Appendix C
Biological Resources

Appendix C.1

James Donlon Boulevard Extension Planning Survey Report

H. T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS

JAMES DONLON BOULEVARD EXTENSION PLANNING SURVEY REPORT

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Project Number 2739-01

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FIGURES

TABLES

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INTRODUCTION

The James Donlon Boulevard Extension Project (hereafter "Project") is located within the planning area of the East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan (hereafter "Plan"; 2006). The James Donlon Boulevard Extension, called the Buchanan Bypass in the Plan, is a covered activity under the Plan as a rural infrastructure project (Plan Section 2.3.2, page 2-18), as is operation and maintenance of the roadway (Plan Section 2.3.2, page 2-18 and Section 2.3.3, page 2-29). As a covered activity, the Project must comply with Plan requirements and, in addition, the Plan has special requirements applicable to the Project as a rural infrastructure project and as a plan activity outside of the Urban Development Area (UDA).

Section 6.3.1 of the Plan (page 6-7) describes requirements for Planning Surveys for projects covered by the Plan. These requirements are to survey for and report on land cover, covered and no-take plants, uncommon vegetation and landscape features, jurisdictional wetlands and waters, and suitable habitat for a specific list of covered and no-take wildlife species.

The Plan assumes presence of all covered wildlife species in suitable habitat. Planning Surveys for suitable habitat are required for the purpose of determining mitigation and determining whether impact avoidance measures (e.g., preconstruction surveys or construction monitoring) are required. Mitigation for the loss of suitable habitat is required based on the assumption that take of these species occurs when suitable habitat is lost. The covered and no-take wildlife species with survey requirements are species for which take of individuals must be avoided as a compliance requirement and surveys indicate habitat within the Project area where take avoidance measures are necessary. The selected covered wildlife species for which habitat surveys are required, based on the need for preconstruction surveys or construction monitoring, are: all covered fairy shrimp and tadpole shrimp species, California tiger salamander (*Ambystoma californiense*), California red-legged frog (*Rana draytonii*), giant garter snake (*Thamnophis gigas*), Townsend's big-eared bat (*Corynorhinus townsendii*), San Joaquin kit fox (*Vulpes macrotis mutica*), Swainson's Hawk (*Buteo swainsoni*), Western Burrowing Owl (*Athene cunicularia hypugea*), and all no-take wildlife species, including Golden Eagle (*Aquila chrysaetos*), Peregrine Falcon (*Falco peregrinus*), White-tailed Kite (*Elanus leucurus*), and ringtail (*Bassariscus astutus*). For the remaining covered species, which include Tricolored Blackbird (*Agelaius tricolor*), silvery legless lizard (*Anniella pulchra pulchra*), and Alameda whipsnake (*Masticophis lateralis euryxanthus*) surveys are not required since pre-construction surveys or construction monitoring are not required.

The Planning Study Report is the mechanism for reporting the results of the surveys. In addition, quantification of impacts of the Project on each of these resources and the applicable avoidance and minimization measures are to be included in the Planning Survey Report for Plan compliance. After incorporation of avoidance and minimization measures into the Project and refinement of the quantification of impacts to land cover types, uncommon vegetation or landscape features, and jurisdictional wetlands and waters, the Application and Planning Survey Summary Report can be drafted. Results from this Planning Survey Report along with descriptions of Project compliance with the avoidance and minimization measures are to be included in the Application and Planning Survey Summary Report for compliance with, and to request take approval under, the Plan.

PROJECT DESCRIPTION

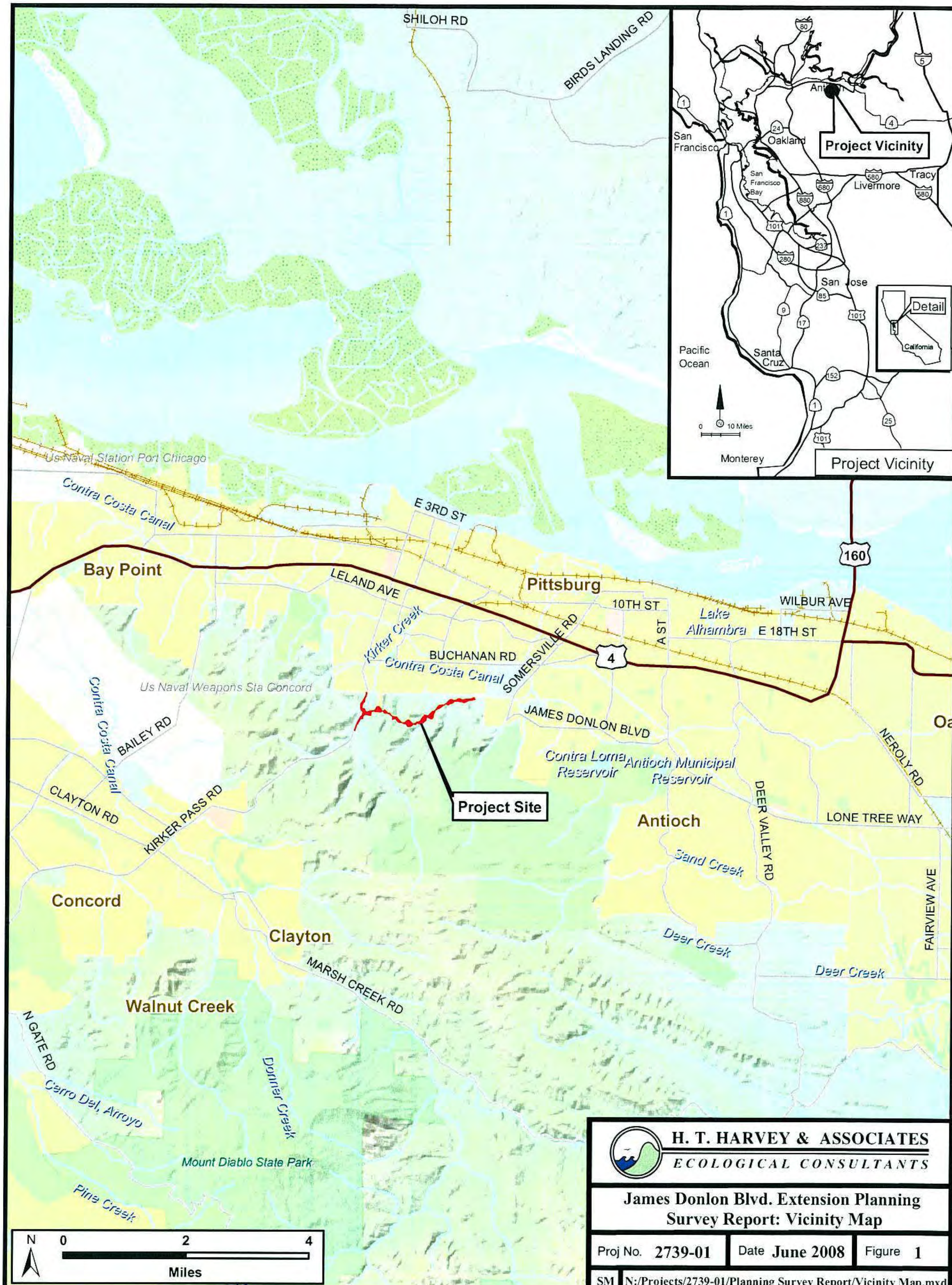
The City of Pittsburg's General Plan (City of Pittsburg 2001) includes a four-lane major arterial to connect Kirker Pass Road to Somersville Road and James Donlon Boulevard (Figure 1). Originally called the Buchanan Road Bypass, as it is called in the Plan, the Project is now recognized as an extension of James Donlon Boulevard.

GENERAL PROJECT AREA DESCRIPTION

The James Donlon Boulevard Extension Project is located in Contra Costa County at the southern edge of the City of Pittsburgh, at the base of the Mt. Diablo foothills, approximately 3.5 mi south of Honker Bay (Figure 1). The Project site intercepts Kirker Creek along its western edge, which is one of the five most significant drainages within the Plan's study area. The site lies within the Clayton and Antioch South 7.5-minute U.S. Geologic Survey (USGS) Quadrangles and is situated at an elevation of approximately 180 to 620 ft mean sea level (MSL). Topography within the Project alignment is variable, with rolling hills, swales, rock outcrops, and incised drainages. The average annual precipitation of the site based on soil type is approximately 12-18 in (Soil Conservation Service [SCS] 1977), and the average annual temperature is 59 degrees Fahrenheit. More recent, location-specific climatic data for the area based on WETS tables (Antioch Pump Plant WETS Station CA232[www/wec/nrcs/usda/gov]) indicates the area has an average annual rainfall of 13.14 in, with most of the yearly precipitation occurring from November to April. Hydrology on-site is influenced by a combination of groundwater seeps, which provide water to two perennial streams (including Kirker Creek), incident rainfall, and surface runoff.

Soils from four series, including Altamont, Fontana, Lodo, and Rincon, underlie the survey area. Three phases of the Altamont series occur on site including Altamont clay, 9 to 15 percent slopes, Altamont clay, 15 to 30 percent slopes, and an Altamont-Fontana complex, 30 to 50 percent slopes. These soils are underlain by soft, fine-grained sandstone and shale, are well drained, and are typically neutral to moderately alkaline in the upper horizons and moderately alkaline in lower horizons (SCS 1977). Two phases of the Rincon series are present, including Rincon clay loam, 2 to 9 percent slopes, and Rincon clay loam, 9 to 15 percent slopes. Rincon soils are well-drained, derive from sedimentary rock-based alluvial fill, and are neutral to mildly alkaline in the surface horizons with a moderately alkaline substratum. Lodo-rock outcrop complex, which consists of Lodo clays and sandstone rock outcrops, occurs on the remainder of the site. These soils are typically thin and somewhat excessively drained, with a shallow depth to bedrock and a mildly acidic surface layer (SCS 1977). None of these soils are on the California state hydric soils list or the Contra Costa County hydric soils list, although inclusions of Pescadero clays can be hydric in some Altamont-Fontana complex phases (SCS 1992).

The National Wetland Inventory (NWI) depicts several wetland types within the survey area. In the western portion of the survey area, Kirker Creek supports two wetland types within the Project boundaries, including: 1) palustrine emergent, seasonally flooded; and 2) palustrine, scrub-shrub, seasonally flooded. Other drainages bisecting the Project site also support the



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James Donlon Blvd. Extension Planning Survey Report: Vicinity Map

Proj No. 2739-01 | Date June 2008 | Figure 1

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wetland types above, as well as 3) palustrine, emergent, temporarily flooded (NWI 1976). Just outside of the Project area to the south, several other wetland types occur, including: 1) lower perennial riverine, unconsolidated bottom, permanently flooded; 2) palustrine, unconsolidated ottom, semipermanently flooded, diked/impounded; 3) palustrine aquatic bed, permanently flooded, diked/impounded; and 4) palustrine emergent, seasonally flooded, diked/impounded.

PLANNING STUDY REPORT COMPONENTS

Section 6.3.1 of the Plan (page 6-7) describes the contents of the Planning Survey Report. While Section 6.3.1 indicates that the Implementing Entity will provide a template for the Planning Survey Report to the City of Pittsburg during the first 6 months of Plan implementation, this template is not yet available. A draft template of the Application and Planning Survey Summary Report has been provided. However, completion of that form requires not only the results of the current Planning Survey Report, but also other information not currently available, such as a description of the avoidance and minimization measures that will be incorporated into the Project. Therefore, the structure of this Planning Survey Report is based on the listed content requirements in Section 6.3.1 of the Plan. As required, the following information is included in the report:

- Descriptions of the types and extent of all land cover; uncommon vegetation or landscape types; suitable habitat for or location of covered and no-take plants; jurisdictional wetlands and waters; and suitable habitat for the selected wildlife species (above) for the Project.
- A map of all these resources in the Project area.
- California Natural Diversity Database (CNDDB) California Native Species Field Survey Forms for all covered plants encountered on the Project site.
- Quantification (i.e., acreage) of impacts of the Project on these resources.
- A description (and map, if appropriate) of the applicable avoidance and minimization measures required by the Plan.

This report is structured generally following this outline of contents, with a separate section for each survey requirement and a section describing applicable avoidance and minimization measures. To date no covered or no-take plants have been encountered on the site so no CNDDB California Native Field Survey Forms are included.

PLANNING SURVEYS AND SURVEY AREA

Planning surveys of the study area were conducted by H. T. Harvey & Associates biologists to document existing biotic resources at the site to satisfy all planning survey requirements necessary for Project coverage under the Plan. Specifically surveys were conducted to determine the types and extent of all land cover, uncommon vegetation or landscape types, suitable habitat for or location of covered and no-take plants, jurisdictional wetlands and waters, and suitable habitat for the selected wildlife species (above) and to develop maps of all these resources. The study area where all surveys were performed includes the extent of grading along the alignment according to Project plans provided by the City of Pittsburg (RBF Consulting, June 2007) expanded to include an additional 100-ft "buffer" area intended to encompass all areas adjacent to the grading footprint that might be potentially impacted by Project construction, either directly or indirectly; note that the term "buffer" area refers only to this additional portion of the study area, and does not imply a buffer from disturbance or other activities.

LAND COVER AND UNCOMMON VEGETATION OR LANDSCAPE FEATURES

SURVEY METHODOLOGY

Prior to the site surveys, information concerning the known distribution of Plan-covered or no-take species that may occur in the area was collected from several sources and reviewed by H. T. Harvey & Associates' biologists. These sources included the California Department of Fish and Game's (CDFG's) CNDDB (2007), the 2006 Plan, and miscellaneous information available through the U.S. Fish and Wildlife Service (USFWS), CDFG, and technical publications. The California Native Plant Society's *Inventory of Rare and Endangered Vascular Plants of California* (CNPS 2007), *The Jepson Manual* (Hickman 1993), and the Plan supplied information regarding the distribution and habitats of vascular plants in the vicinity. USGS topographic maps and aerial photographs of the area were also reviewed prior to the site visit to locate potential seasonal wetlands. Additionally, soils mapping data from the SCS (1977) was used to identify any soils on-site with the capacity to support covered and no-take plants with specific edaphic requirements, and the NWI was queried to further focus efforts to locate potential wetlands.

Plant ecologist and wetlands specialist Kelly Hardwicke, Ph.D., mapped habitats on the Project site on 10, 11, and 12 July 2007 and 1, 7, 8, and 9 August 2007, assisted on 8 and 9 August by plant ecologist Onkar Singh, B.S. Plant species observed were identified using Hickman (1993). The entire Project site was covered on foot. A full list of plant species identified on the Project site during all survey dates, including rare plant surveys conducted 13 March and 30 April 2008, is included in Appendix A

RESULTS

Thirteen distinct land cover types are present on-site: annual grassland, rock outcrops, oak savannah, developed, ruderal, intermittent streams, perennial streams, ephemeral streams, riparian forest/woodland, native grassland, perennial wetlands (groundwater seeps), oak woodland, and seasonal wetlands (Figure 2, Tables 1 and 2). Two sets of acreages are presented. The acreages shown in Table 1 are more inclusive and apply to the entire study area, including the extent of grading and the additional 100-ft buffer area, which was developed to provide a study area that will encompass possible minor changes in Project design and all temporary impacts due to staging areas and construction access. This corresponds to the 85.3-acre (ac) extent of grading provided by RBF Consulting (June 2007), plus approximately 74.5 ac in the additional 100-ft buffer area, for a total study area of approximately 158 ac. The acreages shown in Table 2 represent only those areas within the extent of grading. Plant communities are described in terms of dominant tree, shrub, and herbaceous vegetation composition and structure and classified according to the nomenclature and definitions provided by the Eastern Contra Costa County Plan.

Table 1. Summary of Land Cover, Uncommon Vegetation, and Uncommon Landscape Types Present within the Study Area (including the extent of grading and additional 100-ft buffer area).

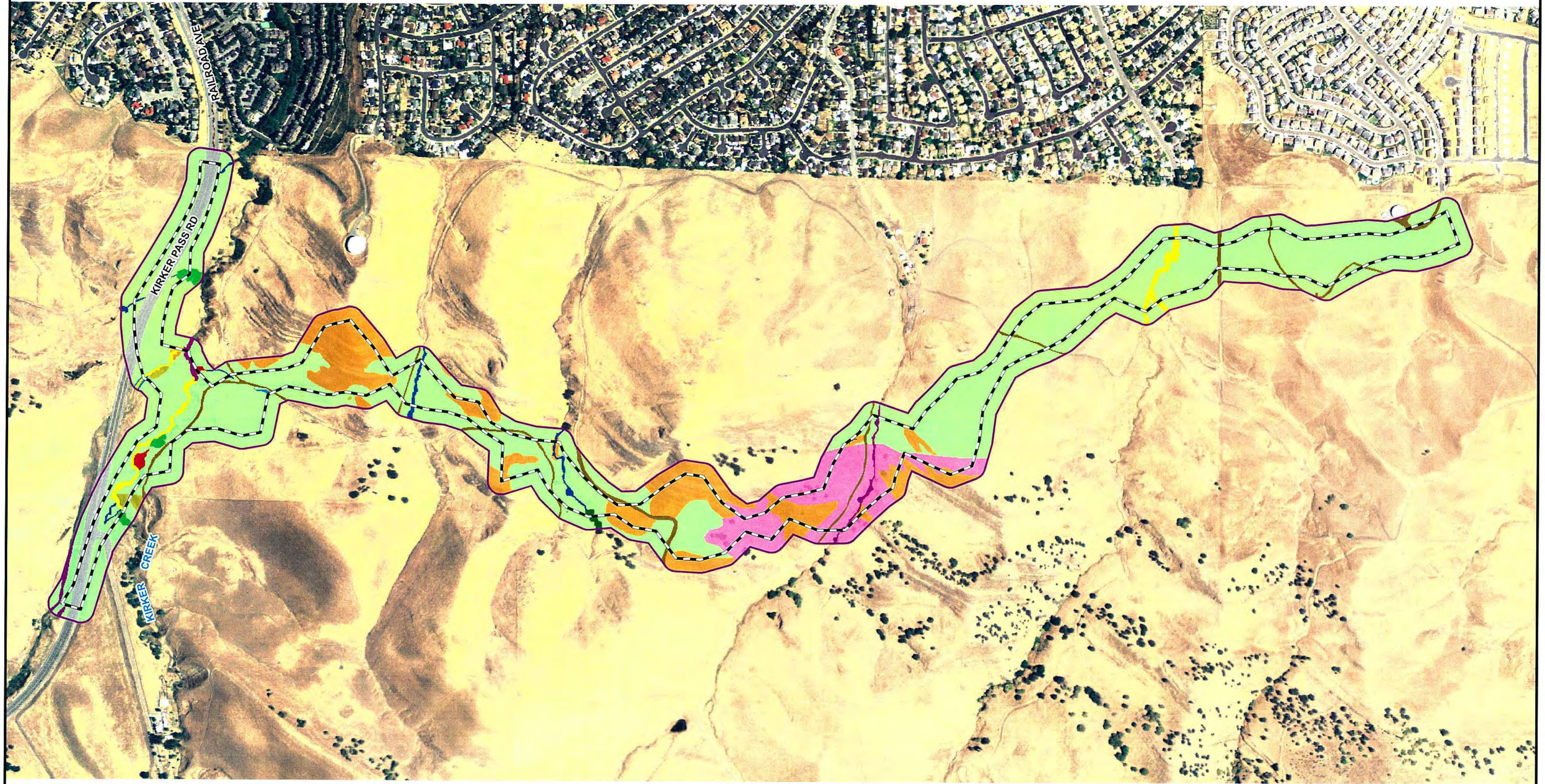
Type		Total Acreage (ac)	
Annual Grassland			105.71
Rock Outcrops*			22.22
Oak Savannah			13.70
Developed			6.28
Ruderal			4.00
Streams	Intermittent	2.01	
	Perennial	1.06	
	Ephemeral	0.93	
	Total Streams		4.00
Riparian Forest/Woodland			0.74
Native Grassland*			0.53
Perennial Wetlands (Seeps)*			0.29
Oak Woodland			0.21
Seasonal Wetlands			0.10
Total			**157.78**

* Also Considered Uncommon Vegetation Alliance or Landscape Feature by the Plan

Table 2. Summary of Land Cover, Uncommon Vegetation, and Uncommon Landscape Types Present within the Extent of Grading Only.

Biotic Habitat/Land Use Type		Total Acreage (ac)	
Annual Grassland			54.49
Rock Outcrops*			12.33
Oak Savannah			8.40
Developed			4.07
Ruderal			2.16
Streams	Intermittent	1.71	
	Perennial	0.55	
	Ephemeral	0.60	
	Total Streams		2.86
Riparian Forest/Woodland			0.34
Native Grassland*			0.32
Perennial Wetlands (Seeps)*			0.23
Oak Woodland			0.07
Seasonal Wetlands			0.04
Total			**85.31**

* Also Considered Uncommon Vegetation Alliance or Landscape Feature by the Plan



LEGEND

- Extent of Grading Limits
- 100 ft Buffer

Habitat

- Annual Grassland
- Native Bunchgrass Grassland
- Rock Outcrop
- Oak Savannah
- Developed
- Ruderal
- Intermittent Stream
- Perennial Stream
- Ephemeral Stream
- Riparian Forest/Woodland
- Perennial Wetland (Seep)
- Oak Woodland
- Seasonal Wetland

N

0 350 700 1,400

Feet

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James Donlon Blvd. Extension Planning Survey Report: Land Cover Types

Proj No. 2739-01	Date June 2008	Figure 2

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The Plan also indicates that some vegetation types or landscape features that are uncommon or rare must be identified in the Planning Survey Report (Plan Section 6.3.1, page 6-10). Uncommon vegetation types are defined as "those vegetation alliances or associations listed as rare or worthy of special consideration by CDFG". Uncommon landscape features are "physical or hydrologic feature that are uncommon in the inventory area and provide important habitat for covered species and biological diversity". Each land cover type, uncommon vegetation type, and uncommon landscape feature found within the study area is described below in decreasing order of extent within the Project area.

Annual Grassland

Annual grassland is found on rolling hills, drainage banks, and swales throughout the study area, comprising approximately 105.7 ac of the full study area, and 54.5 ac of the grading area (Figure 2, Tables 1 and 2). All other land cover types described below exist as inclusions within the matrix of annual grassland habitat that typifies the general Project area. The majority of the habitat on site is dominated by introduced annual grasses such as wild oats (*Avena* sp.), soft chess (*Bromus hordeaceus*), ripgut brome (*Bromus diandrus*), rattail fescue (*Vulpia myuros*), and mouse barley (*Hordeum murinum*). In areas, significant stands of native grasses, including alkali wild-rye (*Leymus triticoides*), also occur. In much of the annual grasslands almost all native grasses have been replaced with introduced annuals, but fairly undisturbed grassland areas still support a large complement of spring-blooming native forb species. . Native grassland forbs observed in included fall-blooming species such as Great Valley gumweed (*Grindelia camporum*), narrow-leaf milkweed (*Asclepias fascicularis*), common yarrow (*Achillea millefolium*), hairy golden aster (*Heterotheca sessiliflora*), gray mule ears (*Wyethia helenioides*), doveweed (*Eremocarpus setigerus*), and common bedstraw (*Galium aparine*); as well as spring-blooming species such as blue dicks (*Dichelostemma capitatum*), arroyo lupine (*Lupinus succulentus*), and miniature lupine (*Lupinus bicolor*).

The grasslands are grazed by cattle, but heavy grazing-related disturbance in the form of trampling and compaction, sparse grass cover, and heavy yellow star-thistle (*Centaurea solstitialis*) or fennel (*Foeniculum vulgare*) infestation only occurs in isolated areas. These appear to be areas near easily accessible perennial water sources or feeding areas, steep, eroded banks or hillsides that have been terraced or further disturbed by cattle, or areas near Kirker Pass Road. The grassy upper banks and hills between Kirker Pass Road and Kirker Creek represent the most heavily disturbed grassland areas on-site, with badly eroding banks and culvert outlets, a high degree of trash and debris from the road, and dense yellow star-thistle infestations. Other non-native invasive grassland species, such as purple star-thistle (*Centaurea calcitrapa*), Italian thistle (*Carduus pycnocephalus*), milk thistle (*Silybum marianum*), stinkwort (*Dittrichia graveolens*), black mustard (*Brassica nigra*), and Russian thistle (*Salsola tragus*), are found throughout the remainder of the Project area at low levels, or concentrated along disturbed areas. In general, however, the grassland on-site is in good condition, with about 90% ground cover or more and a canopy height of approximately 6-16 in in most areas. As the site is underlain in many areas with thin, rocky soils, and in the 12 months prior to site surveys the area received less precipitation than reported by WETS climate data for normal ranges (see *General Project Area Description* above), the structure and qualitatively estimated amount of residual dry matter (RDM) or biomass observed during site surveys indicate a relatively high-quality grassland in terms of vegetative composition, likely to support a large proportion of native forb species.

Quantification of Impacts. Permanent impacts are expected to occur to all grassland areas within the extent of grading limits, meaning that 54.5 ac of annual grassland will be permanently impacted. Temporary impacts to additional grassland areas will occur in construction access and staging areas; because this is a regionally and locally common land cover type (and thus less "sensitive" than most other cover types in the study area), it is likely that temporary impacts for the proposed Project will be intentionally concentrated in areas mapped as annual grasslands (Figure 2) to minimize and avoid unnecessary impacts to more sensitive wetland, stream, rock outcrop, oak savannah, native grassland, riparian, and oak woodland habitats on-site. Therefore, temporary impacts may occur to up to 51.2 ac in the buffer area. Total potential impact within the study area is up to 105.7 ac.

Rock Outcrops

Photograph 1: Interesting features of the rock outcrops.

A geologic uplift feature runs the length of the Project site, where sandstone shelves have been exposed in layers along hillslopes, hill crests, and in some areas, exposed by erosion in stream banks and beds. Approximately 22 ac of the full study area and 12.3 ac of the grading area have 40-80% ground cover of exposed bedrock intermixed with extremely shallow, rocky soils (Figure 2). In several of these areas, interesting features occur, such as small, shallow grottoes, small slot canyons, exposed cliffs up to 10 ft high, and shallow depressions on horizontal rock faces possibly subject to spring ponding (Photograph 1). Additionally, marine fossil deposits are exposed adjacent to bedrock in several areas, particularly near the central drainages on-site (see Figure 2). The rocks themselves appear to be soft, possibly somewhat calcareous sandstone, and no obvious ultramafic or serpentinite features were observed, although a few individuals of species with "weak or indifferent" affinity for serpentine soils were observed in especially thin soils, including California plantain (*Plantago erecta*) and tuberous sanicle (*Sanicula tuberosa*). A remarkable diversity of lichens have colonized most of the rocks (Photograph 2).

Photograph 2: Lichen-covered rock outcrops.

Vegetation in these areas comprises sparsely distributed grasses, including varying densities of purple needlegrass (*Nassella pulchra*), but was dominated by many of the same non-native annual grasses common in areas mapped as annual grasslands such as wild oats, soft chess, and rattail fescue, and native forbs such as Great Valley gumweed. Overall, the character of the rock outcrops is grass- and herbaceous-plant dominated, not shrub-dominated. However, a relatively higher concentration of fairly uncommon and/or native coastal scrub species occurs closely associated with the rock outcrops and adjacent thin soils than observed in grassland areas of the site. These included some shrubs and sub-shrubs such as California sagebrush (*Artemisia californica*), coyote brush (*Baccharis pilularis*), and California matchweed (*Gutierrezia californica*), as well as less common native herbs such as vinegarweed (*Trichostema lanceolatum*), naked buckwheat (*Eriogonum nudum*), and San Joaquin tarweed (*Holocarpha obconica*). During spring special-status plant surveys, several other native, spring-blooming, annual forb species were found to be associated with the regionally uncommon edaphic conditions and geomorphic structure that provide the foundation for this habitat on the site. These included purple owl's clover (*Castilleja exserta*), pygmy weed (*Crassula connata*), and manystemmed gilia (*Gilia clivorum*).

Uncommon Landscape Feature. Rock outcrops are considered an uncommon landscape feature within the Plan area (Plan Section 6.3.1, page 6-10).

Quantification of Impacts. This assessment assumes that rock outcrop areas outside the extent of grading limits will not be temporarily impacted due to staging and access during construction since, as uncommon landscape features, these features should be avoided. Approximately 12.3 ac of this uncommon landscape feature would be permanently impacted under current Project plans; however, avoidance of uncommon landscape features to the greatest extent feasible is required by the Plan (pages 6-27 through 6-33). Should it be determined that complete avoidance of this land cover type through changes in Project design is not possible, no mandatory compensation ratios are required for this uncommon landscape feature under the Plan. However, in-kind rock outcrop mitigation in the form of preservation may be required as compensation for impacts to special-status bats not covered by the Plan under the California Environmental Quality Act (CEQA); such potential impacts are described in H. T. Harvey & Associates (2007b).

Rock outcrops provide uncommon edaphic and physical features, have a disproportionate contribution to biodiversity, and provide potentially important resources to non-Plan covered, special-status wildlife in the form of roosting habitat for pallid bats. As a result, opportunities to minimize permanent impacts to this habitat type by refinement of Project design should be identified, and impacts should be avoided wherever possible to comply with Plan avoidance requirements for uncommon landscape features and with CEQA. Section 6.3 of the Plan calls for avoidance or minimization of impacts to rock outcrops as an uncommon landscape feature when their avoidance "will help meet Plan biological goals" of creating large, contiguous open space preserves of maximum quality (page 6-11). The Plan, in Conservation Measure (CM) 1.14 (Plan pages 6-27 through 6-33) that specifically applies to covered roads such as the James Donlon Boulevard Extension Project (See *Applicable Avoidance and Minimization Measures* below), requires that planned roads be located in the least environmentally sensitive location and that they avoid to the greatest extent feasible impacts on covered species and sensitive natural communities (Plan page 6-29). Rock outcrops in areas to be cut and filled during grading likely cannot be avoided, but impacts must be minimized. Impacts to outcrops by construction access and staging in the surrounding buffer area can be avoided by fencing off outcrops during construction.

Oak Savannah (Blue-Valley Oaks)

A belt of oak savannah intercepts the central portion of the survey corridor. This habitat type comprises approximately 14 ac of the full study area, and 8.4 ac of the grading area (Figure 2).

However, some areas mapped as rock outcrops (see above) could alternatively be considered oak savannah with frequent rock outcrops (Figure 2), as these areas could fit Plan definitions of either land cover type. Oak savannah habitat is defined as grasslands with an overall tree canopy cover of 5-10% (Plan page 3-12), and therefore some areas mapped as annual grasslands also supported a small number of isolated oaks, with canopy cover values less than 5%. Study of 2005 National Agricultural Imagery Program (NAIP) aerial photographs for the region surrounding the Project site indicated the borders of a large, contiguous band of oak savannah, clearly distinct from adjacent grasslands with isolated oaks, that stretches into the Project site from the southeast. Oaks tend to be concentrated on the hillcrests and in some of the drainages with steep, tall banks.

Plant species composition of the herbaceous portion of the oak savannah is similar to that observed in the annual grasslands on-site, with dominants such as wild oats, soft chess, ripgut brome, hairy golden aster, and yarrow, although some plants, such as California goldenrod (*Solidago californica*), were only observed in areas near tree canopies. Alternatively, other savannah areas with rockier soil or near areas mapped as rock outcrops support a similar complement of coastal scrub species, including California sagebrush, California matchweed, and coyotebrush. Within the tree stratum, the oak savannah is dominated by blue oak (*Quercus douglasii*), although Valley oaks (*Quercus lobata*) frequently occur near drainages. Some trees on-site are morphologically similar to both *Quercus* sp., and may be hybrids. California buckeye (*Aesculus californicus*) also occur sporadically throughout the savannah, in drainages, toeslope areas, and occasionally on hillsides. The oaks are generally mature to senescent, and several trees on-site have a greater than 4-ft diameter at breast height (H. T. Harvey & Associates 2007a). Some oak seedling recruitment occurs in isolated areas.

Quantification of Impacts. Approximately 8.4 ac of oak savannah habitat will be permanently impacted under current Project plans. Any impacts for construction access and staging within the buffer area would constitute an increase in the impacted area. However, avoidance of impacts to oak savannah is required by the Plan (See *Applicable Avoidance and Minimization Measures* below), and this assessment assumes that, due to avoidance measures, oak savannah areas outside the extent of grading limits will not be impacted due to staging and access during construction.

Developed

Developed areas on the site consist primarily of the hardscape on Kirker Pass Road, although very small areas representing a tower station and water tank were also mapped as "developed" (Figure 2). These areas support little or no vegetation. Sparsely vegetated areas near the roadside support only invasives such as stinkwort, yellow star-thistle, and Italian thistle. Two ornamental trees occur by the roadside within the study area, a red ironbark (*Eucalyptus sideroxylon*) and a mimosa tree (*Albizia julibrissin*).

Quantification of Impacts. This land cover type comprises approximately 6 ac of the study area, and 4.1 ac of the grading area. Avoidance of this land cover type is not required for Plan compliance, and developed areas are appropriate for access and staging area within the buffer area.

Ruderal

Ruderal areas on-site are comprised of several dirt ranch roads, with compacted, graded soils and sparse, weedy vegetation, comprising approximately 4.0 ac of the study area and 2.2 ac of the grading area (Figure 2). The road complex through the ranch where the Project site is located is decades old, as the roads are visible on the USGS topographic maps for the Clayton and Antioch South 7.5-minute Quadrangles, which were last photorevised in the early 1980's. These roads are graded at sufficient width for two cars to pass generally, but are otherwise unimproved and lack gravel beds. This land cover type is noteworthy in a botanical sense due to the fact that many of the invasive plant species found in the grasslands, drainages, and savannahs of the interior of the site are associated with the roads, with invasives such as Italian thistle, milk thistle and Russian thistle generally decreasing in abundance with increasing distance away from the roads. On the road surfaces, some mat-forming vegetation occurs, such as prostrate spurge (*Chamaesyce prostrata*) and filarees (*Erodium* spp.).

Quantification of Impacts. This land cover type comprises approximately 2.2 ac of the grading area, all of which will be permanently impacted, and 4.0 ac of the study area, all of which may be temporarily impacted by construction staging and access. These disturbed areas are particularly appropriate for temporary construction use for access and staging and may be most appropriate for permanent impacts of the roadway construction (Plan page 6-29 *Siting Requirements*). Avoidance of this land cover type is not required for Plan compliance.

Streams

Several perennial, intermittent, and ephemeral streams occur in drainages throughout the Project site (Figure 2), totaling approximately 4.0 ac of the 158-ac full study area and 2.8 ac of the 85-ac grading area. These acreages are based on the extent of bank as well as bed habitat (see *Jurisdictional Wetlands and Waters* below and Appendix B for jurisdictional acreages based on ordinary high water [OHW]). Streams were classified according to the Plan definitions of streams, which are based on the nature of the hydrological inputs the watercourse receives. Generally, perennial streams have flowing water all year and are principally driven by an above-ground water table and/or groundwater discharge from seeps, such as Kirker Creek within the Project area. Intermittent streams have flowing water seasonally, and are mainly driven by a rainy season groundwater rise, supplemented by incident rainfall and runoff from the surrounding watershed. Ephemeral streams are not affected by groundwater and only convey water during or immediately after precipitation events. Within the Project site, ephemeral streams are either not incised or have remnant tall banks from historical flows. Intermittent and perennial streams support true bed and banks, with the banks from 4 ft to 7 ft tall, depending on the stream. Kirker Creek has very tall banks from long-term historical erosion, but current hydrological inputs also maintain a secondary set of banks below terraces near the toeslope of the tall banks, and an approximately 6-in-deep, incised, low flow channel below the sandy terraces at the foot of these lower banks.

Vegetation with the various streams reflects the differences in hydrological inputs. In ephemeral streams, vegetation is not significantly altered compared to other grassland, rock outcrop, or oak savannah areas (depending on which land cover type the stream passes through). Occasionally, these streams support a higher proportion of the non-native facultative hydrophyte Italian wild-rye (*Lolium multiflorum*) in the herbaceous stratum than observed on hillsides and upland terraces, and in one drainage, blue oaks occur on the upper stream banks. These drainages do not support hydric soils (see *Delineation of Jurisdictional Waters* below and Appendix B. *Preliminary Delineation of Wetlands and Other Waters*). Intermittent streams in the study area are either unvegetated with a consolidated, exposed rock bed and banks (in rock outcrop areas) or support hydrophytic vegetation such as saltgrass (*Distichlis spicata*), rabbitsfoot grass (*Polypogon monspeliensis*), alkali mallow (*Malvella leprosa*), spiny clotbur (*Xanthium spinosum*), bird's foot trefoil (*Lotus corniculatus*), brass buttons (*Cotula coronopifolia*), and sticky sand-spurry (*Spergularia macrotheca*). Scattered tree tobacco (*Nicotiana glauca*) occurs in sandy low terraces and intermittently wet portions of Kirker Creek. Soils in these streams tend to show clear hydric features and are typically sandier than surrounding upland soils.

Streams that had flowing water during the July and August 2007 surveys, including portions of Kirker Creek and the central drainage south of the farmhouse (Figure 2), are classified as perennial. In contrast, streams classified as intermittent were found to have flowing or stagnant water present during spring 2008 surveys only. The Plan states that there are only 5 perennial streams in the covered area, which includes Kirker Creek. However, the unnamed, narrow, central north-south drainage on-site, which is a linear stream course with bed and incised banks, had running water to a depth of approximately 4 in in July and August 2007. A groundwater seep located near where the stream meets the southern edge of the study area is the source of hydrology, and most of this water is pumped out at the farmhouse area to supply water to stock tanks. Although this unnamed drainage is not specified by the Plan, it appears to be truly perennial, if small. In both perennial streams on-site, water is typically unshaded, warm, murky, slow-moving, and variably deep during summer months (from 4-6 in in riffles in the unnamed drainage to 1.5 ft in pools in Kirker Creek), especially where cow punch has caused considerable disturbance to unconsolidated bed soils. During spring 2008 surveys, some areas in intermittent streams were stagnant but most areas mapped as both perennial and intermittent streams support cool, fresh, fast-flowing water early in the season. These watercourses have some amount of riparian scrub associated with them, but some of these areas are small (2-3 contiguous trees or bushes) and are not mapped as a separate habitat type. Woody riparian species growing in the beds of these streams include red willow (*Salix laevigata*), almond (*Prunus dulcis*), and elderberry (*Sambucus mexicana*). Herbaceous vegetation found within perennial streams includes some species found in intermittent streams, such as rabbitsfoot grass, but is dominated by obligate or emergent wetland species such as three-square (*Scirpus pungens*), common tule (*Scirpus acutus*), floating pennywort (*Hydrocotyle verticillata*), watercress (*Rorippa nasturtium-aquaticum*), and in deeper pools, leafy pondweed (*Potamogeton foliosus* var. *foliosus*). Saltgrass grows on tall hummocks above the water surface in most areas of the central drainage (Photograph 3). Soils in these streams tend to be anaerobic, with a high proportion of organic, mucky material.

Quantification of Impacts. Within the grading limits, 1.71 ac of perennial stream, 0.55 ac of intermittent stream, and 0.60 ac of ephemeral stream habitat would be impacted if no avoidance measures are incorporated into the Project. We also calculated length of each of the three stream types in assessing impacts to this land cover type, as per the Plan. Up to 0.39 mi (2063 linear ft) of perennial stream, 0.35 mi (1855 linear ft) of intermittent stream, and 0.36 mi (1878 linear ft) of ephemeral stream habitat would be permanently impacted by the proposed Project in the absence of avoidance measures. Both of these calculations assume that no additional impacts, temporary or permanent, direct or indirect, will occur to streams outside of the extent of grading limits as a result of construction staging, grading, or access due to the Plan requirement for avoidance of these environmentally sensitive habitats. The Plan's avoidance and minimization measures specifically require that planned roads be located in the least environmentally sensitive location and avoid to the greatest extent feasible impacts on covered species and sensitive natural communities such as streams (Plan CM 1.14 [*Siting Requirements*], page 6-29). Streams in areas to be cut and filled during grading likely cannot be avoided, but impacts must be minimized. Impacts to streams due to construction access and staging in the surrounding buffer area can be avoided by fencing streams off during construction.

Photograph 3: The central, unnamed, perennial stream that bisects the site from south to north. Water is flowing in August from a groundwater seep, indicating that this drainage likely carries some amount of water year round, even though the drainage is pumped to provide water to several stock tanks. Saltgrass carpets tall hummocks rising out of the streambed.

Also, stream setbacks, described in CM 1.7 (Plan page 6-15), apply to rural infrastructure projects according to CM 2.12 (Plan page 6-33). Project design or refinement of the Project footprint will be required for Plan compliance to incorporate stream setbacks (CM 1.7, page 6-15 and CM 1.14 [*Design Requirements*], page 6-30, see also *Applicable Avoidance and Minimization Measures* below). Current Project plans for grading would impact 3918 ft of perennial and intermittent streams. Even if redesign of the impact footprint (e.g., using clearspan bridges or other designs) reduced impacts to only 15% of the length of the 50-ft setback area along each stream (the maximum allowed according to Plan CM 1.7, page 6-15), approximately 588 ft of perennial and intermittent streams would be impacted. Redesign of stream crossings to cross directly perpendicular to streams, rather than at oblique angles (such as is proposed in the central, unnamed, perennial drainage), may allow the proposed Project to meet the required Plan, and could also potentially allow the Project to meet Nationwide Permit (NWP) limits for U.S. Army Corps of Engineers (USACE) Section 404 permitting.

Riparian Woodland/Forests

Woody riparian vegetation occurs in patches along several of the drainages on-site (Figure 2). In some places, the riparian trees are rooted along upper banks, out of the drainage beds, and are mature but widely spaced Fremont cottonwoods (*Populus fremontii*) or Valley oaks with an open, grassy understory, thus conforming more to the definition of riparian woodland. In other areas, the trees are rooted along the lower banks and into the beds of the drainages. Canopy cover in these areas is much greater, with up to 100% absolute cover and full shading of the stream habitat. These forested areas support a brushy understory, mainly comprised of poison oak (*Toxicodendron diversilobum*), toyon (*Heteromeles arbutifolia*), and whitebark raspberry (*Rubus leucodermis*). In some areas with taller canopy trees, willow saplings also functionally serve as underbrush species. Herbaceous vegetation is sparse in these areas, and large amounts of leaf litter are typically present. Tree species in the forested areas include Valley oaks, Fremont cottonwoods, red willows, arroyo willows (*Salix lasiolepis*), almond, and in the eroded tributary draw off of Kirker Creek near the northern end of the study area (Figure 2), Mexican fan palm (*Washingtonia robusta*) and Canary Island date palm (*Phoenix canariensis*). Trees tend to be tall (to 60-75 ft in some areas) and mature, although saplings of all tree species, including Valley oak, are present. In total, approximately 0.79 ac of the study area and 0.34 ac of the grading area support enough bank-rooted trees, including a complement of cottonwoods and willows required for this designation under Plan definitions, to be mapped as riparian habitat.

Riparian habitat is regarded as among the most sensitive habitat types in California. In the western United States, riparian areas comprise less than 1% of the land area, but are among the most valuable and productive habitats. Riparian woodlands in Central California support an abundant and diverse assemblage of animal species. Riparian habitats are increasingly uncommon at both a local and regional scale, and support a disproportionate amount of wildlife species and populations given the aerial extent of this land cover type within the landscape. Riparian habitat, because it is considered sensitive natural community by CDFG and is therefore an uncommon vegetation type, must be avoided to the greatest extent feasible (CM 1.14, page 6-29). As a sensitive natural community, impacts to riparian habitat may be considered significant under CEQA (although benefits of the Plan may offset or mitigate impacts), may require a permit from the CDFG (if not covered by the regional wetland permitting programs developed in association with the Plan), and typically require compensatory mitigation (which may also be sufficiently accomplished under the Plan).

Quantification of Impacts. The avoidance of Project-related impacts to riparian woodlands is required for compliance with Plan CM 1.14 and CM 2.12 (See *Applicable Avoidance and Minimization Measures* below). If no impacts occur to riparian habitats outside of the current extent of grading limits, due to avoidance of this land cover in compliance with the Plan, the maximum impact will be the riparian area within the grading limits. Therefore, direct or indirect, temporary or permanent, Project-related impacts will affect up to 0.34 ac of riparian habitats (but see also CDFG jurisdictional features under *Jurisdictional Wetlands and Waters*, below).

Native Grassland

Native grassland was delineated during spring surveys along the eastern banks of Kirker Creek and in a small patch leading up to rock outcrops on a south-facing hillside near the creek (Figure

2). These areas are dominated by non-native annual upland grasses such as wild oats and soft chess. However, due to a combination of factors, likely including the mildly alkaline soils occurring near Kirker creek, the relative inaccessibility of these areas to cattle, and the slightly moister soil conditions along the creek banks and shelves, native grasses remain at least sub-dominant within the grassland in these areas. Some areas support as much as 25% cover of native perennial grasses. Purple needlegrass formed dense to sparse populations in these areas, intermixed in wetter creek bank areas with alkali wild-rye (*Leymus triticoides*) and the non-native grass annual wild-rye. In the areas closest to the creeks, a native forb often associated with vernal pools, coyote thistle (*Eryngium vaseyi*) occurs. Other native grassland forbs, including tomcat clover (*Trifolium willdenovii*), suncups (*Camissonia ovata*), blue dicks, and Great Valley buttercup (*Ranunculus canus*) also occur in association with native grasses in the area. The small patch near the rock outcrops (Figure 2) was not in as moist or alkaline habitat as observed adjacent to Kirker Creek, but appeared to be to some degree associated with the thin soils near the rock outcrops. In total, approximately 0.53 ac of the study area and 0.32 ac of the grading area support enough perennial grass culms, in a mosaic of native grass cover density with at least 25% overall cover of native grasses, to be mapped as native grasslands under Plan definitions.

Native grasslands, including the purple needlegrass alliance, are considered to be sensitive habitats due to their rarity, and are formally considered rare or worthy of special consideration by CDFG (2007). It is estimated that only 2 percent of the state's grasslands still support native Californian grass species, and these areas are sensitive to factors such as overgrazing and increasing dominance of common non-native annual grasses (USDA 2004, HCP/NCCP page 3-10). Native grassland is considered a sensitive natural community by CDFG and is therefore an uncommon vegetation type under Plan definitions, and must be avoided to the greatest extent feasible (CM 1.14, page 6-29). As a sensitive natural community, impacts to native grassland may be considered significant under CEQA (although benefits of the Plan may offset or mitigate impacts), and typically require compensatory mitigation (which may also be sufficiently accomplished under the Plan).

Uncommon Vegetation Type. Native grassland, including purple needlegrass grassland such as present within project boundaries, is considered an uncommon landscape feature within the Plan area (Plan Section 6.3.1, page 6-10).

Quantification of Impacts. The avoidance of Project-related impacts to riparian woodlands is required for compliance with Plan CM 1.14 (See *Applicable Avoidance and Minimization Measures* below). If no impacts occur to native grassland outside of the current extent of grading limits, due to avoidance of this land cover in compliance with the Plan, the maximum impact will be the native grassland within the grading limits. Therefore, direct or indirect, temporary or permanent, Project-related impacts will affect up to 0.32 ac of native grassland.

Perennial Wetlands (Alkaline Groundwater Seeps)

Perennial wetlands on-site are driven by groundwater discharge from seeps. In the central perennial stream, the seep discharge occurs within the stream channel and thus is not mapped as a separate wetland type. However, in Kirker Creek, seep discharge points were observed to occur high (up to 15 ft) above the bed of the stream, thus saturating bank and high terrace soils in non-linear areas (totaling approximately 0.29 ac within the full study area, and 0.23 ac within the 85-ac extent of grading limits) that would otherwise be upland, well-drained banks. Plant species composition within the seep discharges include facultative, salt-loving hydrophytes such as saltgrass, brass buttons, and rabbitsfoot grass, as well as marshy plants such as Mexican rush (*Juncus mexicanus*), toad rush (*Juncus bufonius*), and common spikerush (*Eleocharis macrostachya*). At one seep point, an invasive Russian olive tree (*Elaeagnus angustifolia*) occurs (H. T. Harvey & Associates 2007a). Algal or cyanobacterial crusts and mats are frequent in these areas, and water quality during our site visits appeared murky. Soils are saturated, have a high proportion of mucky organic material, and are disturbed by deep cow punch. The seeps on-site are dominated by saltgrass and as these areas are underlain with soils that can be moderately alkaline, these wetlands are likely alkaline to some degree.

Uncommon Landscape Feature. Alkaline seeps are considered to be a sensitive habitat type by the CDFG (CNDDB 2007). All seeps are considered an uncommon landscape feature within the Plan area (Plan Section 6.3.1, page 6-10). Avoidance or minimization of impacts to seep areas must be incorporated into the Project to the greatest extent feasible (Plan Section 6.3.1, pages 6-10 and 6-11 CM 1.14 [*Siting Requirement*], page 6-29).

Quantification of Impacts. Should Project plans proceed according to current extent of grading limits, and no impacts to perennial wetlands occur outside the current grading limits, 0.23 ac of perennial wetlands will be impacted. Because this land cover type is an uncommon landscape feature, CM 1.14 requires planned roads to be located in the least environmentally sensitive location feasible and to avoid, to the greatest extent feasible, impacts on sensitive natural communities. As an uncommon landscape feature impacts must be minimized (Plan 6-10 and 6-11). Therefore, impacts to this land cover type could be less than 0.23 ac.

Oak Woodlands

One ephemeral drainage on-site supports several (> 10) blue oak trees rooted along the upper stream banks, with a continuous canopy covering approximately 0.21 ac of the full study area and 0.07 ac within the extent of grading (Figure 2). Canopy height is generally shorter than seen in cottonwood-Valley oak riparian woodlands or oak savannahs on site, at approximately 30-40 ft, and these blue oak trees appear somewhat younger on average than those found on hillsides and hillcrests. This feature is similar to the oak savannah on-site, as it features mature blue oaks, with an open understory dominated by non-native annual grasses such as wild oats, soft chess, and Italian wild-rye. Here, the increased canopy cover indicates a separate land cover type based on definitions set forth in the Plan, which stipulate that grasslands with an oak cover of at least 10% be classified as woodlands rather than savannahs. Like most of the other oak woodlands within the areas covered by the Plan, this area supports a contiguous canopy with 100% absolute cover. This completely shades the bed of the ephemeral stream below, which in that area has approximately 3 ft-tall, slumping banks. This area of blue oak woodland cannot be considered riparian habitat as Plan land cover type definitions require some cottonwood or willow component within the overstory vegetation to qualify as a riparian habitat.

Quantification of Impacts. Permanent impacts to 0.07 ac of oak woodlands are expected within the grading limits as a result of the construction of the proposed Project. If construction access limitations prevent avoidance of the remainder of the oak woodlands in the buffer area, a total of 0.21 ac of oak woodlands will be permanently impacted by construction of the Project.

Seasonal Wetlands

Seasonal, non-linear wetlands on-site were the rarest land cover type observed, covering only about 0.1 ac of the 158-ac full study area, and 0.04 ac within the extent of grading. Most wetlands on-site are associated with groundwater seeps, or are within linear drainages. However, in two small areas (both within ephemeral drainages) topographic depressions hold water and create soil saturation for a much longer period than the surrounding ephemeral bed, which only conveys water during or immediately after precipitation events. Based on the presence of distinctly hydric soil features (not observed in the ephemeral streambed soils surrounding these depressions), it is likely these depressions remain saturated for several weeks following precipitation events during the rainy season. During our site visits, these areas supported sparse, dormant (in summer), facultative wetland grasses such as Italian wild-rye and Mediterranean barley (*Hordeum marinum* ssp. *gussoneanum*). Soils tended to be heavily disturbed by cow punch, indicating rainy-season saturation when surrounding areas outside the depressions were not saturated. Some unvegetated, shallow depressions near several rock outcrop features may also seasonally pond water, but these areas are typically too small (> 10 ft^2) to accurately map with GPS/GIS technology, and due to the exposed bedrock, are not expected to support the minimum 5% vegetation cover required to form USACE-jurisdictional wetlands (but see *Suitable Habitat for Selected Wildlife Species* below, concerning *Covered Large Branchiopods*).

Quantification of Impacts. Seasonal wetland habitats are considered sensitive by regulatory agencies such as the CDFG. As such, impacts to seasonal wetland land cover should be avoided to comply with the Plan requirement that rural infrastructure projects be located in the least environmentally sensitive location and avoid, to the greatest extent feasible, sensitive natural communities such as wetlands (CM 1.14, page 6-29). Project-related permanent impacts to 0.04 ac of seasonal wetlands (assuming no seasonal wetland impacts outside the extent of grading limits) will occur with Project construction.

SUMMARY OF LAND COVER IMPACTS

Table 3 presents the likely impacts to land cover types assuming that all areas within the grading limits are impacted but that uncommon vegetation and landscape features and sensitive habitats are avoided within the buffer area during construction as required for Plan compliance (described above). Reductions in the impact area can also be made by Project design refinement incorporating stream setbacks (CM 1.7, page 6-15), avoidance of environmentally sensitive habitat (CM 1.14 [*Siting Requirements*], page 6-29) and structures for wildlife movement and impact minimization (CM 1.14 [*Design Requirements*], pages 6-30 and 6-31)

Table 3. Summary of Likely Impacts to Land Cover, Uncommon Vegetation, and Uncommon Landscape Features Present within the Study Area.

Type		Total Acreage (ac)	
Annual Grassland			105.71
Rock Outcrops*			12.33
Oak Savannah			8.40
Developed			6.28
Ruderal			4.00
Streams	Intermittent	1.71	
	Perennial	0.55	
	Ephemeral	0.60	
	Total Streams		2.86
Riparian Forest/Woodland			0.34
Native Grassland*			0.32
Perennial Wetlands (Seeps)*			0.23
Oak Woodland			0.07
Seasonal Wetlands			0.04

* Also Considered Uncommon Vegetation Alliance or Landscape Feature by the Plan

SURVEYS FOR COVERED AND NO-TAKE PLANT SPECIES

SURVEY METHODOLOGY

Prior to the site surveys, information concerning the known distribution of Plan-covered or no-take species was collected from several sources and reviewed by H. T. Harvey & Associates' biologists. The sources included the CNDDB (2007), the 2006 Plan, and miscellaneous information available through the USFWS, CDFG, and technical publications. The California Native Plant Society's *Inventory of Rare and Endangered Vascular Plants of California* (CNPS 2007), *The Jepson Manual* (Hickman 1993), and the Plan supplied information regarding the distribution and habitats of vascular plants in the vicinity. A query of special-status plants in the CNDDB was also performed for the Clayton and Antioch South, California U.S. Geological Survey (USGS) 7.5-minute Topographical Quadrangle Maps in which the Project site occurs and for the ten quadrangles surrounding the Clayton and Antioch South quadrangles, including the Honker Bay, Antioch North, Walnut Creek, Las Trampas Ridge, Vine Hill, Diablo, Tassajara, Brentwood, Byron Hot Springs, and Jersey Island quadrangles. The information from this query indicates the locations of covered or no-take plant records relative to the study area and provides guidance on habitat associations in the Pittsburg area.

H. T. Harvey & Associates plant ecologist and wetlands specialist Kelly Hardwicke, Ph.D., conducted targeted, protocol-level blooming period surveys for 6 late-blooming special-status plant species covered or considered no-take under the Plan (2006) (see Table 4), on 10 and 11 July 2007, and again on 1, 7, 8, and 9 August 2007. On 8 and 9 August 2007, H. T. Harvey & Associates plant ecologist Onkar Singh assisted in the survey efforts. On 13 March and 30 April 2008, Dr. Hardwicke returned to the site to survey for spring-blooming covered and no-take plant species. The entire Project site was covered on foot. All areas within the extent of grading and the 100-ft buffer were walked using a criss-crossing pattern of informal transects approximately 25 ft apart, and as surveys progressed, areas with potentially suitable habitat for any rare or special-status species were targeted. Plants collected during the survey were identified using one or several of the following resources: *A California Flora and Supplement* (Munz and Keck 1968), *The Jepson Manual* (Hickman 1993), and *Plants of the San Francisco Bay Region: Mendocino to Monterey* (Beidleman and Kozloff 2006).

RESULTS

Eleven special-status plant species are covered under the Plan (2006), including Mount Diablo manzanita (*Arctostaphylos auriculata*), brittlescale (*Atriplex depressa*), San Joaquin spearscale (*Atriplex joaquiniana*), big tarweed (*Blepharizonia plumosa*), round-leaved filaree (*California macrophylla*), Mt. Diablo fairy lantern (*Calochortus pulchellus*), recurved larkspur (*Delphinium recurvatum*), Diablo helianthella (*Helianthella castanea*), Brewer's dwarf flax (*Hesperolinon breweri*), showy madia (*Madia radiata*), and adobe navarretia (*Navarretia nigelliformis* ssp. *nigelliformis*). An additional 6 species, including large-flowered fiddleneck (*Amsinckia grandiflora*), alkali milk-vetch (*Astragalus tener* var. *tener*), Mt. Diablo buckwheat (*Eriogonum truncatum*), diamond-petaled California poppy (*Eschscholzia rhombipetala*), Contra Costa goldfields (*Lasthenia conjugens*), and caper-fruited tropidocarpum (*Tropidocarpum capparideum*), are on the Plan's no-take list.

Two species, the large-flowered fiddleneck and Mount Diablo manzanita, are not expected to occur on the Project site. They both occur at an elevation range hundreds of feet higher (in the upper portions of the Mt. Diablo Range) than the maximum elevation range of the Project site. The Mount Diablo manzanita occurs in chaparral or coast live oak woodland habitats, neither of which occur on the site. Protocol-level surveys were performed for summer or fall blooming plants in 2007 and in spring 2008 for spring-blooming species.

Summer-Fall Blooming Period Surveys

Tables 4 presents a summary of results for the July and August 2007 protocol-level surveys for summer and fall-blooming covered and no-take plants.

Table 4. Results of 2007 Targeted Protocol-level Surveys of Summer or Fall-Blooming Covered and No-Take Plant Species Plant Species.

Common Name	Species Name	Status	2007 Survey Outcome
Brittlescale	*Atriplex depressa*	Plan covered, CNPS 1B.2	Not observed, determined to be absent.
San Joaquin spearscale	*Atriplex joaquiniana*	Plan covered, CNPS 1B.2	Not observed, determined to be absent.
Big tarweed	*Blepharizonia plumosa*	Plan covered, CNPS 1B.1	Not observed, determined to be absent.
Mt. Diablo buckwheat	*Eriogonum truncatum*	Plan no-take, CNPS 1B.1	Not observed, but some *Eriogonum* sp. on-site unidentifiable due to grazing, will reassess in April 2008.
Brewer's western flax	*Hesperolinon breweri*	Plan-covered, CNPS 1B.2	Not observed, determined to be absent.

The 5 late blooming species listed in Table 4 were initially considered to have potential to occur on the Project site because these species are covered in the Plan (2006) and they are known to occur at similar elevations and habitat types present on the Project site. Expanded descriptions of these species and the results of the targeted, protocol-level surveys are reported below. All of these species are considered absent from the impact areas; further surveys for these species are not warranted for purposes of impact assessment or Plan compliance. The Mt. Diablo buckwheat is included in both Table 4 and Table 5 since surveys during July and August 2007 were inconclusive, and the species needed to be considered during the April 2008 surveys as well.

Brittlescale (*Atriplex depressa*). Plan Status: Covered; CNPS List: 1B.2. Brittlescale is found at lower elevations in alkaline or clay soils in chenopod scrublands, meadows and seeps, playas, claypan vernal pools, and valley and foothill grasslands. It has a variable blooming period, with potential to bloom from May to October. The range of this species has been reduced to remaining alkaline grasslands in Alameda, Contra Costa, Colusa, Fresno, Glenn, Merced, Solano, Stanislaus, Tulare, and Yolo counties. At least 4 known populations occur within the neighboring Byron Hot Springs USGS 7.5-minute Quadrangle (CNDDB 2007). Potential habitat is present on the Project site, primarily within the more alkaline, mesic areas surrounding or within Kirker Creek and the unnamed perennial stream at the center of the site, as well as in grassland areas underlain with Altamont clays. Brittlescale was not found during focused surveys performed in July and August 2007.

San Joaquin spearscale (*Atriplex joaquiniana*). Plan Status: Covered; CNPS List: 1B.2. San Joaquin spearscale is found at a wide range of elevations in alkaline soils in chenopod scrublands, meadows and seeps, playas, and valley and foothill grasslands. It has a highly variable blooming period, with potential to bloom from April to October. The range of this species has been reduced to remaining alkaline grasslands in Alameda, Contra Costa, Colusa, Fresno, Glenn, Merced, Monterey, Napa, San Benito, Solano, and Yolo counties, and it is presumed to be extirpated from its historical range in Santa Clara, San Joaquin, and Tulare counties. Several populations are or were known to occur in the vicinity, particularly within the adjacent Byron Hot Springs USGS 7.5-minute Quadrangle (CNDDB 2007). Potential habitat is present on the Project site, primarily within the more alkaline, mesic areas surrounding or within Kirker Creek and the unnamed perennial stream at the center of the site. San Joaquin spearscale was not found during focused surveys performed in July and August 2007.

Big Tarweed (*Blepharizonia plumosa*). Plan Status: Covered; CNPS List 1B.2. This annual herb occurs in valley and foothill grassland, and dry, grassy openings in foothill woodland and chaparral. Most known populations are on heavy clay soils, such as the Altamont clays found in some portions of the Project site and elsewhere within Contra Costa County. The blooming period extends from July through October. The range of this species has been reduced to dry grassy areas in Alameda, Contra Costa, Kern, Monterey, San Benito, San Joaquin, San Luis Obispo, and Stanislaus counties, and it is presumed to be extirpated from its historical range in southern Solano County. Several populations occur or were known to occur within similar habitats to those found on-site within the Antioch South USGS 7.5-minute Quadrangle and other nearby areas, particularly in the vicinity of Roddy Ranch south of Antioch (CNDDB 2007). Potential habitat is present on the Project site, primarily within the upland grassland areas underlain by Altamont clays but also within other upland grassy areas of the site. The protocol-level surveys detected only the common San Joaquin tarweed, *Holocarpha obconia* and did not detect big tarweed.

Mt. Diablo Buckwheat (*Eriogonum truncatum*). Plan Status: No-take; CNPS List 1B.1. This annual herb occurs in sandy areas of valley and foothill grassland, coastal scrub, or chaparral. The blooming period extends from April through September. Formerly considered extinct, this species was rediscovered in 2005 along the slopes of Mt. Diablo. Mt. Diablo buckwheat is now known to occur in Alameda and Contra Costa Counties, and is presumed extirpated from most areas of its historical range, which included Solano County. Several populations occur or once occurred within Project USGS 7.5-minute quadrangles or adjacent quads, particularly within the Clayton and Diablo quads (CNDDB 2007). Only marginally suitable potential habitat is present on the Project site, as most of the soils on-site are heavy clays or clay loams, but in areas surrounding the soft sandstone-based outcrops, acceptably coarse soils may exist in patches. Focused surveys performed in July and August 2007 detected only the common buckwheat, *Eriogonum nudum,* and did not detect Mt. Diablo buckwheat, although some buckwheat plants had been grazed such that they were unidentifiable. Areas with unidentifiable buckwheat were resurveyed on 30 April 2008, and Mt. Diablo buckwheat was not detected.

Brewer's Western Flax (*Hesperolinon breweri*). Plan Status: Covered; CNPS List 1B.2. This annual herb occurs over a wide range of elevations up to 900 m in valley and foothill grasslands, cismontane woodlands, and chaparral, usually on serpentine-derived soils. The blooming period extends from May through July. The range of this species is highly endemic, being restricted to Contra Costa, Napa, and Solano Counties. Several populations are known to occur within the vicinity of the Project site, both in the Project quadrangles as well as in several adjacent quadrangles (CNDDB 2007). Only marginally suitable potential habitat is present on the Project site within the upland grassland and oak savannah areas, as the site lacks serpentinite or other ultramafic features. Focused surveys performed in July 2007 did not detect Brewer's western flax.

Spring Blooming Period Surveys

Table 5 lists covered and no-take plants that bloom in the spring and that could potentially be present in the Project area. H. T. Harvey & Associates conducted targeted, protocol-level surveys on 13 March and 30 April 2008.

Table 5. Results of Spring 2008 Targeted Protocol-level Surveys of Spring-Blooming Covered and No-Take Plant Species.

Common Name	Species Name	Status	2008 Survey Outcome
Alkali milk-vetch	*Astragalus tener var. tener*	Plan no-take, CNPS 1B.2	Not observed, determined to be absent.
Round-leaved filaree	*California macrophylla*	Plan-covered, CNPS 1B.1	Not observed, determined to be absent.
Mt. Diablo fairy-lantern	*Calochortus pulchellus*	Plan-covered, CNPS 1B.2	Not observed, determined to be absent.
Recurved larkspur	*Delphinium recurvatum*	Plan-covered, CNPS 1B.2	Not observed, determined to be absent.
Mt. Diablo buckwheat	*Eriogonum truncatum*	Plan no-take, CNPS 1B.1	Not observed during fall or spring surveys, determined to be absent.
Diamond-petaled California poppy	*Eschscholzia rhombipetala*	Plan no-take, CNPS 1B.1	Not observed, determined to be absent.
Diablo helianthella	*Helianthella castanea*	Plan covered, CNPS 1B.2	Not observed, determined to be absent.
Contra Costa goldfields	*Lasthenia conjugens*	Plan no-take, Federal Endangered, CNPS 1B.1	Not observed, determined to be absent.
Showy madia	*Madia radiata*	Plan-covered, CNPS 1B.1	Not observed, determined to be absent.
Adobe navarretia	*Navarretia nigelliformis* ssp. *nigelliformis*	Plan-covered, CNPS 4.2	Not observed, determined to be absent.
Caper-fruited tropidocarpum	*Tropidocarpum capparideum*	Plan no-take, CNPS 1B.1	Not observed, determined to be absent.

Alkali milk-vetch (*Astragalus tener* var. *tener*). Plan Status: No-take; CNPS List: 1B.2. Alkali milk-vetch occurs at elevations of 3.3 to 197 ft in alkaline playas, valley and foothill grasslands underlain by adobe clay, and vernal pool habitats. The blooming period extends from

March through June. The range of this species has been reduced to remaining low-lying alkaline grasslands in Alameda, Merced, Napa, Solano, and Yolo counties, and it is presumed to be extirpated from its historical range in Contra Costa, Monterey, San Benito, Santa Clara, San Francisco, San Joaquin, Sonoma, and Stanislaus counties (CNPS 2007). Only 2 known populations occur within the neighboring Byron Hot Springs and Antioch North USGS 7.5-minute Quadrangles (CNDDB 2007), both at much lower elevations than the project site. Potential habitat is present on the project site, primarily along the periphery of Kirker Creek in seasonally wet areas with alkaline soils, but focused surveys performed on 13 March and 30 April 2008 did not detect the species.

Round-leaved filaree (*California macrophylla*). Plan Status: Covered; CNPS List: 1B.1. Round-leaved filaree (also known as *Erodium macrophyllum*) is rare but widely spread across cismontane California in areas of cismontane woodland and valley and foothill grasslands underlain by clay soils at elevations of 3.3-755 ft. It is an annual herb in the Asteraceae family that blooms from March to May. There is an abundance of potentially suitable habitat for this species on-site, especially within the grassland and oak savannah areas underlain by heavy Altamont clay soils. Several occurrences of round-leaved filaree have been located within 5 miles of the Project site, all to the south within similar rolling grassland and oak savannah habitat within the foothills of Mt. Diablo (CNDDB 2007). We performed targeted surveys for the species within potential habitat on 13 March and 30 April 2008; however, no round-leaved filaree was found on-site.

Mt. Diablo fairy lantern (*Calochortus pulchellus*). Plan Status: Covered; CNPS List: 1B.2. Mt. Diablo fairy-lantern occurs in a variety of habitats including chaparral, riparian woodland, cismontane woodland, and valley and foothill grasslands. The species blooms from April to June, and has a known elevational range of 33-2854 ft (CNPS 2007). The range of this species primarily encompasses the slopes and foothills of Mt. Diablo in contra Costa County, but it is known from Solano and Alameda Counties as well. At least 27 known populations occur within the Project quadrangles or neighboring quadrangles (CNDDB 2007). Potential habitat is present on the Project site, primarily within wooded, shady slopes and streambanks. We performed targeted surveys for the species within potentially suitable habitat on 30 April 2008; however, no Mt. Diablo fairly-lantern was detected on-site, even in areas supporting known associate species such as *Ranunculus canus*.

Recurved larkspur (*Delphinium recurvatum*). Plan Status: Covered; CNPS List: 1B.2. Recurved larkspur is found in alkaline soils in valley and foothill grasslands, cismontane woodlands, and chenopod scrub at elevations from 10 – 2460 ft (CNPS 2007). The species, which is in the Ranunculaceae family, blooms between March and June. Historically, the species had a wide geographic range extending throughout the Delta region and the Great Central Valley, but many of these populations have been extirpated by grazing or agriculture. Potential habitat is present on-site in the more alkaline grassland and scrubby areas, particularly near Kirker Creek. We surveyed all potentially suitable habitat on 13 March and 30 April 2008, but did not detect recurved larkspur.

Mt. Diablo buckwheat (*Eriogonum truncatum*). Plan Status: No-take; CNPS List: 1B.1. Due to the long blooming period (April – September) for this species and the fact that some grazed buckwheat plants observed during July and August 2007 were unidentifiable, surveys for this species were performed during both survey periods. See discussion of species in the fall-blooming plant survey section above. We surveyed all potentially suitable habitat on 30 April 2008 as a follow-up to July and August 2007 surveys, but again did not detect Mt. Diablo buckwheat.

Diamond-petaled California poppy (*Eschscholzia rhombipetala*). Plan Status: No-take; CNPS List: 1B.1. Diamond-petaled California poppy is found from sea level to 3198 ft in alkaline or clay soils in valley and foothill grasslands. It has potential to bloom from April to May. The range of this species has been reduced to remaining alkaline grasslands in Alameda, San Joaquin, and San Luis Obispo counties, but all known occurrences near the Project site are thought to be extirpated (CNPS 2007), including the occurrence within 5 mi of the Project site in the Antioch North quadrangle (CNDDB 2008). Potential habitat is present on the Project site, primarily within grassland areas underlain with Altamont clays or heavy clay loams. We surveyed all potential habitat on 30 April 2008, but only detected the common species, California poppy (*Eschscholzia californica*).

Diablo helianthella (*Helianthella castenea*). Plan Status: Covered; CNPS List: 1B.2. Diablo Helianthella is found in riparian corridors or open grassy areas in a variety of habitats including coastal sage scrub, riparian woodlands, cismontane woodlands, and valley and foothill grasslands. This sunflower-like plant in the Asteraceae has a potential to bloom from March to June, and it occurs over a wide range of elevations, from 197 – 4265 ft. Most occurrences of this species are centered in drainages within the Mt. Diablo area, in Alameda and Contra Costa counties, but Diablo helianthella has also been found in San Francisco, San Mateo, and Marin counties. Several known populations occur within 5 mi of the project site, all situated in rolling grasslands and oak savannahs to the south of the Project site, at somewhat higher elevations within the Mt. Diablo foothills (CNDDB 2007). As this species has been known to occur in such a wide range of land cover types and microhabitats, at least marginally suitable potential habitat is present on the Project site, primarily within grassy riparian slopes within the survey area. We performed targeted surveys for the species within potential habitat on 13 March and 30 April 2008; however, no Diablo helianthella was detected on-site.

Contra Costa Goldfields (*Lasthenia californica*). Plan Status: No-Take; Federal Status: Endangered; CNPS List: 1B.1. This annual herb occurs in mesic (moderate moisture regime) valley and foothill grasslands and vernal pools. The blooming period is from March to June. The range of this species includes Alameda, Contra Costa, Marin, Napa, Solano, and Sonoma counties, and it is presumed to be extirpated from its historic range in Mendocino, Santa Barbara, and Santa Clara counties. Three occurrences are recorded within the Project vicinity: a historic population, not observed since the early 1900s, present "somewhere in the vicinity of Antioch", and two populations in the neighboring Walnut Creek 7.5-minute quadrangle (CNDDB 2007). Potential habitat is present on the Project site, primarily within the more alkaline, mesic areas surrounding or within Kirker Creek and the depressional seasonal wetland to the east of Kirker Creek. Targeted surveys were performed for this species on 13 March and 30 April 2008; however, Contra Costa goldfields was not detected anywhere on the site.

Showy madia (*Madia radiata*). Plan Status: Covered; State Rare; CNPS List: 1B.1. Showy madia is thought to be extirpated from most of the counties is historically occurred in, but now is restricted to Fresno, Kern, San Benito, and San Luis Obispo Counties in cismontane woodland and valley and foothill grassland at elevations of 82-2953 ft (CNPS 2007), mostly on adobe clays. It is an annual herb in the Asteraceae family that blooms from March to May. It is threatened by grazing and invasive non-native plants (CNPS 2007), and thus was considered to have only a moderate to fairly low likelihood of occurring on-site. However, areas of potential habitat exist within grassy or even shrubby areas underlain by Altamont clays. Targeted surveys were performed in all potential grassland and oak savannah habitat underlain by clay soils on 13 March and again on 30 April, but showy madia was not detected on-site.

Adobe navarretia (*Navarretia nigelliformis* ssp. *nigelliformis*). Plan Status: Covered; CNPS List: 4.2. Adobe navarretia, an annual in the phlox family (Polemoniaceae) is found in vernally mesic grasslands and vernal pools underlain by clay and sometimes serpentinite soils. It has a potential to bloom from April to June, and has been known to occur in seasonal wetlands at elevations from 333 – 3333 ft. The range of this species encompasses several counties in the San Francisco Bay and Great Central Valley floristic provinces; however there are no known populations within 5 mi of the Project site, nor within any 7.5-minute quadrangles containing or adjacent to the site (CNDDB 2007). Potential habitat is technically present on the Project site, primarily within the more alkaline, mesic areas surrounding or within Kirker Creek and the unnamed perennial stream at the center of the site, as well as in grassland areas underlain with Altamont clays. No serpentinite features were observed on-site, although some species with a weak affinity for serpentine soils were detected on site, such as California plantain (*Plantago erecta*), and these areas were also targeted for surveys for Adobe navarretia. However, surveys performed 13 March and 30 April did not detect this species on-site.

Caper-fruited tropidocarpum (*Tropidocarpum capparideum*). Plan Status: No-Take; CNPS List: 1B.1. Caper-fruited tropidocarpum is an exceptionally rare species, until recently considered extinct. Most historical records show the species occurred in grassy, alkaline hills from just above sea level to 1493 ft in elevation, centered around the east San Francisco Bay area. All known populations in the vicinity of the Project site are currently considered extirpated, except for one occurrence near Clayton that has not been observed since 1896 and thus also is likely to be defunct (CNPS 2007, CNDDB 2007). The species was surprisingly rediscovered in alkaline hills in the southern coastal ranges and in the foothills of the southern Sierra Nevada. Caper-fruited tropidocarpum is in the mustard family (Brassicaceae) and blooms from March to April. Potential alkaline, grassy hills do exist within the project area, and on 13 March and 30 April 2008, targeted surveys were conducted for this species. However, the surveys did not detect the species finding only common, weedy mustard species such as black mustard and field mustard.

Quantification of Impacts

To date, following the completion of summer-fall 2007 and spring 2008 surveys, there are no known occurrences of, and therefore no impacts to, Plan-covered or no-take plant species.

JURISDICTIONAL WETLANDS AND WATERS

Jurisdictional delineations are required for activities covered by the Plan. Delineations are to identify regulated resources and support compliance with Sections 404 and 401 of the Clean Water Act, the Porter-Cologne Water Quality Control Act, and Section 1602 of the California Fish and Game Code. The regional wetland permitting programs developed in association with the Plan, if approved, will still require a delineation; however, project permitting will be under that program rather than on a project by project basis. Until or unless a regional program is approved, project-specific permitting will be required. Site-specific surveys were conducted to delineate the extent of jurisdictional wetlands and waters within the study area. The *Preliminary Delineation of Wetlands, Other Waters, and Riparian Habitats* is a stand-alone document intended for review by the permitting agencies if project-specific permitting is required, and is provided in Appendix B. The following is a summary of jurisdictional wetlands and waters.

IDENTIFICATION OF WATERS OF THE U.S.

H. T. Harvey & Associates identified jurisdictional waters of the U.S., including jurisdictional wetlands, using methodology described by USACE guidance in the 1987 Corps' Delineation Manual (Environmental Laboratories 1987) and in the recent *Arid West Supplement* (USACE 2006). The methods used to develop the map of jurisdictional waters (see Figures 3a, 3b, and 3c, and Figures 5a-c in Appendix B) are specific, well-established, and are based on a three parameter system, wherein an area generally must show positive wetland indicators for three parameters -- hydrology, soils, and vegetation – to be considered a wetland.

Reported jurisdictional acreages are based on the full study area, which included the June 2007 extent of grading limits (RBF Consulting, June 2007) plus the surrounding 100-ft buffer. Jurisdictional waters within the buffer area were delineated to allow project applicants the flexibility to make minor changes in grading design based on results of planning surveys and/or to encompass all potential temporary impacts caused by construction staging and access without necessitating an additional, subsequent delineation effort. Guidance from the USACE does not conflict with guidance or definitions put forth in the Plan, as regulatory wetland habitat definitions are not typically synonymous with habitat groupings based on vegetation associations, edaphic features, or wildlife utilization. Jurisdictional waters within the Project study area are shown on Figures 3a, 3b, and 3c. USACE jurisdictional acreages are presented in Table 6.

Table 6. Summary of Waters of the U.S./State (in ac).

Potential Jurisdictional Waters	Grading Area (ac)	Full Study Area (ac)
Wetlands	1.91	2.84
Other Waters	0.06	0.087
Jurisdictional Areas Total	1.97	2.93
Upland	83.3	154.9
Total Area of Study Site	**85.3**	**157.8**

Quantification of Impacts

As discussed in the section above concerning *Land Cover and Uncommon Vegetation or Landscape Features* under *Streams*, permanent impacts could occur to up to 2063 linear ft of perennial streams and 1855 linear ft of intermittent streams (totaling 3918 ft of impacts to wetlands or Waters of the U.S.), as well as up to 1878 linear ft of ephemeral streams or unvegetated "other waters". Impacts could also occur to non-stream seasonal and perennial wetlands on-site, such that the entire acreage of impacts to USACE-jurisdictional habitats within the currently proposed grading area is up to 1.97 ac of impacts. These impacts are assumed to occur within the grading area only, as avoidance of sensitive habitats such as USACE-jurisdictional wetlands is required by CM 1.14 of the Plan (Table 6-6, page 6-29); thus, we have assumed that these jurisdictional areas would not be impacted in the buffer area. Also, because minimization of impacts to sensitive habitats is required by CM 1.14, it is possible that there could be further reduction of impacts to wetlands and Waters of the U.S. within the grading area if minimization of impacts through modifications of the Project design is feasible.

WATERS OF THE STATE

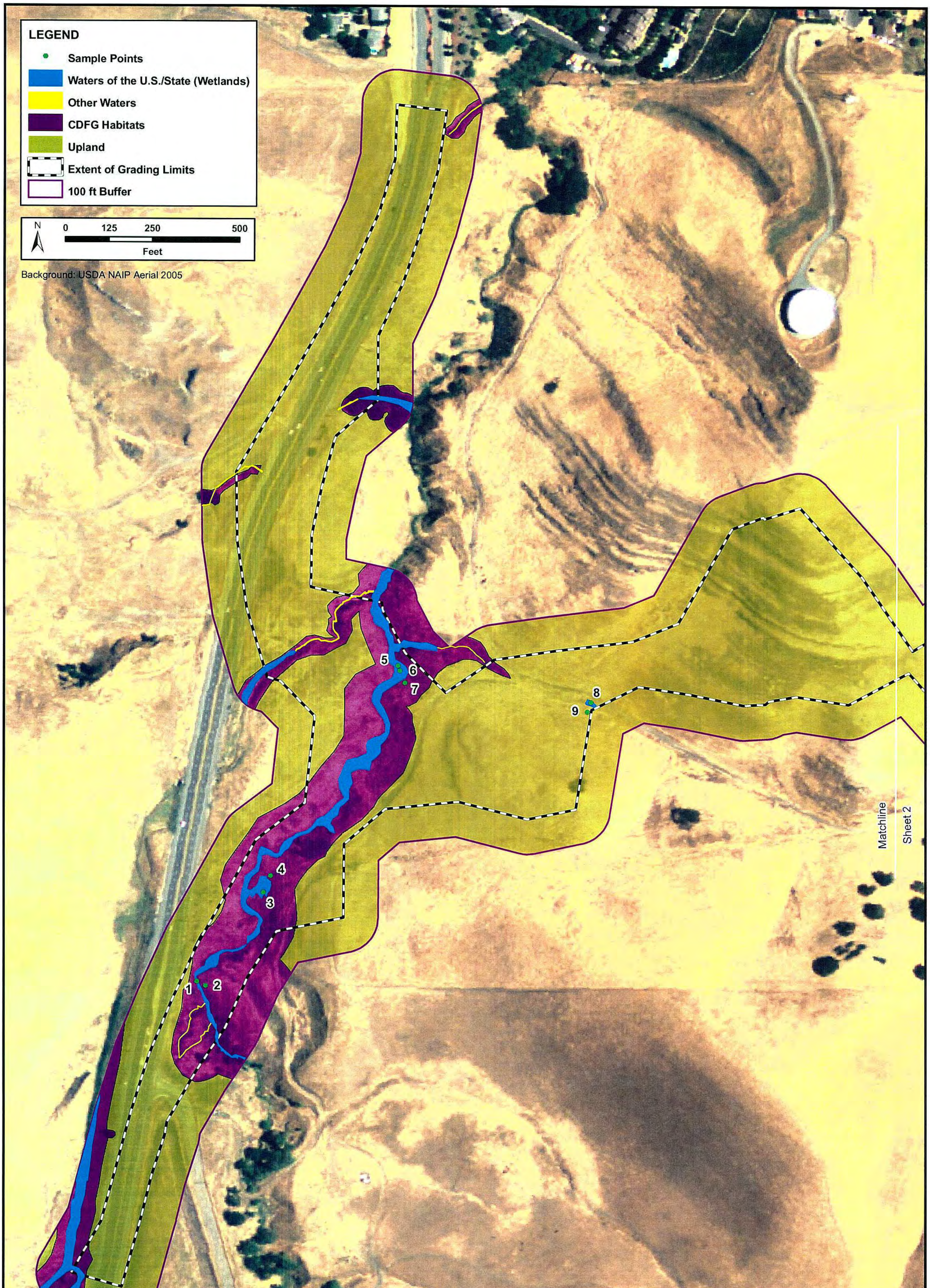
As described above, the *Preliminary Delineation of Wetlands, Other Waters, and Riparian Habitats* (Appendix B) identifies jurisdictional Waters of the U.S., including jurisdictional wetlands, using methodology described by USACE guidance in the 1987 Corps' Delineation Manual (Environmental Laboratories 1987) and in the recent *Arid West Supplement* (USACE 2006). This delineation document also serves as the identification of waters likely, based on our experience, to be under the jurisdiction of local water regulatory agencies, such as the State Water Resource Control Board (SWRCB) and the Regional Water Quality Control Board (RWQCB). The RWQCB does not issue guidance or support a manual citing Board-approved methodology for determining the extent of jurisdictional features, so the USACE three-parameter approach and guidance on jurisdictional "other waters" was also used to determine the extent of Waters of the State. After conducting field surveys and reviewing recent guidance provided by the USACE and Environmental Protection Agency (EPA) (i.e., regarding regulatory issues raised by the recent *SWANNC* and *Rapanos* court decisions), we believe that no habitats on-site would be disclaimed by the USACE that would be subsequently claimed by the RWQCB. Therefore, based on experience with similar projects, all Waters of the U.S. on-site can also be considered Waters of the State; thus, Table 6 summarizes the extent of Waters of the State in the Project study area. Figures 3a, 3b, and 3c indicates the location of jurisdictional Waters of the U.S./State within the Project study area.

Quantification of Impacts

Potential impacts to Waters of the State are assumed to be identical to the potential impacts to Waters of the U.S (see discussion above).

CALIFORNIA DEPARTMENT OF FISH AND GAME REGULATED HABITATS

Streams, ditches, and drainages that contain a defined bed, bank, and channel are also under the regulatory jurisdiction of the CDFG. The CDFG definition of stream includes "intermittent and ephemeral streams, rivers, creeks, dry washes, sloughs, blue-line streams mapped on USGS



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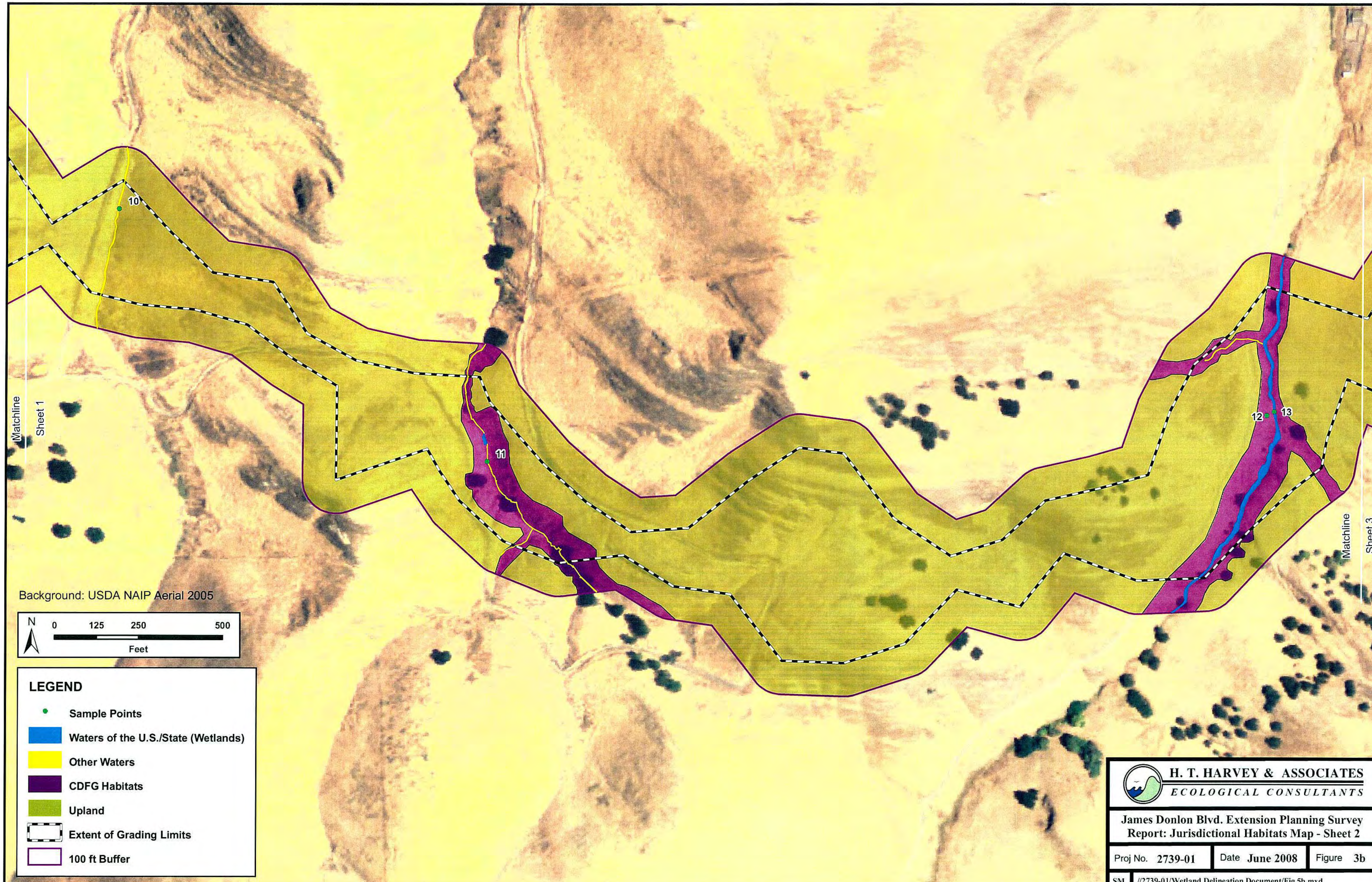
ECOLOGICAL CONSULTANTS

James Donlon Blvd. Extension Planning Survey
Report: Jurisdictional Habitats Map - Sheet 1

Proj No. 2739-01	Date June 2008	Figure 3a
SM	//2739-01/Wetland Delineation Document/Fig 5a.mxd	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Sheet 1
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Sheet 3
Background: USDA NAIP Aerial 2005
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Feet
LEGEND
Sample Points
Waters of the U.S./State (Wetlands)
Other Waters
CDFG Habitats
Upland
Extent of Grading Limits
100 ft Buffer
H. T. HARVEY & ASSOCIATES
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James Donlon Blvd. Extension Planning Survey Report: Jurisdictional Habitats Map - Sheet 2
Proj No. 2739-01
Date June 2008
Figure 3b
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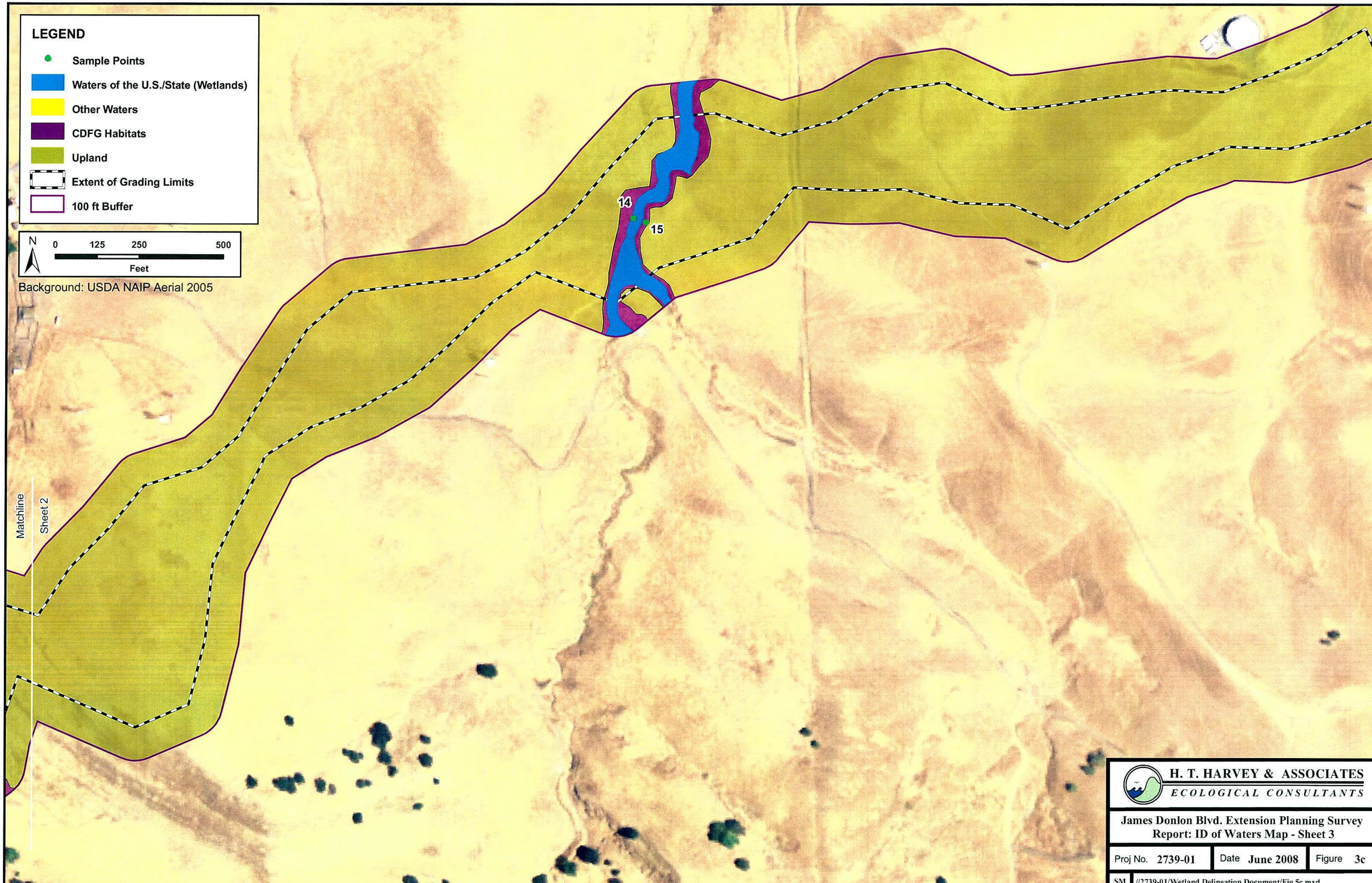
LEGEND
Sample Points
Waters of the U.S./State (Wetlands)
Other Waters
CDFG Habitats
Upland
Extent of Grading Limits
100 ft Buffer
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James Donlon Blvd. Extension Planning Survey
Report: ID of Waters Map - Sheet 3
Proj No. 2739-01
Date June 2008
Figure 3c
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quadrangles, and watercourses with subsurface flows". Activities that would result in the diversion or obstruction of the natural flow of a stream, or substantially change its bed, channel or bank, or utilize any materials (including vegetation) from the streambed, require that the project applicant enter into a Streambed Alteration Agreement with CDFG, under section 1602 of the California Fish and Game Code. All riverine channels on-site (including all areas mapped as perennial, intermittent, and ephemeral streams that had a defined bed and banks out to the edge of any riparian woodland or forest canopies) fit the above definition. CDFG-jurisdictional habitats are mapped on Figures 3a, 3b, and 3c. Based upon our previous experience with similar features, all of these features would likely be claimed by the CDFG, although ultimate determination of jurisdiction lies with CDFG.

Quantification of Impacts

Areas supporting open and dense cover of high quality riparian woodland and forested habitat occur along some of the drainages on-site, particularly Kirker Creek (Figures 3a, 3b, and 3c). Additionally, several drainages on-site without riparian canopies but that have a defined bed and banks are indicated on Figure 3 as being potentially jurisdictional. In general, the more inclusive definition of jurisdictional habitat supported by the CDFG results in a larger area falling under CDFG jurisdiction on some sites than areas considered jurisdictional wetlands and/or other waters by the USACE. This is the case on this site, with 17.59 ac of the 158-ac full survey area, or 11.44 ac of the 85-ac grading area, likely to be considered jurisdictional by CDFG (Figure 3).

However, as described above (see *Land Cover and Uncommon Vegetation or Landscape Features* under *Riparian Woodland/Forests*), impacts to riparian habitats, as a sensitive natural community, must be minimized (CM 1.14, page 6-29). Additionally, no more than 15% of a required 50 ft setback area adjacent to the OHW of these streams is allowed to be permanently impacted (Plan CM 1.7, page 6-15) so additional preservation of riparian habitat should occur.

If the Project must obtain a project-specific permit (prior to approval of a Regional Permit Program), it is typical that the CDFG requires mitigation of impacts to riparian habitats with a mature, native-dominated overstory such as seen within the study area at a 3:1 ratio (mitigation:impact). Riparian areas with mature, native-dominated overstories (riparian habitat as defined by the Plan) are actually a small subset of the total CDFG-jurisdictional habitat on-site, comprising 0.41 ac (0.34 ac willow-cottonwood riparian and 0.07 ac blue oak woodland along a drainage) within the grading area. The CDFG is likely to consider oak woodland areas associated with drainages as forested riparian habitat even though no cottonwoods or willows (as required by Plan definitions of riparian forest) occur there. The remainder of area mapped as CDFG-jurisdictional either supports tree cover too low (or of inappropriate species composition) to be mapped as riparian forest or woodland, or does not support trees at all, but only a defined bed and banks. Areas with only a defined bed and bank can be mitigated at a lower ratio in some circumstances. However, it should not be assumed that only the aforementioned 0.41 ac will require a 3:1 mitigation ratio, as areas not mapped as riparian according to Plan definitions may still support enough mature trees to be considered good quality habitat by the CDFG.

In addition, because of the magnitude of potential impacts from covered road projects outside the UDA, such as this Project, Plan compliance requires that the CDFG review the Plan coverage application and Planning Survey Report independently from the Implementing Entity (Plan, page

6-28). Their review will consider if the Project, including staging areas, has been sited in the least sensitive locations feasible as required by CM 1.14, whether Best Management Practices (BMPs) are to be employed as required by CM 2.12, and whether all other applicable avoidance and minimization measures are incorporated into the Project (Table 6-6, also see page 6-28). Particularly applicable to the discussion of CDFG-jurisdictional streams is the requirement within CM 2.12 stating that, where feasible, stream crossings will be located in stream segments without riparian vegetation and that bridge footings be built outside of stream banks (Plan, page 6-35). See also the discussion of Plan compliance and applicable Conservation Measures for impacts to riparian woodland/scrub, streams, wetlands, and ponds in *Waters of the U.S.*, above.

ADDITIONAL PERMIT REQUIREMENTS

Until or unless a Regional Permit Program is approved, a project-specific permit for impacts to jurisdictional habitats will be required. Mitigation provided by conservation measures and habitat preservation provided by Plan fees may be sufficient not only to mitigate habitat impacts but also to mitigate potential impacts to water quality. As described in CM 1.14 (*Construction Requirements*; see *Applicable Avoidance and Minimization Measures* below), in-stream work should follow BMPs so that no erodible materials are placed within stream courses, temporary stream diversions use sand bags or other measures to minimize in-stream impacts, silt fencing is installed to prevent sediment accumulations within streams during construction, and on-site construction monitoring is conducted to ensure compliance with these and other BMPs, and to ensure that applicable Plan avoidance and minimization measures are followed (Plan, pg. 6-32).

In addition, the Project will not receive coverage under the Plan until it has properly mitigated the impacts to jurisdictional waters according to the terms of the Plan (CM 2.12, page 6-33). CM 2.12 (*Wetland, Pond, and Stream Avoidance and Minimization*; see below) requires: 1) that projects comply with stream setback requirements listed in CM 1.7 (page 6-15); 2) that all wetlands, ponds, and streams to be avoided during project construction will be staked in the field by a qualified biologist; 3) that buffer zones shall be established where feasible and fenced off with site-appropriate fencing; 4) that project personnel conducting ground-disturbing activities near jurisdictional waters will be instructed by a qualified biologist in the applicable Plan avoidance and minimization measures and any applicable permit requirements, including BMPs; 5) that trash generated by these activities will be removed from the site; 6) that no vehicles will be refueled within 200 feet of wetlands, ponds, streams, or riparian woodland/scrub unless this is done within a bermed, lined area; 7) appropriate erosion control measures (see *Applicable Avoidance and Minimization Measures* below) will be enacted between the outer edge of the buffer and the project site; 8) any fiber rolls used for erosion control will be certified free of noxious weed seed and seed mixtures applied for erosion control will also consist of non-invasive plant seed; 9) that, where feasible, stream crossings will be located in stream segments without riparian vegetation and bridge footings will be built outside stream banks; and 10) that herbicides will not be applied within 100 ft of wetlands, ponds, streams, or riparian woodland/scrub unless specifically approved by the EPA for use in aquatic habitats for weed control (Plan pages 6-33 to 6-35). All of these measures are typical of project-specific permits to protect water quality so that project-specific permit requirements or the Regional Permit Program are likely to coincide with compliance with the Plan. However, the Plan notes:

Any regional permit program for aquatic resources that is subsequently adopted by the U.S. Army Corps of Engineers, Regional Water Quality Control Board, or CDFG will contain avoidance and minimization requirements. Those requirements may differ from the avoidance and minimization requirements in this Plan.

SUITABLE HABITAT FOR SELECTED WILDLIFE SPECIES

SELECTED WILDLIFE SPECIES

The Plan requires surveys for selected wildlife species that are covered by the Plan or are no-take species under the Plan. The Plan is structured such that take of covered species is assumed for covered activities in areas providing suitable habitat, rather than being based on site-specific surveys for presence or absence of those species. Compensation for impacts by preservation and/or creation of habitat in a Preserve System to offset that take is the purpose of the Plan. The fee schedule for and the size of the Preserve System are designed to offset habitat loss.

Planning surveys for suitable habitat are also conducted for a subset of the covered species in order to minimize or avoid take of individuals of those species. No take is allowed for those species that are fully protected by law and described under the Plan as no-take species. Each project is required to incorporate measures (e.g., preconstruction surveys) to avoid take of those species (see *Applicable Avoidance and Minimization Measures* below). For these species, planning surveys are conducted to delineate habitat wherein preconstruction surveys will take place.

Prior to site visits, the CNDDB (2007) was queried for information on the local distribution of the selected wildlife species. Aerial photographs, as well as the wetland delineation mapping of the area, were also reviewed prior to site visits, and used during the surveys, to locate potential habitat for these species.

H. T. Harvey & Associates conducted reconnaissance-level planning surveys of the study area as specified in the Plan to determine:

1) the location and quantity of suitable breeding habitat for the branchiopod species covered by the Plan;
2) the location and quantity of suitable habitat for giant garter snake and suitable breeding habitat for the California red-legged frog and California tiger salamander;
3) the potential location on the Project site of suitable breeding or denning habitat for the San Joaquin kit fox, suitable breeding or roosting habitat for the Townsend's big-eared bat, and suitable breeding habitat for the ringtail; and
4) the extent of suitable breeding and roosting habitat for the Burrowing Owl and suitable breeding habitat for the Golden Eagle, Peregrine Falcon, White-tailed Kite, and Swainson's Hawk.

The type of habitat for which surveys were conducted (e.g., breeding, roosting, or general habitat) varied among species to follow the precise requirements of the Plan.

PLAN COVERED SPECIES NOT REQUIRING PLANNING SURVEYS

Species covered by the Plan for which planning surveys are not required are:

- Tricolored Blackbird
- Silvery legless lizard
- Alameda whipsnake
- Foothill yellow-legged frog
- Western pond turtle

Appendix D of the Plan includes maps of habitat for each of these five species within the Plan area based on the Plan's modeling exercise. The maps for Tricolored Blackbird show foraging habitat, but no breeding habitat, within the Project study area. Our site visits confirmed that there is no breeding habitat for Tricolored Blackbirds within the study area, and the site is likely to be used for foraging only if breeding occurs nearby. The Project is not within Plan mapped habitat for the silvery legless lizard and Alameda whipsnake. Western pond turtle habitat on the site as mapped by the Plan would be for movement between suitable core habitats off-site only. Our site visits confirmed that the perennial streams (Kirker Creek and the unnamed drainage described above in *Land Cover and Uncommon Vegetation or Landscape Features* under *Streams*) could be used as movement habitat by western pond turtles. Foothill yellow-legged frog habitat is mapped by the Plan as suitable low use habitat within the Project study area; however, while foothill yellow-legged frogs are found on the moister, western slopes of the foothill ranges in Contra Costa County, the habitat within the study area, on the drier eastern foothills of the range, are not used by foothill yellow-legged frogs and are not within the range of the species. Our site visits also confirm that habitat on the site is not foothill yellow-legged habitat, i.e., there is no cobble-sized substrate in shallow flowing streams within the study area (Plan Appendix D).

COVERED LARGE BRANCHIOPOD PLANNING SURVEYS

Methodology

Brent Helm, Ph.D., and Todd Wood of Helm Biological Consulting conducted a survey of the study area on 8 August 2007 for the location and quantity of suitable breeding habitat for the branchiopod species covered by the Plan: the longhorn fairy shrimp (*Branchinecta longiantenna*), vernal pool fairy shrimp (*Branchinecta lynchi*), midvalley fairy shrimp (*Branchinecta mesovallensis*), and vernal pool tadpole shrimp (*Lepidurus packardi*). Habitat for all of these species is similar. Potential habitat for these large branchiopods is defined as any seasonally inundated depression that on average ponds (or gently conveys water) 2 in or greater in depth for 14 or more consecutive days. Potential habitat characteristics of large branchiopods are based on the life history of Central Valley endemics (Eriksen and Belk 1999; Helm 1998, 1999; Helm and Vollmar 2002). Habitats with more rapidly flowing water (e.g., creeks, streams, and ephemeral drainages) or semi-to-permanently inundated areas, especially those that support predators (e.g., frogs, crayfish, and fish), were not considered suitable habitat for covered large branchiopods. Particular attention was given to the rock outcroppings since they are known to support the longhorn fairy shrimp in Contra Costa County. All basins in the rock outcroppings on-site were evaluated for their potential to support federally listed large branchiopods.

Results

The James Donlon Boulevard Extension Project consists of steep terrain with 20-40% slopes. The slopes are lined with terraces created by grazing cattle. The steep terrain is uncharacteristic of vernal pool terrain where the majority of large branchiopods are found. Twelve areas on-site were investigated more closely for their potential to support federally listed large branchiopods (Figure 4). Kirker Creek on-site was not considered habitat for federally listed large branchiopods because it has swift flows during the rainy season and supports permanent populations of western pond turtle and California red-legged frog, which are voracious predators of large branchiopods.

Five of these 12 areas have basins that were determined to have potential to support covered branchiopods including: 2 rock outcrop pools, 2 seasonal swales, and a single depression next to a cattle rub rock. The numbered locations of all 12 sites at which focused investigations were performed are presented on Figure 4. Representative photographs of some of the basins on-site are found in the complete report from Helm Biological Consulting (Appendix C). Table 7 details the results of the survey.

Table 7. Results of the Covered Large Branchiopod Habitat Assessment.

Site No.	Habitat Type	Maximum Potential Ponding Depth* (in)	Suitable Habitat?	Comments	Plant Species Present
1	culvert infall	3	No	no hydrophytic vegetation present	*Hirschfeldia incana, Hordeum murinum* ssp. *leporinum*
2	depression	0	No	sandy soils, no hydrophytic vegetation present, no algae matting, no water marks on rocks	*Avena* ssp, *Hordeum murinum* ssp. *leporinum, Bromus hordeaceous*
3	rock outcrop	1	No	insufficient ponding depth	none
4	rock outcrop	3	Yes	potentially suitable breeding habitat (21.8 ft^2)	none
5	depression	0	No	gravel basin, insufficient ponding depth	*Avena* ssp., *Hordeum murinum* ssp. *leporinum, Hierschfeldia incana, Bromus hordeaceous*
6	rock outcrop	0	No	no depression, sloped	none
7	rock outcrop	3	Yes	potentially suitable breeding habitat (34.8 ft^2)	none

Site No.	Habitat Type	Maximum Potential Ponding Depth* (in)	Suitable Habitat?	Comments	Plant Species Present
8	depression	2	Yes	3 ft x 1 ft, cattle rub rock (3 ft^2)	none
9	pool in stream		No	western pond turtle and California red-legged frog habitat	none
10	depression	0	No	no basin, cattle rub rock	none
11	seasonal swale	5	Yes	historically connected to site 12, now interrupted by dirt road (322.3 ft^2)	*Lolium multiflorum, Hordeum marinum* ssp. *gussoneanum*
12	seasonal swale	4	Yes	disrupted by culvert, historically would have been deeper (575.0 ft^2)	*Lolium multiflorum, Hordeum marinum* ssp. *gussoneanum*

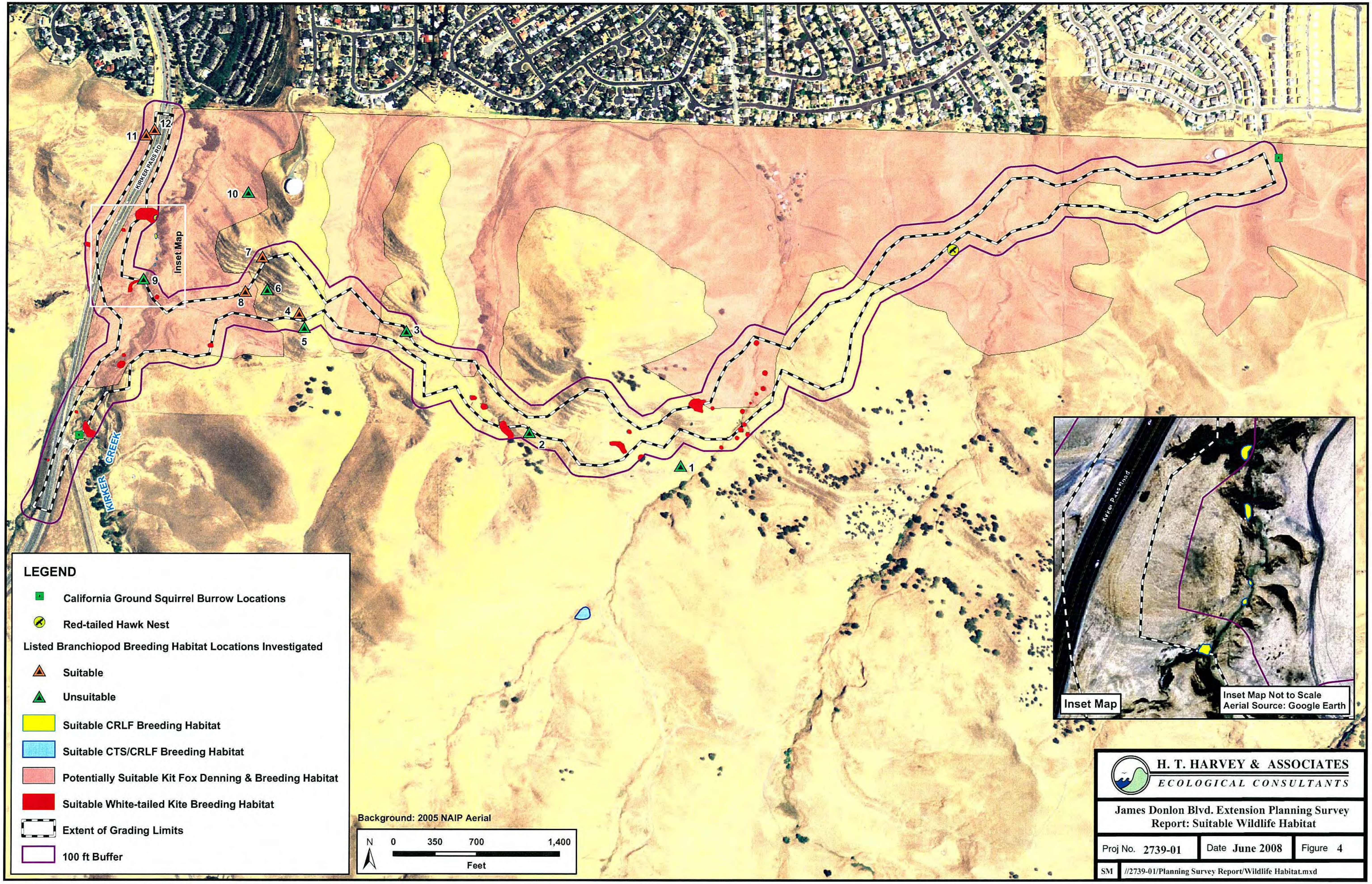
* The maximum depth that a basin can fill with water

Quantification of Impacts

The Plan defines specific habitat elements that are components of covered brachiopod breeding habitat as vernal pools, sandstone rock outcrops, or sandstone depressions within seasonal wetland land cover type. These habitat elements were found within the study area but not within mapped seasonal wetland land cover. There are 5 locations where potential breeding habitat of covered brachiopods is present, representing a total of 956.9 ft^2 as shown in Table 8 and on Figure 4. Although no individuals of these covered branchiopods were observed, the Plan requires only a survey of the location and extent of suitable breeding habitat, rather than determination of presence/absence of these species.

Table 8. Potential Impacts to Potential Breeding Habitat of the Covered Large Branchiopods.

Site No.	Habitat Type	Size (ft^2)
4	rock outcrop	21.8
7	rock outcrop	34.8
8	depression	3.0
11	seasonal swale	322.3
12	seasonal swale	575.0
	Total	956.9


KIRKER PASS RD
Inset Map
11
12
10
7
9
8
6
4
5
3
2
1
KIRKER CREEK
Kirker Pass Road
Inset Map
Inset Map Not to Scale
Aerial Source: Google Earth
LEGEND
California Ground Squirrel Burrow Locations
Red-tailed Hawk Nest
Listed Branchiopod Breeding Habitat Locations Investigated
Suitable
Unsuitable
Suitable CRLF Breeding Habitat
Suitable CTS/CRLF Breeding Habitat
Potentially Suitable Kit Fox Denning & Breeding Habitat
Suitable White-tailed Kite Breeding Habitat
Extent of Grading Limits
100 ft Buffer
Background: 2005 NAIP Aerial
N
0 350 700 1,400
Feet
H. T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS
James Donlon Blvd. Extension Planning Survey
Report: Suitable Wildlife Habitat
Proj No. 2739-01
Date June 2008
Figure 4
SM
//2739-01/Planning Survey Report/Wildlife Habitat.mxd

SELECTED COVERED AMPHIBIAN AND REPTILE PLANNING SURVEYS

Methodology

H. T. Harvey & Associates' Associate Herpetologist Jeff Wilkinson, Ph.D., conducted a survey of the study area on 1 August 2007 to evaluate potentially suitable habitat for the giant garter snake, and potentially suitable breeding habitat for the California red-legged frog and California tiger salamander. All aquatic habitats, including streams and drainages where they cross the study area, were surveyed for pools of suitable depth for California red-legged frogs to breed and quiet or still enough for California tiger salamander breeding. There are no ponds within the study area; however, Dr. Wilkinson observed the closest potential breeding pond south of the Project alignment (Figure 4). The entire study area was traversed to ensure detection of any suitable giant garter snake habitat.

Results

Giant Garter Snake (*Thamnophis gigas*). Plan Status: Covered. The giant garter snake is the largest member of the genus *Thamnophis*, growing to lengths of 4.5 ft or greater. The habitat components most important to the survival of giant garter snakes are: 1) water, including permanent water that persists through the summer months, 2) emergent aquatic vegetation and steep, vegetated banks for cover, and 3) an abundant food supply. Other important components are adjacent upland areas with small mammal burrows or other suitable winter retreats and habitat diversity including water. Land development, especially the diking, channelization, and draining of wetlands, has fragmented or eliminated much of the original habitat (Hansen and Brode 1980). Due to this loss of the snake's historical habitat, the giant garter snake's typical habitat today is valley floor canals and permanent and seasonal tule-cattail marshes. Giant garter snakes are also found in flooded rice fields, streams, and sloughs, especially with muddy bottoms (Stebbins 1985). Giant garter snakes could also utilize rock piles, small mammal burrows, and other suitable sites adjacent to the water conveyance systems as hibernacula.

The Plan defines specific habitat elements for giant garter snake habitat within the aquatic land cover types (pond, wetland, streams, and marshes) as sloughs, irrigation and drainage canals, ponds, and low-gradient streams accessible from the San Joaquin River (Plan Table 6-1). There is no habitat within the study area meeting these parameters. The site is located well above the flatter floodplain of the San Joaquin River, with the lower portions of the site at 180 ft MSL, from which the on-site streams/drainages rise quickly. In addition, although Kirker Creek ultimately reaches the San Joaquin River, this connection is over 3 mi from the Project site.

California Red-legged Frog (*Rana draytonii*). Plan Status: Covered. The California red-legged frog is the largest native frog in California (Jennings and Hayes 1994). California red-legged frogs have been observed in a number of aquatic and terrestrial habitats throughout their historical range, e.g., natural lagoons, dune ponds, pools in or next to streams, streams, marshlands, sag ponds, and springs, as well as human-created stock ponds, secondary and tertiary sewage treatment ponds, wells, canals, golf course ponds, irrigation ponds, sand and gravel pits (containing water), and large reservoirs (Jennings 1988). As long as there is standing water of at least several inches in depth and introduced aquatic predators are rare or nonexistent, conditions are at least potentially suitable for red-legged frogs. The habitats that contain the highest densities of red-legged frogs are associated with deep-water pools (27 in [>0.7 meters] deep) with stands of overhanging willows (*Salix* spp.) and an intermixed fringe of cattails (*Typha latifolia*), tules (*Scirpus* spp.), or sedges (*Carex* sp.) (Hayes and Jennings 1988). However, California red-legged frogs have also been observed to inhabit stock ponds, sewage treatment ponds, and artificial (i.e., concrete) pools completely devoid of vegetation (Storer 1925; Mark Jennings, unpubl. data).

The Plan provides the specific habitat elements to define California red-legged frog breeding habitat as slow-moving streams, ponds, or marshes. California red-legged frogs typically use the pools within these habitats to breed. Within the study area, all streams/drainages were examined to determine the location of potential breeding habitat of California red-legged frogs. The majority of streams are ephemeral or intermittent and lack the slow-moving, longer-lasting stream habitat used by California red-legged frogs for breeding. The only portions of streams on the site with slow-moving segments that hold water long enough for successful breeding are within Kirker Creek at the western terminus of the Project. Several pools within Kirker Creek along the eastern edge of the Project and buffer area in the vicinity of the creek are suitable for breeding by California red-legged frogs (Figure 4 inset).

Quantification of Impacts. The Plan defines specific habitat elements for California red-legged frogs within the area of a covered activity. Portions of Kirker Creek fit the definition of breeding habitat for California red-legged frogs where deep pools are present in slow moving steams (Figure 4). Only two potentially suitable breeding pools are present within the study area, one just on the border of the grading limits and the other within the 100-ft buffer area. Impacts to breeding pools within the grading limits would be a maximum of 130 ft^2. The remainder of Kirker Creek within the study area is slow moving stream habitat that could be used as dispersal or foraging habitat or aquatic refugia by California red-legged frogs (Figure 2). Avoidance of environmentally sensitive stream habitat is required by the Plan, as feasible. The maximum potential impact to all slow moving stream habitat within the grading limits is 0.17 ac (which coincides with the perennial stream portion of Kirker Creek within the grading limits).

California Tiger Salamander (*Ambystoma californiense*). Plan Status: Covered. The California tiger salamander has disappeared from a significant portion of its range due to habitat loss attributed to agricultural practices and urbanization, and the introduction of non-native aquatic predators (e.g. bluegill [*Lepomis macrochirus*], largemouth bass [*Micropterus salmoides*], mosquitofish [*Gambusia affinis*], and bullfrogs [*Rana catesbeiana*]). The California tiger salamander's current range includes the Great Central Valley of California and adjacent foothill districts as well as the coastal grasslands from the vicinity of San Francisco Bay south at least to Santa Barbara County (Storer 1925, Morey 1988). The California tiger salamander's preferred breeding habitat is pond environments persisting a minimum of 3-4 months on an annual basis. Examples of such environments include vernal and ephemeral pools, and human-made ponds surrounded by uplands that contain small mammal burrows. The species will use permanent ponds provided that aquatic vertebrate predators are not present (Stebbins 1985). Ponds provide breeding and larval habitat while burrows excavated by small mammals such as California ground squirrels (*Spermophilus beecheyi*) and Botta's pocket gophers (*Thomomys bottae*) support juvenile and adult salamanders in upland habitats.

The Plan's specific habitat elements within the aquatic land cover habitats for California tiger salamanders are: ponds and wetlands in grassland, oak savanna, or oak woodland; vernal pools; reservoirs; and small lakes. None of these types of these types of habitats occur within the Project study area. Although there are wetland seeps and seasonal wetlands on the site, these are associated with streams rather than ponds, and California tiger salamander need standing water for a minimum of 3 months for successful larval development. Therefore none of these habitats within the study area are suitable California tiger salamander breeding habitat. The closest pond suitable as California tiger salamander (and California red-legged frog) breeding habitat is approximately 0.2 mi south of the study area (see Figure 4).

Quantification of Impacts. The Plan defines specific habitat elements as components of California tiger salamander breeding habitat as ponds and wetlands in grassland, oak savanna, or oak woodland; vernal pools; reservoirs; and small lakes. None of these habitat elements were found within the study area. Therefore, there is no breeding habitat for California tiger salamanders in the study area and no impacts to California tiger salamander breeding habitat.

SELECTED COVERED MAMMAL PLANNING SURVEYS

Methodology

Mammalogist and kit fox biologist Howard Clark, M.S. conducted a survey of the study area on 31 July 2007, walking transects throughout the study area ensuring that all potentially suitable habitats were evaluated for suitability for kit fox use and/or evidence of occurrence. Areas with steep slopes were visually inspected for dirt mounds, rocky outcrops, and denning areas from valley and canyon floors using binoculars and potential habitat features were examined closely by hiking to the feature. Rodent burrow complexes were inspected for canid sign and excavation. Dirt roads were surveyed for travel corridor use and canid tracks.

Wildlife ecologist and bat biologist Dave Johnston, Ph.D., conducted a field survey of the Project site on 1 August 2007 to determine the potential habitat for Townsend's big-eared bat and ringtail. The study area was surveyed by walking and driving the entire Project alignment. Aerial photographs of the area were also reviewed prior to the site visit, and used during the survey, to locate potential habitat for these species.

Results

San Joaquin Kit Fox (*Vulpes macrotis mutica*). Plan Status: Covered. The San Joaquin kit fox typically inhabits California Valley grassland, Lower Sonoran grassland, and desert shrubland (Nelson et al. 2007, Koopman et al. 2001). For kit foxes to survive in these habitat types a stable prey base and a permanent denning system must be present. Prey items generally include kangaroo rats (*Dipodomys* sp.), murid rodents, and California ground squirrels. The kit fox requires underground dens for temperature regulation, shelter, reproduction, and predator avoidance (Golightly and Ohmart 1984). Kit foxes commonly modify and use dens constructed by other animals, as well as human-made structures (USFWS 1998). Typically, ground squirrels and ground squirrel burrows are important components of suitable denning and breeding habitat for San Joaquin kit foxes. Warrick and Cypher (1998) noted that kit foxes avoided rugged, steep terrain and preferred flatter, gentler rolling hills to flatter plains. Therefore, potentially suitable

San Joaquin kit fox denning and breeding habitat is in flatter, gently rolling hills or valley areas. Koopman et al. (2001) found that kit foxes used washes and dirt roads more than expected, perhaps due to an associated abundance of rodents near these features which can, therefore, be used to detect presence of the species. Canids also often have a latrine system within their home range (Clark 2007); these latrines are a good indicator of site use by kit fox.

The Project site consists of a mix of rugged hills and flatter valley areas with characteristic grassland habitats, and the higher elevations contain oak woodland/grassland matrices. The valleys, although sloped, are flatter and more conducive to kit fox movement than the steeper, adjacent hills, but the valleys quickly taper upslope and become unappealing for foraging and denning due to their narrow nature. Therefore, the portions of the site comprised of flatter valleys provide potentially suitable San Joaquin kit fox denning and breeding habitat, whereas steeper slopes and ridgelines do not (Figure 4). No dens (natal or escape) were observed during the field survey on 31 July 2007, nor were any canid latrines found among the rock outcrops. High densities of coyotes in riparian areas and in the oak woodland habitat may provide a limiting factor of kit fox occupation of these areas as coyotes are a main source of kit fox mortality (Disney and Spiegel 1992). However, no coyote sign was observed during the survey. The Project area has a very low density of California ground squirrels; only one small cluster of 6-8 burrows at the easternmost edge of the buffer area and a single burrow at the southwest limit of the Project (Figure 4) were detected within the study area during site surveys, and no other ground squirrel activity was observed. Lack of a prey base is a limiting factor of kit fox occupation within suitable habitats (White and Ralls 1993).

No evidence of kit fox (sign, scats, dens) was observed in the study area but potentially suitable breeding or denning habitat occurs within the flatter areas of the Project as shown on Figure 4. Lack of prey base and burrows for den starts, however, limits the suitability for use by kit fox for denning or breeding.

Quantification of Impacts. The Plan does not define specific habitat elements as components of San Joaquin kit fox habitat. Rather, the Plan considers any occurrence of land cover types with which the species may be associated, in this case grasslands, oak savanna, or agriculture, to be potentially suitable habitat. Therefore, potential impact to suitable denning and breeding habitat for San Joaquin kit foxes within the Project area is commensurate with the grassland and oak savannah habitats shown on Figure 2 and Table 9. The total acreage of permanent impacts to potential denning and breeding habitat is the total acreage of these land cover types within the Project grading limits, i.e., 63.2 ac. Temporary impacts could occur within the buffer area, comprising an additional 56.7 ac. However, in the absence of any specific habitat elements defined by the Plan for this species, we refined the area that we consider to represent potential kit fox breeding or denning habitat based on the criteria described above (e.g., flatter valley-floor areas). The flatter areas of the Project that are similar to preferred San Joaquin kit fox breeding or denning habitat comprise 37.4 ac within the grading limits or a total of 69.9 ac in the entire Project study area (Figure 4).

Table 9. Impacts to Potential San Joaquin Kit Fox Denning and Breeding Habitat within the Project Study Area.

Type Land Cover	Total Acreage Permanent (Grading Limits)	Temporary (Buffer Area)
Annual Grassland	54.8	51.4
Oak Savannah	8.4	5.3
Total	63.2	56.7
Suitable Habitat (Flatter Portions)		
Annual Grassland	34.03	31.67
Oak Savannah	3.38	0.84
Total	37.41	32.51

Townsend's big-eared bat (*Corynorhinus townsendii*). Plan Status: Covered. Townsend's big-eared bat is a colonial species and females aggregate in the spring at nursery sites known as maternity colonies. Although Townsend's big-eared bat is usually a cave dwelling species, many colonies in central California are found in anthropogenic structures such as the attics of buildings or old abandoned mines that mimic cave-like cavities. No records of Townsend's big-eared bats are known within 5 miles (8 kilometers) of the Project.

No habitat for the Townsend's big-eared bat was observed in the study area during the survey conducted on 1 August 2007. The Townsend's big-eared bat is a cavernous habitat obligate (i.e., this species roosts only in cave-like situations); although shallow grottoes or indentations in some of the rock outcrops are present, they are not nearly deep enough to provide habitat for Townsend's big-eared bats, and no other suitable roosting habitat is present along the Project alignment. Furthermore, no mines, caves, buildings, or trees with large enough cavities were present in or adjacent to the study area. There is no suitable breeding or roosting habitat for Townsend's big-eared bat within the Project study area.

Quantification of Impacts. The Plan defines specific habitat elements that are components of Townsend's big-eared bat breeding and roosting habitat as rock formations with caves, mines, and buildings within any land cover type. None of these habitat elements were found within the study area. Therefore, there is no habitat for Townsend's big-eared bat in the study area and no impacts to Townsend's big-eared bat breeding and roosting habitat.

Ringtail (*Bassariscus astutus*). Plan Status: No-take. Though ringtails have been recently recorded on the valley floor in the Sacramento Valley, they are not considered to range out into the valley floor in the San Joaquin Valley. Ringtails prefer wooded canyon bottoms along watercourses and rocky talus slopes often with nearby dense vegetation. No records of ringtail are known within 5 miles (8 kilometers) of the Project site.

No habitat suitable for ringtails was observed in the study area during the survey conducted on 1 August 2007. Ringtails inhabit old-growth riparian habitat and in some cases, rocky talus slopes with surrounding dense vegetation neither of which occur in the study area. On-site riparian areas do not provide the necessary old growth trees and complex riparian habitat structure needed for suitable ringtail habitat. The Project site includes areas with rocky outcrops and grottos, but the crevices are not large enough and the surrounding vegetation is not dense enough to provide adequate cover for this species. Additionally, rocky areas do not provide the talus slopes used as habitat by this species.

Quantification of Impacts. The Plan does not define specific habitat elements that are components of breeding habitat for ringtail or any other no-take species. As there is no suitable breeding habitat (or suitable habitat of any kind) for ringtail within the study area, no take of ringtail will occur as a result of this Project.

SELECTED SPECIAL-STATUS AVIAN SPECIES

Methodology

Wildlife ecologist John Sterling, B.A., conducted a reconnaissance-level planning survey to evaluate suitable breeding and roosting habitat for Burrowing Owl and suitable breeding habitat for Swainson's Hawk and the no-take avian species (Golden Eagle, Peregrine Falcon, and White-tailed Kite) on 10 July 2007. The entire study area was covered on foot. Only one raptor nest structure was observed during the survey, but this nest was on a transmission line tower to the south of the survey area (Figure 4) and was identified as a Red-tailed Hawk (*Buteo jamaicensis*) nest; the Red-tailed Hawk is not a covered or no-take species under the Plan.

Results

White-tailed Kite (*Elanus leucurus*). Plan Status: No-take. The White-tailed Kite is a common and widespread breeding species in the Central Valley and other agricultural, grassland, and savannah landscapes in the state. Kites nest in trees and hunt for voles and other small prey in agricultural fields, grasslands and marshes. No kites or nests were found on the Project site during the field survey. However, the site has potentially suitable habitat for kites in that there are trees within the study area surrounded by grassland foraging habitat.

Quantification of Impacts. The Plan does not define specific habitat elements that are components of breeding habitat for White-tailed Kite. Instead incorporation of measures to avoid take into the Project is required (CM 1.11, page 6-24) as White-tailed Kite is a no-take species under the Plan. As there is potentially suitable breeding habitat for White-tailed Kites within the study area, avoidance of impacts to individuals is required for Plan compliance.

Swainson's Hawk (*Buteo swainsoni*). Plan Status: Covered. Swainson's Hawks are locally common in the Central Valley, but the species is uncommon to rare elsewhere in California. The state's population center is in the agricultural region of western Sacramento County, the Woodland and Davis areas in Yolo County, and in Sutter, Colusa, and Glenn counties near the Sacramento River. The primary foraging habitat of this migratory raptor includes relatively flat, open landscapes comprised of grasslands and agriculture including grain and hay fields, alfalfa, tomato, and several other row crops. It is rare in the annual grassland landscape of the western and eastern edges of the valley and generally avoids oak savanna and landscapes with hill and canyon topography. This raptor preys primarily upon California voles (*Microtus californicus*) and Botta's pocket gophers during the breeding season, but will also forage heavily on grasshoppers and dragonflies after the young have fledged (often in July).

No Swainson's Hawks or their nests were detected during the field survey of the Project area. It is not likely that this species occurs on the Project site due to the lack of optimal foraging habitat and high topographic relief of the Project area, as well as the low density of this species in the Pittsburg area of Contra Costa County. Only one raptor nest structure was observed during the survey, but this nest was a Red-tailed Hawk nest on a transmission line tower to the south of the survey area (Figure 4).

Quantification of Impacts. The Plan defines the specific habitat element that is a component of Swainson's Hawk breeding habitat as being actual potential nest sites (i.e., trees within the species' range usually below 200 ft in elevation). Planning surveys are conducted to locate nest trees which are large trees with potential nests in any land cover type. There are no trees of suitable size within the study area, and no trees with raptor nests, and only the very lowest portions of the study area are below 200 ft. Therefore, the habitat element representing suitable breeding habitat for Swainson's Hawk is not present in the study area. There is no habitat for Swainson's Hawk in the study area and no impacts to Swainson's Hawk breeding habitat will occur as a result of the Project.

Golden Eagle (*Aquila chrysaetos*). Plan Status: No-take. The Golden Eagle is an uncommon permanent resident and migrant in California. Golden Eagles forage upon a variety of prey, but show a preference for rabbits and rodents. The home range of a breeding pair of eagles may include a number of alternate nests, usually located on cliffs, in large trees, or on high-tension towers. Only one of these sites is used each year for breeding. No eagles or their nests were found during the field survey. There are no high cliffs or suitable large trees within the study area to provide suitable breeding habitat, and no eagle nests were observed on transmission towers. Although Golden Eagles may forage on the Project site, they are not expected to nest there.

Quantification of Impacts. The Plan does not define specific habitat elements that are components of breeding habitat for no-take species such as the Golden Eagle. Instead avoidance of take is required. As, there is no suitable breeding habitat for Golden Eagle within the study area, no take of Golden Eagles will occur as a result of the Project.

American Peregrine Falcon (*Falco peregrinus anatum*). Plan Status: No-take. The Peregrine Falcon nests in large cliff faces and in some regions, on tall buildings and large bridges. In the Sacramento Valley, these falcons are winter visitors and migrants that forage primarily on waterfowl and shorebirds, and so, are primarily found at lakes and wetlands that support large populations of their prey. No falcons or their nests were detected during the field survey. It is highly unlikely that this species would ever occur on the Project site due to lack of breeding habitat in the area and the lack of suitable concentrations of prey on the Project site.

Quantification of Impacts. The Plan does not define specific habitat elements that are components of breeding habitat for no-take species such as the Peregrine Falcon. Instead avoidance of take is required. As there is no suitable breeding habitat for Peregrine Falcon within the study area, no take of Peregrine Falcons will occur as a result of the Project.

Burrowing Owl (*Athene cunicularia*). Plan Status: Covered. The Burrowing Owl nests locally in lowland areas throughout much of the state, although populations in most areas of California have declined in recent decades due primarily to development. This species is unique among owls in that it nests in the abandoned burrows of mammals such as the California ground squirrel and American badger (*Taxidea taxus*). Burrowing owls prey upon large insects and small rodents such as voles.

No burrows or sign of this species (whitewash, pellets or feathers) were detected during the field survey. One group of ground squirrel burrows at the eastern end of the study area and a single burrow at the western end of the study area were the only burrows present in the study area (Figure 4). During the survey there was no sign of Burrowing Owls (whitewash, feathers, pellets) at or near these burrows. However, Burrowing Owls could potentially use these burrows in the future, either for breeding or as roosts during the nonbreeding season. The limited presence of burrows limits the location of potential occurrence of Burrowing Owls on the site.

Quantification of Impacts. The Plan does not define specific habitat elements that are components of Burrowing Owl breeding and roosting habitat. Rather, the Plan considers any occurrence of land cover types with which the species may be associated, in this case grasslands, oak savanna, or agriculture, to be potentially suitable habitat. Therefore, potential impact to suitable nesting and roosting habitat for Burrowing Owls within the Project area is commensurate with the grassland and oak savannah habitats shown on Figure 2 and Table 8. The total acreage of permanent impacts to potential nesting and roosting habitat is the total acreage of these land cover types within the Project grading limits, i.e., 114.6 ac. In reality, however, suitable breeding and roosting habitat for Burrowing Owls in the Project area is limited to the two small areas providing burrows where owls could nest or roost; these burrow systems occupy no more than 10 ft^2 within the grading limits (in the southwestern part of the Project area) and an additional 500 ft^2 within the 100-ft buffer area in the eastern part of the Project area.

APPLICABLE AVOIDANCE AND MINIMIZATION MEASURES

The Plan has very well defined measures for avoidance and minimization of impacts to sensitive habitats, uncommon vegetation or landscape features, and covered and no-take species, and to comply with legal or regulatory requirements of the Federal Endangered Species Act (FESA) and/or other legal or regulatory requirements that are applicable. These avoidance and minimization measures are contained in conservation measures that apply either to all or to specific types of covered activities, in this case for rural infrastructure projects, or even to specific projects within the Plan area. Compliance with measures for protection of individuals of selected covered species is also required if presence of suitable habitat for these species is detected during planning surveys.

APPLICABLE CONSERVATION MEASURES

The James Donlon Boulevard Extension, as a rural infrastructure project, and the future operation and maintenance activities associated with this rural infrastructure, must comply with CM 1.14 (*Design Requirements for Covered Roads outside the UDA*), CM 1.12 (*Implement Best Management Practices for Rural Road Maintenance*), and CM 1.7 (*Establish Stream Setbacks*), as noted in CM 2.12 (page 6-33). The presence of potentially jurisdictional water that the Project may discharge into or fill requires compliance with CM 2.12 (*Wetland, Pond, and Stream Avoidance and Minimization*).

Presence of habitat for select wildlife species and potential presence of fully protected wildlife species or migratory birds will require compliance with Species-level Measures in Section 6.4.3 and CM 1.11 (*Avoid Direct Impacts on Extremely Rare Plants, Fully Protected Wildlife Species or Covered Migratory Birds*). There are no known occurrences of covered or no-take plants within the Project area. The covered species for which habitat (of the appropriate designation [e.g., breeding, roosting, or denning] as defined by the Plan) is present within the Project study area are:

- San Joaquin Kit Fox
- Western Burrowing Owl
- California red-legged frog
- Covered large branchiopods

The Western Burrowing Owl is also a covered migratory bird. Individuals could potentially be present during construction activities since suitable (albeit limited) breeding habitat for the species is present.

The only fully protected wildlife species that may be present and nesting during construction, based on the presence of potential breeding habitat, is the White-tailed Kite.

CONSERVATION MEASURES

Following is a discussion of the conservation measures from the Plan that apply to the Project, based on the results of our planning surveys. Below, quotations from the Plan in applicable measures are noted in *italics*.

Conservation Measure 1.7. Establish Stream Setbacks

CM 2.12 indicates that all Plan covered activities will implement the measures to avoid and minimize impacts on wetlands, ponds, streams and riparian woodland/scrub (page 6-33). One of these measures is the implementation of CM 1.7 (page 6-34).

> *A stream setback will be applied to all development projects covered by the HCP/NCCP according to the stream types...*
> *For the purpose of determining required stream setbacks, streams will be assigned to one of five categories.*

Two of these categories fit all of the streams on the Project site (Figure 5):

- First and second order ephemeral reaches in natural areas (25-ft setback). This applies to the westernmost ephemeral drainage; the ephemeral drainage at the center of the site that supports several oak trees; and a rock-lined ephemeral tributary to the west of the central, unnamed perennial stream (see Figure 5).
- Perennial, intermittent, or third or higher order ephemeral reaches in agricultural or natural areas and Marsh Creek mainstem (75-ft setback). All the remaining streams on-site, i.e., not first or second order, fit this category.

> *The setback is measured from the top of the stream bank in an aerial perspective (to eliminate differences in setbacks on different slopes). Where native woody riparian vegetation is present, setbacks will extend, at minimum, to the outer dripline of this vegetation.*
>
> *No setbacks are required on drainages and swales that have neither defined bed and bank nor evidence of scour or sediment transport.*
>
> *The stream categories above are designed to correlate with existing habitat quality for species covered by the HCP/NCCP and with potential impacts of development to stream functions. Stream setbacks are designed to protect existing habitat quality, to protect water quality and hydrologic processes through buffering, and allow for at least minimal restoration. For informational purposes, the Implementing Entity will create and make available to local jurisdictions digital and hardcopy maps categorizing stream reaches according to this system.*

The remainder of the discussion of stream setbacks is applicable to development projects and projects within the UDA. Although road projects such as the James Donlon Boulevard Extension Project frequently have to cross drainages, the Plan does not clearly outline how such

LEGEND

Streams Setback Categories

- 1st or 2nd Order Ephemeral Streams in Natural Areas (25ft Setback)
- 3rd or Higher Order Perennial, Intermittant, or ephemeral Streams in Natural Areas (75ft Setback)
- Extent of Grading Limits
- 100 ft Buffer

Background: USDA NAIP Aerial 2005

N 0 350 700 1,400 Feet

H. T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS

James Donlon Blvd. Extension Planning
Survey Report: Stream Setback Categories

Proj No. 2739-01	Date June 2008	Figure 5
SM	//2739-01/Wetland Delineation Document/Fig 5.mxd	

roads will maintain setbacks. Discussion should be held with the Implementing Entity to determine how this CM will be applied to the James Donlon Boulevard Extension Project as a covered rural infrastructure project.

Conservation Measure 1.11. Avoid Direct Impacts on Extremely Rare Plants, Fully Protected Wildlife Species, or Covered Migratory Birds

Extremely Rare Plants. Covered activities will avoid all impacts to extremely rare plant species listed in Plan Table 6-5 as no-take species. Planning surveys are to identify no-take plant species. As noted previously, the large-flowered fiddleneck is not expected to occur on the Project site . Spring blooming season surveys determined that none of the remaining no-take plants, which include alkali milk-vetch, Mt. Diablo buckwheat, diamond-petaled California poppy, Contra Costa goldfields, and caper-fruited tropidocarpum, occur in the study area. CM 1.11 requires that project proponents demonstrate one of the following conditions:

- no-take plant species are absent from the Project site, and the Project will not result in indirect impacts if such plants are found adjacent to the project site; or
- if no-take plant species are found at a project site, all direct and indirect impacts on such plants that could result from the project are avoided.

As none of the no-take plants occur on the site, documentation in this report of the surveys conducted and the absence of no-take plants will demonstrate compliance with CM1.11.

Fully Protected Wildlife Species. Planning surveys have established that the only wildlife species that may occur in the Project impact area that is listed as fully protected (as defined under Section 3511 of the California Fish and Game Code) is the White-tailed Kite. CDFG cannot issue permits for take of this species. To comply with these regulations, covered activities will avoid any take of fully protected wildlife species as defined under the California Fish and Game Code. White-tailed Kite may nest in trees within the Project impact area; however, no nests are currently present in the study area.

To comply with this measure, project proponents covered under the HCP/NCCP must not disturb or destroy nests of fully protected species or of other birds (per Section 3503 of the California Fish and Game Code). Direct impacts on this species must also be avoided. Projects will be designed to avoid take should any such species be found on the property.

Migratory Bird Treaty Act. All birds covered by the Plan (Tricolored Blackbird, Western Burrowing Owl, Golden Eagle, and Swainson's Hawk) are also considered migratory birds and subject to the prohibitions of the Migratory Bird Treaty Act (MBTA). Planning Surveys have determined that, of these, the Western Burrowing Owl is the only covered bird for which breeding habitat is present in the Project study area.

Actions conducted under the Plan must comply with the provisions of the MBTA and avoid killing or possessing covered migratory birds, their young, nests, feathers, or eggs. Because none of the covered bird species are currently listed under the ESA, none of the *covered birds are eligible for a Special Purpose Permit associated with the HCP/NCCP (as described in Appendix 5 of the Habitat Conservation Planning Handbook).*

To fulfill the requirements of the Migratory Bird Treaty Act, covered activities must not result in take as defined by the MBTA of covered bird species. Conservation Measures 1.12 and 1.14 incorporate avoidance guidelines for compliance with the Migratory Bird Treaty Act. In addition, avoidance and minimizations measures for burrowing owl, golden eagle, and Swainson's hawk are described in detail in Section 6.3.3.

Conservation Measure 1.12. Implement Best Management Practices for Rural Road Maintenance

The Plan indicates (Section 2.3.2, page 2-18) that the operation and maintenance of covered rural infrastructure projects, like the James Donlon Boulevard Project, are also covered activities. As such, CM 1.12 applies.

Road maintenance activities have the potential to affect covered species by introducing sediment and other pollutants into downstream waterways, spreading invasive weeds, and disturbing breeding wildlife. In order to avoid and minimize these impacts, the BMPs listed below will be used where appropriate and feasible for all covered road maintenance activities.

- *Silt fencing or other sediment control device will be installed downslope from maintenance activities that disturb soil to minimize the transport of sediment off site.*
- *In the course of rural-road maintenance, no erodible materials will be deposited into watercourses. Brush, loose soils, or other debris material will not be stockpiled within stream channels or on adjacent banks.*
- *Herbicides and pesticides should be used only when necessary and will be applied in strict compliance with label requirements and state and federal regulations. Herbicides and pesticides will only be applied when weather conditions will minimize drift and impacts on non-target sites.*
- *Maintenance activities on rural roads adjacent to natural land cover types will be seasonally timed, when safety permits, to avoid or minimize adverse effects on active nests of resident and migratory birds, including the covered birds (Swainson's hawk, golden eagle, tricolored blackbird, and western burrowing owl). This measure is particularly relevant for right-of-way mowing, brush clearing, and tree trimming. Project proponents should coordinate with the wildlife agencies to develop schedules that optimize logistical and financial needs while avoiding potential impacts to nesting birds.*
- *Mowing equipment will be thoroughly cleaned before use in rural areas so they are free of noxious weeds (e.g., yellow star-thistle) and do not introduce such weeds to new areas.*
- *Maintenance or repair of road medians or shoulder barriers in areas that support natural land cover types (e.g., annual grassland, oak savanna, oak woodland) will*

not reduce the ability of wildlife of all types to move through or over them, within safety limits. If possible, replacement or repair of road medians should improve the ability of wildlife to move past these structures.

Conservation Measure 1.14. Design Requirements for Covered Roads outside the UDA

New roads or road improvements covered by the HCP/NCCP outside the UDA [such as the James Donlon Boulevard Extension] *will have impacts on many covered species far beyond the direct impacts of their project footprints. For example, new or expanded roads may create major hazards or barriers to the movement of mobile species such as San Joaquin kit fox, California red-legged frog, California tiger salamander, and Western pond turtle. Roads and other linear projects also create dispersal corridors for nonnative plants, introduce runoff of car waste (e.g., oil, grease, radiator fluid), and create substantial noise and physical disturbance. Vehicle traffic on roads generate debris such as tires, litter, or car parts that can be hazardous to wildlife.*

To minimize the impacts of new, expanded, and improved roads in agricultural and natural areas of the inventory area, road and bridge construction projects covered by the Plan outside the UDA will adopt the siting, design, and construction requirements.

Table 6-6 of the Plan contains the siting, design, and construction requirements that apply to the James Donlon Boulevard Project. These requirements are replicated in Table 10 below.

Table 10. James Donlon Boulevard (Buchanan Bypass) Category of Siting, Design, and Construction Requirements

Road Conservation Measure	Category
Siting Requirements	
Site in least sensitive locations	R
Site equipment storage away from sensitive areas	R
Conduct project surveys well in advance of design	R
Planning survey requirements apply to r-o-way	R
Widlife Design Requirements	
Design requirements superceded by latest research	R
Collect data on wildlife movement for at least 1 yr prior to design	R
Use bridges, viaducts, or causeways	P
Construct road undercrossings at freq. Intervals	P
Install crossing facilities at known travel routes	P
Large wildlife crossings every mile or less	P
Small wildlife crossings every 1,000 ft or less	P
Minimum sizing for culverts	P
Use grating over tunnels/culverts for light penetration	P
Fencing designs to maximize crossing use	P
Discourage trails within 500 ft	P

Road Conservation Measure	Category
Road median designs for wildlife	P
Construction Actions	
Best management practices	R
Install monitoring boxes (cameras)	P
Post-Construction Actions	
Control roadside vegetation adj to preserves and OS	R
Revegetate cut/fill slopes with natives	R
Monitor structures for wildlife use	P

R = Required
P = Possible (required unless data demonstrate measure would not benefit wildlife and CDFG and USFWS agree to omit)
O = Optional (measure can be implemented at agency's discretion; if implemented, it will reduce mitigation fee; fee reduction determined case-by-case by Implementing Entity)

The design elements listed in this measure fall into one of three categories depending on the project. These are defined in the Plan for each covered rural infrastructure project.

> ***Required** (R). Avoidance/minimization measure is required and cannot be waived.*
> ***Possible** (P). Avoidance/minimization measure is required unless field data collected at the site or in comparable areas elsewhere demonstrate that the measure would not benefit the target wildlife species. CDFG and USFWS must also agree to waive the requirement.*
> ***Optional** (O). Avoidance/minimization measure can be implemented at the Permittee's discretion. If implemented, a discount will be applied to the road fee. This discount will be determined on a case-by-case basis by the Implementing Entity.*
>
> *Proponents of rural road projects seeking coverage under the HCP/NCCP that result in new ground disturbance or that create or worsen a wildlife movement barrier must submit an application to the Implementing Entity, CDFG and USFWS that explains how project siting, design, and construction would comply with the terms of this conservation measure according to the requirements and options in* [HCP/NCCP] *Table 6-6.*
>
> *In order to receive take coverage under the Plan, CDFG and USFWS must approve the application as consistent with this and any other applicable conservation measures in the HCP/NCCP. This additional compliance step is necessary because of the complexity of rural road projects and their expected substantial effects on covered species.*

Details of the requirements are described in the Plan on pages 6-29 through 6-33 as follows:

Siting Requirements

- *Planned roads will be located in the least environmentally sensitive location feasible and will avoid, to the greatest extent feasible, impacts on covered species and sensitive natural communities such as wetlands. Alignments will follow existing roads, easements, rights-of-way, and disturbed areas as appropriate to minimize* *additional habitat fragmentation. The footprint of disturbance will be minimized to the maximum extent practicable.*

- *Equipment storage, fueling, and staging areas will be sited on disturbed areas or on ruderal or non-sensitive nonnative grassland land cover types, when these sites are available, to minimize risk of direct discharge into riparian areas or other sensitive land cover types.*
- *Project surveys, including land cover mapping, will be conducted during the conceptual planning stage of each project (i.e., well in advance of project design) so that the results can inform the siting and design process. Project surveys should be conducted in as wide a study corridor as possible to enable project siting to minimize environmental impacts.*
- *All planning survey requirements of this Plan will be followed within the construction corridor (i.e., the limit of project construction plus equipment staging areas and access roads) and the entire road right-of-way. Expanding the survey area beyond the project footprint will help identify covered species and their habitats so that impacts on covered species that occur adjacent to the construction zone can be minimized.*
- *For certain road projects (see Table 6-6), data collection will be required on wildlife movement through the road study corridor for at least 1 year prior to project design. Wildlife movement will be studied at the site to determine which species move across it, when they move, and, most importantly, which landscape features are most often used. These data will be used to select the most appropriate design requirements for the species and conditions unique to the site (see below).*
- *Transportation project proponents will consult early with the HCP/NCCP Implementing Entity, CDFG, and USFWS on individual projects to ensure that conceptual designs (siting) and project designs (construction and staging areas) meet the terms of this Plan (*[Plan] *Table 6-6).*

Design Requirements for Wildlife Movement and Impact Minimization

- *Design requirements will be updated or changed by designs shown by the best available science to be more effective at facilitating safe wildlife movement across roads. The effectiveness of road crossings for wildlife is an active area of research, so frequent advances in design are expected throughout the permit term.*
- *Wildlife crossing needs will be assessed for each road project as a whole (for those projects subject to this provision [see* [Plan] *Table 6-6]), not by road segment, and for each wildlife species likely to need to cross the facility (Barnum 2003). Data will be collected on wildlife movements at the proposed project site for at least 1 year. These data will inform the design of wildlife movement structures suitable for the site and the species that use the area.*
- ***Placement of Undercrossings.*** *Road undercrossings will be constructed at frequent intervals to allow wildlife movement (see* [Plan] *Table 6-6 for applicability). A combination of large structures (bridges, large culverts, or large tunnels) spaced at greater intervals and small structures (small culverts or tunnels) spaced at frequent*

intervals will be used to accommodate a wide variety of wildlife species. However, placement of undercrossings in areas where wildlife are most likely to use them is more important than maintaining a certain frequency or spacing. Wildlife crossings that serve multiple species should be used whenever possible. Crossing facilities should be installed at known travel routes, natural pinch points, or other topographically appropriate locations to maximize the chance of use. Suitable areas may include stream crossings or natural drainages. Undercrossings should be placed at grade whenever possible to maximize their use by wildlife.

- ***Use of Bridges.*** *Bridges, viaducts, or causeways will be used for certain projects (*[Plan] *Table 6-6) to minimize impacts on important upland areas, wetlands, streams, and local surface hydrology that feeds wetlands and streams near the road, and to provide the widest and most natural passageways for wildlife (i.e., to allow natural vegetation and physical features to occur in the undercrossing). If possible, bridges will span the bed and bank of streams and avoid or minimize bridge piers or footings within the stream, within bridge safety limits. If possible, the span of bridges that cross streams should also include some upland habitat beneath their spans to provide dry areas for wildlife species that do not use creeks or for use during storms. Native plantings, natural debris, or rocks should be installed under bridges to provide wildlife cover and encourage the use of crossings.*
- ***Crossing Frequency.*** *Large wildlife crossings (for medium to large mammals) will be placed approximately once every mile along new or substantially expanded roads that cross wildlife movement routes (see* [Plan] *Table 6-6 for applicability). Small wildlife crossings will be placed approximately every 1,000 feet along new or substantially expanded roads. This is the same interval of undercrossings suitable for California tiger salamander installed along Vasco Road in the inventory area (65 undercrossings in 13 miles). Within these parameters, undercrossings should be placed where wildlife are most likely to use them, rather than evenly spaced. The required interval can be used as an average if it can be demonstrated that strict adherence to the requirement will not benefit wildlife movement.*
- ***Culvert Designs.*** *Tunnels or culverts must be the minimum length, height, and width necessary to provide safe passage under the road. Culvert designs will be based on the best available data at the time. Current thinking recommends that culverts designed for medium-size mammals such as San Joaquin kit fox, coyote, raccoon, be 5–8 feet in diameter (although culverts larger than 8 feet in diameter may be needed for longer crossings). Culverts designed for small mammals are recommended at 18–48 inches in diameter; smaller structures may be preferred by smaller wildlife species. Culverts should, when feasible, provide a natural substrate on which wildlife can travel (e.g., open bottom). It is also recommended that wildlife undercrossings using tunnels or culverts use grating on the inactive part of the roadbed (e.g., road shoulders) to allow filtration of ambient light and moisture but minimize noise intrusion. Artificial lighting inside tunnels or culverts is not recommended; these devices have not been shown to be effective and may deter nocturnal wildlife.*
- ***Fencing Design.*** *Fencing will be used along the roadway to direct wildlife to undercrossings and minimize their access to the road (see* [Plan] *Table 6-6 for*

applicability). Fencing designs will be customized for the wildlife expected to use the undercrossing and will be based on the best available data at the time. Fencing must be continuous along the road and must be attached to the undercrossing to facilitate its use. Fencing must also extend well beyond the target undercrossing to reduce the chance of wildlife moving around the fence. For example, four fencing designs have been installed along Vasco Road and monitored for their effectiveness in reducing mortality of California tiger salamanders (Jones & Stokes Associates 1998b, 1999).

Fencing must be monitored regularly by the applicant and repairs made promptly to ensure effectiveness. Wildlife undercrossings must be at the same or similar elevation as the fencing (e.g., along elevated roadways) to increase chances of their use. Vegetation must be managed along small mammal and amphibian fencing to reduce the opportunity for these species to climb the fence. Fencing designed for small mammal or amphibian exclusion must be installed at least 8 inches deep into the soil to prevent small mammal burrows providing access under the fence.

Where roads cross the wildlife exclusion fences, gates should be used whenever possible with material at the base of the gate to minimize the gap between the gate and the roadbed. If gates are not feasible, an in-roadway barrier (e.g., wildlife grates or similar devices) or device that channels species away must be installed to deter wildlife from moving around fences into the road.

- ***Road Median Designs.*** *When compatible with vehicle safety, road medians should allow wildlife to cross under or over the median in the event they become trapped on the roadway.*

Construction Requirements

The following measures are specifically required for rural road and transportation projects. Other conservation measures described in this Plan for covered activities also apply.

- *No erodible materials will be deposited into watercourses. Brush, loose soils, or other debris material will not be stockpiled within stream channels or on adjacent banks.*
- *All no-take species will be avoided.*
- *Construction activities will comply with the Migratory Bird Treaty Act and will consider seasonal requirements for birds and migratory non-resident species, including covered species.*
- *Temporary stream diversions, if required, will use sand bags or other approved methods that minimize in-stream impacts and effects on wildlife.*
- *Silt fencing or other sediment trapping method will be installed downgradient from construction activities to minimize the transport of sediment off site.*
- *Barriers will be constructed to keep wildlife out of construction sites, as appropriate.*

- *Onsite monitoring will be conducted throughout the construction period to ensure that disturbance limits, BMPs, and Plan restrictions are being implemented properly.*
- *Active construction areas will be watered regularly to minimize the impact of dust on adjacent vegetation and wildlife habitats, if warranted.*

The following construction measure will be applied differently to each rural road project (see [Plan] *Table 6-6).*

- *Install sturdy lock-boxes for cameras at each large wildlife undercrossing to facilitate wildlife monitoring by the Implementing Entity. Boxes should be at least 1 foot square, include a removable door, and be prewired for electricity (solar, battery, or alternating current). This will provide for the least intrusive, most secure, most flexible, and most cost-effective way to monitor wildlife usage, while minimizing human impacts. Boxes will be mounted on adjustable pedestals to vary the height of the box.*

Postconstruction Requirements

- *Roadside vegetation within the right-of-way and adjacent to HCP/NCCP Preserves or other open space areas will be controlled to prevent the spread of invasive exotic plants such as yellow star-thistle into nearby or adjacent preserves.*
- *Vegetation and debris must be managed in and near culverts and under and near bridges to ensure that entryways remain open and visible to wildlife and the passage through the culvert or under the bridge remains clear.*
- *Cut-and-fill slopes will be revegetated with native, non-invasive nonnative, or non-reproductive (i.e., sterile hybrids) plants suitable for the altered soil conditions.*
- *All structures constructed for wildlife movement (tunnels, culverts, underpasses, fences) must be monitored at regular intervals and repairs made promptly to ensure that the structure is in proper condition.*

Conservation Measure 2.12. Wetland, Pond, and Stream Avoidance and Minimization

All projects that discharge into or fill waters of the United States, including jurisdictional wetlands, are required to obtain applicable permits from the U.S. Army Corps of Engineers. All projects that discharge into or fill waters of the State, including jurisdictional wetlands, are required to obtain applicable permits from the Regional Water Quality Control Board. Projects that fill streams under the jurisdiction of the State are also required to obtain a streambed alteration agreement with CDFG.

While specific determination of discharge or fill in Waters of the U.S. or the State has not been made yet, it is very likely that roadway construction of the magnitude of the James Donlon Boulevard Extension Project will necessitate one or both.

All covered activities will implement the following measures to avoid and minimize impacts of covered activities on wetlands, ponds, streams, and riparian woodland/scrub.

- *Like avoidance and minimization measures for terrestrial habitats, this conservation measure is not intended to create small, isolated wetland mitigation sites. Some impacts on aquatic land cover types are expected under the Plan. The intent of the Plan is to concentrate mitigation for filled aquatic features in areas away from urban development and within large preserves that are linked to existing protected areas. Larger preserves will be more effective for protecting, enhancing, and restoring wetlands. The analysis conducted in this Plan assumes that small, isolated wetlands will not be avoided on projects within the urban development area.*

  Projects proposing to fill less than 3.0 acres of jurisdictional wetlands and waters do not need additional avoidance analysis beyond that in the HCP/NCCP. Projects proposing to fill greater than 3.0 acres of jurisdictional wetland and waters must conduct a site-specific analysis of avoidance and minimization measures in the wetland delineation report to demonstrate the project avoids and minimizes impacts on these features to the maximum extent practicable. The avoidance and minimization analysis for projects proposing impacts on more than 3.0 acres of jurisdictional wetlands and waters must be reviewed and approved by the Implementing Entity for projects within the UDA or by CDFG and USFWS for projects outside the UDA, consistent with the regional avoidance accomplished by the HCP/NCCP.

As it is currently defined, the Project will have less than 3 ac of impacts to jurisdictional wetlands or other waters of the U.S. or State, although areas requiring a streambed alteration agreement, which include upland bank areas, comprise over 8 ac within the grading area. Because these upland banks are not considered jurisdictional *wetlands* or *waters*, it is our understanding that CDFG-regulated riparian habitat does not affect the 3-ac impact limit. However, CM 1.14 (page 6-28), which is specific to covered roads outside the UDA, such as the James Donlon Extension Project, indicates that proponents of such projects must submit their applications to the CDFG in addition to the Implementing Entity.

Any regional permit program for aquatic resources that is subsequently adopted by the U.S. Army Corps of Engineers, Regional Water Quality Control Board, or CDFG will contain avoidance and minimization requirements. Those requirements may differ from the avoidance and minimization requirements in this Plan.

- *Applicants with streams on site must follow the stream setback requirements in Conservation Measure 1.7.*
- *Applicants for coverage under the HCP/NCCP must follow the guidelines in Conservation Measure 1.10 to minimize the effects of urban development on downstream hydrology, streams, and wetlands.*
- *All wetlands, ponds, streams, and riparian woodland/scrub to be avoided by covered activities will be temporarily staked in the field by a qualified biologist.*
- *Buffer zones should be established where feasible between the aquatic resource and development. Required setbacks for streams are described in Conservation Measure 1.7. Credit for preservation of aquatic habitat will be given only if these features meet minimum distances from dense urban development (see* [Plan] *Table 5-6).*

- *Fencing will be erected between the outer edge of the buffer zone and the project area. The type of fencing will match the activity and impact types. For example, projects that have the potential to cause erosion will require erosion control barriers (see below), and projects that may bring more household pets to a site should be fenced to keep the pets out. The temporal requirements for fencing also depend on the activity and impact type. For example, fencing for permanent impacts should be permanent, and fencing for short-term impacts should be removed after the activity is completed.*
- *Personnel conducting ground-disturbing activities within or adjacent to the buffer zone of wetlands, ponds, streams, or riparian woodland/scrub will be trained by a qualified biologist in these avoidance and minimization measures and the permit obligations of project proponents working under this HCP/NCCP. Vehicles and equipment will be parked on pavement, existing roads, and previously disturbed areas.*
- *Trash generated by covered activities will be promptly and properly removed from the site.*
- *No construction or maintenance vehicles will be refueled within 200 feet of wetlands, ponds, streams, or riparian woodland/scrub unless a bermed and lined refueling area is constructed and hazardous material absorbent pads are available in the event of a spill.*
- *Appropriate erosion-control measures (e.g., fiber rolls, filter fences, vegetative buffer strips) will be used on site to reduce siltation and runoff of contaminants into wetlands, ponds, streams, or riparian woodland/scrub. Filter fences and mesh will be of material that will not entrap reptiles and amphibians. Erosion control blankets shall be used as a last resort because of their tendency to biodegrade slowly and trap reptiles and amphibians. Erosion-control measures will be placed between the outer edge of the buffer and the project site.*
- *Fiber rolls used for erosion control will be certified as free of noxious weed seed.*
- *Seed mixtures applied for erosion control will not contain invasive nonnative species, and will be composed of native species or sterile nonnative species.*
- *Where feasible, stream crossings will be located in stream segments without riparian vegetation, and bridge footings will be built outside the stream banks (i.e., clear span structures).*
- *Herbicide will not be applied within 100 feet of wetlands, ponds, streams, or riparian woodland/scrub; however, where appropriate to control serious invasive plants, herbicides that have been approved for use by EPA in or adjacent to aquatic habitats may be used as long as label instructions are followed and applications avoid or minimize impacts on covered species and their habitats. In seasonal or intermittent stream or wetland environments, appropriate herbicides may be applied during the dry season to control nonnative invasive species (e.g., yellow star-thistle). Herbicide drift should be minimized by applying the herbicide as close to the target area as possible.*

PLAN SECTION 6.4.3 SPECIES-LEVEL MEASURES

Section 6.4.3 (pages 6-36 through 6-48) of the Plan specifies species-level measures, which follow the planning surveys, for pre-construction surveys and construction monitoring. A summary of these measures appears in Plan Table 6-1. Table 11 below summarizes the measures applicable to the Project based on our findings regarding species habitat presence within the study area.

Table 11. Summary of Species-level Measures Applicable to the James Donlon Boulevard Project (from Plan Table 6-1).

Species	Preconstruction Survey	Best Management Practices	Construction Monitoring
San Joaquin kit fox	• Establish presence/absence • Determine status and map all dens (>5 in. diameter)	• Monitor dens • Destroy unoccupied dens • Discourage use of occupied (non-natal) dens	• Establish exclusion zones (>50 ft) for potential and atypical dens • Establish exclusion zones (>100 ft) for known dens • Notify USFWS of any occupied natal dens
Western Burrowing Owl	• Establish presence/absence (pellets, whitewash, prey remains) • Determine status and map all burrows • Document use of habitat (e.g., breeding, foraging)	• Avoid occupied nests during breeding season (Feb–Sep) • Avoid occupied burrows during nonbreeding season (Sep–Feb) • Install one-way doors in occupied burrow (if avoidance not possible) • Monitor burrows with doors installed	• Establish buffer zones during breeding season (250 ft) around nests • Establish buffer zones (160 ft) around burrows
California red-legged frog	• Provide written notification to FWS and DFG regarding timing of construction and likelihood of occurrence on site	• Allow agency staff to translocate species, if requested	• None

Species	Preconstruction Survey	Best Management Practices	Construction Monitoring
Covered shrimp	• Establish presence/absence • Document and evaluate use of all habitat features (e.g., vernal pools, rock outcrops)	• Establish a buffer near construction activities • Prohibit incompatible activities • Any filling of vernal pools (requires separate permit) must take place after pools are dry and sampling completed • Collect and provide soils for storage by IE*	• Establish buffer around outer edge of all hydric vegetation associated with habitat • Buffer is 50 ft or the limit of the immediate watershed supporting the seasonal wetland, whichever is larger • Construction personnel must participate in training

*IE = Implementing Entity

Details of the measures applicable to each species potentially present on the Project site are provided in the Plan on pages 6-37 and 6-38, and 6-46 through 6-48 as follows:

San Joaquin Kit Fox

> *To avoid or minimize direct impacts on San Joaquin kit fox as a result of covered activities, the following procedures will be implemented. This program was based on the USFWS Standardized Recommendations for Protection of the San Joaquin Kit Fox prior to or during Ground Disturbance (U.S. Fish and Wildlife Service 1999).*
>
> *Planning Surveys*
> *A USFWS/CDFG–approved biologist will identify potential breeding or denning habitat for kit fox (Section 6.3.1, Planning Surveys). If the project does not fully avoid impacts to suitable breeding and denning habitat, preconstruction surveys will be required.*
>
> *Preconstruction Surveys*
> *Prior to any ground disturbance related to covered activities, a USFWS/CDFG–approved biologist will conduct a preconstruction survey in areas identified in the planning surveys as supporting suitable breeding or denning habitat for San Joaquin kit fox. The surveys will establish the presence or absence of San Joaquin kit foxes and/or suitable dens and evaluate use by kit foxes in accordance with USFWS survey guidelines (U.S. Fish and Wildlife Service 1999). Preconstruction surveys will be conducted within 30 days of ground disturbance. On the parcel where the activity is proposed, the biologist will survey the proposed disturbance footprint and a 250-foot radius from the perimeter of the proposed footprint to identify San Joaquin kit foxes and/or suitable dens. Adjacent parcels under different land ownership will not be surveyed. The status of all dens will be determined and mapped. Written results of preconstruction surveys will be submitted to USFWS within 5 working days after survey completion and before the start of ground disturbance. Concurrence is not required prior to initiation of covered activities.*

If San Joaquin kit foxes and/or suitable dens are identified in the survey area, the measures described below will be implemented.

Avoidance and Minimization Requirements

- *If a San Joaquin kit fox den is discovered in the proposed development footprint, the den will be monitored for 3 days by a USFWS/CDFG– approved biologist using a tracking medium or an infrared beam camera to determine if the den is currently being used.*
- *Unoccupied dens should be destroyed immediately to prevent subsequent use.*
- *If a natal or pupping den is found, USFWS and CDFG will be notified immediately. The den will not be destroyed until the pups and adults have vacated and then only after further consultation with USFWS and CDFG.*
- *If kit fox activity is observed at the den during the initial monitoring period, the den will be monitored for an additional 5 consecutive days from the time of the first observation to allow any resident animals to move to another den while den use is actively discouraged. For dens other than natal or pupping dens, use of the den can be discouraged by partially plugging the entrance with soil such that any resident animal can easily escape. Once the den is determined to be unoccupied it may be excavated under the direction of the biologist. Alternatively, if the animal is still present after 5 or more consecutive days of plugging and monitoring, the den may have to be excavated when, in the judgment of a biologist, it is temporarily vacant (i.e., during the animal's normal foraging activities).*

Construction Monitoring

If dens are identified in the survey area outside the proposed disturbance footprint, exclusion zones around each den entrance or cluster of entrances will be demarcated. The configuration of exclusion zones should be circular, with a radius measured outward from the den entrance(s). No covered activities will occur within the exclusion zones. Exclusion zone radii for potential dens will be at least 50 feet and will be demarcated with four to five flagged stakes. Exclusion zone radii for known dens will be at least 100 feet and will be demarcated with staking and flagging that encircles each den or cluster of dens but does not prevent access to the den by kit fox.

Western Burrowing Owl

Determine whether western burrowing owls utilize artificial burrows and artificial perches. Prior to initiating covered activities, conduct surveys for burrowing owl as described below. This measure incorporates avoidance and minimization guidelines from CDFG's Staff Report on Burrowing Owl Mitigation (California Department of Fish and Game 1995).

Planning Surveys
A USFWS/CDFG–approved biologist will identify potential burrowing owl breeding habitat (Section 6.3.1, Planning Surveys). If project does not fully avoid impacts to suitable breeding habitat, preconstruction surveys will be required.

Preconstruction Surveys
Prior to any ground disturbance related to covered activities, a USFWS/CDFG approved biologist will conduct a preconstruction survey in areas identified in the planning surveys as having potential burrowing owl habitat. The surveys will establish the presence or absence of western burrowing owl and/or habitat features and evaluate use by owls in accordance with CDFG survey guidelines (California Department of Fish and Game 1993).

On the parcel where the activity is proposed, the biologist will survey the proposed disturbance footprint and a 500-foot radius from the perimeter of the proposed footprint to identify burrows and owls. Adjacent parcels under different land ownership will not be surveyed. Surveys should take place near sunrise or sunset in accordance with CDFG guidelines. All burrows or burrowing owls will be identified and mapped. Surveys will take place no more than 30 days prior to construction. During the breeding season (February 1– August 31), surveys will document whether burrowing owls are nesting in or directly adjacent to disturbance areas. During the nonbreeding season (September 1– January 31), surveys will document whether burrowing owls are using habitat in or directly adjacent to any disturbance area. Survey results will be valid only for the season (breeding or nonbreeding) during which the survey is conducted.

Avoidance and Minimization and Construction Monitoring
If burrowing owls are found during the breeding season (February 1–August 31), the project proponent will avoid all nest sites that could be disturbed by project construction during the remainder of the breeding season or while the nest is occupied by adults or young. Avoidance will include establishment of a non-disturbance buffer zone (described below). Construction may occur during the breeding season if a qualified biologist monitors the nest and determines that the birds have not begun egg-laying and incubation or that the juveniles from the occupied burrows have fledged. During the nonbreeding season (September 1– January 31), the project proponent should avoid the owls and the burrows they are using, if possible. Avoidance will include the establishment of a buffer zone (described below).

If occupied burrows for burrowing owls are not avoided, passive relocation will be implemented. Owls should be excluded from burrows in the immediate impact zone and within a 160-foot buffer zone by installing one-way doors in burrow entrances. These doors should be in place for 48 hours prior to excavation. The project area should be monitored daily for 1 week to confirm that the owl has abandoned the burrow. Whenever possible, burrows should be excavated using hand tools and refilled to prevent reoccupation (California Department of Fish and Game 1995). Plastic tubing or a similar structure should be inserted in the tunnels during excavation to maintain an escape route for any owls inside the burrow.

California Red-legged Frog

<u>*Planning Surveys*</u>
A USFWS/CDFG–approved biologist will identify potential red-legged frog breeding habitat (Section 6.3.1, Planning Surveys). If the project fills or surrounds suitable breeding habitat, the project proponent will notify USFWS, CDFG, and the Implementing Entity of the presence and condition of potential breeding habitat, as described below. No preconstruction surveys are required.

<u>*Minimization*</u>
Written notification to USFWS, CDFG, and the Implementing Entity, including photos and habitat assessment, is required prior to disturbance of any suitable breeding habitat. The project proponent will also notify these parties of the approximate date of removal of the breeding habitat at least 30 days prior to this removal to allow USFWS or CDFG staff to translocate individuals, if requested. USFWS or CDFG must notify the project proponent of their intent to translocate California red-legged frog within 14 days of receiving notice from the project proponent. The applicant must allow USFWS or CDFG access to the site prior to construction if they request it.

There are no restrictions under this Plan on the nature of the disturbance or the date of the disturbance unless CDFG or USFWS notify the project proponent of their intent to translocate individuals within the required time period. In this case, the project proponent must coordinate the timing of disturbance of the breeding habitat to allow USFWS or CDFG to translocate the individuals. USFWS and CDFG shall be allowed 45 days to translocate individuals from the date the first written notification was submitted by the project proponent (or a longer period agreed to by the project proponent, USFWS, and CDFG).

Covered Shrimp

<u>*Planning Surveys*</u>
A USFWS/CDFG–approved biologist will identify potential habitat for covered shrimp species. Suitable habitat is defined in the species profiles for each shrimp species (Appendix D). (Note that the understanding of suitable habitat for each species may change as more occurrences are discovered and additional research is conducted.) If suitable habitat is identified, project proponents will avoid and minimize impacts to the maximum extent practicable. Avoidance measures should include relocating impacts away from the suitable habitat. Avoidance and minimization measures will be incorporated into the project design and other portions of the application package prior to submission for coverage under the Plan. If project does not fully avoid impacts to suitable habitat, preconstruction surveys will be required. If surveys determine that the habitat is occupied, project proponents must compensate for the loss of this habitat as described in Conservation Measure 3.8. Project proponents have the option to forgo the following survey, avoidance, and minimization requirements by assuming that suitable habitat is occupied and compensating for the loss of this habitat as described in Conservation Measure 3.8.

Preconstruction Survey

Prior to any ground disturbance related to covered activities, a USFWS-approved biologist will conduct a preconstruction survey in areas identified in the planning surveys as having suitable shrimp habitat. The surveys will establish the presence or absence of covered shrimp and/or habitat features and evaluate use by listed shrimp in accordance with modified USFWS survey guidelines (U.S. Fish and Wildlife Service 1996b). Project proponents are required to conduct USFWS protocol surveys in one year (rather than two) to determine presence or absence of listed shrimp species. If covered shrimp are absent from the site, there are no further requirements related to covered shrimp. If covered shrimp are present, the following avoidance and minimization and construction monitoring measures are required.

Avoidance and Minimization Requirements

To the maximum extent practicable, impacts on occupied habitat of covered shrimp will be avoided by implementing the following measures based on existing mitigation standards (U.S. Fish and Wildlife Service 1996a).

- *If suitable habitat for covered shrimp will be retained on site, establish a buffer (described below) from the outer edge of all hydric vegetation associated with seasonal wetlands occupied by covered shrimp. Alternatively, at the request of the project proponent, representatives of the Implementing Entity and USFWS may conduct site visits to inspect the particular characteristics of specific project sites and may approve reductions of the buffer. Buffer reductions may be approved for all or portions of the site whenever reduced setbacks will maintain the hydrology of the seasonal wetland and achieve the same or greater habitat values as would be achieved by the original buffer.*
- *Activities inconsistent with the maintenance of seasonal wetlands within the buffers and disturbance of the onsite watershed will be prohibited. Inconsistent activities include altering existing topography; placing new structures within the buffers; dumping, burning, and/or burying garbage or any other wastes or fill materials; building new roads or trails; removing or disturbing existing native vegetation; installing storm drains; and using pesticides or other toxic chemicals.*
- *Filling of seasonal wetlands, if unavoidable, will be delayed until pools are dry and samples from the top 4 inches of wetland soils are collected. Soil collection will be sufficient to include a representative sample of plant and animal life present in the wetland by incorporating seeds, cysts, eggs, spores, and similar inocula. The amount of soil collected will be determined by the size of the wetland filled and the variation in physical and biological conditions within the wetland. The number and size of samples will be sufficient to capture this variation. For very small wetlands it may be most cost effective to simply collect all topsoil. These samples will be provided to the Implementing Entity so that the soil can be translocated to suitable habitat within the inventory area unoccupied by covered shrimp or used to inoculate newly created seasonal wetlands on preserve lands.*
- *Seasonal wetlands occupied by covered shrimp that are filled will be offset by preserving or acquiring seasonal wetlands occupied by the covered shrimp species*

and restoring habitat suitable for the covered shrimp species in accordance with Conservation Measure 3.8. Such mitigation will supercede requirements for mitigation of impacts on wetland habitat when covered species are present.

Construction Monitoring

If suitable habitat for covered shrimp will be retained on site, project proponents will establish a buffer from the outer edge of all hydric vegetation associated with seasonal wetlands occupied (or assumed to be occupied) by covered shrimp. This buffer zone will be determined in the field by the biologists as the immediate watershed feeding the seasonal wetland or a minimum of 50 feet, whichever is greater. Buffers will be marked by brightly colored fencing or flagging throughout the construction process. Activities will be prohibited within this buffer in accordance with the minimization measure above.

Construction personnel will be trained to avoid affecting shrimp. A qualified biologist approved by USFWS will inform all construction personnel about the life history of covered shrimp, the importance of avoiding their habitat, and the terms and conditions of the HCP/NCCP related to avoiding and minimizing impacts on covered shrimp.

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APPENDIX A.
PLANT SPECIES OF THE
JAMES DONLON BOULEVARD EXTENSION PROJECT SITE

Appendix A. Plant Species Identified on the James Donlon Blvd. Extension Project Site.		
FAMILY NAME	**SCIENTIFIC NAME**	**COMMON NAME**
Anacardiaceae	*Toxicodendron diversilobum*	poison oak
Apiaceae	*Berula erecta*	cutleaf water parsnip
	Cicuta maculata	water hemlock
	Daucus carota	wild carrot
	Eryngium vaseyi	coyote thistle
	Foeniculum vulgare	fennel
	Hydrocotyle verticillata	whorled marsh pennywort
	Sanicula bipinnatifida	purple sanicle
	Sanicula tuberosa	tuberous sanicle
Araceae	*Phoenix canariensis*	Canary Island date palm
	Washingtonia robusta	Mexican fan palm
Asclepiadaceae	*Asclepias fascicularis*	narrow-leaf milkweed
Asteraceae	*Achillea millefolium*	yarrow
	Artemisia californica	California sagebrush
	Baccharis pilularis	coyotebrush
	Carduus pycnocephalus	Italian thistle
	Centaurea calcitrapa	purple star-thistle
	Centaurea solstitialis	yellow star-thistle
	Cirsium vulgare	bull thistle
	Cotula coronopifolia	brassbuttons
	Cynara cardunculus	cardoon
	Dittrichia graveolens	stinkwort
	Gnaphalium luteo-album	cudweed
	Grindelia camporum var. camporum	Great Valley gumplant
	Gutierrezia californica	California matchweed
	Helianthus californicus	California sunflower
	Heterotheca sessiliflora	hairy golden aster
	Holocarpha obconica	San Joaquin tarweed
	Hypochaeris glabra	smooth cat's ear
	Lactuca serriola	prickly lettuce
	Picris echioides	bristly ox-tongue
	Senecio vulgare	old-man-of-spring
	Silybum marianum	milk thistle
	Solidago californica	California goldenrod
	Sonchus oleraceus	sow thistle
	Taraxacum officinale	dandelion
	Wyethia helenioides	gray mule ears
	Xanthium spinosum	spiny cocklebur
	Xanthium strumarium	rough cocklebur
Boraginaceae	*Amsinckia menziesii* var. *intermedia*	orange-flowered fiddleneck

Appendix A. Plant Species Identified on the James Donlon Blvd. Extension Project Site.		
FAMILY NAME	**SCIENTIFIC NAME**	**COMMON NAME**
	Amsinckia menziesii var. *menziesii*	rigid fiddleneck
	Amsinckia tessellata	Devil's lettuce
	Borago officinalis	common borage
Brassicaceae	*Brassica nigra*	black mustard
	Hirschfeldia incana	Short pod mustard
	Lepidium latifolium	broadleaf peppergrass
	Lepidium nitidum	common peppergrass
	Raphanus sativus	wild radish
	Rorippa nasturtium-aquaticum	water cress
	Sisymbrium officinale	hedge mustard
	Thysanocarpus curvipes	hairy lace pod
Caprifoliaceae	*Sambucus mexicana*	blue elderberry
Caryophyllaceae	*Arenaria serpyllifolia*	thyme-leaved sandwort
	Cerastrium glomeratum	sticky chickweed
	Silene gallica	windmill pink
	Spergularia macrotheca	sticky sand-spurry
Chenopodiaceae	*Chenopodium album*	lamb's quarters
	Salsola tragus	Russian thistle
Convolvulaceae	*Convolvulus arvensis*	field bindweed
	Cressa truxillensis	alkali weed
Crassulaceae	*Crassula connata*	pygmy weed
Cucurbitaceae	*Marah fabaceus*	California manroot
Cyperaceae	*Eleocharis macrostachya*	common spikerush
	Scirpus acutus	common tule
	Scirpus pungens	three square
Elaeagnaceae	*Elaeagnus angustifolius*	Russian olive
Euphorbiaceae	*Chamaesyce prostrata*	prostrate spurge
	Eremocarpus setigerus	doveweed
Fabaceae	*Albizia julibrissin*	mimosa tree
	Lotus corniculatus	bird's-foot trefoil
	Lupinus bicolor	miniature lupine
	Lupinus luteolus	butter lupine
	Lupinus succulentus	arroyo lupine
	Melilotus indica	yellow sweet-clover
	Trifolium hirtum	rose clover
	Trifolium willdenovii	tomcat clover
Fagaceae	*Quercus douglasii*	blue oak
	Quercus lobata	Valley oak
Geraniaceae	*Erodium botrys*	white-stemmed filaree
	Erodium cicutarium	red-stemmed filaree

Appendix A. Plant Species Identified on the James Donlon Blvd. Extension Project Site.		
FAMILY NAME	**SCIENTIFIC NAME**	**COMMON NAME**
	Geranium dissectum	cut-leaf geranium
Hippocastanaceae	*Aesculus californica*	buckeye
Hydrophyllaceae	*Phacelia ciliata*	Great Valley phacelia
Juncaceae	*Juncus bufonius*	toad rush
Lamiaceae	*Trichostema lanceolatum*	vinegarweed
Liliaceae	*Dichelostemma capitatum*	blue dicks
Malvaceae	*Malvella leprosa*	alkali-mallow
	Malva parviflora	cheeseweed
Moraceae	*Ficus carica*	fig
Myrtaceae	*Eucalyptus sideroxylon*	red ironbark
Onagraceae	*Camissonia ovata*	suncups
	Epilobium brachycarpum	panicled willowherb
Papaveraceae	*Eschscholzia californica*	California poppy
Plantaginaceae	*Plantago erecta*	California plantain
Poaceae	*Avena* barbata	slender wild oats
	Avena fatua	wild oats
	Bromus diandrus	ripgut brome
	Bromus hordeaceus	soft chess brome
	Distichlis spicata	saltgrass
	Hordeum marinum ssp. *gussoneanum*	Mediterranean barley
	Hordeum murinum	mouse barley
	Hordeum vulgare	cultivated barley
	Leymus triticoides	alkali wild-rye
	Lolium multiflorum	Italian ryegrass
	Nasella pulchra	purple needlegrass
	Polypogon monspeliensis	annual beard grass
	Vulpia myuros	rattail fescue
Polemoniaceae	*Gilia clivorum*	manystemmed gilia
Polygonaceae	*Eriogonum* nudumvar. nudum	buckwheat
	Rumex crispus	curly dock
Portulacaceae	*Calandrinia ciliata*	red maids
Potamogetaceae	*Potamogeton foliosus* var. *foliosus*	leafy pondweed
Pteridaceae	*Pentagramma triangularis*	goldback fern
Ranunculaceae	*Ranunculus canus*	Great Valley buttercup
Rosaceae	*Heteromeles arbutifolia*	toyon
	Prunus armeniaca	apricot
	Prunus dulcis	almond
	Rubus leucodermis	Western raspberry
Rubiaceae	*Galium aparine*	common bedstraw
Salicaceae	*Populus fremontii*	Fremont cottonwood

Appendix A. Plant Species Identified on the James Donlon Blvd. Extension Project Site.		
FAMILY NAME	**SCIENTIFIC NAME**	**COMMON NAME**
	Salix lasiolepis	arroyo willow
	Salix laevigata	red willow
Saururaceae	*Anemopsis californica*	yerba mansa
Saxifragaceae	*Saxifraga californica*	California saxifrage
Scrophulariaceae	*Bellardia trixago*	Mediterranean lineseed
	Castilleja exerta	purple owl's clover
Solanaceae	*Nicotiana glauca*	tree tobacco
	Solanum americanum	small-flowered nightshade
The species are arranged alphabetically by family name for all vascular plants encountered during the plant survey. Plants are also listed alphabetically within each family. Species nomenclature is from Hickman (1993) except where different nomenclature has been adopted by Reed (1988).		

APPENDIX B.
JAMES DONLON BOULEVARD
EXTENSION PROJECT
CONTRA COSTA, CALIFORNIA
PRELIMINARY DELINEATION OF WETLANDS
AND OTHER WATERS

H. T. HARVEY & ASSOCIATES

ECOLOGICAL CONSULTANTS

JAMES DONLON BOULEVARD EXTENSION PROJECT CONTRA COSTA, CALIFORNIA PRELIMINARY DELINEATION OF WETLANDS, OTHER WATERS, AND RIPARIAN HABITATS

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EXECUTIVE SUMMARY

H. T. Harvey & Associates' biologists surveyed the James Donlon Boulevard Extension project site, located in northeastern Contra Costa County, California for areas potentially meeting the regulatory definition of Waters of the United States (U.S.), Waters of the State, and those areas considered to be sensitive riparian or bed and banks-channel habitat by the California Department of Fish and Game (CDFG). An approximately 157.8-acre (ac) study area was surveyed for jurisdictional waters (wetlands, other waters), and routine on-site delineations of the project's impact areas were performed. Approximately 2.84 ac of potential U.S. Army Corps of Engineers (USACE) and Regional Water Quality Control Board (RWQCB) jurisdictional waters (wetlands, or special aquatic sites) were identified within the survey area, which included depressional wetlands, groundwater seeps, several linear wetland drainages, and the Kirker Creek bed. Several other linear drainage features within the survey area, totaling 0.09 ac of potential jurisdictional waters, were found to meet the regulatory definition of "other waters" of the U.S./State at the time of sampling. The remaining areas within the survey area (approximately 154.9 ac) met none of the regulatory definitions of jurisdictional waters as defined by the USACE. However, areas likely to be considered jurisdictional by CDFG, including all channels with a defined bed and banks, and all areas covered by a riparian canopy associated with these bed and banks, were generally more extensive than USACE- and RWQCB-jurisdictional habitats. Areas likely to require a Streambed Alteration Agreement from CDFG for channel impacts or riparian tree removal comprised 17.6 ac on-site.

Summary of Jurisdictional Waters

Potential Jurisdictional Waters of the U.S/State	**Acres**
Wetlands	2.84
Other Waters	0.09
USACE/RWQCB Jurisdictional Areas Total	2.93
Upland (non-USACE/RWQCB-Jurisdictional)	154.9
Potential CDFG-Jurisdictional Areas	**Acres**
CDFG Jurisdictional Areas Total	17.6
Upland (non-CDFG Jurisdictional)	140.2
Total Area of Study Site	**157.8**

INTRODUCTION

PROJECT AREA DESCRIPTION

The proposed James Donlon Boulevard Extension project site is located in Contra Costa County, California, south of the City of Pittsburg (Figure 1). The area surveyed for jurisdictional waters involves a linear corridor project site where the applicant proposes to construct a road extension from Kirker Pass Road to the western edge of the approved Sky Ranch II Subdivision to serve sub-regional circulation needs, as well as to relieve existing traffic congestion on Buchanan Road. The survey area lies within the Clayton and Antioch South 7.5 minute U.S. Geological Survey (USGS) Quadrangles and is situated at elevations ranging from approximately 180 to 620 ft above mean sea level (MSL) (Figure 2). The average annual precipitation of the site based on soil type is approximately 12-18 in (Soil Conservation Service [SCS] 1977), and the average annual temperature is 59 degrees Fahrenheit. More recent, location-specific climatic data for the area based on WETS tables (Antioch Pump Plant WETS Station CA232) indicates the area has an average annual rainfall of 13.14 in, with most of the yearly precipitation occurring from November to April.

Plant species on-site are representative of annual grasslands and wetland complexes typical within the region. A list of all species identified at the site during surveys is presented as Appendix A.

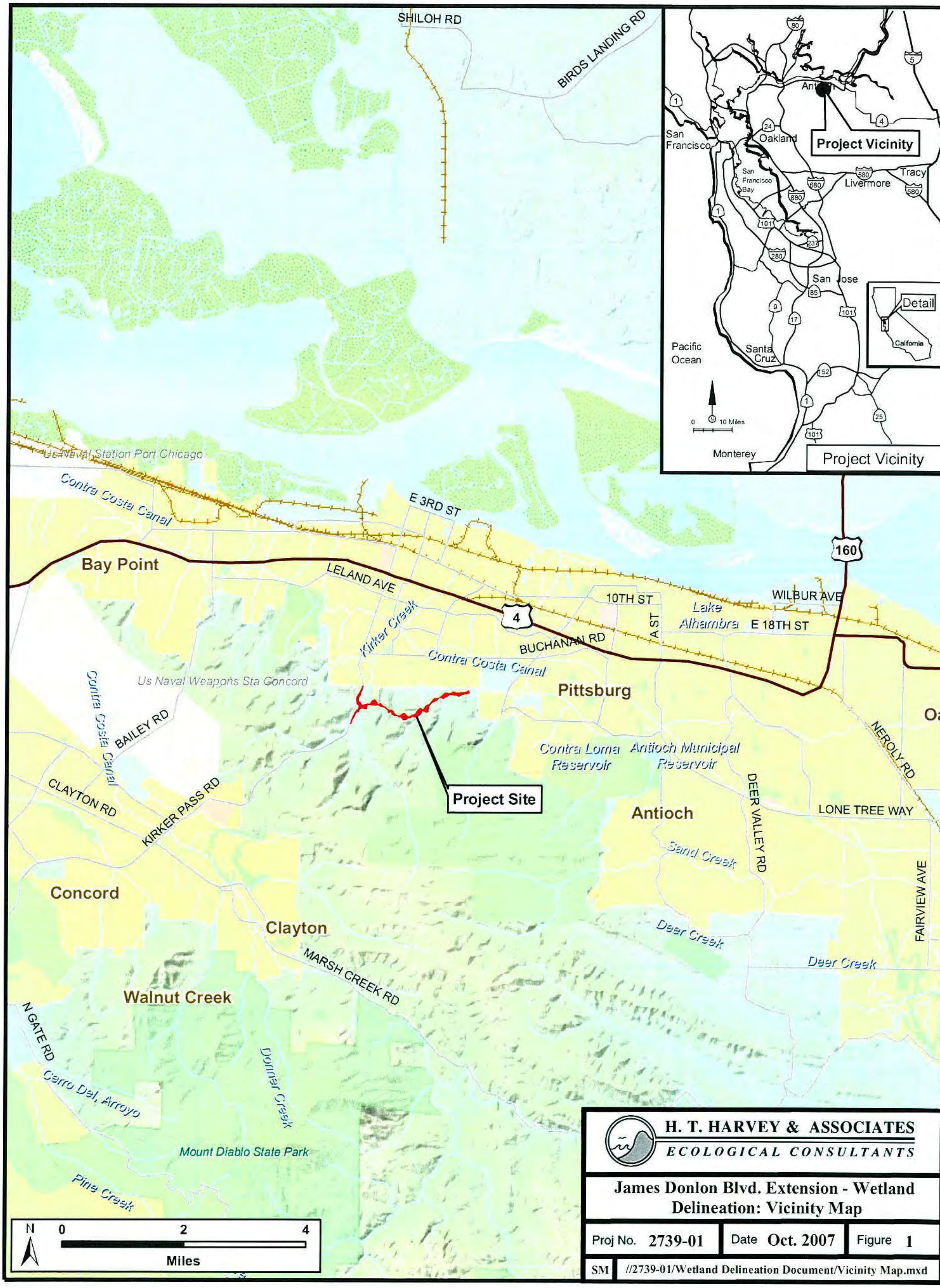
Soils from four series, including Altamont, Fontana, Lodo, and Rincon, underlie the survey area (Figure 3). Three phases of the Altamont series occur on site including Altamont clay, 9 to 15 percent slopes, Altamont clay, 15 to 30 percent slopes, and an Altamont-Fontana complex, 30 to 50 percent slopes. These soils are underlain by soft, fine-grained sandstone and shale, are well drained, and are typically neutral to moderately alkaline in the upper horizons and moderately alkaline in lower horizons (SCS 1977). Two phases of the Rincon series are present, including Rincon clay loam, 2 to 9 percent slopes, and Rincon clay loam, 9 to 15 percent slopes. Rincon soils are well-drained, derive from sedimentary rock-based alluvial fill, and are neutral to mildly alkaline in the surface horizons with a moderately alkaline substratum. Lodo-Rock outcrop complex, which consists of Lodo clays and sandstone rock outcrops, occurs on the remainder of the site. The soils are typically thin and somewhat excessively drained, with a shallow depth to bedrock and a mildly acidic surface layer (SCS 1977). None of these soils are on the California State Hydric Soils List or the Contra Costa County Hydric Soils List, although inclusions of Pescadero clays can be hydric in some Altamont-Fontana complex phases (SCS 1992, see Appendix B).

The National Wetland Inventory (NWI), updated for the Antioch and Clayton Quadrangles in 1976 depicts several wetland types within the survey area. In the western portion of the survey area, Kirker Creek supports two wetland types within the project boundaries including: 1) palustrine emergent, seasonally flooded; and 2) palustrine, scrub-shrub, seasonally flooded. Other drainages bisecting the project site also support the wetland types above as well as palustrine, emergent, temporarily flooded (NWI 1976, Figure 4).

SURVEY PURPOSE

H. T. Harvey & Associates plant ecologist Kelly Hardwicke, Ph.D., field ecologist Onkar Singh, B.S., and senior plant ecologist Patrick Boursier, Ph.D., surveyed the project area for features that may meet the physical criteria and regulatory definition of "Waters of the United States" and "Waters of the State" (jurisdictional waters). Additionally, surveys were performed to identify those features and tree canopies potentially under the jurisdiction of CDFG as sensitive riparian habitat. These results are presented here as one document summarizing jurisdictional determinations for USACE, RWQCB, and CDFG riparian habitats as required for project compliance with the 2006 East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP).

Surveys were conducted within an approximately 157.8-ac survey area that corresponds to the proposed grading plan for the James Donlon Boulevard Extension plus a 100-ft buffer surrounding this area, where temporary construction access and staging may occur during construction. The purpose of this work was to identify the extent and distribution of potential jurisdictional waters such as wetlands, other waters, and riparian habitats occurring within the project boundaries under conditions existing at the time of the survey.



H. T. HARVEY & ASSOCIATES
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James Donlon Blvd. Extension - Wetland Delineation: Vicinity Map

Proj No. 2739-01 | Date Oct. 2007 | Figure 1

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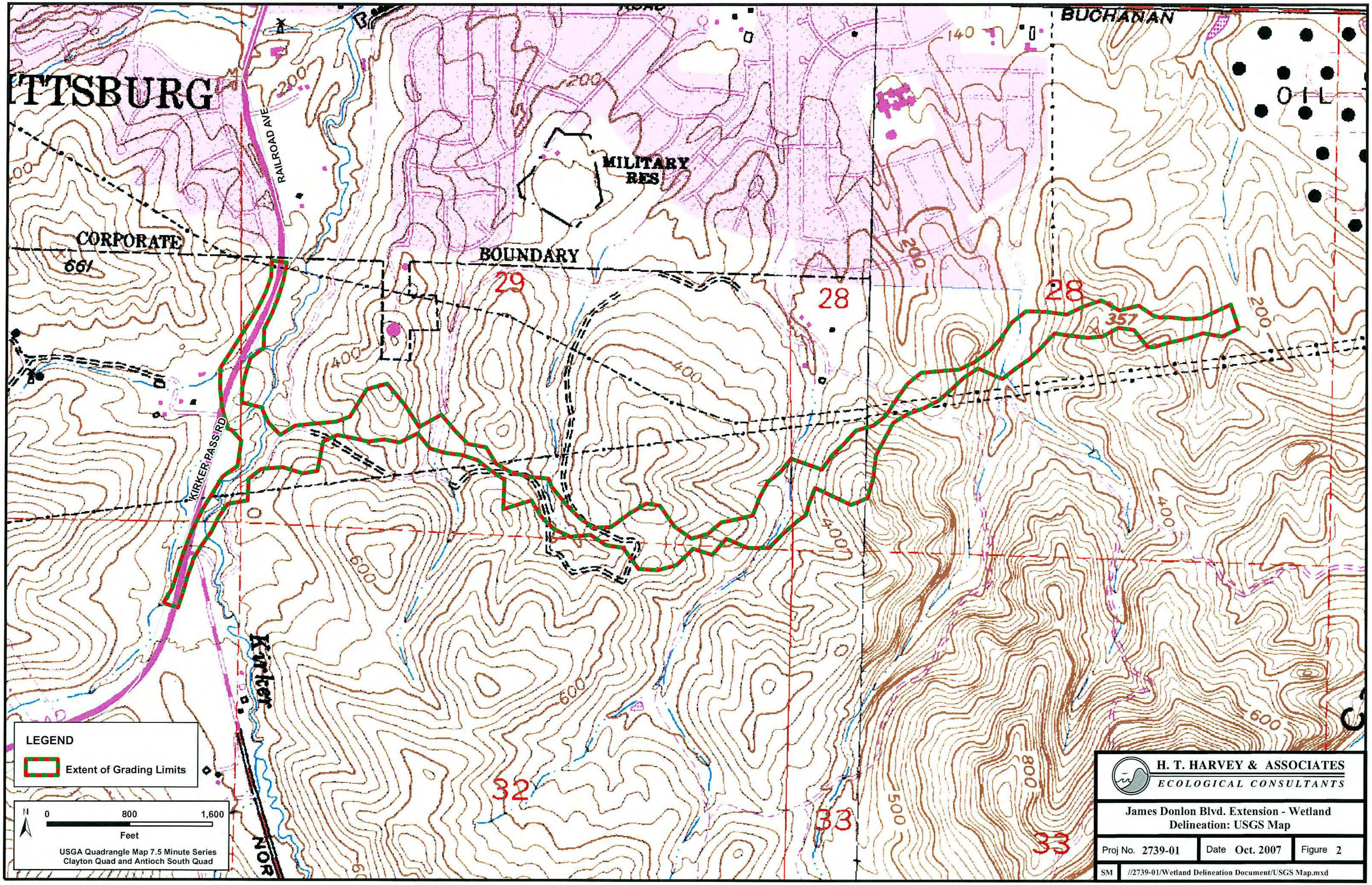

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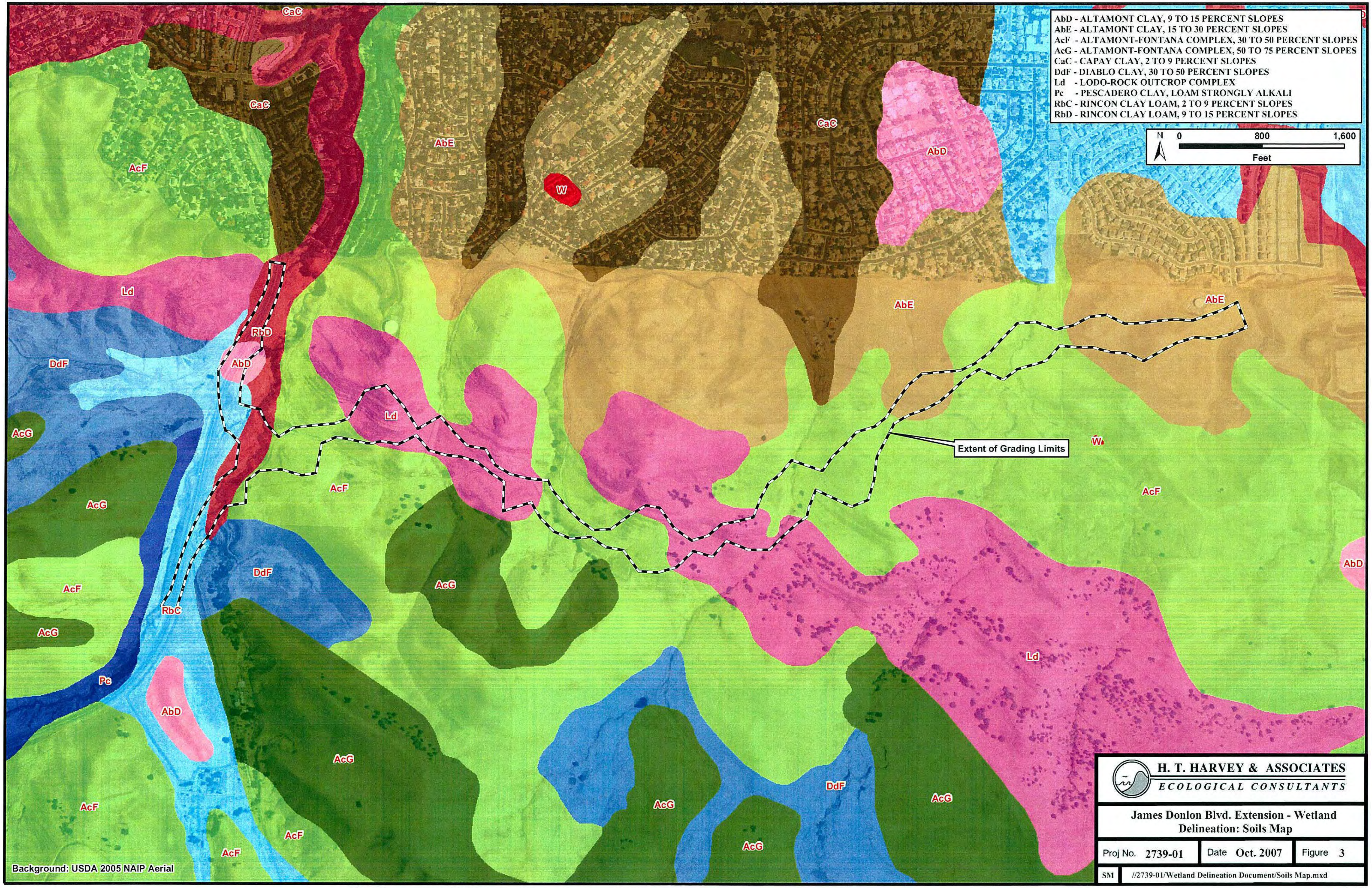
James Donlon Blvd. Extension - Wetland Delineation: USGS Map

Proj No. 2739-01	Date Oct. 2007	Figure 2

SM //2739-01/Wetland Delineation Document/USGS Map.mxd



AbD - ALTAMONT CLAY, 9 TO 15 PERCENT SLOPES
AbE - ALTAMONT CLAY, 15 TO 30 PERCENT SLOPES
AcF - ALTAMONT-FONTANA COMPLEX, 30 TO 50 PERCENT SLOPES
AcG - ALTAMONT-FONTANA COMPLEX, 50 TO 75 PERCENT SLOPES
CaC - CAPAY CLAY, 2 TO 9 PERCENT SLOPES
DdF - DIABLO CLAY, 30 TO 50 PERCENT SLOPES
Ld - LODO-ROCK OUTCROP COMPLEX
Pc - PESCADERO CLAY, LOAM STRONGLY ALKALI
RbC - RINCON CLAY LOAM, 2 TO 9 PERCENT SLOPES
RbD - RINCON CLAY LOAM, 9 TO 15 PERCENT SLOPES
N
0
800
1,600
Feet
CaC
CaC
AcF
AbE
W
CaC
AbD
Ld
RbD
AbD
DdF
Ld
AbE
AbE
AcG
Extent of Grading Limits
W
AcF
AcG
AcF
DdF
AcG
AcF
RbC
AcG
AbD
Ld
Pc
AbD
AcG
AcF
DdF
AcG
AcG
AcF
AcF
AcF
AcG
Background: USDA 2005 NAIP Aerial
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James Donlon Blvd. Extension - Wetland
Delineation: Soils Map
Proj No. 2739-01
Date Oct. 2007
Figure 3
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PSSA
PSSC
PEMC
PFOC
PEMA
PEMCH
PABHH
PUBFH
R2UBH
LEGEND
Extent of Grading Limits
National Wetlands Inventory
PEMA
PEMC
PFOA
PFOC
PSSA
PSSC
R2UBH
PABHH
PUBFH
PEMCH
Background: USDA 2005 NAIP Aerial
N
0
800
1,600
Feet
H. T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS
James Donlon Blvd. Extension - Wetland
Delineation: National Wetlands Inventory Map
Proj No. 2739-01
Date Oct. 2007
Figure 4
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SURVEY METHODS

IDENTIFICATION OF JURISDICTIONAL WATERS

Prior to site surveys, topographic maps and aerial photographs of the study area were obtained from several sources and reviewed. These sources included the U.S. Geological Survey (USGS) Maps and NWI Maps for the Clayton and Antioch South quadrangles, National Agriculture Imagery Program (NAIP) 2005 aerials, and historic aerial photography obtained from the SCS (1977).

Surveys for potential jurisdictional waters of the U.S./State were conducted 10, 11, and 12 July, and 1, 7, 8, and 9 August 2007 using methodologies approved by the U.S. Army Corps of Engineers (USACE). The Regional Water Quality Control Board (RWQCB) does not issue similar guidance or support a manual citing Board-approved methodology for determining the extent of jurisdictional features, so the USACE three-parameter approach and guidance on jurisdictional "other waters" was also used to determine the extent of Waters of the State. Areas likely to be considered jurisdictional by the CDFG were delineated based on guidance from the CDFG (1994). Seven site visits were required to investigate the entire survey area for the existing biotic habitats, to concurrently perform other preconstruction surveys such as a tree survey, and to specifically investigate the extent of potential jurisdictional wetlands within the areas that may require impacts to waters of the U.S/State or to sensitive riparian habitat. As part of our field surveys we investigated the floristic, hydrologic, and edaphic characteristics of all representative wetland and "other waters" habitats within the project area.

Waters of the U.S./State

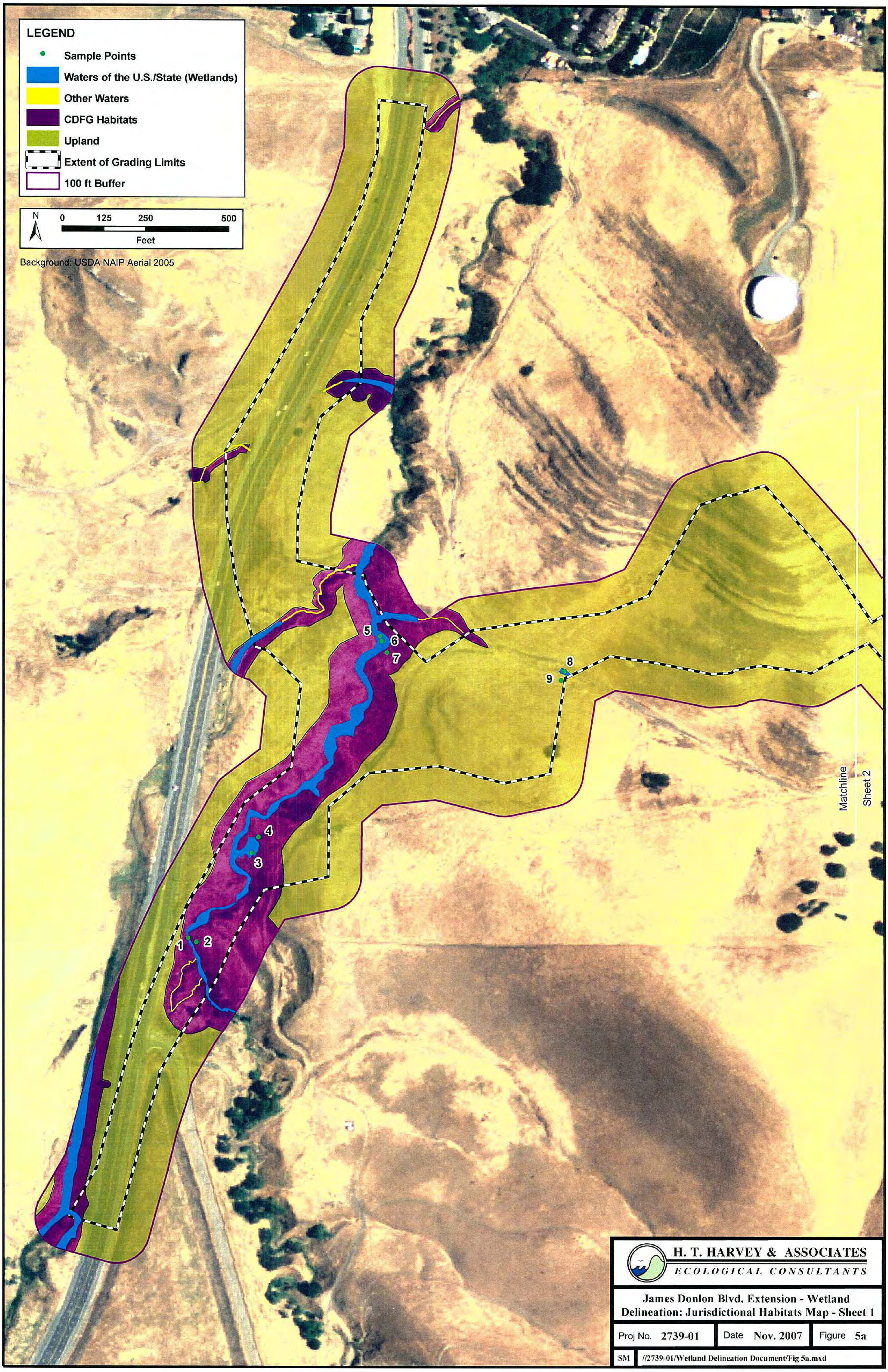
The vegetation, soils, and hydrology of the site were examined following the guidelines outlined in the *Routine Determination Method* in the Corps of Engineers 1987 Wetlands Delineation Manual (Environmental Laboratory 1987). Soil sampling locations are shown in Figures 5a–c. In addition, the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (hereafter "*Regional Supplement*"; USACE 2006) was followed to document site conditions relative to hydrophytic vegetation, hydric soils and wetland hydrology. As noted in the latter report, the *Regional Supplement* is designed to be used with the current version of the *Corps 1987 Manual*, except where superceded by instruction issued in the more recent and location-specific *Regional Supplement* (USACE 2006). This report was also compiled in accordance with guidance provided in *Information Needed for Verification of Corps Jurisdiction* (USACE 2000).

The project site was examined for topographic features, drainages, alterations to site hydrology, and areas of significant recent disturbance. A determination was then made as to whether normal environmental conditions were present at the time of the field surveys. These data were used to document which portions of the site were wetlands. Generally, surveys examined the vegetation, soils, and hydrology using the "Routine Determination Method, On-Site Inspection Necessary (Section D)" outlined in the Corps of Engineers Wetlands Delineation Manual (Environmental Laboratory 1987), and using the updated data forms, vegetation sampling methods, and hydric soil and hydrology indicators developed for the *Regional Supplement* (USACE 2006). This three-parameter approach to identifying wetlands is based upon the presence of hydrophytic vegetation, hydric soils, and wetland hydrology.

Alternatively, the wetland drainage bed in the east of the project site represented by Sample Point 14 (Figure 5c) was found to contain newly deposited sandy entisols that had not yet built up sufficient organic matter deposition to develop the low matrix chromas required for applicable hydric soil field indicator categories. This portion of the survey area was examined for wetlands using the procedures described in the Corps of Engineers Wetlands Delineation Manual: Arid West Supplement (USACE 2006) for "Difficult Wetland Situations in the Arid West: Problematic Hydric Soils" (Part 5, "Problematic Hydric Soils", Subsection 3, "Vegetated Sand and Gravel Bars within Flood Plains"). With this approach, there must be clear indicators of hydrophytic vegetation and wetland hydrology, the soils are indicated to be "naturally problematic" on the USACE data forms, and the hydric characteristics of the soil (redoximorphic features, etc.) are discussed in the remarks section.

The Pittsburg area received less precipitation than usual during the 2006-2007 rainy season. According to the "Wetlands that Periodically Lack Indicators of Wetland Hydrology" section of the *Regional Supplement* (USACE 2006), 30-year WETS tables' data can be used to make a determination as to whether the site meets the definition of typical climactic or hydrological conditions. Using data from WETS station CA232, located in Antioch, it was determined that the normal annual rainfall for this area was 13.41 in., with a 30% chance that rainfall will be greater than 14.77 in./year or less than 9.97 in./year (Antioch Pump Plant 3 WETS Station CA232). According to California Irrigation Management Information System (CIMIS) data for nearby Concord Station 170, provided by the Department of Water Resources and the Office of Water Use Efficiency, the precipitation recorded in the vicinity of the project site for the twelve months prior to summer surveys (June 2006 to July 2007) totaled only 7.40 in., well below the 9.97 in/year cutoff for low but typical annual precipitation for the area. Additionally, CIMIS (Concord Station 170) reports that the area received less-than-typical (according to WETS tables monthly ranges) precipitation for October of 2006 and January and March of 2007, although the region did receive slightly more than typical precipitation in February of 2007 (3.17 in received vs. a 30% normal upper limit of 3.06 in.). This means that the region received nearly half of the 2006-2007 total precipitation in one month, likely resulting in a fairly short-duration groundwater charge in spring of 2007.

Overall, the approach used to identify wetlands included digging soil pits to sample soil from various depths, observing vegetation growing in proximity to the soil sample area, determining current hydrologic features, and inspecting for signs of seasonal hydrology (surface and subsurface) present near the sample area. Due to the fact that annual precipitation for the area was considerably less-than-typical during the survey year (based on precipitation data from Antioch Pump Plant 3 WETS Station CA232 and CIMIS Concord Station 170), the upper limit of wetlands was extrapolated to approximate the size that might otherwise occur during "normal" rainfall events using a combination of field characteristics including site topography, perennial rather than annual vegetation, and presence of redoximorphic soil features. Also, the *Regional Supplement* (USACE 2006) provides methodological guidance for detecting indicators of wetland hydrology during: 1) site visits during the dry season (Section 5, "Wetlands that periodically lack indicators of wetland hydrology", Subsection *a*); and 2) periods with below-


LEGEND
Sample Points
Waters of the U.S./State (Wetlands)
Other Waters
CDFG Habitats
Upland
Extent of Grading Limits
100 ft Buffer
N
0
125
250
500
Feet
Background: USDA NAIP Aerial 2005
1
2
3
4
5
6
7
8
9
Matchline
Sheet 2
H. T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS
James Donlon Blvd. Extension - Wetland
Delineation: Jurisdictional Habitats Map - Sheet 1
Proj No. 2739-01
Date Nov. 2007
Figure 5a
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Matchline
Sheet 1
10
11
12
13
Matchline
Sheet 3
Background: USDA NAIP Aerial 2005
N
0
125
250
500
Feet
LEGEND
Sample Points
Waters of the U.S./State (Wetlands)
Other Waters
CDFG Habitats
Upland
Extent of Grading Limits
100 ft Buffer
H. T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS
James Donlon Blvd. Extension - Wetland Delineation: Jurisdictional Habitats Map - Sheet 2
Proj No. 2739-01
Date Nov. 2007
Figure 5b
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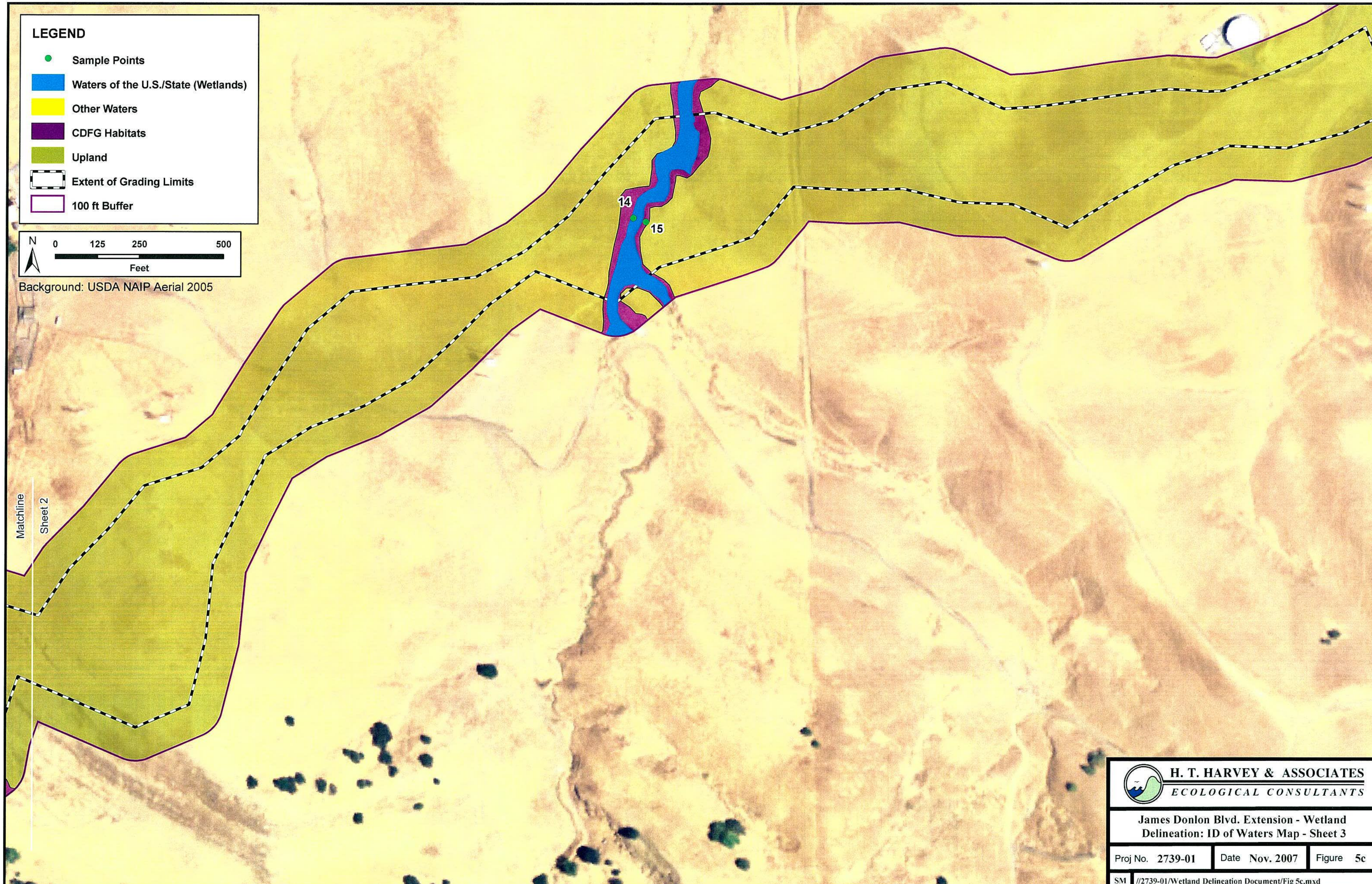
LEGEND
Sample Points
Waters of the U.S./State (Wetlands)
Other Waters
CDFG Habitats
Upland
Extent of Grading Limits
100 ft Buffer
N
0
125
250
500
Feet
Background: USDA NAIP Aerial 2005
14
15
Matchline
Sheet 2
H. T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS
James Donlon Blvd. Extension - Wetland Delineation: ID of Waters Map - Sheet 3
Proj No. 2739-01
Date Nov. 2007
Figure 5c
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normal rainfall (Section 5, "Wetlands that periodically lack indicators of wetland hydrology", Subsection *b*). As both situations applied, we used the methods recommended by the USACE in these situations. These methods stipulate identifying areas as wetlands if they have both hydric soils and a hydrophytic vegetation community, and correlate with a geomorphic position reasonable for wetland formation, even in the absence of hydrological indicators specifically described by the *Regional Supplement* (USACE 2006). This was the case with Sample Point 8 within this project area (Figure 5a).

CDFG-Jurisdictional Habitats

Streams, ditches, and drainages that contain a defined bed, bank, and channel are under the regulatory jurisdiction of the CDFG. In determining the extent and distribution of CDFG jurisdictional habitats within and adjacent to the study area, the site was assessed following the methodology outlined in *A Field Guide to Lake and Streambed Alteration Agreements, Sections 1600-1607, California Department of Fish and Game* (CDFG 1994). In brief, this guidance issued by CDFG for determining the lateral extent of a stream for jurisdictional status states that lateral extent can be measured in several ways depending on the particular situation. These criteria state that: (1) areas occurring within 100-year floodplains; (2) areas occurring within the natural banks of the stream; (3) areas occurring within or under the outer edge of riparian vegetation along the creek; or (4) areas within a constructed levee (not relevant in this case) may be considered jurisdictional (CDFG 1994). In addition, CDFG guidance also indicates "biological components of a stream may include aquatic and riparian vegetation, all aquatic animals including fish, amphibians, reptiles, and invertebrates, and terrestrial species which derive benefits from the stream system"; and their definition of stream includes all "intermittent and ephemeral streams, rivers, creeks, dry washes, sloughs, blue-line streams mapped on USGS quadrangles, and watercourses with subsurface flows" (CDFG 1994).

Thus, our analysis included comparing site-specific information regarding the topography, hydrology, floristic composition and wildlife use to the above criteria. All riverine channels on-site (including all areas mapped as perennial, intermittent, and ephemeral streams that had a defined bed and banks out to the edge of any riparian woodland or forest canopies) were examined to determine if they fit the above definition. In specifically applying this guidance to the project site, we utilized USGS-mapped and Waters of the U.S./State as a beginning point for identifying likely jurisdictional features, then used criteria 2 and 3 above (areas occurring within natural banks, and areas within a riparian canopy, whichever was more inclusive) to determine the lateral extent of CDFG jurisdictional features. Based upon our previous experience with similar features, all of these features would likely be claimed by the CDFG, although ultimate determination of jurisdiction lies with CDFG.

A brief overview of the USACE methodology specifically applicable to the identification of jurisdictional waters on the project site is summarized below.

IDENTIFICATION OF SECTION 404 WETLANDS AND OTHER WATERS

Vegetation. Plants observed at each of the sample sites were identified to species using *The Jepson Manual* (Hickman 1993). Additional references included *Weeds of California and other Western States, Vol 1* and *2* (DiTomaso and Healy 2007) and *Plants of the San Francisco Bay*

Region: Mendocino to Monterey (Beidleman and Kozloff 2003). The wetland indicator status of each species was obtained from the 1988 Wetland Plant List, California (Reed 1988). The names of plants were generally not taken from *The Jepson Manual* (Hickman 1993) as these names are not totally consistent with scientific names used in the 1988 Wetland Plant List, California (Reed 1988) and the National List of Scientific Plant Names (Smithsonian Institution 1982).

A list of species for each observation area was then compiled and a visual estimate of the percent cover of plant species was made following guidance provided in the *Regional Supplement.* It was then determined which of the observation areas supported wetland vegetation using the applicable Indicator (*i.e.*, 1-Dominance Test; 2-Prevalence Test; or, 3-Morphological Adaptations) as described in the *Regional Supplement.*

Wetland indicator species are designated according to their frequency of occurrence in wetlands. For instance, a species with a presumed frequency of occurrence of 67 to 99 percent in wetlands is designated a facultative wetland indicator species. The five basic levels of wetland indicator status described in the *Regional Supplement* do not include plus (+) or minus (-) indicators. The wetland indicator groups, indicator symbol and the frequency of occurrence of species within them in wetlands are as follows:

Table 1. Wetland Indicator Status Categories for Vascular Plants.

INDICATOR CATEGORY	SYMBOL	FREQUENCY OF OCCURRENCE
OBLIGATE	OBL	greater than 99%
FACULTATIVE WETLAND	FACW	67 - 99%
FACULTATIVE	FAC	34 - 66%
FACULTATIVE UPLAND	FACU	1 - 33%
UPLAND	UPL	less than 1%

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

Obligate and facultative wetland indicator species are hydrophytes that occur "in areas where the frequency and duration of inundation or soil saturation produce permanently or periodically saturated soils of sufficient duration to exert a controlling influence on the plant species present" (Environmental Laboratory 1987). Facultative indicator species may be considered wetland indicator species when found growing in hydric soils that experience periodic saturation. A complete list of the vascular plants observed within the survey area, and their current indicator status has been provided in Appendix A. Plants species that are not on the regional list of wetland indicator species are upland species.

Soils. Where possible, the top 22 in of the soil profile were examined for hydric soil indicators. Diagnostic features include numerous indicators defined and described by the National Technical Committee for Hydric Soils (NTCHS). These indicators include the presence of organic soils (Histosols, A1), histic epipedons (A2), depleted matrix (F3), redox depressions (F8), redox dark surface (F6), and mottling indicated by the presence of gleyed or bright spots of colors (in the former case, blue grays; in the latter case, orange red, or red brown) within the soil horizons observed, among other features. Mottling of soils usually indicates poor aeration and lack of good drainage. Munsell Soil Notations (Kollmorgen Instruments Corp. 1990) were recorded for the soil matrix for each soil sample. The last digit of the Munsell Soil Notation refers to the chroma of the sample. This notation consists of numbers beginning with 0 for neutral grays and increasing at equal intervals to a maximum of about 20. Chroma values of the soil matrix that are 1 or less, or 2 or less when mottling is present, are typical of soils which have developed under anaerobic conditions. The first digit of the Munsell Soil notation refers to the value of the sample, with numbers beginning from 2 for saturated colors to a maximum of about 8 for faded or light colors. Hydric soils often show low value colors when soils have accumulated sufficient organic material to indicate development under wetland conditions, but can show high value colors when iron depletion has occurred, removing color value from the soil matrix.

In sandy soils, such as alluvial deposits in the bottom of drainage channels, hydric soil indicators include high organic matter content in the surface horizon (Sandy Mucky Mineral, S1) and streaking of subsurface horizons by organic matter (A5). In some cases, as described in the *Arid West Regional Supplement* (2006), coarse soils can be naturally problematic when recently deposited in floodplains or channels. These soils can lack certain features of hydric soils that require several years to develop, such as a low value and low chroma from a build-up of organic material coating the coarse grains. All soil colors indicated in this report were taken under clear, sunny skies using moistened soil samples.

The Soil Survey of Contra Costa County, California (SCS 1977) was consulted to determine which soil types have been mapped on the project site. The list of hydric soils in Contra Costa County is included in Appendix B.

Hydrology. Each of the sample sites was examined for positive field indicators (primary and secondary) of wetland hydrology following the guidance provided in the *Regional Supplement.* Such indicators might include visual observation of inundation (A1) and/or soil saturation (A3), watermarks (B1), drift lines (B3), water-borne sediment deposits (B2), water-stained leaves (B9), and drainage patterns within wetlands (B10).

Identification of Other Waters

Surveys were also conducted within the project areas for "other waters." "Other waters" include lakes, seasonal ponds, channels, tributary waters, non-wetland linear drainages, and seasonal springs. Such areas are identified by the (seasonal or perennial) presence of standing or running water and generally lack hydrophytic vegetation. "Other waters" extend to the ordinary high water (OHW) mark on opposing channel banks in non-tidal drainage channels. The OHW mark is typically indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in character of soil, destruction of vegetation, exposed roots on the bank, deposition of leaf litter and other debris materials or lower limit of moss growth on channel banks.

IDENTIFICATION OF CDFG JURISDICTIONAL RIPARIAN HABITAT

USGS Blue-line Features. USGS topographic maps for the Clayton and Antioch South quadrangles were examined to determine the presence and location of any mapped blue-line features on-site (Figure 2). All features mapped as blue-line stream courses within the project boundaries or the 100-ft buffer were considered to be potential CDFG jurisdictional riparian habitat. The mapped blue-line features, as well as all "intermittent and ephemeral streams, rivers, creeks, dry washes, [or] sloughs" (CDFG 1994) found during ground surveys to support regular bed and banks were considered to have potential to support and benefit "biological components" of these streams such as amphibians, bank-burrowing wildlife, and riparian plant species; therefore any such feature was determined to be under CDFG jurisdiction.

100-year Floodplain. The 100-year floodplain was not calculated for any features on-site, as steep, rolling topography on-site is expected to confine flooding to relatively narrow areas within existing banks or high bank terraces.

Natural Banks of Streams. All areas within the defined, naturally occurring banks of all incised channels on-site were surveyed and considered to be potential CDFG jurisdictional habitat.

Extent of Riparian Vegetation. All areas within or adjacent to defined, naturally occurring banks of all incised channels on-site were surveyed for the presence of a riparian canopy. All areas found to be within or underneath riparian vegetation including willow scrub and trees, cottonwood stands, and oak canopies associated with defined channels were considered to be potential CDFG jurisdictional habitat.

Constructed Levees. No man-made levees constrained floodplains or channels within the project area; therefore this guidance on determining the lateral extent of CDFG jurisdiction did not apply.

SURVEY RESULTS

WATERS OF THE U.S./STATE

We identified approximately 2.84 ac of potential jurisdictional wetlands, and also identified 0.09 ac of potential jurisdictional "other waters" within the survey area. A total of 15 Sample Points were taken throughout the survey area (Figures 5a-5c). Wetland data forms for the Sample Points are provided in Appendix C.

Table 2. Summary of Jurisdictional Waters

Potential Jurisdictional Waters	Acres	Linear ft of Drainage Channels
Wetlands	2.84	
Other Waters	0.09	3205
Jurisdictional Areas Total	2.93	
Upland	154.9	
Total Area of Study Site	**157.8**	

Information pertinent to the identification of jurisdictional waters assembled during the investigations is presented in three appendices attached to this report.

- Appendix A — Plant List
- Appendix B — Soil Descriptions
- Appendix C — USACE Wetland Determination Data Forms

Please Note: After conducting field surveys and reviewing recent guidance provided by the USACE and Environmental Protection Agency (EPA) (i.e., regarding regulatory issues raised by the recent SWANNC and Rapanos court decisions), we believe that no habitats on-site would be disclaimed by the USACE that would be subsequently claimed by the RWQCB. Therefore, based on experience with similar projects, all Waters of the U.S. on-site can also be considered Waters of the State, and it is our opinion that no features in the study area would be considered Waters of the State that are not also identified as Waters of the U.S.

OBSERVATIONS / RATIONALE / ASSUMPTIONS

- The on-site determination assumed normal circumstances and results are based upon existing conditions present at the time of the summer (2007) delineation surveys. Surveys were performed according to the "Routine Method of Determination" utilizing three parameters, as outlined in the 1987 Corps of Engineers Wetland Delineation Manual. Reconnaissance surveys to locate all potential jurisdictional features within the 157.8-ac survey area, and to investigate soil conditions with many small exploratory pits, were conducted during the early portion of the summer surveys (10, 11, and 12 July 2007). Formal delineation surveys, where full data pits were dug in each representative wetland type, were then conducted in late summer (1, 7, 8, and 9 August 2007).

- Although normal circumstances were assumed, WETS tables and CIMIS data for the region indicated that precipitation in the area was significantly below normal (less than 30% chance the area would receive the amount of precipitation recorded for 2006-2007). Therefore, climatic/hydrological conditions for the area were not considered typical. The site is located on California annual grassland and oak savannah habitat, which supports few herbaceous perennials. As such, the vegetation can change quickly and areas that normally support hydrophytes may currently support upland plants or unidentifiable litter (due to below-normal precipitation during the 2006-2007 wet season and performing field work during the dry season). It was assumed that the extent of wetlands on-site is typically larger than was observed during July and August of 2007, and the extent of jurisdictional waters was thus determined through prudent extrapolation of the boundaries, using topographical cues and aerial photographs (NAIP 2005) from a year with normal annual precipitation.

- The survey area includes all areas to be graded or otherwise impacted, temporarily or permanently, during project construction. The survey area was defined by using a CAD-based shapefile of the final grading plan, with a 100-ft buffer to ensure any areas used for staging or other temporary impacts were included.

- Because surveys were accomplished in the dry season, some seasonal wetland areas lacked active wetland hydrology during our field work. Along with indicators of hydrology that can be used in the dry season (such as a non-effervescent salt crust (B11) or oxidized rhizoshperes along living roots (C3)), we inspected areas for visual signs of recent saturation and/or inundation. The site is grazed by cattle, so seasonally mesic areas where significant signs of trampling disturbance ("cow punch") were observed (Photograph 1) were assumed to support saturated or inundated soils during periods when surrounding, non-punched soils were dry.

Photograph 1. Area showing soils disturbed by cattle during rainy-season saturation (right, with comparison upland soils to left).

- Saltgrass (*Distichlis spicata*, FACW) occurred in areas high (7 ft or more) above the OHW of some linear wetland drainages and Kirker Creek, in well-drained, strongly-sloped areas that lacked all indicators of hydric soils and hydrology (Sample Point 2, Figure 5a, Appendix C). It is assumed that the saltgrass found well above OHW on these banks is not indicative of wetland conditions but instead occurs due to salt concentration within the soil and the assumption that the species can persist in these locations due to its highly rhizomatous nature.

- Wetland hydrology on-site is driven by 1) groundwater seeps and 2) incident rainfall and surface runoff. Three perennial groundwater discharge points were found, two in Kirker Creek and one in the unnamed but perennially wet drainage corresponding to Sample Point 13 (Figure 5b, Appendix C). In both drainages, hydrology downstream of the seep points was significantly augmented by groundwater discharge, and the streambeds were perennially inundated downstream of the groundwater discharge.

- Several non-incised linear drainage features on site convey water at some times during at least some years, but do not support saturated soils for sufficient duration or at sufficient frequencies to develop hydric soils or a hydrophytic vegetation community. Several non-incised features on-site, such as the one shown in Photograph 2, were inspected via exploratory pits, but failed to provide evidence of positive indicators for any of the three necessary parameters. Soils tended to resemble soils in adjacent upland areas, no clear indicators of wetland hydrology or a OHW boundary were observed, and vegetation within the swales tended to be dominated by upland vegetation with a complement of weakly hydrophytic vegetation such as Italian ryegrass (*Lolium multiflorum*, FAC) and Mediterranean barley (*Hordeum hystrix*, FAC). In contrast, areas with clear bank incision appeared to carry large amounts of surface water and typically supported associated wetlands within the drainage bed.

Photograph 2. Non-incised drainages on-site such as the feature shown above were inspected for signs of wetland hydrology, hydrophytic vegetation, and hydric soils, but these areas did not meet a 3-parameter definition of wetlands.

- Two types of seasonal linear drainage features were considered to be jurisdictional "other waters": non-incised linear drainages with an unconsolidated bottom, and incised linear drainages underlain by consolidated bedrock. Some drainages had areas that were swale-like in cross-section and non-incised in the survey area, but within the same drainage were clearly incised both upstream and downstream of the swale section. As explained above (Photograph 2), these non-incised drainages did not support hydric soils or indicators of wetland hydrology, and had a weakly hydrophytic (Sample Point 10, Appendix C, Figure 5b) or upland (Sample Point 11, Figure 5b, Appendix C) vegetation community. In these features, we acted on guidance from the USACE (*pers. communication*, Bob Smith, USACE) and considered a linear channel within the swale or non-incised area, with a width equal to the incision widths upstream and downstream of the swale, to be jurisdictional "other waters". In other cases, seasonal linear drainages were clearly incised, and had a distinct OHW mark indicating regular scouring flows, but were not considered wetlands due to the lack of vegetation (Photograph 3). Much of the survey

Photograph 3. Linear drainage underlain by exposed bedrock. Although these drainages were incised and showed a clear OHW, they cannot support the minimum 5% vegetation cover needed for wetlands, and were thus considered jurisdictional "other waters".

area is underlain with Lodo-Rock outcrop complex, and thin soils or exposed sandstone bedrock are common throughout the site. In some seasonal drainages, all soil material has washed away in scouring floods, such that these areas cannot meet the minimum 5% vegetation cover criteria for wetlands (Environmental Laboratories 1987, *Regional Supplement* 2006). These areas were considered jurisdictional "other waters" up to the OHW marks.

- Kirker Creek supported a clear, sinuous, low flow channel with an incised thalweg approximately 3-6 in. deep and 12-36 in. wide in most areas. However, unlike other linear drainages in the area, Kirker Creek and associated tributaries constitute a major watercourse, draining a fairly large portion of eastern Contra Costa County, and the stream within the project site has approximately 40-ft high banks within the survey area (Photograph 4). Within the thalweg, which for much of its length had running water even at the time of summer surveys, soils were mucky (F1) and clearly anaerobic (indicated by presence of hydrogen sulfide, A4), and vegetation was dominated by obligate hydrophytes such as three-square (*Scirpus pungens*, OBL) (see Sample Point 5, Figure 5a, Appendix C). Within drier areas upstream of seep discharge points in the Kirker Creek low flow channel, sandy soils showed clear redoximorphic features (S5), a hydrophytic vegetation community, and indicators of wetland hydrology were apparent (see Sample Point 1, Figure 5a, Appendix C). While in other drainages, wetlands were confined to areas within the low flow channel, in Kirker Creek wide, low, wetland benches and terraces are within the banks of the creek but outside the thalweg (see Photograph 4). Though the soils in these benches was only moist, not saturated at the time of sampling, these areas supported all wetland species such as salt grass (*Distichlis spicata*, FACW), rabbitsfoot grass (*Polypogon monspeliensis*, FACW), and brassbuttons (*Cotula coronopifolia*, FACW), and the hydrology for these areas is clearly from surface overflow and lateral subsurface seepage from the low flow channel of the creek. These low terraces met all three parameters for wetlands, and were therefore considered jurisdictional (see Sample Point 6, Figure 5a, Appendix C).

Photograph 4. Kirker Creek, August 2007. The low flow channel supports darker, obligate vegetation while the low terraces support lighter green, facultative wetland vegetation; all areas within the 40-ft banks met soil, vegetation, and hydrology parameters for wetlands. A seep discharge point occurs in the left foreground.

- The easternmost drainage in the survey area (Figure 5c, Photograph 5) differed from the other linear drainages on-site, because although it had sharply incised banks, it also has a very wide (approximately 6-15 ft.) bed with no apparent low flow channel. Hydrophytic vegetation and indicators of recent soil saturation were uniformly found over the width of the bed, but soils were coarse and too recently deposited to show the low values and chromas associated with organic material build up (see Sample Point 14, Figure 5c, Appendix C). Although the soils did not conform to the parameters of any listed indicator category discussed in the *Regional Supplement* (2006), they exhibited strong, recent redoximorphic features. The wetlands within this drainage are not perennial; however, rainy season flood flows, potentially restrained to the surface by a shallow aquitard under the recently deposited streambed soils, are apparently of sufficient intensity and duration to discourage the formation of a regular low flow channel, deposit new bed soils regularly, and support extensive (wide) linear wetlands.

Photograph 5. Easternmost, incised linear drainage with wide seasonal wetlands.

AREAS MEETING THE REGULATORY DEFINITION OF USACE/RWQCB JURISDICTIONAL WATERS

A) Identification of Section 404 Potential Jurisdictional Wetlands (Special Aquatic Sites)

Depressional Wetlands. Approximately 0.02 ac (886.0 square ft) of potential wetlands were identified within topographic depressions located in swaled linear drainages within the survey area (Figures 5a, 5b). Three parameters identifying wetlands were observed at Sample Point 8 (Figure 5a; Appendix C).

Linear Wetland Drainages. Approximately 2.74 ac (119,218.1 square ft) of potential wetlands (including the associated bench wetlands within Kirker Creek and two seep discharge areas) were identified within 3 main linear drainages in the survey area (Figure 5a-5c). Three parameters were documented at Sample Points 1, 5, 6, 13, and 14 (Figure 5a-5c; Appendix C).

Groundwater Seeps. Approximately 0.08 ac (3499.8 square ft) of potential wetlands were identified outside the beds of linear drainages in a groundwater seep discharge point within the survey area (Figure 5a). Other groundwater seeps occur within the survey area, but were located within linear drainages (see above). Three parameters identifying wetlands were observed at Sample Point 3 (Figure 5a; Appendix C).

Vegetation. Sample Points 1, 3, 5, 6, 8, 13, and 14 are located within potential wetland habitat. Hydrophytic vegetation was encountered in all wetland areas despite the time of year delineation surveys were conducted and the atypically dry climactic conditions at the site during the year surveys were performed. Topographic depressions supported facultative communities including species such as Italian wild-rye (FAC) and Mediterranean barley (FAC). Seasonal linear wetlands, such as those within the easternmost drainage or associated with Kirker Creek, supported facultative wetland vegetation with dominants such as saltgrass (FACW), rabbitsfoot grass (FACW), brassbuttons (FACW), sticky sand-spurry (*Spergularia macrotheca*, FAC), and spiny clotbur (*Xanthium spinosum*, FAC). Perennial wetlands, including the low flow channel of Kirker Creek, the unnamed perennial drainage in the center portion of the site (Figure 5b, Sample Point 13), and groundwater seep discharge points, supported strongly hydrophytic or even emergent communities dominated by three-square (OBL), common tule (*Scirpus acutus*, OBL), watercress (*Nasturtium officinale*, OBL), and marsh pennywort (*Hydrocotyle verticillata*, OBL) as well as facultative hydrophytes like salt grass and rabbitsfoot grass. Salt grass extends up the banks of Kirker Creek, but these upper populations occur on well-drained, upland soils and are assumed to occur due to salinity of the soils, rather than hydrological conditions.

Hydrology. Oxidized rhizospheres along living roots (C3) were observed in the soils at Sample Points 1, 3, 6, and 14. Salt crust (B11) was observed on the soil surface of samples taken at Sample Point 2, 6, and 14 (Photograph 6). Hydrogen sulfide (C1), surface water (A1), and saturation (A3) were observed within the perennial wetlands at Sample Points 3, 5, and 13. Additionally, a thick, cyanobacterial biotic crust (B12) was observed in areas at the groundwater seep discharge described at Sample Point 3. Sample point 8 did not exhibit any typical primary hydrological indicators described in the *Regional Supplement* (2006), although it did have a shallow aquitard (D3) and recent soil saturation was evidenced by cow punch (Photograph 1). As conditions were atypically dry for the year, site visits occurred during the dry season, and the area supported both hydric soils and a hydrophytic vegetation community, the area was identified to be a wetland.

Photograph 6. Salt crust (B11) at Sample Point 6. A portion of the crust has been scraped away for comparison with the darker soils beneath.

Soils. Soils observed were varied in texture and extent of hydric features such as muck accumulation, organic material build up, and redoximorphic features such as Fe concentrations and depletions and Mn nodules. Sample Points 3, 5, and 13 all occurred in perennial wetlands with loamy or fine-textured soils and satisfied the criteria for both hydrogen sulfide odor (A4) and loamy mucky mineral (F1) (Photograph 7). Sample Point 1 had coarser, more recent soils, and satisfied the requirements for sandy redox (S5). Sample Point 6, representing the wetland benches near the low flow channel of Kirker Creek, had a thin, salty (Photograph 6), sandy layer recently deposited over finer-textured soils, and satisfied the requirements for depleted below dark surface (A11). Sample Point 8 satisfied the description of redox dark surface (F6), but the fine-textured (sandy clay loam) soils at Sample Point 14 had been recently deposited and thus had not yet built up the organic material necessary for the low color values and chromas called for by this indicator category. The soils at Sample Point 14 were thus considered to be naturally problematic and were identified as hydric based on the common, prominent mottling patterns observed within the soil pore linings and root channels. Common, moderate, prominent or distinct mottles were observed within the soil matrices of Sample Points 1, 6, 8, and 14 with

Photograph 7. Loamy mucky mineral soil, with gley Munsell color plate for comparison. Sample Point 5.

colors of 2.5 YR 4/8, 5YR 4/6, 7.5 YR 4/6, 7.5 YR 5/6, 7.5YR 5/8, and 10YR 5/8. Sample Points 3, 5, and 13 were situated in perennial wetlands and had organic muck layers with colors of 5 PB 2.5/1 and 5 PB 3/1 and high value, low chroma depletion layers or features.

B) Identification of Other Waters

Several linear drainages on-site either did not satisfy 3 wetland parameters due to insufficient or infrequent hydrology to saturate soils (*i.e,* for long or very long duration during normal rainfall conditions), or were not wetlands due to the absence of soils and vegetation, and being underlain by incised bedrock (Photograph 3, Figures 5a and 5b). However, these linear drainages do convey surface water and can be considered jurisdictional "other waters" under Section 404 of the Clean Water Act. Approximately 3205 linear feet of potential other waters were identified within the survey area.

Non-incised Linear Drainages. Approximately 0.058 ac (2527.9 square ft) of non-wetland drainage channels were identified as potential other waters throughout the survey area (Figures 5a and 5b). These features occurred mainly within two central drainages and as tributaries to larger drainages within the survey area. These features were considered jurisdictional other waters at a width equal to the incision width where the features were incised above and below the swale-like area. A lack of wetland parameters exemplifying the non-incised linear drainages on-site was documented at Sample Points 10 and 11 (Figure 5b; Appendix C).

Incised Rock Drainages. Approximately 0.029 ac (1276.1 square ft) of linear drainage channels was identified as potential other waters within the survey area. These features were not formally sampled due to a lack of both soils and vegetation, but in all cases a clear OHW mark was observed to indicate hydrology.

AREAS NOT MEETING THE REGULATORY DEFINITION OF USACE/RWQCB JURISDICTIONAL WATERS

The remainder of the survey area (approximately 154.9 ac) met none of the regulatory definitions of jurisdictional waters. Information relative to plants, soils and hydrology are summarized in data forms (see Appendix C) for Sample Points 2, 4, 7, 9, 12, and 15. Positive indicators included some hydrophytic species such as saltgrass (FACW), Mediterranean barley (FAC), and Italian wild-rye (FAC) occurring on the upper banks of the drainages (Sample Points 2, 4, 7, 9, 12 and 15), presumably due to salinity tolerance as these areas lacked indicators of wetland hydrology and hydric soils. Also, these plants did not represent these communities, which were dominated by upland species. Most areas surrounding on-site wetlands supported distinctly higher chroma soils than those observed within wetlands and had no or few faint redoximorphic features.

Upland areas on-site included California annual grassland and oak savannah habitat associated with steep slopes, and in some cases, frequent sandstone rock outcrops. Of the 15 Sample Points recorded on site, 6 were taken in this upland habitat (Appendix C, Sample Points 2, 4, 7, 9, 12, and 15). Vegetation at these Sample Points is characteristic of grazed, droughty grassland and included soft chess (*Bromus mollis*, FACU), black mustard (*Brassica nigra*, UPL (not on list)), and wild oats (*Avena fatua*, UPL (not on list)). Soils were observed to be clay loam, gravelly clay loam, or sandy clay loams with matrix colors of 7.5 YR 5/4, 10YR 4/4 or 10YR 3/2 with no or few faint mottles and no other indicators of regular inundation (*i.e.*, organic buildup or streaking). No evidence of hydrology, such as inundation, saturation, sediment deposits, or drainage patterns in wetlands, was observed in any of these locations.

CDFG JURISDICTIONAL RIPARIAN HABITATS

Areas Meeting the Regulatory Definition of CDFG Jurisdictional Riparian Habitat

USGS Blue-line Features. All features mapped as blue-line stream courses within the project boundaries or the 100-ft buffer were considered to be potential CDFG jurisdictional riparian habitat. Only one feature shown as a blue-line stream course (or as Waters or "other waters" of the U.S./State) was not mapped as potential CDFG jurisdictional habitat. This was an unnamed ephemeral stream immediately to the east of Kirker Creek (Figure 4, feature near Kirker Creek mapped on NWI as "PEMA", and Figure 5b, left-most channel on figure). Within the project boundaries (including the 100-ft buffer for temporary impacts), this feature was not incised and was instead swale-like in cross section. However, it was incised both above and below the project boundaries. Concomitantly, the extent of the blue-line mapping for this stream ends just short of the project boundaries (Figure 2). Acting on standardized guidance from the USACE, this feature was mapped as "other waters" of the U.S./State, but due to the lack of incision, defined bed and banks, or an associated riparian canopy (see below), was not considered CDFG-jurisdictional.

100-year Floodplain. The 100-year floodplain is expected to be fairly narrow on-site, as steep, rolling topography is expected to confine flooding to relatively narrow areas within existing natural banks, high bank terraces, or under any riparian vegetation. All high bank terraces above regularly-incised channels were mapped as potentially under CDFG jurisdiction.

Natural Banks of Streams. All areas within the defined, naturally occurring banks of all incised channels on-site were surveyed and considered to be potential CDFG jurisdictional habitat. The lateral extent of these features was determined to be the top-of-bank for defined natural banks in the absence of riparian vegetation.

Extent of Riparian Vegetation. All areas within or adjacent to defined, naturally occurring banks of all incised channels on-site were surveyed for the presence of a riparian canopy. All areas found to be within or underneath riparian vegetation including willow scrub and trees, cottonwood stands, and oak canopies associated with defined channels were considered to be potential CDFG jurisdictional habitat. The lateral extent was determined to be all areas within or under canopies of this sort, even when these canopies extended beyond the top of the natural bank.

Constructed Levees. No man-made levees constrained the extent of floodplains or channels within the project area; therefore this guidance on determining the lateral extent of CDFG jurisdiction did not apply.

In total, approximately 17.6 ac within the project area, identified and delineated as described above, was found to meet the definitions provided in CDFG guidance (CDFG 1994) on determining the lateral extent of CDFG jurisdictional riparian habitat (Figure 5a-c). Within the project alignment, these areas were associated with incised drainages with clear, natural banks, and in some cases, outwards from top-of-bank to the outer extent of channel-associated riparian vegetation.

Areas Not Meeting the Regulatory Definition of CDFG Jurisdictional Riparian Habitat

The remainder of the survey area (approximately 140.2 ac) met none of the regulatory definitions of CDFG jurisdictional riparian habitat. Upland (non-riparian) habitat on-site occurred on rolling hillsides above top-of-bank of the drainages and consisted mainly of annual grasslands with scattered blue oaks.

DISCUSSION

As described above, areas meeting the technical criteria of USACE/RWQCB-jurisdictional wetlands were observed within the survey area associated with topographical depressions, linear wetland drainages including a perennial stream known as Kirker Creek, and groundwater seep discharge points. The primary source of hydrology for these wetlands appears to be groundwater seeps, and incident rainfall and surface runoff. In addition, other areas meeting the technical criteria of jurisdictional "other waters" were observed within the study area, associated with non-wetland linear drainages, either in non-incised portions of drainages that were incised upstream and downstream of the survey area, or in drainages underlain in bedrock which thus did not support soils or vegetation.

Based upon a review of topographic maps and information contained in the county soil survey, some of these wetlands may be saline and/or moderately alkaline, as Altamont clays can be moderately alkaline, and Altamont-Fontana soils can contain inclusions of strongly alkaline Pescadero soils. Additionally, all wetlands on-site connect to either Kirker Creek, which flows to New York Slough then to Honker Bay, or they drain to unnamed drainages that also, via storm drains, culverts, and other below and above-ground constructed flood control channels, drain to New York Slough and eventually to Honker Bay. Upland areas within the survey area were either rolling hills or steeply sloped, eroded banks of the drainages.

No issues of hydrological connection or supply are pertinent to the discussion and delineation of CDFG jurisdictional riparian habitats. Instead, the areas found to be under CDFG jurisdiction represent "hotspots" of resources, both in terms of foraging and nesting opportunities, for a disproportionate number of wildlife species relative to the surrounding habitats. We do not anticipate that any additional areas other than those identified here will be claimed by CDFG, as our method of delineation used the most inclusive criteria typically used by CDFG for this site (top of defined, natural banks or the edge of the riparian vegetation, whichever was larger) when determining the jurisdictional lateral extent of the streams within the project site.

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APPENDIX A.
PLANTS OBSERVED AT THE JAMES DONLON BOULEVARD EXTENSION SURVEY AREA

Appendix A. Plant Species Identified on the James Donlon Blvd. Extension Project Site.			
FAMILY NAME	**SCIENTIFIC NAME**	**COMMON NAME**	**WETLAND INDICATOR STATUS**
Anacardiaceae	*Toxicodendron diversilobum*	poison oak	UPL**
Apiaceae	*Berula erecta*	cutleaf water parsnip	OBL
	Cicuta maculata	water hemlock	UPL**
	Foeniculum vulgare	fennel	FACU
	Hydrocotyle verticillata	whorled marsh pennywort	OBL
Asclepiadaceae	*Asclepias fascicularis*	narrow-leaf milkweed	FAC
Asteraceae	*Achillea millefolium*	yarrow	FACU
	Artemisia californica	California sagebrush	UPL**
	Baccharis pilularis	coyotebrush	UPL**
	Carduus pycnocephalus	Italian thistle	UPL**
	Centaurea calcitrapa	purple star-thistle	UPL**
	Centaurea solstitialis	yellow star-thistle	UPL**
	Cirsium vulgare	bull thistle	FACU
	Cotula coronopifolia	brassbuttons	FACW
	Cynara cardunculus	cardoon	UPL**
	Dittrichia graveolens	stinkwort	UPL**
	Grindelia camporum var. camporum	Great Valley gumplant	FACU
	Gutierrezia californica	California matchweed	UPL**
	Helianthus californicus	California sunflower	OBL
	Heterotheca sessiliflora	hairy golden aster	UPL**
	Holocarpha obconica	San Joaquin tarweed	UPL**
	Lactuca serriola	prickly lettuce	FAC
	Picris echioides	bristly ox-tongue	FAC
	Pseudognaphalium luteoalbum	everlasting cudweed	FACW
	Silybum marianum	milk thistle	UPL**
	Solidago californica	California goldenrod	UPL**
	Sonchus oleraceus	sow thistle	UPL**
	Wyethia helenioides	gray mule ears	UPL**
	Xanthium spinosum	spiny cocklebur	FAC
	Xanthium strumarium	rough cocklebur	FAC
Brassicaceae	*Brassica nigra*	black mustard	UPL**
	Lepidium latifolium	broadleaf pepperweed	FACW
	Nasturtium officinale	water cress	OBL
Caprifoliaceae	*Sambucus cerulea*	blue elderberry	FAC
Caryophyllaceae	*Spergularia macrotheca*	sticky sand-spurry	FAC
Chenopodiaceae	*Salsola pestifer*	Russian thistle	FACU
Convolvulaceae	*Convolvulus arvensis*	field bindweed	UPL**
Cyperaceae	*Eleocharis macrostachya*	common spikerush	OBL
	Scirpus acutus	common tule	OBL
	Scirpus pungens	three square	OBL
Elaeagnaceae	*Elaeagnus angustifoliq*	Russian olive	FAC
Euphorbiaceae	*Eremocarpus setigerus*	doveweed	UPL**

Appendix A. Plant Species Identified on the James Donlon Blvd. Extension Project Site.			
FAMILY NAME	**SCIENTIFIC NAME**	**COMMON NAME**	**WETLAND INDICATOR STATUS**
Fabaceae	*Albizia julibrissin*	mimosa tree	UPL**
	Lotus corniculatus	bird's-foot trefoil	FAC
	Lupinus sp.	lupine sp.	
	Melilotus indicus	yellow sweet-clover	FAC
	Trifolium hirtum	rose clover	UPL
Fagaceae	*Quercus douglasii*	blue oak	UPL**
	Quercus lobata	valley oak	FAC
Geraniaceae	*Erodium* sp.	filaree	
Hippocastanaceae	*Aesculus californica*	buckeye	UPL**
Juncaceae	*Juncus mexicanus*	Mexican rush	FACW
Lamiaceae	*Trichostema lanceolatum*	vinegarweed	UPL**
Malvaceae	*Malvella leprosa*	alkali-mallow	FAC
Moraceae	*Ficus carica*	fig	UPL**
Myrtaceae	*Eucalyptus sideroxylon*	red ironbark	UPL**
Onagraceae	*Epilobium brachycarpum*	panicled willowherb	UPL
Papaveraceae	*Eschscholzia californica*	California poppy	UPL**
Poaceae	*Avena* sp.	wild oats	UPL
	Bromus rubens	ripgut brome	UPL
	Bromus mollis	soft chess brome	FACU
	Distichlis spicata	saltgrass	FACW
	Hordeum hystrix	Mediterranean barley	FAC
	Hordeum murinum	mouse barley	UPL**
	Elymus triticoides	alkali wild-rye	FAC
	Lolium multiflorum	Italian ryegrass	FAC~
	Polypogon monspeliensis	annual beard grass	FACW
	Vulpia myuros	rattail fescue	FACU
Polygonaceae	*Eriogonum* sp.		
	Rumex crispus	curly dock	FACW
Potamogetonaceae	*Potamogeton foliosus var. foliosus*	leafy pondweed	OBL
Rosaceae	*Heteromeles arbutifolia*	toyon	UPL**
	Prunus armeniaca	apricot	UPL**
	Prunus dulcis	almond	UPL**
	Rubus leucodermis	Western raspberry	UPL**
Rubiaceae	*Galium aparine*	common bedstraw	FACU
Salicaceae	*Populus fremontii*	Fremont cottonwood	FACW
	Salix lasiolepis	arroyo willow	FACW
	Salix laevigata	red willow	FACW~
Scrophulariaceae	*Bellardia trixago*	Mediterranean lineseed	UPL**
Solanaceae	*Nicotiana glauca*	tree tobacco	FAC

Appendix A. Plant Species Identified on the James Donlon Blvd. Extension Project Site.			
FAMILY NAME	SCIENTIFIC NAME	COMMON NAME	WETLAND INDICATOR STATUS

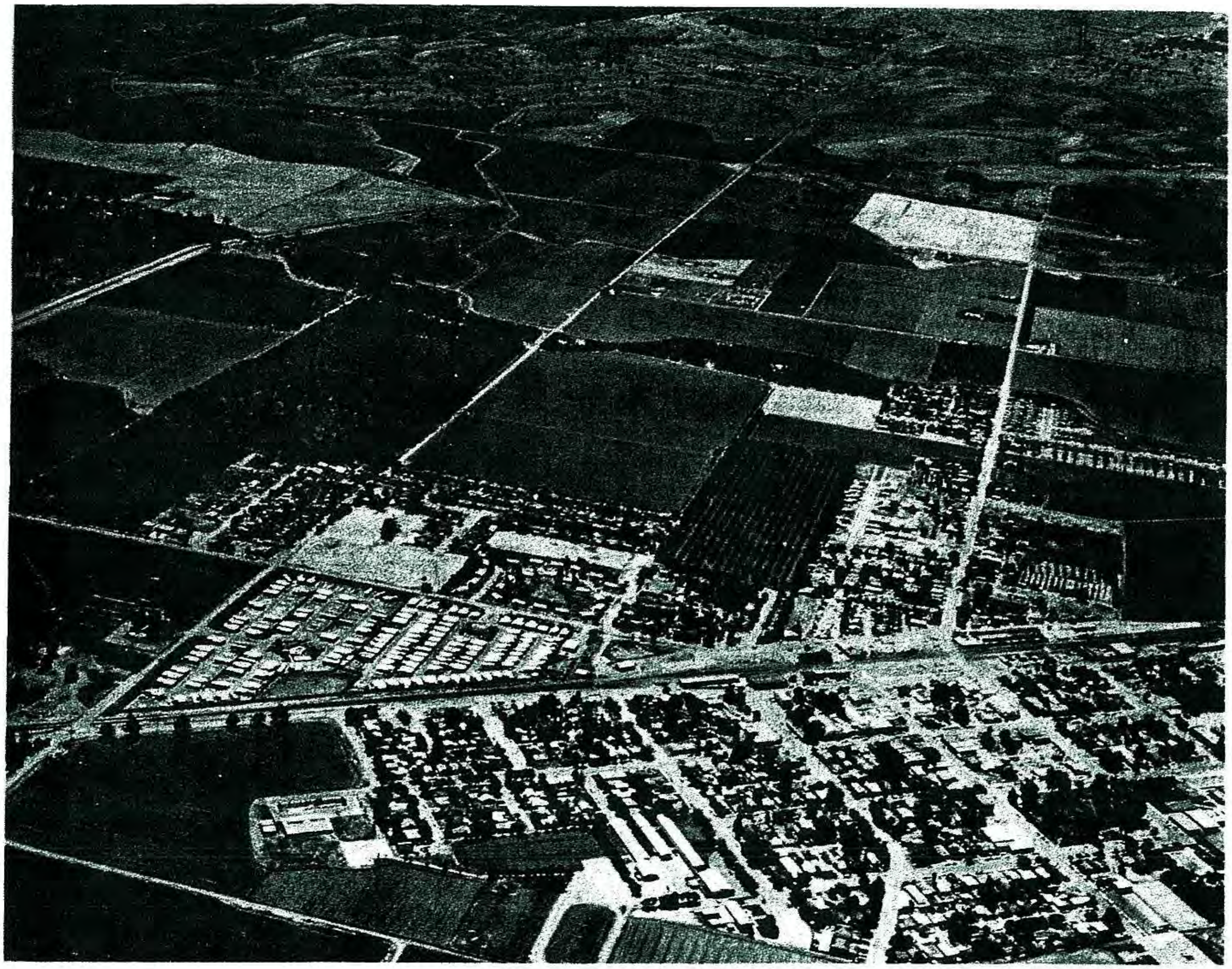
The species are arranged alphabetically by family name for all vascular plants encountered during the plant survey. Plants are also listed alphabetically within each family. Species nomenclature is from Hickman (1993) except where different nomenclature has been adopted by Reed (1988).

UPL**: corresponds to those species not covered by Reed (1988), *i.e.,* NI or NOL
FAC~: corresponds to those species not covered by Reed (1988) but where a closely related wetland congener with similar ecological and habitat requirements is covered; in these cases, we have supplied the indicator status of the congener (*i.e.*, in the case of *Lolium multiflorum*)

APPENDIX B.
SOILS

SOIL SURVEY OF

Contra Costa County, California



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one described as representative of the series, but the depth to soft shale and sandstone is 30 to 40 inches.

Included with this soil in mapping are areas of Diablo clay that make up about 10 percent of the mapping unit. This soil is along the lower part of the slopes. Also included are areas of Cropley clay along toe slopes that make up 3 percent. A few areas of Clear Lake clay in concave drainageways make up 2 percent.

Runoff is medium, and the hazard of erosion is moderate where the soil is tilled and exposed. Roots can penetrate to a depth of 30 to 40 inches. The available water capacity is 5 to 7 inches.

This soil is used mainly for range. A few areas are used for dryland grain and grain hay, and some areas are used for homesites. Capability unit IVe–5(15); Clayey range site.

AaF—Alo clay, 30 to 50 percent slopes. This steep soil is on hills. It has the profile described as representative of the series. Depth to soft sandstone and shale is 20 to 36 inches.

Included with this soil in mapping are areas of Altamont clay that make up about 3 percent of the mapping unit, areas of Fontana silty clay loam that make up 3 percent, areas of Lodo clay loam that make up 2 percent, areas of Los Osos clay loam that make up 4 percent, and areas of Sehorn clay that make up 3 percent.

Runoff is medium to rapid, and the hazard of erosion is moderate to high where the soil is bare. Roots can penetrate to a depth of 20 to 36 inches. The available water capacity is 3.5 to 6 inches.

This soil is used mainly for range. Some areas are used for homesites. Capability unit VIe–1(15); Clayey range site, steep.

AaG—Alo clay, 50 to 75 percent slopes. This very steep soil is on hills. It has a profile similar to the one described as representative of the series. Depth to soft sandstone and shale is 20 to 30 inches.

Included with this soil in mapping are areas of Lodo clay loam that make up about 5 percent of the mapping unit and areas of Millsholm loam that make up 5 percent. A few areas of severely eroded soils that are less than 20 inches deep to sandstone and shale are also included.

Runoff is rapid, and the hazard of erosion is high where the soil is bare. The available water capacity is 3.5 to 5 inches. Roots can penetrate to a depth of 20 to 30 inches.

This soil is used for range. Capability unit VIIe–1(15); Clayey range site, very steep.

Altamont Series

The Altamont series consists of well-drained soils underlain by shale and soft, fine-grained sandstone. These soils are on foothills north and east of Mount Diablo. Slopes are 9 to 75 percent. Elevation ranges from 400 to 1,500 feet. The average annual air temperature is 59° F., and the frost-free season is 260 to 300 days. The average annual rainfall is 12 to 16 inches. These soils are moist to a depth of 24 inches from December to April and are dry from May to November in most years. Vegetation is annual grasses, forbs, and scattered oaks.

In a representative profile the surface layer is dark grayish-brown, neutral to moderately alkaline clay about 26 inches thick. The layer below that is dark grayish-brown and brown, calcareous clay about 13 inches thick. The substratum is grayish-brown, calcareous silty clay. Shale is at a depth of 48 inches.

Permeability is slow, and the available water capacity is 6.5 to 10 inches. Roots can penetrate to a depth of 40 to 60 inches.

Altamont soils are used for range, dryland grain, and volunteer hay.

Representative profile of Altamont clay, 15 to 30 percent slopes, on a smooth, rounded hill 7 miles south of Brentwood in SE¼SE¼N½ sec. 18, T. 1 S., R. 3 E.

A11—0 to 14 inches, dark grayish-brown (10YR 4/2) clay, very dark grayish brown (10YR 3/2) when moist; strong, very coarse, prismatic structure parting to moderate, coarse, angular blocky; extremely hard, very firm, sticky and plastic; many very fine roots; common, very fine, tubular pores; neutral; gradual, wavy boundary.

A12—14 to 26 inches, dark grayish-brown (10YR 4/2) clay, very dark grayish brown (10YR 3/2) when moist; strong, very coarse, prismatic structure parting to moderate, coarse, angular blocky; extremely hard, very firm, sticky and very plastic; many very fine exped roots; common, very fine, tubular pores; many intersecting slickensides; some black carbonaceous spots; moderately alkaline; gradual, wavy boundary.

ACca—26 to 39 inches, dark grayish-brown (10YR 4/2) and brown (10YR 4/3) clay, dark brown (10YR 3/3) when moist; moderate, very coarse, prismatic structure parting to weak, coarse, angular blocky; extremely hard, firm, sticky and very plastic; common very fine roots; few, very fine, tubular pores; many intersecting slickensides; moderately alkaline; slightly calcareous; disseminated lime and filaments and soft bodies of lime; gradual, wavy boundary.

C1ca—39 to 48 inches, grayish-brown (10YR 5/2) silty clay, dark brown (10YR 3/3) when moist; fragments of weathered shale; moderate, medium, subangular blocky structure; very hard, firm, sticky and plastic; very few very fine roots; few fine pores; moderately alkaline; slightly calcareous; gradual, wavy boundary.

C2r—48 to 60 inches, light grayish-brown shale.

The A horizon is 20 to 30 inches thick. It is dark brown, grayish brown, or dark grayish brown in a hue of 10YR. Moist values are less than 3.5.

Cracks ¼ to 2 inches wide extend from the surface into the upper part of the C horizon after long dry periods. The cracks form a coarse or very coarse prismatic structure. Depth to lime ranges from 20 to 30 inches. The lower part of the A horizon or the upper part of the C horizon has a slight to distinct accumulation of secondary lime.

The ACca horizon is 12 to 16 inches thick. The C1ca horizon is 8 to 14 inches thick. It is silty clay loam or silty clay and contains as much as 5 percent gravel, by volume, where the soils formed in soft conglomerates. Depth to sedimentary rock ranges from 40 to 60 inches.

AbD—Altamont clay, 9 to 15 percent slopes. This soil is on smooth, rolling hills. Included with it in mapping are areas of Capay clay that make up about 6 percent of the mapping unit and areas of Rincon clay loam that make up 4 percent. These soils are in small drainageways. Also included are areas of Fontana silty clay loam that make up 4 percent and areas of Linne clay loam that make up 1 percent.

Runoff is slow to medium where the soil is tilled and exposed. The hazard of erosion is slight to moderate. It is slight in areas of range.

This soil is used mainly for range, dryland grain, and some volunteer hay. Capability unit IIIe–5(15); Clayey range site.

AbE—Altamont clay, 15 to 30 percent slopes. This soil is on rolling hills. It has the profile described as representative of the series.

Included with this soil in mapping are areas of Capay clay that make up about 5 percent of the mapping unit and areas of Rincon clay loam that make up 3 percent. These soils are along narrow drainageways and in depressions. Also included are areas of Fontana silty clay loam that make up 3 percent and areas of Linne clay loam that make up 2 percent. A few areas of highly calcareous silty clay loam underlain by sedimentary rock at a depth of 40 to 60 inches are also included.

Runoff is medium, and the hazard of erosion is moderate where the soil is bare.

This soil is used mainly for range and dryland grain or grain hay. Capability unit IVe–5(15); Clayey range site.

AcF—Altamont-Fontana complex, 30 to 50 percent slopes. This complex is on foothills in the eastern uplands of the county. It consists of about 50 percent Altamont clay and 35 percent Fontana silty clay loam. The remaining 15 percent is Millsholm loam, Lodo clay loam, Capay clay, and Rincon clay loam. The Fontana soil has the profile described as representative of the series.

Altamont soils are on the lower part of the slopes and on north-facing slopes. Fontana soils are on ridge crests and on south-facing slopes. Millsholm and Lodo soils are less than 20 inches deep to sandstone and shale. Capay and Rincon soils are in small drainageways and on toe slopes.

Where the soils are bare, runoff is medium to rapid and the hazard of erosion is moderate to high.

The soils in this complex are used mainly for range. A few areas are used for dryland small grain. Capability unit VIe–1(15); Clayey range site, steep.

AcG—Altamont-Fontana complex, 50 to 75 percent slopes. This complex is on foothills in the eastern part of the county. It consists of about 40 percent Altamont clay, 40 percent Fontana silty clay loam, and 15 percent Millsholm loam. The remaining 5 percent is Gaviota sandy loam and Briones loamy sand. Altamont clay has slopes of 50 to 60 percent. Fontana silty clay loam has slopes of 50 to 75 percent and is on south-facing slopes.

Where the soils are bare, runoff is rapid and the hazard of erosion is high.

The soils in this complex are used for range. Capability unit VIIe–1(15); Clayey range site, very steep.

Antioch Series

The Antioch series consists of moderately well drained soils underlain by old mixed alluvium. These soils are on old terraces and fans. Slopes are 0 to 9 percent. Elevation ranges from 10 to 300 feet. The average annual temperature is 59° F., and the frost-free season is 260 to 280 days. The average annual rainfall is 14 to 18 inches. These soils are dry from May or early in June to late in October in most years. Vegetation is annual grasses and forbs.

In a representative profile the surface layer is dark grayish-brown and dark-brown, strongly acid or medium acid loam about 14 inches thick. The subsurface layer is mottled, gray, medium acid heavy loam about 3 inches thick. The subsoil is mottled, brown clay about 19 inches thick. It is slightly acid in the upper part and becomes moderately alkaline as depth increases. The substratum is yellowish-brown, calcareous clay loam that extends to a depth of more than 60 inches.

Permeability is very slow in the subsoil. The available water capacity is 3.5 to 5 inches. The depth to which roots can penetrate is limited to 12 to 20 inches by the clay subsoil. Some water available to plants perches above the subsoil for short periods.

Antioch soils are used mainly for range. A few areas are used for irrigated pasture and homesites.

Representative profile of Antioch loam, 2 to 9 percent slopes, on a gently sloping terrace used for range near Port Chicago in SW¼SE¼ sec. 5, T. 2 N., R. 1 W.

A1p—0 to 4 inches, dark grayish-brown (10YR 4/2) loam, dark brown (10YR 3/3) when moist; massive; hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common, very fine and fine, tubular pores; strongly acid; abrupt, smooth boundary.

A12—4 to 14 inches, dark-brown (10YR 3/3) loam, very dark grayish brown (10YR 3/2) when moist; massive; hard, firm, slightly sticky and slightly plastic; few fine and very fine roots; few, fine, tubular pores; medium acid; clear, wavy boundary.

A2—14 to 17 inches, gray (10YR 6/1) heavy loam, dark brown (10YR 3/2) when moist; common, fine, distinct, strong-brown (7.5YR 5.8) mottles, dark yellowish brown (10YR 4/4) when moist; massive; very hard, firm, slightly sticky and slightly plastic; few very fine roots that spread out on the boundary and form a thin mat; common, very fine, tubular pores; medium acid; abrupt, wavy boundary.

B21t—17 to 29 inches, brown (10YR 4/3) clay, dark brown (10YR 3/3) when moist; many, fine, distinct, dark yellowish-brown (10YR 4/4) mottles; moderate, coarse, columnar structure; gray (10YR 6/1) coatings on top of peds which follow down cleavage planes 1 to 2 inches; extremely hard, extremely firm, very sticky and very plastic; very few very fine roots; few very fine pores; thick continuous clay films on ped faces and in pores; slightly acid; diffuse, wavy boundary.

B22t—29 to 36 inches, brown (10YR 4/3) clay, dark yellowish brown (10YR 3/4) when moist; many, fine, distinct, dark yellowish-brown (10YR 4/4) mottles; moderate, coarse, prismatic structure; extremely hard, extremely firm, very sticky and very plastic; very few very fine roots; few, fine, tubular pores; thick continuous clay films in pores; moderately alkaline; distinct, wavy boundary.

C—36 to 60 inches, yellowish-brown (10YR 5/4) clay loam, dark yellowish brown (10YR 4/4) when moist; massive; extremely hard, very firm, sticky and plastic; very few very fine roots; common, very fine and fine, tubular pores; few thin clay films; moderately alkaline; strongly calcareous; lime is disseminated, in small soft masses, and in seams.

The A horizon is 12 to 18 inches thick. It is pale brown, grayish brown, light grayish brown, or brown and is fine sandy loam, loam, silt loam, or light silty clay loam.

The C horizon is stratified and is sand to silty clay loam. The upper part of the C horizon has prominent or distinct mottles.

These soils are calcareous between depths of 10 and 20 inches. The organic-matter content is less than 1 percent and decreases irregularly with depth.

La—Laugenour loam. This is the only Laugenour soil mapped in the county. Included with it in mapping are Sycamore silty clay loam and Omni clay loam that each make up about 5 percent of the mapping unit. Also included are a few areas of a soil that is underlain by clay at a depth of 40 inches.

Runoff is slow, and there is no hazard of erosion where the soil is tilled and exposed.

This soil is used mainly for commercial development. A few acres are used for irrigated almonds. Capability unit IIs–0(17).

Linne Series

The Linne series consists of well-drained soils underlain by calcareous, interbedded shale and soft sandstone. These soils are on lower foothills in the eastern part of the county. Slopes are 5 to 30 percent. Elevation ranges from 150 to 1,000 feet. The average annual air temperature is 59° F., and the frost-free season is 260 to 300 days. The average annual rainfall is 12 to 15 inches. These soils are moist between depths of 4 and 20 inches from late in December to April and are dry from May to November in most years. Vegetation is annual grasses and forbs.

In a representative profile the surface layer is gray, calcareous clay loam about 29 inches thick. It is underlain by white, calcareous shale.

Permeability is moderately slow, and the available water capacity is 4 to 8 inches. Roots can penetrate to a depth of 20 to 40 inches.

Linne soils are used for range, for dryland grain, chiefly barley, and for volunteer hay.

Representative profile of Linne clay loam, 5 to 15 percent slopes, along Camino Diablo Road in NE¼SE¼NW¼ sec. 8, T. 1 S., R. 3 E.

A11—0 to 12 inches, gray (10YR 5/1) clay loam, very dark gray (10YR 3/1) when moist; moderate, fine and medium, granular structure; slightly hard, very friable, sticky and plastic; many very fine roots; many, very fine and fine, interstitial pores; moderately alkaline; strongly calcareous; few filaments and soft bodies of lime; diffuse, wavy boundary.

A12ca—12 to 29 inches, gray (10YR 5/1) clay loam, very dark grayish brown (10YR 3/2) when moist; moderate, fine and medium, granular structure; slightly hard, very friable, sticky and plastic; many very fine roots; many, very fine and fine, interstitial pores; moderately alkaline; strongly calcareous, many irregularly shaped lime concretions; abrupt, wavy boundary.

Crca—29 to 32 inches, white (10YR 8/1) shale; calcareous; many filaments and coatings of lime.

The A horizon is gray, dark gray, or very dark gray and is heavy loam, silt loam, clay loam, or light silty clay loam. It has moderate or strong, fine or medium, granular structure.

The profile is mildly calcareous to strongly calcareous. In some places, the uppermost few inches do not effervesce. Depth to soft, interbedded sedimentary rock is 20 to 40 inches.

LbD—Linne clay loam, 5 to 15 percent slopes. This gently rolling to rolling soil is on foothills in the uplands. It has the profile described as representative of the series.

Included with this soil in mapping are Fontana silty clay loam and Diablo clay that each make up about 5 percent of the mapping unit. Also included are areas of gray, calcareous clay loam that is 10 to 20 inches deep to interbedded sedimentary rock. These areas make up 4 percent of the mapping unit. Areas of gravelly clay loam less than 10 inches deep that formed in soft conglomerate make up 1 percent.

Runoff is slow to medium, and the hazard of erosion is slight to moderate where the soil is tilled and exposed.

This soil is used for dryland grain, chiefly barley, and for range. Capability unit IIIe–5(15); Clayey range site.

LbE—Linne clay loam, 15 to 30 percent slopes. This soil is moderately steep. Included with it in mapping are areas of dark-gray, calcareous clay loam that is 10 to 20 inches deep to interbedded sedimentary rock. These areas make up about 8 percent of the mapping unit. Also included are areas of Fontana silty clay loam that make up 5 percent. Areas of a soil that is similar to Linne clay loam but that is noncalcareous throughout the surface layer make up 2 percent.

Runoff is medium, and the hazard of erosion is moderate where the soil is bare.

This soil is used for range and some dryland grain, chiefly barley. Capability unit IVe–1(15); Clayey range site.

Lodo Series

The Lodo series consists of somewhat excessively drained soils underlain by soft sandstone and shale. These soils are on uplands (fig. 5). Slopes are 9 to 75 percent. Elevation ranges from 300 to 3,000 feet. The average annual air temperature is 59° F., and the frost-free season is 260 to 300 days. The average annual rainfall is 14 to 25 inches. These soils are moist from a depth of 4 inches to bedrock from November to May and are dry from June to November in most years. Vegetation is annual grasses, forbs, and oak. Dense stands of oak are in a few areas.

In a representative profile the surface layer is dark-gray, slightly acid clay loam about 18 inches thick. It is underlain by fine-grained sandstone.

Permeability is moderately slow, and the available water capacity is 2 to 4 inches. Roots can penetrate to a depth of 10 to 20 inches.

Lodo soils are used for range, wildlife habitat, and watershed.

Representative profile of Lodo clay loam, 9 to 30 percent slopes, north of Livorna Road in SE¼SE¼SE¼ sec. 1, T. 1 N., R. 1 W.

A11—0 to 6 inches, dark-gray (10YR 4/1) clay loam, very dark grayish brown (10YR 3/2) when moist; moderate, medium, subangular blocky structure; very hard, friable, slightly sticky and plastic; many very fine and few fine roots; many, fine and few,

Figure 5.—**Lodo soils on uplands. Slope ranges from 9 to 75 percent.**

medium, tubular pores; slightly acid; gradual, smooth boundary.

A12—6 to 18 inches, dark-gray (10YR 4/1) clay loam, very dark grayish brown (10YR 3/2) when moist; moderate, medium, subangular blocky structure; very hard, friable, slightly sticky and plastic; common very fine roots; common, fine, tubular pores; slightly acid; abrupt, wavy boundary.

R—18 to 22 inches, light-gray (2.5Y 7/2) fine-grained sandstone.

The A horizon is dark gray, grayish brown, very dark grayish brown, brown, or dark brown. It has hues of 10YR, 2.5Y, or 7.5YR and moist values and chromas of 3 or less. The A horizon is clay loam or loam. It has weak or moderate, fine or medium, granular or fine, subangular blocky structure and ranges from medium acid to neutral. Depth to shale or sandstone is 10 to 20 inches. The R layer is between 3 to 4 in hardness on the Mohs scale.

LcE—Lodo clay loam, 9 to 30 percent slopes. This rolling to hilly soil is on uplands. It has the profile described as representative of the series.

Included with this soil in mapping are Los Osos clay loam and Millsholm loam, each of which makes up about 5 percent of the mapping unit, and areas of Tierra loam that make up 3 percent. Also included are rock outcrops that make up 2 percent and small areas of gently rolling Lodo soil.

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

This soil is used for range. Capability unit VIe-1(15); Shallow Fine Loamy range site.

LcF—Lodo clay loam, 30 to 50 percent slopes. This steep soil is on uplands. Included with it in mapping are areas of Millsholm soils that make up about 10 percent of the mapping unit and areas of Gaviota sandy loam that make up 2 percent. Also included are rock outcrops that make up 3 percent.

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

This soil is used for range, wildlife habitat, and watershed. Capability unit VIIe-1(15); Shallow Fine Loamy range site, steep.

LcG—Lodo clay loam, 50 to 75 percent slopes. This very steep soil is on uplands. Included with it in mapping are rock outcrops that make up about 8 percent of the mapping unit and areas of Millsholm loam that make up 7 percent.

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

This soil is used for range, wildlife habitat, and watershed. Capability unit VIIe-1(15); Shallow Fine Loamy range site, very steep.

Ld—Lodo-Rock outcrop complex. This complex consists of about 60 percent Lodo clay loam and about 25 percent sandstone outcrops. Slopes are 15 to 75 percent.

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

This complex is used for range, wildlife habitat, and watershed. Capability unit VIIe-1(15); Shallow Fine Loamy range site, very steep.

Los Gatos Series

The Los Gatos series consists of well-drained soils underlain by interbedded sedimentary rock. These soils are on north-facing slopes in the uplands. Slopes are 15 to 75 percent. Elevation ranges from 500 to 2,000 feet. The average annual air temperature is 56° F., and the frost-free season is 260 to 300 days. The

The profile is highly saline. An odor of hydrogen sulfide can be detected when hydrochloric acid is applied to all horizons. The C horizon contains polysulfides and becomes extremely acid when drained or exposed to wetting and drying.

Ra—Reyes silty clay. This is the only Reyes soil mapped in the county. Included with it in mapping are areas of Joice muck along the upper boundary of the saltwater intrusion into Suisun Bay that make up as much as 15 percent of the mapping unit. Also included are small areas where 20 to 40 inches of silty clay loam or loam fill have been deposited. These areas are slightly better drained than Reyes silty clay. A few areas that lack polysulfides are also included.

Runoff is very slow, and there is no hazard of erosion. Most areas are subject to inundation during high tides.

This soil is used for wildlife habitat and recreation areas. Capability unit VIIIw-1(16).

Rincon Series

The Rincon series consists of well-drained soils mainly on benches. These soils formed in alluvial valley fill from sedimentary rock. Slopes are 0 to 15 percent. Elevation ranges from 50 to 500 feet. The average annual air temperature is 59° F., and the frost-free season is 260 to 300 days. The average annual precipitation is 12 to 16 inches. These soils are moist to a depth of 20 inches from November to May and are dry throughout from June to October in most years. Vegetation is annual grasses, forbes, and scattered oaks.

In a representative profile the surface layer is dark grayish-brown, neutral clay loam about 12 inches thick. The upper part of the subsoil is brown, neutral or mildly alkaline clay about 17 inches thick. The lower part of the subsoil is yellowish-brown, moderately alkaline silty clay loam about 9 inches thick. The substratum is light yellowish-brown, moderately alkaline silty clay loam and heavy loam. It extends to a depth of more than 60 inches.

Permeability is slow, and the available water capacity is 7 to 10 inches. Roots can penetrate to a depth of 42 to more than 60 inches.

Rincon soils are used for irrigated nut crops, fruit, row crops, and forage crops and for dryland pasture, hay, grain, and range.

Representative profile of Rincon clay loam, 0 to 2 percent slopes, south of Lone Tree Way in SW¼NW¼SE¼ sec. 3, T. 1 N., R. 2 E.

Ap—0 to 6 inches, dark grayish-brown (10YR 4/2) clay loam, very dark grayish brown (10YR 3/2) when moist; massive; extremely hard, firm, sticky and plastic; common very fine roots; common, very fine and medium, tubular and interstitial pores; neutral; abrupt, smooth boundary.

A12—6 to 12 inches, dark grayish-brown (10YR 4/2) clay loam, very dark grayish brown (10YR 3/2) when moist; weak, medium and coarse, angular blocky structure; extremely hard, firm, sticky and plastic; common very fine roots; few, very fine, tubular pores; neutral; clear, wavy boundary.

B21t—12 to 22 inches, brown (10YR 4/3) clay, dark brown (10YR 3/3) when moist; moderate, medium and coarse, angular blocky structure; extremely hard, very firm, sticky and very plastic; common very fine roots; few, very fine, tubular pores; common thin clay films lining pores and on ped faces; neutral; clear, wavy boundary.

B22t—22 to 29 inches, brown (10YR 5/3) clay, dark brown and dark yellowish brown (10YR 3/3 and 4/4) when moist; moderate, medium and coarse, angular blocky structure; extremely hard, very firm, sticky and very plastic; few very fine roots; few, very fine, tubular pores; many clay films lining pores and on ped faces; mildly alkaline; clear, wavy boundary.

B3ca—29 to 38 inches, yellowish-brown (10YR 5/4) silty clay loam, dark yellowish brown (10YR 4/4) when moist; moderate, fine, angular blocky structure; very hard, firm, sticky and plastic; very few very fine roots; few, very fine, tubular pores; common thin clay films lining pores and on ped faces; moderately alkaline; slightly effervescent; disseminated lime and few soft masses of lime; clear, wavy boundary.

C1ca—38 to 55 inches, light yellowish-brown (10YR 6/4) silty clay loam, dark yellowish brown (10YR 4/4) when moist; moderate, fine, angular blocky structure; very hard, friable, sticky and plastic; very few very fine roots; few very fine pores; few thin clay films lining pores and on ped faces; moderately alkaline; slightly effervescent; few soft masses of lime; clear, wavy boundary.

C2ca—55 to 65 inches, light yellowish-brown (10YR 6/4) heavy loam; moderate, fine, angular blocky structure; hard, friable, sticky and slightly plastic; no roots; common, very fine, tubular pores; very few thin clay films lining pores and on ped faces; moderately alkaline; strongly effervescent; disseminated lime and soft masses of lime.

The A horizon is 10 to 18 inches thick. It is dark grayish-brown or brown clay loam, light clay loam, or heavy clay loam. It is slightly acid to mildly alkaline.

The B2t horizon is 13 to 21 inches thick. It is brown or dark yellowish-brown heavy clay loam or clay and has a clay content of 35 to 45 percent. It is neutral to moderately alkaline, and the B22t horizon is calcareous in places.

The C horizon is light yellowish brown, yellowish brown, or brown and is loam, clay loam, or silty clay loam.

RbA—Rincon clay loam, 0 to 2 percent slopes. This nearly level soil formed in valley fill. It has the profile described as representative of the series.

Included with this soil in mapping are areas of Brentwood clay loam that make up about 5 percent of the mapping unit. Also included are areas of Capay clay that make up 5 percent and areas of San Ysidro loam that make up 2 percent.

Runoff is slow and the hazard of erosion is none to slight where the soil is tilled and exposed. Roots can penetrate to a depth of more than 60 inches. The available water capacity is 9 to 10 inches.

This soil is used mainly for irrigated nut crops, fruit, row crops, and forage crops. Capability unit IIs-3(17).

RbC—Rincon clay loam, 2 to 9 percent slopes. This gently sloping and moderately sloping soil is on benches. Included with it in mapping are small areas of Capay clay that make up about 5 percent of the mapping unit and small areas of Antioch loam that make up 5 percent. Also included are soils on alluvial fans. These soils have a surface layer of dark reddish-brown, neutral sandy loam and a subsoil of reddish-brown, neutral clay loam. They have slopes of 3 to 5 percent.

Runoff is medium and the hazard of erosion is slight where the soil is tilled and exposed. Roots can penetrate to a depth of more than 60 inches. The available water capacity is 9 to 10 inches.

This soil is used mainly for dryland grain and volunteer hay. A few areas are used for range. Capability unit IIe-3(17).

RbD—Rincon clay loam, 9 to 15 percent slopes. This strongly sloping soil is on benches. Included with it in mapping are small areas of Capay clay that make up about 5 percent of the mapping unit and small areas of Antioch loam that make up 5 percent. Rincon soils that have slopes of 15 to 30 percent also make up 5 percent.

Runoff is medium to rapid, and the hazard of erosion is moderate to severe where the soil is tilled and exposed. Roots can penetrate to a depth of 60 inches. The available water capacity is 9 to 10 inches.

This soil is used mainly for range. A few areas are used for dryland grain. Capability unit IIe-3(17).

RcA—Rincon clay loam, wet, 0 to 2 percent slopes. This soil is on the lower edges of valley fill. It has a profile similar to the one described as representative of the series, but an intermittent water table is at a depth of 42 to 55 inches.

Included with this soil in mapping are areas of Brentwood clay loam that make up about 5 percent of the mapping unit. Also included are areas of Capay clay that make up 5 percent and areas of San Ysidro loam that make up 2 percent.

Runoff is slow and there is no hazard of erosion where the soil is tilled and exposed. The depth to which roots can penetrate is limited to 42 to 55 inches by the water table. The available water capacity is 7 to 9 inches.

This soil is used mainly for irrigated row crops. Most areas are artificially drained. Capability unit IIw-2(17).

Rindge Series

The Rindge series consists of very poorly drained organic soils that formed in marshes. These soils are on the Sacramento-San Joaquin Delta. Slopes are 0 to 2 percent. Elevation ranges from 5 to 15 feet below sea level. The average annual air temperature is 59° F., and the frost-free season is 250 to 310 days. The average annual rainfall is 12 to 16 inches. The native vegetation is reeds and tules.

In a representative profile the surface layer is very dark brown, very strongly acid muck about 14 inches thick. The next layer is very dark gray, very strongly acid muck about 10 inches thick. Below this, to a depth of 60 inches, is black, very strongly acid muck.

Permeability is rapid, and the available water capacity is 10 or more inches. Roots can penetrate to a depth of 50 inches or more. The water table ranges from a depth of about 50 inches during the summer to 12 inches or less during the winter.

Rindge soils are used for irrigated field corn, milo, asparagus, tomatoes, and pasture.

Representative profile of Rindge muck, on Holland Tract approximately 120 feet south of a main drainage ditch and 400 feet west of the Old River Levee in SW¼NW¼SW¼ sec. 30 (projected), T. 2 N., R. 4 E. (Color is for moist soil unless otherwise noted; pH by 0.01M CaCl2.)

Oap—0 to 6 inches, very dark brown (10YR 2/2) muck, very dark brown (10YR 2/2) when rubbed; less than 2 percent undisturbed fibers, none when rubbed; moderate, medium, granular structure; soft, very friable, nonsticky and nonplastic; common, very fine roots; very strongly acid; clear, smooth boundary.

Oa2—6 to 14 inches, very dark brown (10YR 2/2) muck, very dark brown (10YR 2/2) when rubbed; less than 2 percent undisturbed fibers, none when rubbed; pockets 3 to 4 inches in diameter of reddish-brown (5YR 4/4) fibers throughout, occupying 10 to 15 percent of cross-section area; content of undisturbed fibers in pockets is 45 percent, less than 10 percent when rubbed; weak, medium, subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; common very fine roots; very strongly acid; gradual, smooth boundary.

Oa3—14 to 24 inches, very dark gray (10YR 3/1) muck, black (5YR 2/1) when rubbed; about 15 percent dark yellowish-brown (10YR 4/4 and 3/4) undisturbed fibers, none when rubbed; few, medium, dark reddish-brown (5YR 2/2) coatings on ped faces; weak, thick, platy structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; very strongly acid; abrupt, smooth boundary.

Oa4—24 to 42 inches, black (N 2/0) muck, black (N 2/0) when rubbed; 30 percent undisturbed fibers, 5 percent when rubbed; massive; slightly hard, very friable, slightly sticky and slightly plastic; slight odor of hydrogen sulfide; very strongly acid; gradual, smooth boundary.

Oa5—42 to 60 inches, black (10YR 2/1) muck, black (10YR 2/1) when rubbed; 35 percent undisturbed fibers, 5 percent when rubbed; massive; slightly hard, very friable, slightly sticky and slightly plastic; slight odor of hydrogen sulfide; very strongly acid.

The Oap and Oa2 horizons are very dark brown, very dark gray, or black in hues of 10YR and 7.5YR. The structure varies with the degree of tillage. It is granular in intensively tilled areas and subangular blocky in other areas. In the Oa2 horizon, the content of unrubbed fibers is 0 to 10 percent. All of these fibers break down when rubbed. The Oap and Oa2 horizons are very strongly acid to medium acid.

The Oa3 horizon is black to very dark reddish brown in hues of 10YR, N, and 5YR. Values are 2 or 3 and chromas are 1 or 2. The Oa3 horizon has platy or subangular blocky structure. The content of unrubbed organic fibers is 10 to 30 percent, and the content of rubbed fibers is 0 to 5 percent.

The Oa4 and Oa5 horizons are black in hues of 10YR and N. The content of unrubbed fibers is 25 to 50 percent. These horizons are very strongly acid or strongly acid.

Depth to mineral material is more than 52 inches. The organic-matter content is more than 15 percent in the surface layer and commonly increases with depth. Thin strata of organic material that contain more than 10 percent rubbed fibers are commonly near a depth of 50 inches, but these strata total less than 10 inches in thickness.

Rd—Rindge muck. This level or nearly level soil is the only Rindge soil mapped in the county. Included with it in mapping are areas of Webile muck that make up about 5 percent of the mapping unit and areas of Kingile muck that make up 4 percent. Included on the Holland tract are areas of soils that are underlain by coarse sand between depths of 36 to 52 inches. These areas make up 4 percent. Also included are areas of a soil that is similar to Rindge muck but that contains more than 10 inches of less-

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CONCORD FIELD OFFICE -- TECHNICAL GUIDE (SECTION II-D-6)

MAP SYMBOL	MAP UNIT NAME	HYDRIC COMPONENT(S)	LOCATION NOTES	ITEMS 4/
AaE	ALO CLAY, 15 TO 30 PERCENT SLOPES			
AaF	ALO CLAY, 30 TO 50 PERCENT SLOPES			
AaG	ALO CLAY, 50 TO 75 PERCENT SLOPES			
AbD	ALTAMONT CLAY, 9 TO 15 PERCENT SLOPES			
AbE	ALTAMONT CLAY, 15 TO 30 PERCENT SLOPES			
AcF	ALTAMONT-FONTANA COMPLEX, 30 TO 50 PERCENT SLOPES			
AcG	ALTAMONT-FONTANA COMPLEX, 50 TO 75 PERCENT SLOPES	PESCADERO INCLUSIONS	CONCAVE DRAINAGEWAYS AND IN SALINE-SODIC SPOTS	
AdA	ANTIOCH LOAM, 0 TO 2 PERCENT SLOPES			
AdC	ANTIOCH LOAM, 2 TO 9 PERCENT SLOPES			
BaA	BOTELLA CLAY LOAM, 0 TO 2 PERCENT SLOPES	INCLUSIONS OF SOILS SIMILAR TO CLEAR LAKE SOILS THAT ARE HYDRIC	DEPRESSIONS, DRAINAGEWAYS	
BaC	BOTELLA CLAY LOAM, 2 TO 9 PERCENT SLOPES			
Bb	BRENTWOOD CLAY LOAM			
Bc	BRENTWOOD CLAY LOAM, WET	POSSIBLE INCLUSIONS	DEPRESSIONS, DRAINAGEWAYS	
BdE	BRIONES LOAMY SAND, 5 TO 30 PERCENT SLOPES			
BdE2	BRIONES LOAMY SAND, 15 TO 30 PERCENT SLOPES, ERODED			
BdF	BRIONES LOAMY SAND, 30 TO 50 PERCENT SLOPES			
BdF2	BRIONES LOAMY SAND, 30 TO 50 PERCENT SLOPES, ERODED			
BeB	BRIONES FINE SANDY LOAM, 2 TO 5 PERCENT SLOPES			
CaA	CAPAY CLAY, 0 TO 2 PERCENT SLOPES	MARCUSE INCLUSIONS	DEPRESSIONS	
CaC	CAPAY CLAY, 2 TO 9 PERCENT SLOPES			

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MAP SYMBOL	MAP UNIT NAME	HYDRIC COMPONENT(S)	LOCATION NOTES	ITEMS 4/
CbA	CAPAY CLAY, WET, 0 TO 2 PERCENT SLOPES	MARCUSE INCLUSIONS	DEPRESSIONS	
Cc	CLEAR LAKE CLAY	PESCADERO INCLUSIONS; OTHER POSSIBLE INCLUSIONS	DEPRESSIONS, DRAINAGEWAYS, SALINE-SODIC SPOTS	
CeA	CONEJO CLAY LOAM, 0 TO 2 PERCENT SLOPES	POSSIBLE INCLUSIONS	DEPRESSIONS, DRAINAGEWAYS	
CeB	CONEJO CLAY LOAM, 2 TO 5 PERCENT SLOPES			
ChA	CONEJO CLAY LOAM, CLAY SUBSTRATUM, 0 TO 2 PERCENT SLOPES	POSSIBLE INCLUSIONS	DEPRESSIONS, DRAINAGEWAYS	
CkB	CROPLEY CLAY, 2 TO 5 PERCENT SLOPES	PESCADERO INCLUSIONS; OTHER POSSIBLE INCLUSIONS	DEPRESSIONS, DRAINAGEWAYS, SALINE-SODIC SPOTS	
CmE	CUT AND FILL LAND-DIABLO COMPLEX, 9 TO 30 PERCENT SLOPES			
CnE	CUT AND FILL LAND-LOS OSOS COMPLEX, 9 TO 30 PERCENT SLOPES			
CoE	CUT AND FILL LAND-MILLSHOLM COMPLEX, 9 TO 30 PERCENT SLOPES			
CoF	CUT AND FILL LAND-MILLSHOLM COMPLEX, 30 TO 50 PERCENT SLOPES			
DaC	DELHI SAND, 2 TO 9 PERCENT SLOPES			
DdD	DIABLO CLAY, 9 TO 15 PERCENT SLOPES			
DdE	DIABLO CLAY, 15 TO 30 PERCENT SLOPES			
DdF	DIABLO CLAY, 30 TO 50 PERCENT SLOPES			
DeE	DIBBLE SILTY CLAY LOAM, 15 TO 30 PERCENT SLOPES			
DeF	DIBBLE SILTY CLAY LOAM, 30 TO 50 PERCENT SLOPES			
Ea	EGBERT MUCKY CLAY LOAM	EGBERT (CA0266)		
FaG	FELTON LOAM, 50 TO 75 PERCENT SLOPES			

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MAP SYMBOL	MAP UNIT NAME	HYDRIC COMPONENT(S)	LOCATION NOTES	ITEMS 4/
Fc	FLUVAQUENTS	FLUVAQUENTS		
Fd	FONTANA-ALTAMONT COMPLEX			
GaA	GARRETSON LOAM, 0 TO 2 PERCENT SLOPES			
GaB	GARRETSON LOAM, 2 TO 5 PERCENT SLOPES			
GbE	GAVIOTA SANDY LOAM, 15 TO 30 PERCENT SLOPES			
GbF	GAVIOTA SANDY LOAM, 30 TO 50 PERCENT SLOPES			
GbG	GAVIOTA SANDY LOAM, 50 TO 75 PERCENT SLOPES			
GcE	GILROY CLAY LOAM, 15 TO 30 PERCENT SLOPES			
GcF	GILROY CLAY LOAM, 30 TO 50 PERCENT SLOPES			
GcG	GILROY CLAY LOAM, 50 TO 75 PERCENT SLOPES			
Ja	JOICE MUCK	JOICE (CA0269)		
KaC	KIMBALL GRAVELLY CLAY LOAM, 2 TO 9 PERCENT SLOPES			
KaE	KIMBALL GRAVELLY CLAY LOAM, 9 TO 30 PERCENT SLOPES			
Kb	KINGILE MUCK	KINGILE (CA0402)		
La	LAUGENOUR LOAM	POSSIBLE INCLUSIONS	DEPRESSIONS	
LbD	LINNE CLAY LOAM, 5 TO 15 PERCENT SLOPES			
LbE	LINNE CLAY LOAM, 15 TO 30 PERCENT SLOPES			
LcE	LODO CLAY LOAM, 9 TO 30 PERCENT SLOPES			
LcF	LODO CLAY LOAM, 30 TO 50 PERCENT SLOPES			
LcG	LODO CLAY LOAM, 50 TO 75 PERCENT SLOPES			
Ld	LODO-ROCK OUTCROP COMPLEX			
LeE	LOS GATOS LOAM, 15 TO 30 PERCENT SLOPES			
LeF	LOS GATOS LOAM, 30 TO 50 PERCENT SLOPES			
LeG	LOS GATOS LOAM, 50 TO 75 PERCENT SLOPES			

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MAP SYMBOL	MAP UNIT NAME	HYDRIC COMPONENT(S)	LOCATION NOTES	ITEMS 4/
LhE	LOS OSOS CLAY LOAM, 15 TO 30 PERCENT SLOPES			
LhF	LOS OSOS CLAY LOAM, 30 TO 50 PERCENT SLOPES			
LhG	LOS OSOS CLAY LOAM, 50 TO 75 PERCENT SLOPES			
Lk	LOS OSOS-LOS GATOS COMPLEX			
Lm	LOS ROBLES CLAY LOAM			
Ma	MARCUSE SAND	MARCUSE (CA1495) 1/		
Mb	MARCUSE CLAY	MARCUSE (CA0360) 1/		
Mc	MARCUSE CLAY, STRONGLY ALKALI	MARCUSE (CA0360) 1/		
Md	MERRITT LOAM	MERRITT 1/ 2/		
MeE	MILLSHOLM LOAM, 15 TO 30 PERCENT SLOPES			
MeF	MILLSHOLM LOAM, 30 TO 50 PERCENT SLOPES			
MeG	MILLSHOLM LOAM, 50 TO 75 PERCENT SLOPES			
Oa	OMNI CLAY LOAM	OMNI 1/		
Ob	OMNI SILTY CLAY	OMNI 1/		
PaC	PERKINS GRAVELLY LOAM, 2 TO 9 PERCENT SLOPES			
PaD	PERKINS GRAVELLY LOAM, 9 TO 15 PERCENT SLOPES			
Pb	PESCADERO CLAY LOAM	PESCADERO 1/		
Pc	PESCADERO CLAY, LOAM STRONGLY ALKALI	PESCADERO 1/		
Pd	PIPER SAND	PIPER 1/ 2/		
Pe	PIPER LOAMY SAND	PIPER 1/ 2/		
Ph	PIPER FINE SANDY LOAM	PIPER 1/ 2/		
PkA	POSITAS LOAM, 0 TO 2 PERCENT SLOPES			
PkC	POSITAS LOAM, 2 TO 9 PERCENT SLOPES			

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MAP SYMBOL	MAP UNIT NAME	HYDRIC COMPONENT(S)	LOCATION NOTES	ITEMS 4/
Qa	QUARRY	QUARRIES MAY BE HYDRIC IF PONDED DURING PART OF GROWING SEASON		
Ra	REYES SILTY CLAY	REYES (CA0170) 3/		
RbA	RINCON CLAY LOAM, 0 TO 2 PERCENT SLOPES	POSSIBLE INCLUSIONS	DEPRESSIONS, DRAINAGEWAYS	
RbC	RINCON CLAY LOAM, 2 TO 9 PERCENT SLOPES			
RbD	RINCON CLAY LOAM, 9 TO 15 PERCENT SLOPES			
RcA	RINCON CLAY LOAM, WET, 0 TO 2 PERCENT SLOPES	POSSIBLE INCLUSIONS	DEPRESSIONS, DRAINAGEWAYS	
Rd	RINDGE MUCK	RINDGE (CA0401)		
Re	ROCK OUTCROP-XERORTHENTS ASSOCIATION			
Rh	RYDE SILT LOAM	RYDE 1/		
Sa	SACRAMENTO CLAY	SACRAMENTO 1/ 2/		
Sb	SACRAMENTO CLAY, ALKALI	SACRAMENTO 1/ 2/		
Sc	SAN YSIDRO LOAM	POSSIBLE INCLUSIONS	DEPRESSIONS, DRAINAGEWAYS	
SdE	SEHORN CLAY, 15 TO 30 PERCENT SLOPES			
SdF	SEHORN CLAY, 30 TO 50 PERCENT SLOPES			
SdG	SEHORN CLAY, 50 TO 75 PERCENT SLOPES			
Se	SHIMA MUCK	SHIMA (CA0347)		
Sh	SOLANO LOAM	SOLANO 1/ 2/		
Sk	SOLANO LOAM, STRONGLY ALKALI	SOLANO 1/ 2/		
Sm	SORRENTO SILTY CLAY LOAM	POSSIBLE INCLUSIONS	DEPRESSIONS, DRAINAGEWAYS	
Sn	SORRENTO SILTY CLAY LOAM, SAND SUBSTRATUM			
So	SYCAMORE SILTY CLAY LOAM	OMNI INCLUSIONS; OTHER POSSIBLE INCLUSIONS	DEPRESSIONS, DRAINAGEWAYS	
Sp	SYCAMORE SILTY CLAY LOAM, CLAY SUBSTRATUM	OMNI INCLUSIONS; OTHER POSSIBLE INCLUSIONS	DEPRESSIONS, DRAINAGEWAYS	
TaC	TIERRA LOAM, 2 TO 9 PERCENT SLOPES			

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MAP SYMBOL	MAP UNIT NAME	HYDRIC COMPONENT(S)	LOCATION NOTES	ITEMS 4/
TaD	TIERRA LOAM, 9 TO 15 PERCENT SLOPES			
TaE	TIERRA LOAM, 15 TO 30 PERCENT SLOPES			
Ub	URBAN LAND			
VaF	VALLECITOS LOAM, 30 TO 50 PERCENT SLOPES			
Vb	VENICE MUCK	VENICE (CA0397)		
Wa	WEBILE MUCK	WEBILE (CA0353)		
ZaA	ZAMORA SILTY CLAY LOAM, 0 TO 2 PERCENT SLOPES			
ZaB	ZAMORA SILTY CLAY LOAM, 2 TO 5 PERCENT SLOPES			

1/ Hydrology has been altered in some or all areas of this soil map unit through drainage and/or protection from flooding. Soil characteristics indicate that hydric soil conditions existed prior to alteration.

2/ Areas of this soil map unit occuring below five feet elevation (mean sea level) may meet hydric soil criteria under current conditions.

3/ Reyes soils, as they are mapped in this soil survey area in undrained and unprotected areas, would now be recognized as the Navato series.

4/ Additional Items (as per NFSAM 512.12): 1 - Hydric only because of saturation; 2 - supports woody vegetation under natural conditions; 3 - contains potholes or playas; 4 - are seasonally flooded or ponded; 5 - can be farmed under natural conditions without removing woody vegetation.

APPENDIX C.
WETLAND DETERMINATION DATA FORMS

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: James Donlon Boulevard Extension City/County: Pittsburgh/Contra Costa Sampling Date: 8/1/07

Applicant/Owner: City of Pittsburgh State: California Sampling Point: 1

Investigator(s): K. Hardwicke Section/Township/Range: S 29/T.2 N./R.1 E.

Landform (hillslope, terrace, etc.): streambed Local Relief (concave, convex, none): Concave Slope (%): 1

Subregion (LRR): LRR C Lat: N 596750 Long: W 4204698 Datum: NAD83

Soil Map Unit Name: Rincon clay loam 9 to 15% slopes NWI classification PSSC

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

Are Vegetation ____ Soil ____ or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X 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 X	No ____
Hydric Soil Present?	Yes X	No ____
Wetland Hydrology Present?	Yes X	No ____

Is the Sampled Area within a Wetland? Yes X No ____

Remarks:
Intermittent streambed, sandy thalweg 4 in. deep at bottom of steep, eroded banks 40 ft. high. Annual precipitation lower than typical as based on WETS climate data.

VEGETATION

Tree Stratum (Use scientific names)	Absolute Cover %	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		
Herb Stratum			
1. *Distichlis spicata*	12	X	FACW
2. *Polypogon monspeliensis*	18	X	FACW
3. *Scirpus pungens*	8		OBL
4. *Scirpus acutus*	22	X	OBL
5.			
6.			
7.			
8.			
Total Cover:	60		
Woody Vine Stratum			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 40 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 3/3 = 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:			Multiply by:
OBL species	30	x 1 =	30
FACW species	30	x 2 =	60
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL Species	0	x 5 =	0
Column totals	60 (A)		90 (B)

Prevalence Index = B/A = 1.5

Hydrophytic Vegetation Indicators:

X Dominance Text is >50%

X Prevalence Index is ≤3.0[1]

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

____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:
moist, sandy thalweg with hydrophytic graminoids. Obvious dry time of year for veg.

SOIL

Sampling Point: 1

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-7"	7.5 YR 4/2	70	5 YR 4/6	29	C	RC	silty sand	Fe concentrations
			10 YR 2/1	1	C	M		organic deposits
7-10"	7.5 YR 4/2	80	5 YR 4/6	12	C	RC	sandyclayloam	
			10 YR 2/1	8	C	M		organic streaking
10-14"	7.5 YR 4/2	94	5 YR 4/6	6	C	PL	silty clay	14" = bottom of pit

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, 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)
_X_ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

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

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (If present):

Type: clay layer under recent sandy layer

Depth (inches): 10

Hydric Soil Present? Yes X No ___

Remarks:

Recently deposited sandy soils above hard clay layer. Sands in thalweg of int. stream, moist but not saturated. All living roots have oxidized rhizospheres.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

___ 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)
_X_ Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Plowed Soils (C6)
___ 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)
___ Thin Muck Surface (C7)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes ___ **No X**

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

CIMIS data (Concord #170) reports 8/06-7/07 annual precip. of 7.4 in. WETS tables ranges for Antioch report normal 30% range at 9.97-14.77 in./yr.

Remarks:

Soil moist but not saturated, but this is a dry season. Likely carries water to OHW of thalweg in rainy season.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: James Donlon Boulevard Extension City/County: Pittsburgh/Contra Costa Sampling Date: 8/1/07

Applicant/Owner: City of Pittsburgh State: California Sampling Point: 2

Investigator(s): K. Hardwicke Section/Township/Range: S 29/T. 2 N./R. 1 E.

Landform (hillslope, terrace, etc.): terrace Local Relief (concave, convex, none): Convex Slope (%): 8

Subregion (LRR): LRR C Lat: N 596758 Long: W 4204576 Datum: NAD83

Soil Map Unit Name: Rincon clay loam 9-15% slopes NWI classification PSSC

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

Are Vegetation ___ Soil ___ or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X 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 X
Hydric Soil Present?	Yes ___	No X
Wetland Hydrology Present?	Yes ___	No X

Is the Sampled Area within a Wetland? Yes ___ No X

Remarks:

High terrace 7 ft. above sandy thalweg of intermittent stream (Kirker Creek) below. Annual precipitation lower than typical as based on WETS climate data.

VEGETATION

Tree Stratum (Use scientific names)	Absolute Cover %	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		
Herb Stratum			
1. *Avena fatua*	32	X	UPL
2. *Bromus mollis*	14	X	FACU
3. *Centaurea solstitialis*	17	X	UPL
4. *Lolium multiflorum*	4		FAC
5. *Distichlis spicata*	5		FACW
6. *Trifolium hirtum*	6		UPL
7. *Bromus rubens*	2		UPL
8. *Bellardia trixago*	2		UPL
Total Cover:	82		
Woody Vine Stratum			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 2 % Cover of Biotic Crust 0

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0/3 = 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	5	x 2 =	10
FAC species	4	x 3 =	12
FACU species	14	x 4 =	56
UPL Species	59	x 5 =	295
Column totals	82 (A)		393 (B)

Prevalence Index = B/A = 4.5

Hydrophytic Vegetation Indicators:

___ Dominance Text is >50%

___ Prevalence Index is ≤3.0[1]

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

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks:

Distichlis and Lolium presence in dry terrace most likely due to saline soils and rhizomatous nature of Distichlis, which spreads up the banks from the intermittent streambed below. about 15% cover is unidentifiable standing dead or litter.

SOIL

Sampling Point: 2

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-22"	7.5 YR 5/4	93	7.5 YR 5/8	3	C	PL	sandyclayloam	friable, some mottling
	7.5 YR 3/2	4						but redox features are relatively faint
								well-drained, dry soils
								22" = bottom of pit

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

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

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

Indicators for Problematic Hydric Soils[3]:

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

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (If present):

Type: none

Depth (inches): ______

Hydric Soil Present? Yes_____ No X

Remarks:

Redox features all in pore linings, and are faint to barely distinct.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

___ 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 Plowed Soils (C6)
___ 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)
___ Thin Muck Surface (C7)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes_____ No X

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

CIMIS data (Concord #170) reports 8/06-7/07 annual precip. of 7.4 in. WETS tables ranges for Antioch report normal 30% range at 9.97-14.77 in./yr.

Remarks:

Soils are deep, completely dry, and well-drained. No wetland hydrology.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: James Donlon Boulevard Extension City/County: Pittsburgh/Contra Costa Sampling Date: 8/1/07

Applicant/Owner: City of Pittsburgh State: California Sampling Point: 3

Investigator(s): K. Hardwicke Section/Township/Range: S 29/T. 2 N./R. 1 E.

Landform (hillslope, terrace, etc.): terrace, bank Local Relief (concave, convex, none): Convex Slope (%): 9

Subregion (LRR): LRR C Lat: N 596808 Long: W 4204657 Datum: NAD83

Soil Map Unit Name: Rincon clay loam 9 to 15% slopes NWI classification PEMC

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

Are Vegetation ____ Soil ____ or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X 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 X No ____	**Is the Sampled Area within a Wetland?**	Yes X No ____
Hydric Soil Present?	Yes X No ____		
Wetland Hydrology Present?	Yes X No ____		

Remarks:

Active groundwater seep in side of bank well above (5 ft.) Kirker Creek intermittent stream channel. Hydrology from this seep feeds creek, which becomes more perennially wet downstream of this feature. Annual precipitation lower than typical.

VEGETATION

Tree Stratum (Use scientific names)	Absolute Cover %	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		
Herb Stratum			
1. *Distichlis spicata*	58	X	FACW
2. *Spergularia macrotheca*	14		FAC
3. *Polypogon monspeliensis*	6		FACW
4. *Cotula coronopifolia*	1		FACW
5. *Juncus mexicanus*	1		FACW
6.			
7.			
8.			
Total Cover:	80		
Woody Vine Stratum			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust 15

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 1/1 = 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:			Multiply by:
OBL species	0	x 1 =	0
FACW species	66	x 2 =	132
FAC species	14	x 3 =	42
FACU species	0	x 4 =	0
UPL Species	0	x 5 =	0
Column totals	80 (A)		174 (B)

Prevalence Index = B/A = 2.2

Hydrophytic Vegetation Indicators:

X Dominance Text is >50%

X Prevalence Index is ≤3.0[1]

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

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

No upland vegetation in soils permenantly saturated by seep.

SOIL

Sampling Point: 3

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1"	10 YR 4/2	95	10 YR 3/4	5	C	RC	sandy clay	also algal and salt crust
1-4"	5 PB 2.5/1	100					mucky clay	saturated, organic muck
4-8"	10 YR 3/1	60	10 YR 5/8	35	C	RC	clay	Fe concentrations and
			10 YR 2/1	5	C	M		Mn nodules
8-20"	7.5 YR 3/3	90	10 YR 5/8	10	C	RC	clay	20" = bottom of pit

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

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

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
X 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)
X Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

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

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (If present):
Type: none
Depth (inches): ___

Hydric Soil Present? Yes X No ___

Remarks:
Soil saturated to inundated in deep cow punch. Clearly wet year-round.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

X Surface Water (A1)
___ High Water Table (A2)
X 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)
X Salt Crust (B11)
X Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
X Hydrogen Sulfide Odor (C1)
X Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Plowed Soils (C6)
___ 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)
___ Thin Muck Surface (C7)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes X	No ___	Depth (inches): 0-2"
Water Table Present?	Yes X	No ___	Depth (inches): 0"
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): 0"

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
CIMIS data (Concord #170) reports 8/06-7/07 annual precip. of 7.4 in. WETS tables ranges for Antioch report normal 30% range at 9.97-14.77 in./yr.

Remarks:
Groundwater seep provides perennial wetland hydrology.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: James Donlon Boulevard Extension City/County: Pittsburgh/Contra Costa Sampling Date: 8/1/07
Applicant/Owner: City of Pittsburgh State: California Sampling Point: 4
Investigator(s): K. Hardwicke Section/Township/Range: S 29/T. 2 N./R. 1 E.
Landform (hillslope, terrace, etc.): hillslope (bank) Local Relief (concave, convex, none): Convex Slope (%): 11
Subregion (LRR): LRR C Lat: N 596814 Long: W 4204672 Datum: NAD83
Soil Map Unit Name: Rincon clay loam, 9 to 15% slopes NWI classification PEMC
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If no, explain in Remarks.)
Are Vegetation ___ Soil ___ or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X 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.

	Yes	No
Hydrophytic Vegetation Present?		X
Hydric Soil Present?		X
Wetland Hydrology Present?		X

Is the Sampled Area within a Wetland? Yes ___ No X

Remarks:
On bank above Kirker Creek intermittent stream bed, approx. 20 ft to north at same elevation above channel as seep data point 3. Soils and veg distinctly drier, no wetland hydrology, outside boundary of groundwater seep. Annual precip. lower than typical

VEGETATION

Tree Stratum (Use scientific names)	Absolute Cover %	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		
Herb Stratum			
1. *Centaurea solstitialis*	31	X	UPL
2. *Avena fatua*	36	X	UPL
3. *Bromus mollis*	10		FACU
4. *Grindelia camporum*	5		FACU
5. *Lolium multiflorum*	7		FAC
6. *Brassica nigra*	2		UPL
7.			
8.			
Total Cover:	91		
Woody Vine Stratum			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 16 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0/2 = 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	7	x 3 =	21
FACU species	15	x 4 =	60
UPL Species	69	x 5 =	349
Column totals	91	(A)	430 (B)

Prevalence Index = B/A = 4.7

Hydrophytic Vegetation Indicators:

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

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks:
Dominated by upland vegetation, annual vegetation brown and dry compared to still-green seep veg. approx 20 ft. away.

SOIL

Sampling Point: 4

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16"	10 YR 4/4	60	10 YR 5/8	3	C	PL	gravelly	light Fe mottles, soil dry
	10 YR 3/2	37					clay loam	rocks or hard clay
								16" = bottom of pit

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

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

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

Indicators for Problematic Hydric Soils[3]:

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

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (If present):
Type: none
Depth (inches): ______

Hydric Soil Present? Yes ______ No X

Remarks:
Soils completely dry, gravelly, well-drained, and with no organic streaking or muck.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

___ 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 Plowed Soils (C6)
___ 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)
___ Thin Muck Surface (C7)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? **Yes** ______ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
CIMIS data (Concord #170) reports 8/06-7/07 annual precip. of 7.4 in. WETS tables ranges for Antioch report normal 30% range at 9.97-14.77 in./yr.

Remarks:
Dry, crumbly soil with no salt or biotic crust. Adjacent to seep boundary, but clear transition to these upland soils outside of seep.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: James Donlon Boulevard Extension City/County: Pittsburgh/Contra Costa Sampling Date: 8/7/07

Applicant/Owner: City of Pittsburgh State: California Sampling Point: 5

Investigator(s): K. Hardwicke Section/Township/Range: S 29/T. 2 N./R. 1 E.

Landform (hillslope, terrace, etc.): streambed Local Relief (concave, convex, none): Concave Slope (%): 1

Subregion (LRR): LRR C Lat: N 596926 Long: W 4204856 Datum: NAD83

Soil Map Unit Name: Rincon clay loam, 9 to 15% slopes NWI classification PEMC

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

Are Vegetation ___ Soil ___ or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X 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 X No ___	Is the Sampled Area within a Wetland?	Yes X No ___
Hydric Soil Present?	Yes X No ___		
Wetland Hydrology Present?	Yes X No ___		

Remarks:

Kirker Creek low flow channel. Approx. 10 ft. downstream of another groundwater seep discharge (different seep than data point 3), stream is perennial. Channel is vegetated emergent wetland. Annual precipitation lower than typical as based on WETS data.

VEGETATION

Tree Stratum (Use scientific names)	Absolute Cover %	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		
Herb Stratum			
1. *Scirpus pungens*	84	X	OBL
2. *Polypogon monspeliensis*	2		FACW
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:			
Woody Vine Stratum			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 3 % Cover of Biotic Crust 0

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 1/1 = 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	84	x 1 = 84
FACW species	2	x 2 = 4
FAC species	0	x 3 = 0
FACU species	0	x 4 = 0
UPL Species	0	x 5 = 0
Column totals	86 (A)	88 (B)

Prevalence Index = B/A = 1.0

Hydrophytic Vegetation Indicators:

X Dominance Text is >50%

X Prevalence Index is ≤3.0[1]

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

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No ___

Remarks:

Approx. 11% cover of open water. Scirpus in middle of low flow is uniformly flattened in direction of stream flow and covered in sediment. Channel thalweg may scour of veg. in extremely wet years.

SOIL

Sampling Point: 5

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2"	10 YR 4/3	97	10 YR 5/1	3	D	M	sandyclayloam	soil inundated, possibly Fe
								redox but not visble in red matrix
2-3"	5 PB 2.5/1	100					mucky clay	organic mucky layer, slimy
3-20"	10 YR 4/2	30					sandyclayloam	
	5 PB 3/1	70						organic streaking
								20" = bottom of pit

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

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

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
X 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)
X Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

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

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (If present):

Type: none

Depth (inches): ______

Hydric Soil Present? Yes X No ___

Remarks:

Upper soil layers very wet. Saturated at surface, but less wet below indicating hydrology is from seep above draining into channel.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

X Surface Water (A1)
___ High Water Table (A2)
X 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)
X Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Plowed Soils (C6)
___ 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)
___ Thin Muck Surface (C7)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ___ Depth (inches): 1-2"
Water Table Present? Yes X No ___ Depth (inches): 0"
Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 0"

Wetland Hydrology Present? Yes X No ___

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

CIMIS data (Concord #170) reports 8/06-7/07 annual precip. of 7.4 in. WETS tables ranges for Antioch report normal 30% range at 9.97-14.77 in./yr.

Remarks:

Low flow channel, in August contains fairly stagnant water slowly moving from seep point.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: James Donlon Boulevard Extension City/County: Pittsburgh/Contra Costa Sampling Date: 8/7/07

Applicant/Owner: City of Pittsburgh State: California Sampling Point: 6

Investigator(s): K. Hardwicke Section/Township/Range: S 29/T. 2 N./R 1 E.

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

Subregion (LRR): LRR C Lat: N 596927 Long: W 4204851 Datum: NAD83

Soil Map Unit Name: Rincon clay loam, 9 to 15% slopes NWI classification PEMC

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

Are Vegetation ____ Soil ____ or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X 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 X No ____	Is the Sampled Area within a Wetland? Yes X No ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks:

Low (6 in. above OHW) sandy terrace adjacent to Kirker Creek low flow channel. Annual precipitation lower than typical as based on WETS climate data.

VEGETATION

Tree Stratum (Use scientific names)	Absolute Cover %	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		
Herb Stratum			
1. *Distichlis spicata*	63	X	FACW
2. *Polypogon monspeliensis*	11		FACW
3. *Lotus corniculatus*	6		FAC
4. *Cotula coronopifolia*	5		FACW
5. *Spergularia macrotheca*	2		FAC
6.			
7.			
8.			
Total Cover:	87		
Woody Vine Stratum			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 12 % Cover of Biotic Crust 0

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 1/1 = 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	79	x 2 = 158
FAC species	8	x 3 = 24
FACU species	0	x 4 = 0
UPL Species	0	x 5 = 0
Column totals	87 (A)	182 (B)

Prevalence Index = B/A = 2.1

Hydrophytic Vegetation Indicators:

X Dominance Text is >50%

X Prevalence Index is ≤3.0[1]

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

____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

1% of cover is riverine drift, litter.

SOIL

Sampling Point: 6

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-2"	10 YR 4/4	100					silty sand	recent sand deposit, with salt
2-6"	10 YR 3/1	60	7.5 YR 5/6	40	C	RC	sandy loam	loamy layer below most recent layer
6-11"	10 YR 5/1	75	7.5 YR 4/6	25	C	RC	loamy clay	
11-16"	10 YR 5/1	50	7.5 YR 4/6	10	C	RC	loamy clay	
	5 PB 3/1	40						16" = bottom of pit

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, 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**)
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

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

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (If present):

Type: clay layer below sand

Depth (inches): 6"

Hydric Soil Present? Yes X No ___

Remarks:

Soil is moist 0.5 in. below surface.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ 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)
- X Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ 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)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

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

Wetland Hydrology Present? Yes X No ___

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

CIMIS data (Concord #170) reports 8/06-7/07 annual precip. of 7.4 in. WETS tables ranges for Antioch report normal 30% range at 9.97-14.77 in./yr.

Remarks:

Soil is moist. Flooded in wet season by overflow from channel, horizontal seepage of moisture from channel in remainder of year.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: James Donlon Boulevard Extension City/County: Pittsburgh/Contra Costa Sampling Date: 8/7/07

Applicant/Owner: City of Pittsburgh State: California Sampling Point: 7

Investigator(s): K. Hardwicke Section/Township/Range: S 29/T. 2 N./R. 1 E.

Landform (hillslope, terrace, etc.): hillslope (bank) Local Relief (concave, convex, none): Convex Slope (%): 25

Subregion (LRR): LRR C Lat: N 596932 Long: W 4204851 Datum: NAD83

Soil Map Unit Name: Rincon clay loam, 9 to 15% slopes NWI classification none

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

Are Vegetation ____ Soil ____ or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X 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 X
Hydric Soil Present?	Yes ____	No X
Wetland Hydrology Present?	Yes ____	No X

Is the Sampled Area within a Wetland? Yes ____ No X

Remarks:

Dry, well-drained bank approx. 10 ft. above lower stream terraces of Kirker Creek. Annual precipitation lower than typical as based on WETS climate data.

VEGETATION

Tree Stratum (Use scientific names)	Absolute Cover %	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum			
1. *Grindelia camporum*	3	X	FACU
2.			
3.			
4.			
5.			
Total Cover:	3		
Herb Stratum			
1. *Carduus pycnocephalus*	21	X	UPL
2. *Brassica nigra*	16	X	UPL
3. *Vulpia myuros*	14	X	FACU
4. *Avena fatua*	12		UPL
5. *Elymus triticoides*	2		FAC
6. *Lolium multiflorum*	4		FAC
7. *Galium aparine*	4		FACU
8. *Centaurea solstitialis*	10		UPL
Total Cover:	83		
Woody Vine Stratum			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 26 % Cover of Biotic Crust 0

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0/4 = 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	6	x 3 =	18
FACU species	21	x 4 =	84
UPL Species	59	x 5 =	295
Column totals	86 (A)		397 (B)

Prevalence Index = B/A = 4.6

Hydrophytic Vegetation Indicators:

____ Dominance Text is >50%

____ Prevalence Index is ≤3.0[1]

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

____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks:

Vegetation is mostly dead, dry.

SOIL

Sampling Point: 7

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12"	10 YR 4/4	98	10 YR 5/6	2	C	PL	clay loam	faint mottles, patchy
								dry, friable
								12" = bottom of pit

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

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

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

Indicators for Problematic Hydric Soils[3]:

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

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (If present):
Type: rock
Depth (inches): 12"

Hydric Soil Present? **Yes**____ **No** X

Remarks:
Very few redox features, low contrast with matrix. Soil is dry and crumbles away from bank slope very easily.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

___ 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 Plowed Soils (C6)
___ 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)
___ Thin Muck Surface (C7)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? **Yes**____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
CIMIS data (Concord #170) reports 8/06-7/07 annual precip. of 7.4 in. WETS tables ranges for Antioch report normal 30% range at 9.97-14.77 in./yr.

Remarks:
No wetland hydrology. Well-drained soils.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: James Donlon Boulevard Extension City/County: Pittsburgh/Contra Costa Sampling Date: 8/8/07

Applicant/Owner: City of Pittsburgh State: California Sampling Point: 8

Investigator(s): K. Hardwicke Section/Township/Range: S 29/T 2 N./R. 1 E.

Landform (hillslope, terrace, etc.): depression in eroded channel Local Relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR): LRR C Lat: N 597095 Long: W 4204824 Datum: NAD83

Soil Map Unit Name: Altamont-Fontana comlex, 30 to 50% slopes NWI classification none

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

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

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

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

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

Remarks:

Depressional wetland in poorly incised, short, swaley erosional channel draining to Kirker Creek. Soil is dry but shows evidence of rainy-season saturation due to extreme cow punch. Annual precip. lower than typical as basd on WETS climate data.

VEGETATION

Tree Stratum (Use scientific names)	Absolute Cover %	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		
Herb Stratum			
1. *Lolium multiflorum*	35	X	FAC
2. *Hordeum hystrix*	20	X	FAC
3. *Hordeum murinum*	5		UPL
4.			
5.			
6.			
7.			
8.			
Total Cover:	60		
Woody Vine Stratum			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 40 % Cover of Biotic Crust 0

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 2/2 = 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:			Multiply by:
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	55	x 3 =	165
FACU species	0	x 4 =	0
UPL Species	5	x 5 =	25
Column totals	60 (A)		190 (B)

Prevalence Index = B/A = 3.2

Hydrophytic Vegetation Indicators:

X Dominance Text is >50%

___ Prevalence Index is ≤3.0[1]

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

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No ___

Remarks:

Upland vegetation such as Centaurea solstitialis and Avena sp. ring the edges of the depression, but facultative hydrophytes dominate within depressed, cow punched area.

SOIL

Sampling Point: **8**

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-16"	10 YR 2/2	92	7.5 YR 5/8	8	C	PL	sandyclayloam	soil is dry, hard.
								clay layer at 16"
								16" = bottom of pit

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, 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)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

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

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (If present):

Type: hard clay layer

Depth (inches): 16"

Hydric Soil Present? Yes X No ___

Remarks:

Dried seasonal depression, water perches above hard clay layer.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ 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 Plowed Soils (C6)
- X 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)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes X No ___

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

CIMIS data (Concord #170) reports 8/06-7/07 annual precip. of 7.4 in. WETS tables ranges for Antioch report normal 30% range at 9.97-14.77 in./yr.

Remarks:

Wet-season saturation inferred from deep cow punch throughout depression. Clear topographic low point over shallow aquitard. Area surrounding depression does not show the same signs of wet-season saturation.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: James Donlon Boulevard Extension City/County: Pittsburgh/Contra Costa Sampling Date: 8/8/07

Applicant/Owner: City of Pittsburgh State: California Sampling Point: 9

Investigator(s): K. Hardwicke Section/Township/Range: S 29/T. 2 N./R. 1 E.

Landform (hillslope, terrace, etc.): toe of slope Local Relief (concave, convex, none): Convex Slope (%): 3

Subregion (LRR): LRR C Lat: N 597092 Long: W 4204816 Datum: NAD83

Soil Map Unit Name: Altamont-Fontana complex, 30 to 50% slopes NWI classification none

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

Are Vegetation ___ Soil ___ or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X 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 X	Is the Sampled Area within a Wetland?	Yes ___ No X
Hydric Soil Present?	Yes ___	No X		
Wetland Hydrology Present?	Yes ___	No X		

Remarks:
Low terrace at toe of slope of large hill approx. 6 ft. above depressional wetland in eroded swale. Annual precipitation lower than typical as based on WETS climate data.

VEGETATION

Tree Stratum (Use scientific names)	Absolute Cover %	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		
Herb Stratum			
1. *Avena fatua*	33	X	UPL
2. *Bromus mollis*	20	X	FACU
3. *Centaurea solstitialis*	4		UPL
4. *Lolium multiflorum*	12		FAC
5. *Brassica nigra*	13		UPL
6. *Cirsium vulgare*	6		FACU
7. *Hordeum murinum*	3		UPL
8. *Bromus rubens*	2		UPL
Total Cover:	93		
Woody Vine Stratum			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 9 % Cover of Biotic Crust 0

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0/2 = 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:			Multiply by:
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	12	x 3 =	36
FACU species	26	x 4 =	104
UPL Species	55	x 5 =	275
Column totals	93 (A)		415 (B)

Prevalence Index = B/A = 4.5

Hydrophytic Vegetation Indicators:

___ Dominance Text is >50%

___ Prevalence Index is ≤3.0[1]

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

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks:
Vegetation is seasonally dead, crisped, dry. Upland species predominate.

SOIL

Sampling Point: 9

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-8"	10 YR 3/2	100					clay loam	no visible redox features
8-18"	10 YR 2/2	100					clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

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

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

Indicators for Problematic Hydric Soils[3]:

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

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (If present):

Type: none

Depth (inches): ________

Hydric Soil Present? Yes ____ **No** X

Remarks:

Soil is completely dry, with no visible redox features. Deep, well-drained.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ 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 Plowed Soils (C6)
- ___ 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)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes ____ **No** X

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

CIMIS data (Concord #170) reports 8/06-7/07 annual precip. of 7.4 in. WETS tables ranges for Antioch report normal 30% range at 9.97-14.77 in./yr.

Remarks:

No wetland hydrology.

SOIL

Sampling Point: 10

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-13"	10 YR 3/3	97	10 YR 3/6	3	C	PL	silty clay	Redox Fe concentrations faint
								13"=bottom of pit

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

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

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

Indicators for Problematic Hydric Soils[3]:

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

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (If present):
Type: none
Depth (inches): ______

Hydric Soil Present? **Yes** ____ **No** X

Remarks:
Clay soils completely dry and hard, with some rock outcrops. Runoff events probaly do not last long enough for soil moisture to penetrate deeply or saturate for long duration.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

___ 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 Plowed Soils (C6)
___ 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)
___ Thin Muck Surface (C7)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes ____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
CIMIS data (Concord #170) reports 8/06-7/07 annual precip. of 7.4 in. WETS tables ranges for Antioch report normal 30% range at 9.97-14.77 in./yr.

Remarks:
Swaled area of drainage, little or no evidence of regular flows. No drainage patterns, drift or sediment deposits on rock outcrops, or water marks on leaves.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: James Donlon Boulevard Extension City/County: Pittsburgh/Contra Costa Sampling Date: 8/8/07
Applicant/Owner: City of Pittsburgh State: California Sampling Point: 11
Investigator(s): K. Hardwicke Section/Township/Range: S 29/T 2 N./R. 1 E.
Landform (hillslope, terrace, etc.): ephemeral streambed Local Relief (concave, convex, none): Concave Slope (%): 3
Subregion (LRR): LRR C Lat: N 597771 Long: W 4204653 Datum: NAD83
Soil Map Unit Name: Altamont-Fontana complex, 30 to 50% slopes NWI classification none
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If no, explain in Remarks.)
Are Vegetation ___ Soil ___ or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X 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 X
Hydric Soil Present?	Yes ___	No X
Wetland Hydrology Present?	Yes ___	No X

Is the Sampled Area within a Wetland? Yes ___ No X

Remarks:
Banks of ephemeral stream are approx. 30 ft. high, but lower channel is swaled out in area of data point. Incision both upstream and downstream of swaled area. Annual precipitation lower than typical as based on WETS climate data.

VEGETATION

Tree Stratum (Use scientific names)	Absolute Cover %	Dominant Species?	Indicator Status
1. *Quercus lobata*	3	X	FAC
2.			
3.			
4.			
Total Cover:	3		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		
Herb Stratum			
1. *Avena fatua*	38	X	UPL
2. *Vulpia myuros*	12	X	FACU
3. *Brassica nigra*	5		UPL
4. *Hordeum hystrix*	4		FAC
5. *Lolium multiflorum*	8		FAC
6.			
7.			
8.			
Total Cover:	67		
Woody Vine Stratum			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 30 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 1/3 = 33% (A/B)

Prevalence Index worksheet:

Total % Cover of:			Multiply by:
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	15	x 3 =	45
FACU species	12	x 4 =	48
UPL Species	43	x 5 =	215
Column totals	70	(A)	308 (B)

Prevalence Index = B/A = 4.4

Hydrophytic Vegetation Indicators:

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

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks:
Valley oak associated with channel, canopy reaches to edge of data point area. Herbaceous veg. a mix of weak hydrophytes and upland vegetation, may meet hydrophytic veg criteria in atypically wet years.

SOIL

Sampling Point: 11

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-11"	10 YR 3/2	96	10 YR 4/6	4	C	PL	silty clay	Redox features faint
								11" = bottom of pit

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

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

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

Indicators for Problematic Hydric Soils[3]:

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

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (If present):

Type: none

Depth (inches): ________

Hydric Soil Present? Yes ______ No X

Remarks:

Soil completely dry, water does not appear penetrate deeply or saturate these soils for long duration. Soil borders on F6, Redox Dark Surface, but does have prominent enough or frequent enough mottles.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

___ 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 Plowed Soils (C6)
___ 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)
___ Thin Muck Surface (C7)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes ______ No X

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

CIMIS data (Concord #170) reports 8/06-7/07 annual precip. of 7.4 in. WETS tables ranges for Antioch report normal 30% range at 9.97-14.77 in./yr.

Remarks:

No sign of wetland hydrology, not even drift or water marks.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: James Donlon Boulevard Extension City/County: Pittsburgh/Contra Costa Sampling Date: 8/9/07

Applicant/Owner: City of Pittsburgh State: California Sampling Point: 12

Investigator(s): K. Hardwicke Section/Township/Range: S 29/T. 2 N./R. 1 E.

Landform (hillslope, terrace, etc.): stream bank Local Relief (concave, convex, none): Convex Slope (%): 15

Subregion (LRR): LRR C Lat: N 598478 Long: W 4204695 Datum: NAD83

Soil Map Unit Name: Altamont-Fontana complex, 30 to 50% slopes NWI classification PEMC

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

Are Vegetation ____ Soil ____ or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X 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 X
Hydric Soil Present?	Yes ____	No X
Wetland Hydrology Present?	Yes ____	No X

Is the Sampled Area within a Wetland? Yes ____ No X

Remarks:

Data point just above toe of bank to perennially wet, seep-fed stream and lower compacted terrace above low flow channel. Annual precipitation lower than typical as based on WETS climate data.

VEGETATION

Tree Stratum (Use scientific names)	Absolute Cover %	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		
Herb Stratum			
1. *Carduus pycnocephalus*	17	X	UPL
2. *Cirsium vulgare*	15	X	FACU
3. *Hordeum hystrix*	12	X	FAC
4. *Avena fatua*	13	X	UPL
5. *Brassica nigra*	8		UPL
6. *Lolium multiflorum*	7		FAC
7. *Bromus rubens*	2		UPL
8.			
Total Cover:	74		
Woody Vine Stratum			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 34 % Cover of Biotic Crust 0

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 1/4 = 25% (A/B)

Prevalence Index worksheet:

Total % Cover of:			Multiply by:
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	19	x 3 =	57
FACU species	15	x 4 =	60
UPL Species	40	x 5 =	200
Column totals	74 (A)		317 (B)

Prevalence Index = B/A = 4.3

Hydrophytic Vegetation Indicators:

____ Dominance Text is >50%

____ Prevalence Index is ≤3.0[1]

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

____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks:

10% litter and duff. Vegetation is dry, mostly dormant.

SOIL

Sampling Point: 12

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-7"	10 YR 3/2	99	10 YR 5/8	1	C	PL	gravelly clay loam	friable, small whitish gravels
7-17"	10 YR 3/2	100					gravelly clay	fewer, but still some whitish gravels
								17" =bottom of pit

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

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

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

Indicators for Problematic Hydric Soils[3]:

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

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (If present):

Type: finer clay soils

Depth (inches): 7"

Hydric Soil Present? Yes ___ No X

Remarks:

Soil is dry, friable. Found some living roots, but no redox features associated with these. V. few redox features in profile.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ 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 Plowed Soils (C6)
- ___ 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)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes ___ No X

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

CIMIS data (Concord #170) reports 8/06-7/07 annual precip. of 7.4 in. WETS tables ranges for Antioch report normal 30% range at 9.97-14.77 in./yr.

Remarks:

Well-drained streambank, no sign of wetland hydrology.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: James Donlon Boulevard Extension City/County: Pittsburgh/Contra Costa Sampling Date: 8/9/07

Applicant/Owner: City of Pittsburgh State: California Sampling Point: 13

Investigator(s): K. Hardwicke Section/Township/Range: S 29/T 2 N./R. 1 E.

Landform (hillslope, terrace, etc.): streambed Local Relief (concave, convex, none): Concave Slope (%): 1%

Subregion (LRR): LRR C Lat: N 598485 Long: W 4204699 Datum: NAD83

Soil Map Unit Name: Altamont-Fontana complex, 30 to 50% slopes NWI classification PEMC

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

Are Vegetation ___ Soil ___ or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes __X__ 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 X	No
Hydric Soil Present?	Yes X	No
Wetland Hydrology Present?	Yes X	No

Is the Sampled Area within a Wetland? Yes __X__ No ____

Remarks:

Seep-fed stream, 1-4 in. of slowly running water in August. Water quality poor from cattle disturbance, water stagnant in some deeper cow punch puddles. Annual precip. lower than typical as based on WETS climate data.

VEGETATION

Tree Stratum (Use scientific names)	Absolute Cover %	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		
Herb Stratum			
1. *Nasturtium officinale*	12	X	OBL
2. *Polypogon monspeliensis*	17	X	FACW
3. *Distichlis spicata*	6	X	FACW
4. *Hydrocotyle verticillata*	15	X	OBL
5. *Carduus pycnocephalus*	3		UPL
6. *Pseudognaphalium luteoalbum*	2		FACW
7.			
8.			
Total Cover:	55		
Woody Vine Stratum			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 20 % Cover of Biotic Crust 5

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 4/4 = 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	27	x 1 = 27
FACW species	25	x 2 = 50
FAC species	0	x 3 = 0
FACU species	0	x 4 = 0
UPL Species	3	x 5 = 15
Column totals	55 (A)	92 (B)

Prevalence Index = B/A = 1.7

Hydrophytic Vegetation Indicators:

X Dominance Text is >50%

X Prevalence Index is ≤3.0[1]

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

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes __X__ No ____

Remarks:

Approximately 20% of plot surface open water. Biotic crust is algal filaments. Low tussock covered in Polypogon and Distichlis, Nasturtium and Hydrocotyle are emergent in deeper pools.

SOIL

Sampling Point: 13

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8"	10 YR 2/1	93					clay loam	redox features obscured by organic
	5 PB 2.5/1	7					mucky	material and/or is Fe-depleted
								8" = bottom of pit

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- X 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)
- X Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

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

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (If present):

Type: none found

Depth (inches): ______

Hydric Soil Present? Yes X No ___

Remarks:

Perennially inundated soils at bottom of seep-fed streambed approximately 150 ft dowstream from seep discharge point

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- X Surface Water (A1)
- ___ High Water Table (A2)
- X 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)
- X Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ 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)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes X	No ___	Depth (inches): 1-4"
Water Table Present?	Yes X	No ___	Depth (inches): 0"
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): 0"

Wetland Hydrology Present? Yes X No ___

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

CIMIS data (Concord #170) reports 8/06-7/07 annual precip. of 7.4 in. WETS tables ranges for Antioch report normal 30% range at 9.97-14.77 in./yr.

Remarks:

Algal mats on dried/drying cow punch edges.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: James Donlon Boulevard Extension City/County: Pittsburgh/Contra Costa Sampling Date: 8/9/07
Applicant/Owner: City of Pittsburgh State: California Sampling Point: 14
Investigator(s): K. Hardwicke Section/Township/Range: S 28/T. 2 N./R. 1 E.
Landform (hillslope, terrace, etc.): streambed Local Relief (concave, convex, none): Concave Slope (%): 1
Subregion (LRR): LRR C Lat: N 599109 Long: W 4205146 Datum: NAD83
Soil Map Unit Name: Altamont-Fontana complex, 30 to 50% slopes NWI classification PEMA
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____ Soil ____ or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____ Soil X 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 X	No ____
Hydric Soil Present?	Yes X	No ____
Wetland Hydrology Present?	Yes X	No ____

Is the Sampled Area within a Wetland? Yes X No ____

Remarks:
Wide streambed, sharply incised 6-7' banks, with Polypogon from one bank to the other. Recently deposited entisols, sandy clay. Annual precip. lower than typical as based on WETS climate data.

VEGETATION

Tree Stratum (Use scientific names)	Absolute Cover %	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		
Herb Stratum			
1. *Polypogon monspeliensis*	32	X	FACW
2. *Dsitichlis spicata*	9	X	FACW
3. *Malvella leprosa*	5		FAC
4. *Xanthium spinosum*	3		FAC
5. *Dittrichia graveolens*	1		UPL
6.			
7.			
8.			
Total Cover:	50		
Woody Vine Stratum			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 40 % Cover of Biotic Crust 0

Dominance Test worksheet:

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	41	x 2 = 82
FAC species	8	x 3 = 24
FACU species	0	x 4 = 0
UPL Species	1	x 5 = 5
Column totals	50 (A)	109 (B)

Prevalence Index = B/A = 2.2

Hydrophytic Vegetation Indicators:

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

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:
10% cover of unidentifiable dead litter or drift.

SOIL

Sampling Point: 14

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3"	10 YR 4/4	91	2.5 YR 4/8	7	C	PL	sandy clay	soil dry, hard
			10 YR 6/1	2	D	M	loam	some redox features along living
								roots (RC)
3-9"	10 YR 4/4	98	2.5 YR 4/8	2	C	PL	sandy clay	
							loam	
9-11"	10 YR 4/4	80	2.5 YR 4/8	12	C	PL	clay	soil is moist, not saturated
			7.5 YR 5/8	5	D	PL		
			10 YR 5/1	3	D	M		11" = bottom of pit

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

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

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

Indicators for Problematic Hydric Soils[3]:

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

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (If present):
Type: clay layer
Depth (inches): 9 in.

Hydric Soil Present? Yes X No ___

Remarks:
Soil not dark with accumulated organic material because it is too new. Deposited recently, within past 3 years. Redox features prominent, many, mostly along pore linings as veg. is dried, but in some (Xanthium, Distichlis) along living root channels.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

___ 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)
X Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
X Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Plowed Soils (C6)
___ 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)
___ Thin Muck Surface (C7)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
X Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:
Surface Water Present? Yes ___ No X Depth (inches): ___
Water Table Present? Yes ___ No X Depth (inches): ___
Saturation Present? Yes ___ No X Depth (inches): ___
(includes capillary fringe)

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
CIMIS data (Concord #170) reports 8/06-7/07 annual precip. of 7.4 in. WETS tables ranges for Antioch report normal 30% range at 9.97-14.77 in./yr.

Remarks:
Frequent dried cow punch indicates saturation during rainy season, but only seasonal saturation. Banks sharply incised, bed wide, so likely carries large flood events.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: James Donlon Boulevard Extension City/County: Pittsburgh/Contra Costa Sampling Date: 8/9/07

Applicant/Owner: City of Pittsburgh State: California Sampling Point: 15

Investigator(s): K. Hardwicke Section/Township/Range: S 28/T. 2 N./R. 1 E.

Landform (hillslope, terrace, etc.): flat plain above streambed Local Relief (concave, convex, none): Convex Slope (%): 2%

Subregion (LRR): LRR C Lat: N 599120 Long: W 4205142 Datum: NAD83

Soil Map Unit Name: Altamont-Fontana complex, 30 to 50% slopes NWI classification none

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

Are Vegetation ____ Soil ____ or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X 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 X
Hydric Soil Present?	Yes ____	No X
Wetland Hydrology Present?	Yes ____	No X

Is the Sampled Area within a Wetland? Yes ____ No X

Remarks:

Flat area top of bank, 7 ft. above intermittent, wide streambed. Annual precipitation lower than typical as based on WETS climate data.

VEGETATION

Tree Stratum (Use scientific names)	Absolute Cover %	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		
Herb Stratum			
1. *Bromus mollis*	29	X	FACU
2. *Avena fatua*	23	X	UPL
3. *Hordeum hystrix*	20	X	FAC
4. *Rumex crispus*	2		FACW
5. *Centaurea solstitialis*	1		UPL
6.			
7.			
8.			
Total Cover:	75		
Woody Vine Stratum			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 16 % Cover of Biotic Crust 0

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 1/3 = 33% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	2	x 2 =	4
FAC species	20	x 3 =	60
FACU species	29	x 4 =	116
UPL Species	24	x 5 =	120
Column totals	75 (A)		300 (B)

Prevalence Index = B/A = 4

Hydrophytic Vegetation Indicators:

____ Dominance Text is >50%

____ Prevalence Index is ≤3.0[1]

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

____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks:

9% cover of unidentifiable standing dead and litter. Grass is dead, dried, grazed and trampled.

SOIL

Sampling Point: 15

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-20"	10 YR 2/2	99	10 YR 4/6	< 1	C	PL	clay loam	soil is completely dry
								uniform, dark mollisol

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

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

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

Indicators for Problematic Hydric Soils[3]:

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

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (If present):
Type: none
Depth (inches): ________

Hydric Soil Present? Yes ____ No X

Remarks:
Very dry. Darker, older, finer material than soils of intermittent streambed below.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

___ 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 Plowed Soils (C6)
___ 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)
___ Thin Muck Surface (C7)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:
Surface Water Present? Yes ____ No X Depth (inches): ____
Water Table Present? Yes ____ No X Depth (inches): ____
Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): ____

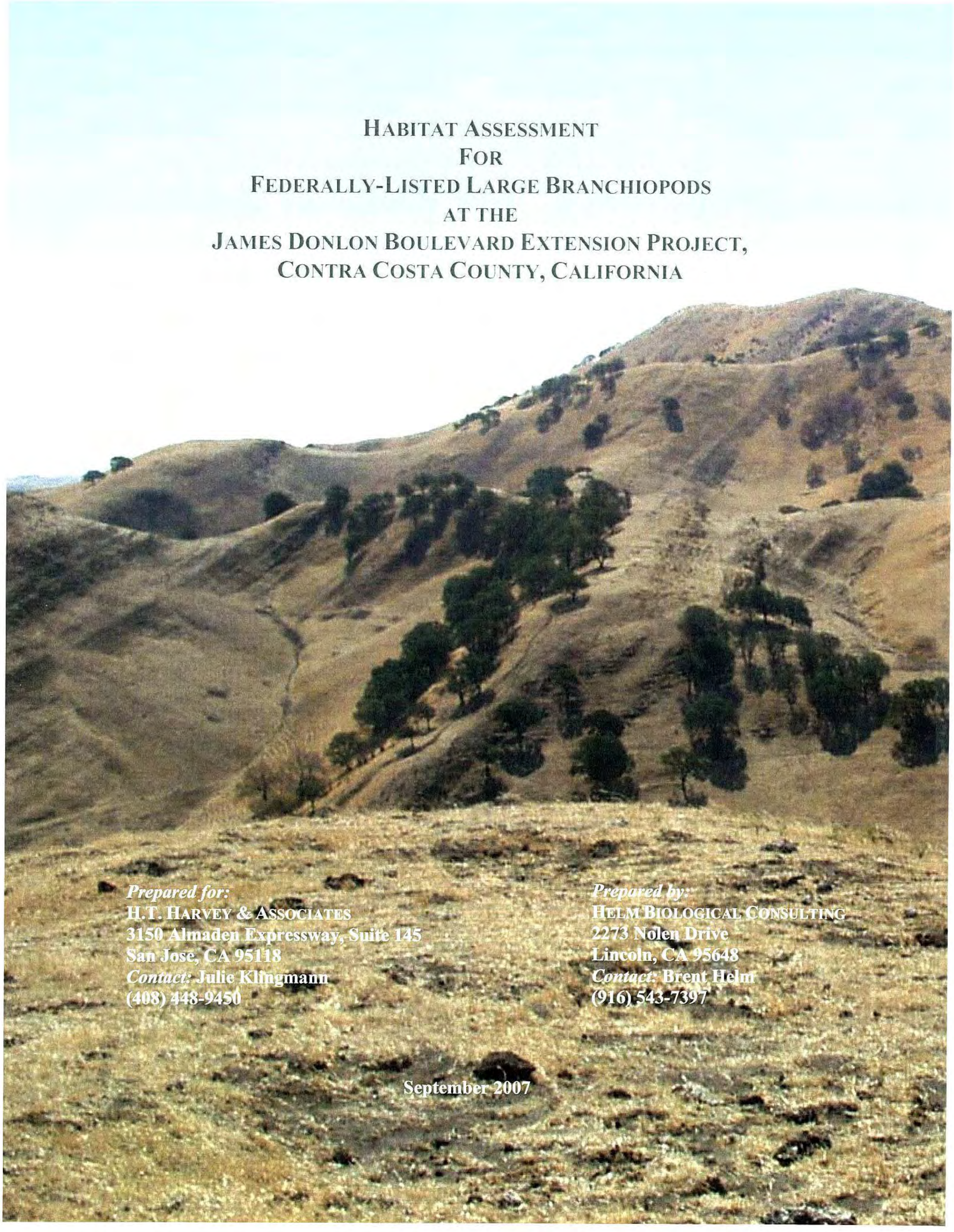
Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
CIMIS data (Concord #170) reports 8/06-7/07 annual precip. of 7.4 in. WETS tables ranges for Antioch report normal 30% range at 9.97-14.77 in./yr.

Remarks:
No wetland hydrology. Well-drained top-of-bank.

APPENDIX C.
HABITAT ASSESSMENT FOR FEDERALLY-LISTED LARGE BRANCHIOPODS AT THE JAMES DONLON BOULEVARD EXTENSION PROJECT, CONTRA COSTA COUNTY, CALIFORNIA

HABITAT ASSESSMENT
FOR
FEDERALLY-LISTED LARGE BRANCHIOPODS
AT THE
JAMES DONLON BOULEVARD EXTENSION PROJECT, CONTRA COSTA COUNTY, CALIFORNIA



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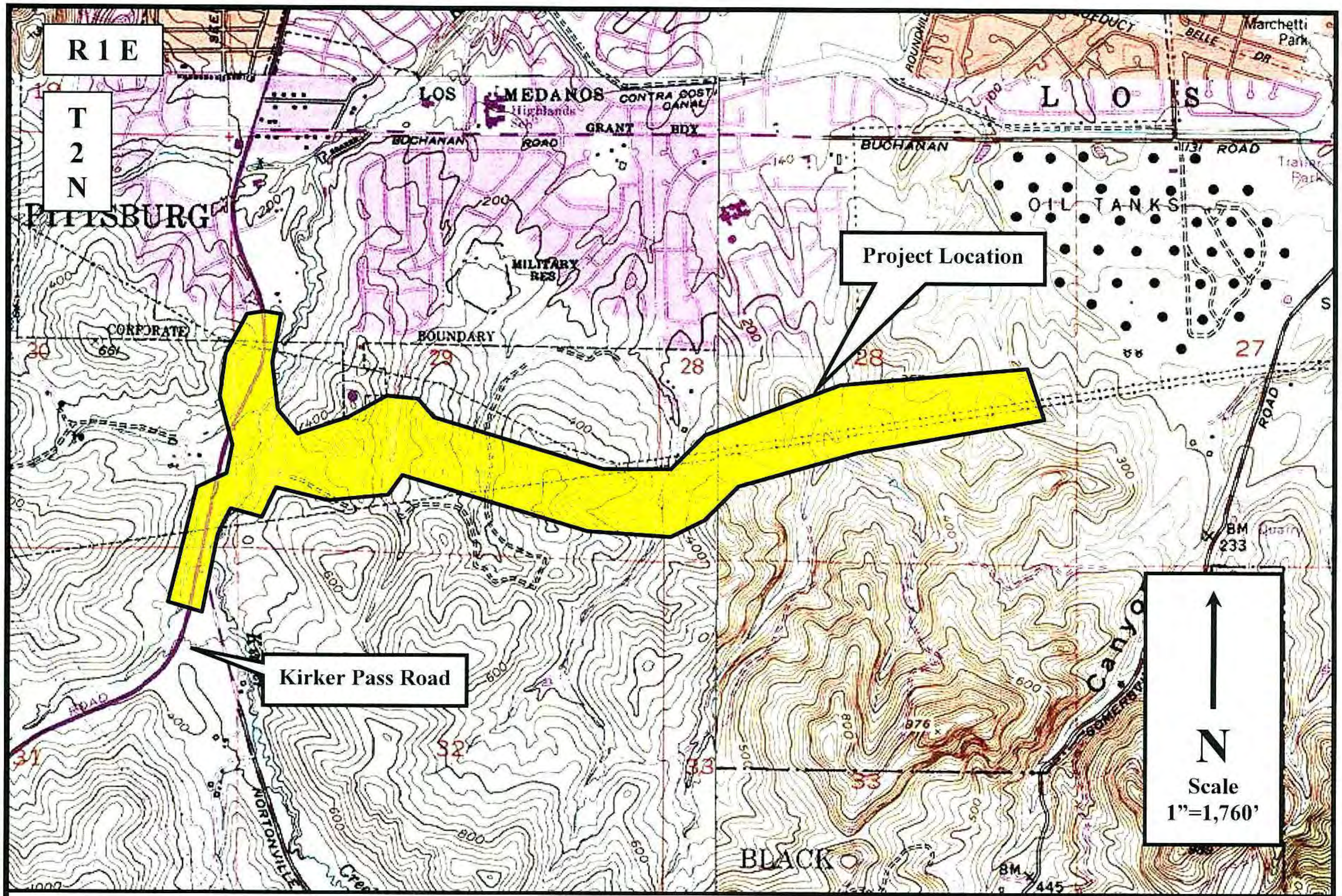
HABITAT ASSESSMENT FOR FEDERALLY-LISTED LARGE BRANCHIOPODS AT THE JAMES DONLON BOULEVARD EXTENSION PROJECT, CONTRA COSTA COUNTY, CALIFORNIA

INTRODUCTION

Helm Biological Consulting was contracted by H.T. Harvey & Associates to assess the habitats occurring at the James Donlon Boulevard Extension (Buchanan Road Bypass) Project, Contra Costa County, California for their potential to support federally-listed large branchiopods (e.g., vernal pool fairy shrimp [*Branchinecta lynchi*], longhorn fairy shrimp [*B. longiantenna*], and vernal pool tadpole shrimp [*Lepidrus packardi*]).

The James Donlon Boulevard Extension (Buchanan Road Bypass) Project is located south of Buchanan Road, west of Somersville Road, and east of Kirker Pass Road, Contra Costa County, California. Additionally, the James Donlon Boulevard Extension (Buchanan Road Bypass) Project is located in Sections 28, 29, 30, and 31 of Township 2 North, Range 1 East of the Clayton 7.5-minute U.S. Geological Survey topographic quadrangle map, and in Section 28 of the Antioch South 7.5-minute U.S. Geological Survey topographic quadrangle map (Latitude 037° 59' 13.81" North; Longitude 121° 52' 39.64 West; UTM 100598557 Easting; and UTM 4204780 Northing) (Figure 1).

This report discusses the methods and results of a habitat assessment for federally-listed large branchiopods at the James Donlon Boulevard Extension (Buchanan Road Bypass) Project, Contra Costa County, California.



Latitude 037° 59’ 13.81” N, Longitude 121° 52’ 39.64” W – Approximate UTM Northing 4204780, Easting 100598557

Figure 1. James Donlon Boulevard Extension Project Location

(Source: U.S. Geological Survey Clayton and Antioch South 7.5 minute Topographic Quadrangle Maps)

METHODS

A visit to the project site was conducted on August 8, 2007, by Dr. Brent Helm and Mr. Todd Wood. All basins on site were evaluated for their potential to support federally-listed large branchiopods. Potential habitat for federally-listed large branchiopods is defined as any seasonal inundated depression that on average ponds (or gently conveys water) two (2) inches or greater in depth for 14 or more consecutive days. Potential habitat characteristics of large branchiopods are based on the life history of Central Valley endemics (Eriksen and Belk 1999; Helm 1998, 1999; Helm and Vollmar 2002). Habitats that flow water (e.g., creeks, streams, ephemeral drainages) or semi-to-permanently inundated areas, especially those that support predators (e.g., frogs, crayfish, and fish) were not considered suitable habitat for federally-listed large branchiopods.

Particular attention was given to the rock outcroppings since they are known to support the longhorn fairy shrimp in Contra Costa County.

RESULTS

Site Characteristics

The James Donlon Boulevard Extension Project consists of steep terrain with 20-40% slopes. The slopes are lined with terraces created by grazing cattle. The steep terrain is uncharacteristic of vernal pool terrain where the majority of large branchiopods are found. The site is dominated by annual grasses including: hare barley (*Hordeum murinum* ssp. *leporinum*), wild oats (*Avena fatua*), and soft brome (*Bromus hordeaceus*) with the occassional forbs including short-pod mustard (*Hierschfeldia incana*), bull thistle (*Cirsium vulgare*), and mules-ear (*Wyethia* sp.). Mature valley oaks (*Quercus lobata*) and California buckeyes (*Aesculus californica*) are scattered across the landscape. Areas retaining more moisture such as depressional areas and areas with clay soils supported Italian annual ryegrass (*Lolium multiflorum*) and Mediterranean barley (*Hordeum marinum* ssp. *gussaneanum*).

Habitat Assessment

Twelve areas on site were investigated for their potential to support federally-listed large branchiopods (Table 1). Five of these 12 areas had basins that were determined to have potential to support federally-listed large branchiopods (Table 1 and Exhibit A). These basins include:

- Two rock outcrop pools
- Two seasonal swales
- One depression next to a cattle rub rock

Kirker Creek on site (Exhibit A) was not considered habitat for federally-listed large branchiopods because it supports permanent populations of western pond turtle (*Clemmys marmorata marmarota*) and California red-legged frog (*Rana auroro draytonii*), which are voracious predators of large branchiopods, and swift flows during the rainy season.

Representative photographs of some of basins on site are found in Appendix A.

Table 1. Results of the Federally-listed Large Branchiopod Habitat Assessment for James Donlon Boulevard Extension (Buchmanan Road Bypass) Project

Site Number	Habitat Type	Maximum Potential Ponding Depth* (in inches)	Large Branchiopod Habitat Yes / No	Comments	Plant Species Present
1	culvert infall	3	No	No hydrophytic vegetation present	*Hierschfeldia incana, Hordeum murinum ssp. leporinum*
2	depression	0	No	sandy soils, no hydrophytic vegetation present, no algae matting, no water marks on rocks	*Avena ssp, Hordeum murinum ssp. leporinum, Bromus hordeaceous*
3	rock outcrop	1	No	insuficient ponding depth	
4	rock outcrop	3	Yes		
5	depression	0	No	gravel basin, insuficient ponding depth	*Avena ssp., Hordeum murinum ssp. leporinum, Hierschfeldia incana, Bromus hordeaceous*
6	rock outcrop	0	No	no depression, sloped	
7	rock outcrop	3	Yes		
8	depression	2	Yes	3' x 1', cattle rub rock	
9	pool in stream		No	western pond turtle, California red-legged frog	
10	depression	0	No	no basin, cattle rub rock	
11	seasoanl swale	5	Yes	historically was connected to site 12, now interrupted by dirt road.	*Lolium multiflorum, Hordeum marinum ssp. gussoneanum*
12	seasoanl swale	4	Yes	disrupted by culvert, historically would have been deeper	*Lolium multiflorum, Hordeum marinum ssp. gussoneanum*

* the maximum depth that a basin can potentially pond water

Exhibit A.
Potential Federally-listed Large Branchiopod Habitat at the James Donlon Boulevard Extension Project
(Base map provided by: H.T. Harvey & Associates)

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APPENDIX A.
REPRESENTATIVE PHOTOGRAPHS

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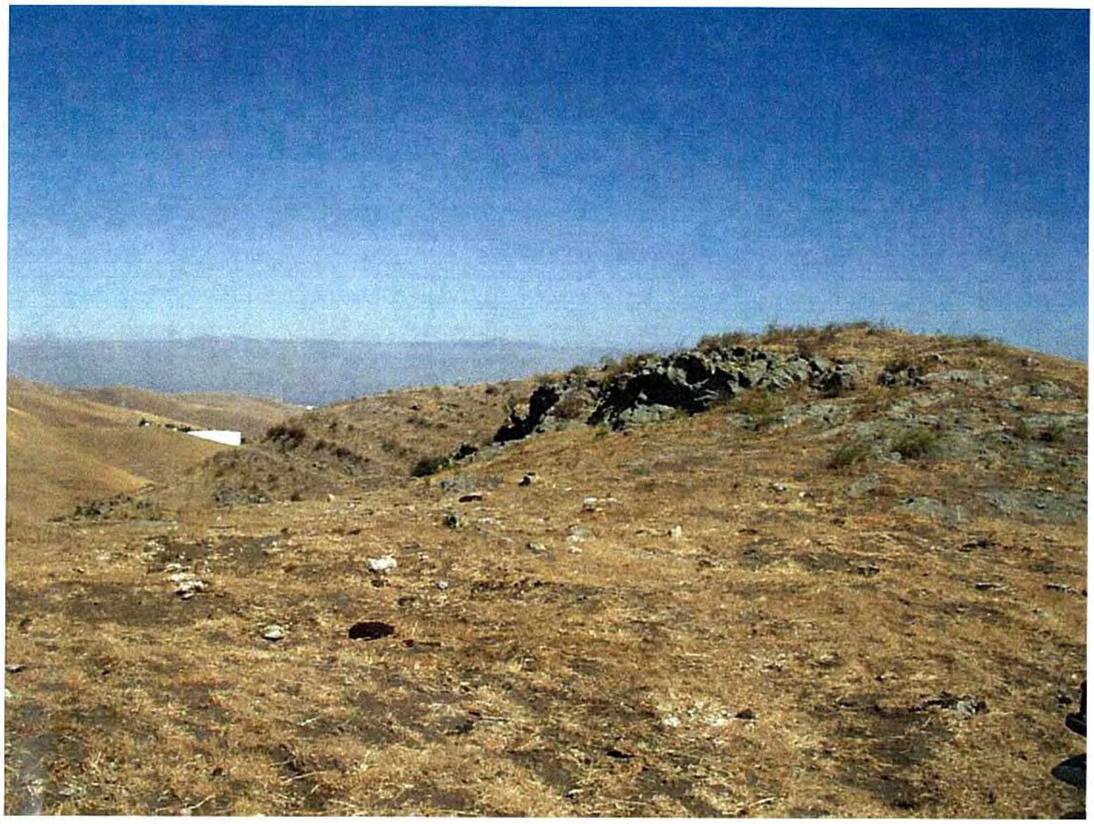
Site Number 1. Depression basin.

Upslope of site number 1.



Ridge top

Ridge top

Ridge top

Site Number 2. Sandy depression

Site Number 3. Rock outcrop

Site Number 4. Rock outcrop

Site Number 5. Gravel bottom depression

Site Number 6. Rock outcrop

Site Number 11. Seasonal swale

Site Number 12. Seasonal swale

Appendix C.2

Tree Survey Report

H. T. HARVEY & ASSOCIATES

ECOLOGICAL CONSULTANTS

JAMES DONLON BOULEVARD EXTENSION
TREE SURVEY REPORT

Prepared by

H. T. Harvey & Associates

Prepared for

The City of Pittsburg
c/o RBF Consulting
500 Ygnacio Road, Suite 270
Walnut Creek, CA 94596
Attn: Dustin Joseph

6 June 2008

Project Number 2739-01

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LIST OF CONTRIBUTERS

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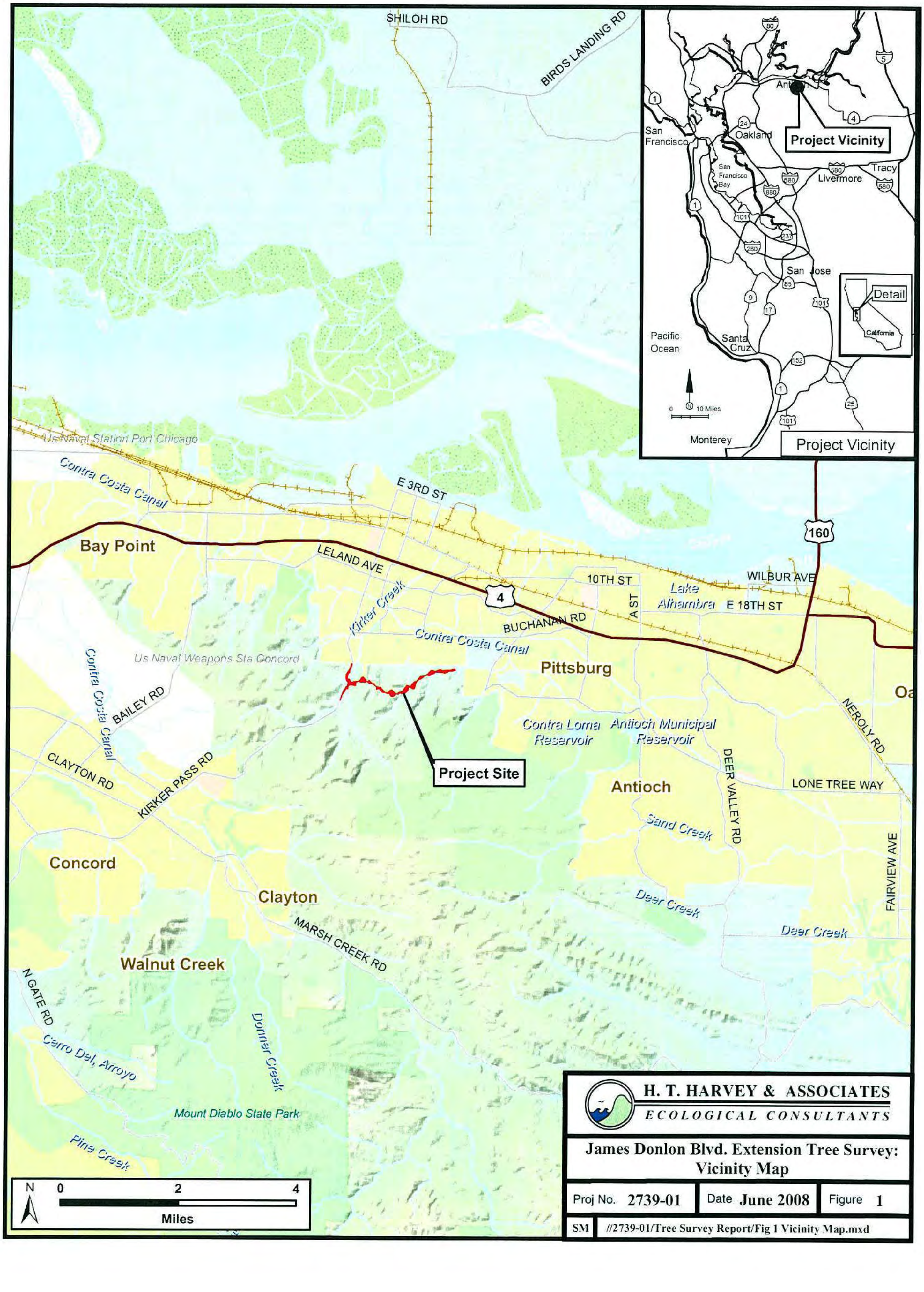
Patrick J. Boursier, Ph.D., Senior Plant Ecologist
Julie Klingmann, M.S., Project Manager
Kelly Hardwicke, Ph.D., Plant Ecologist
Onkar Singh, B.S., Field Ecologist

INTRODUCTION

H. T. Harvey & Associates conducted a tree survey for the James Donlon Boulevard Extension Project. We collected tree survey data including diameter, species identity, health and vigor rating, and location in the survey area. These data represent a complete inventory of all trees in the survey area that are greater than or equal to 6 inches (in) in diameter or additive diameter at 4.5 feet (ft; approximate breast height above natural grade). This survey does not determine the fate of the trees, but will allow planners to determine which trees are to be removed, relocated, or preserved in place.

GENERAL PROJECT AREA DESCRIPTION

The James Donlon Boulevard Extension Project is located in Contra Costa County at the southern edge of the City of Pittsburg, at the base of the Mt. Diablo foothills, approximately 3.5 mi south of Honker Bay (Figure 1). The Project site intercepts Kirker Creek along its western edge. The site lies within the Clayton and Antioch South 7.5-minute U.S. Geological Survey Quadrangles and is situated at elevations ranging from approximately 180 to 620 ft above mean sea level. Topography within the Project alignment is variable, with rolling hills, swales, rock outcrops, and incised drainages. The average annual precipitation of the site is approximately 12-18 in (Soil Conservation Service [SCS] 1977), and the average annual temperature is 59 degrees Fahrenheit. Most of the yearly precipitation occurs from November to April in this region. Hydrology on-site is influenced by a combination of groundwater seeps, which provide water to two perennial streams (including Kirker Creek), incident rainfall, and surface runoff.



H. T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS

James Donlon Blvd. Extension Tree Survey: Vicinity Map

Proj No. 2739-01	Date June 2008	Figure 1

SM //2739-01/Tree Survey Report/Fig 1 Vicinity Map.mxd

METHODOLOGY

H. T. Harvey & Associates' plant ecologist Kelly Hardwicke, Ph.D., conducted a tree survey within the proposed alignment of the future James Donlon Boulevard extension at the site on 1, 7, 8, and 9 August 2007, assisted by field ecologist Onkar Singh, B.S., on 8 and 9 August 2007. In accordance with our scope of work, the tree survey boundary was defined by the proposed extent of grading boundaries for the road extension, plus a 100-ft buffer zone surrounding this area to capture all areas potentially subject to temporary impacts from project construction (Figures 2a and 2b). , Very small trees and saplings were not included in our tree survey. For the purposes of this report, a "tree" was defined as an individual stem with a diameter greater than or equal to 6 inches at 4.5 ft (approximate breast height above natural grade), or a group of stems with an additive diameter of 6 inches at 4.5 ft for multi-stemmed trees (but note that this definition is not equivalent to the definition of an ordinance-sized tree, as explained below). Survey data for all trees in the survey area were collected and compiled. All trees that were accessible were tagged with aluminum labels. Trees that were inaccessible due to being inundated with poison oak, covered with a thick sheaf of persistent dead leaves, as in the palm trees, or not reachable due to orientation were approximated, not tagged, and labeled (these include trees 1001, 1002, 1003, 1004, and 1005).

Data collected for each tree included species, diameter, health, and spatial location. Diameters were measured with a Biltmore stick at 4.5 feet from ground level (a standard for such surveys). For multi-stemmed trees (branching below 4.5 feet), an additive diameter was calculated by adding the diameters; the additive diameter was considered for classification as a "tree" for the sake of this survey. Dead branches were not included in the diameter measurements. All tree locations were mapped onto an aerial photograph (Figures 2a and 2b). Each tree was assigned a health and vigor rating based on the following scale:

1 = Very Low Vigor
2 = Low Vigor
3 = Moderate Vigor
4 = High Vigor
5 = Very High Vigor

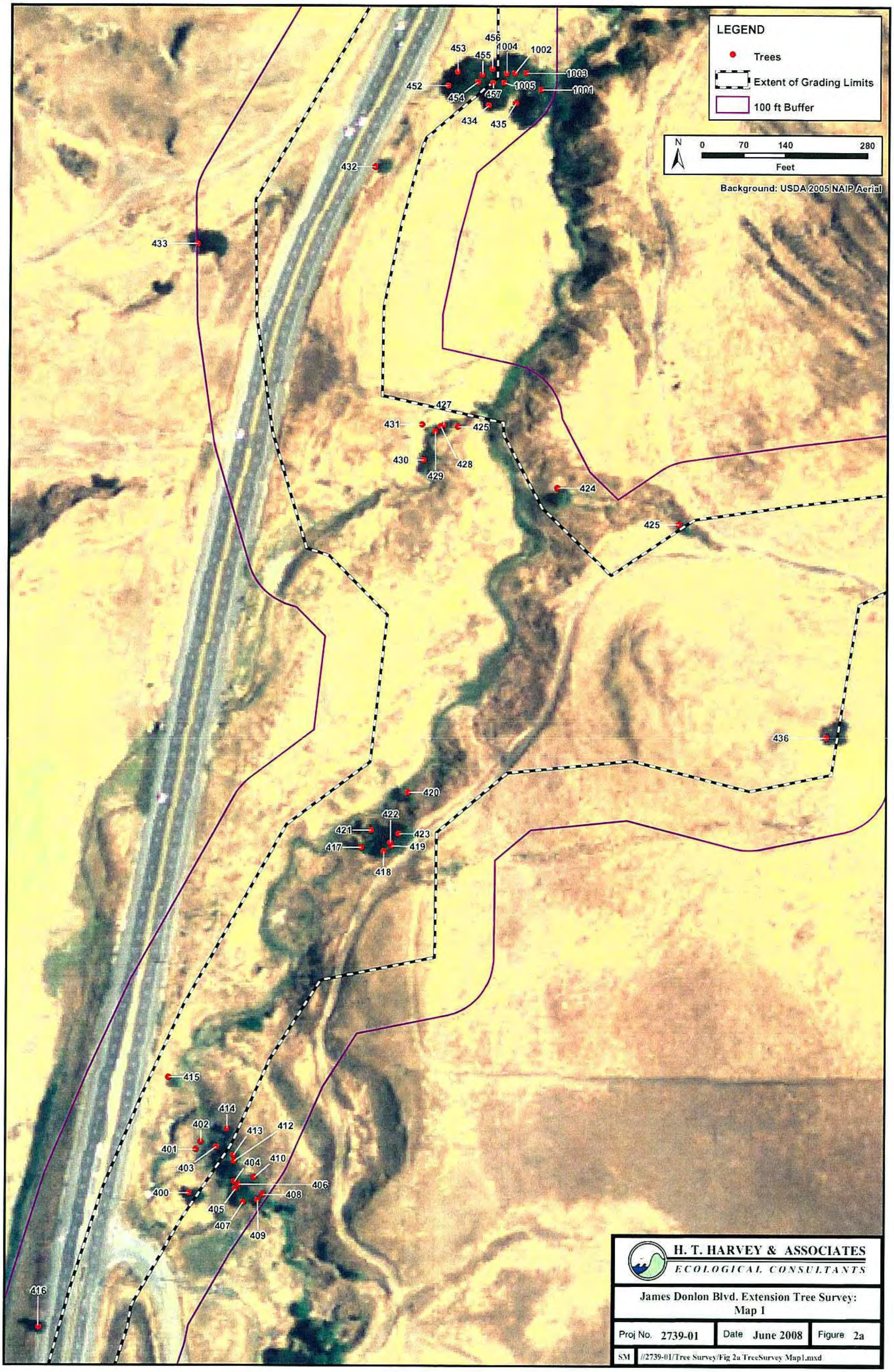
CONTRA COSTA COUNTY TREE ORDINANCES AND PROJECT APPLICABILITY

The Project site occurs in a Pre-Zoning District of the City of Pittsburg, and is currently within Contra Costa County jurisdiction. Therefore, the project is subject to County tree ordinances. Under Articles 816-4 and 816-6 of the Contra Costa County Code, trees of certain sizes and species are protected from removal or significant alteration and these actions will require issuance of permits from the County.

Heritage trees, protected by Article 816-4, are defined as those trees specially designated by the County Board of Supervisors as such due to unique ecological or historical significance or due to being considered an outstanding specimen of the species because of location, size, age, rarity, shape, or health. The County does not have a listing or map of heritage trees available. A specific inquiry can be made through the County Planning Department with an exact address or parcel number. However, it is unlikely that any trees on the Project site have been specifically designated as a heritage tree, and no trees on-site meet the unique ecological or historical qualifications. Some trees on-site could potentially qualify under the outstanding size criteria, such as Tree 435, a Valley oak with a single stem diameter of 60 in; Tree 439, a blue oak with a single stem diameter of 59 in; or Tree 451, a Valley oak with an additive 2-stem diameter of 74 in (See *Results: Table 2*). Stricter regulations, per-tree fees, and permit requirements exist for heritage trees, but this is not likely to apply to Project-related tree impacts because it is unlikely that any trees on the site were nominated for designation as a heritage tree. Confirmation regarding whether these trees would be considered heritage trees should be requested during County permitting.

The tree protection and preservation ordinance (Article 816-6) designates certain trees as "protected" due to size and species. These include single-stemmed trees 20 in or larger in circumference (approximate diameter at breast height [dbh] of 6.5 in) or all multi-stemmed trees with an additive circumference of 40 in or larger (approximate additive dbh of 13 in or more) at 4.5 ft above the natural grade (which is the definition of dbh). Within cities in Contra Costa County, protected trees include trees meeting the diameter requirements and of the following species: tanbark oak (*Lithocarpus densiflora*), coast live oak (*Quercus agrifolia*), canyon live oak (*Quercus chrysolepis*), blue oak (*Quercus douglasii*), California black oak (*Quercus kelloggii*), Valley oak (*Quercus lobata*), and interior live oak (*Quercus wislizenii*). For properties within unincorporated areas of Contra Costa County, protected trees include trees meeting the size requirements for all oak species listed above as well as the following additional species, provided trees of these other species are within or adjacent to a riparian corridor, foothill woodland, or oak savannah, or are part of any grove of 4 or more trees: bigleaf maple (*Acer macrophyllum*), box elder (*Acer negundo*), California buckeye, (*Aesculus californica*) white alder (*Alnus rhombifolia*), madrone (*Arbutus menziesii*), toyon (*Heteromeles arbutifolia*), California black walnut (*Juglans hindsii*), California juniper (*Juniperus californica*), knobcone pine (*Pinus attenuata*), digger pine (*Pinus sabiniana*), California sycamore (*Platanus racemosa),* Fremont cottonwood (*Populus fremontii*), black cottonwood (*Populus trichocarpa*), shining willow (*Salix lasiandra*), red willow (*Salix laevigata*), arroyo willow (*Salix lasiolepis*), coast red elderberry (*Sambucus callicarpa*), coast redwood (*Sequoia sempervirens*), and California bay (*Umbellularia californica*). As the Project site is within unincorporated Contra Costa County lands and has frequent drainages representing riparian habitat, a belt of oak savannah runs through the project site, and trees on-site often occur in stands of 4 or more, it is likely all trees of the appropriate species and size described above would be considered within or adjacent to riparian, oak savannah, or foothill woodland habitat. As such, removal, topping the upper 25% of the tree's crown, or grading or other activities taking place within the dripline of a protected tree would require a permit to be issued by the County.

Issuance of a tree removal permit under Article 816-6 requires that a site plan, containing the accurate locations, species, sizes, and health ratings of all protected trees, be submitted to the County. Much of this information is available in this report (See Figures 2a-b and Results: Table 2), but due to the 100-ft buffer used for all Project surveys and analyses, this report includes more trees than what would be required for the site plan and other permit materials. Only those trees whose trunks are within 50 ft of the finalized proposed ground disturbance plans need be shown accurately on the site plan submitted with permit application materials. Additionally, the



LEGEND
Trees
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100 ft Buffer
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Feet
Background: USDA 2005 NAIP Aerial
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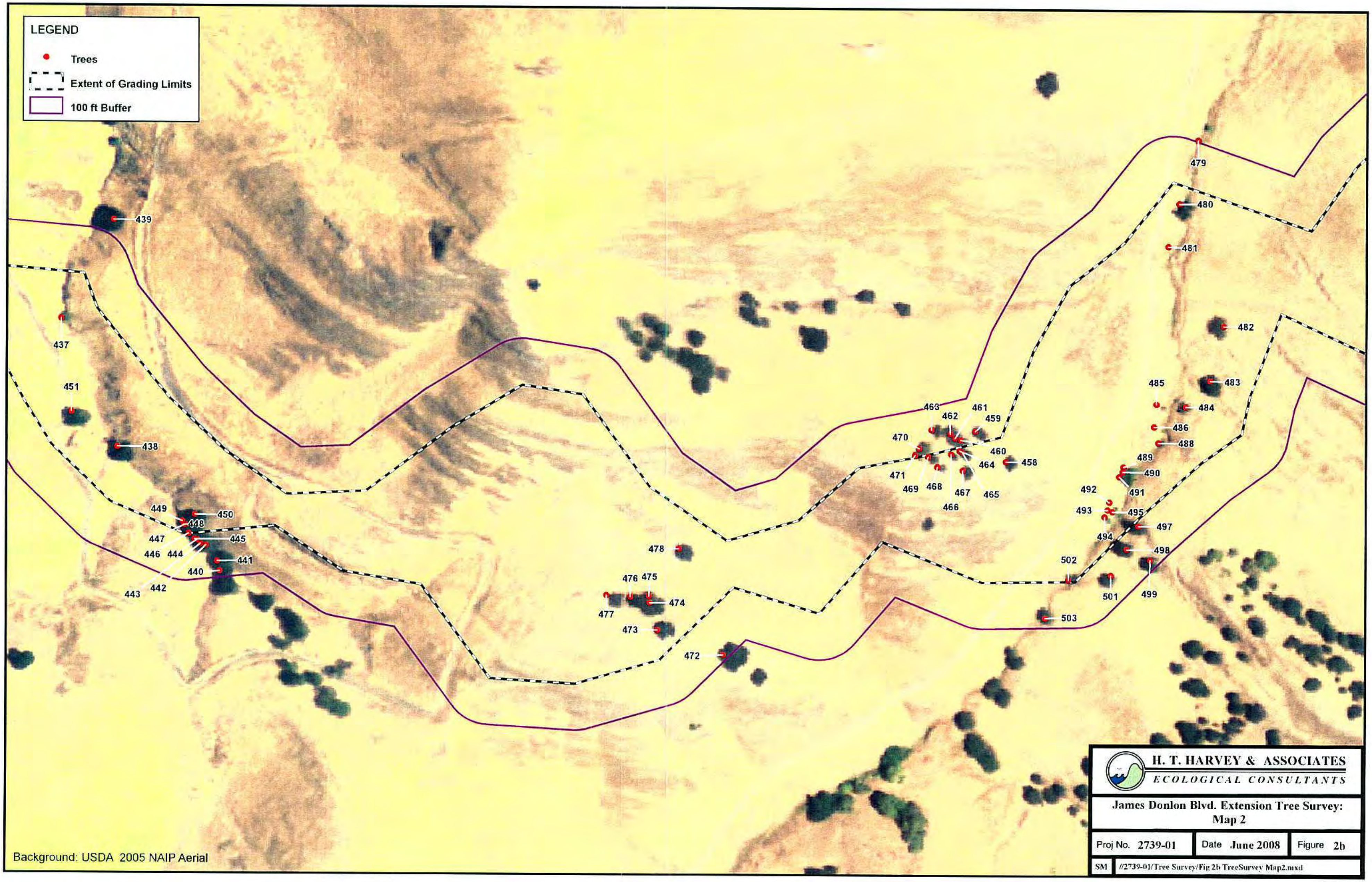
H. T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS
James Donlon Blvd. Extension Tree Survey:
Map 1
Proj No. 2739-01
Date June 2008
Figure 2a
SM //2739-01/Tree Survey/Fig 2a TreeSurvey Map1.mxd



H. T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS

James Donlon Blvd. Extension Tree Survey: Map 2

Proj No. 2739-01 | Date June 2008 | Figure 2b

SM //2739-01/Tree Survey/Fig 2b TreeSurvey Map2.mxd site plan should show accurate and finalized grading, drainage, and underground utility plans, the reason for removal or alteration of existing trees, the extent of trimming that will occur to trees being topped, the methods that will be used to remove the trees, specific information regarding the effect of tree alteration or removal on soil stability or erosion if the tree is located on a steep slope or creek bank (many trees on site are located on such slopes or banks due to the rolling topography and frequent drainages), and a photograph of each tree to be affected. This plan may require additional submittal of an arborist's report issued by an arborist certified with the Western Chapter of the International Society of Arborculture (WCISA) in the event that 1) the reason for removal(s) relates to the health of the tree(s); 2) grading, filling, or trenching is to take place under the dripline of any existing tree; or 3) in order for the County to review a collective tree permit for a larger project, as in this case, it is decided that technical expertise is necessary to make the decision for permit issuance. The arborist's report will provide the arborist's determination of whether trees intended to be preserved during project construction would be expected to survive construction or trimming-related impacts, and the arborist's recommendations for Best Management Practices and other preservation methods that will best protect the long term survival of the trees in question.

RESULTS

We recorded a total of 105 trees of 6 inches dbh or additive dbh in the survey area (Figures 2a and 2b). Valley oak, blue oak, Fremont cottonwood, and almond (*Prunus dulcis*) were the most frequently occurring trees. Tree locations are shown in Figures 2a and 2b, labeled by tree tag number. Table 1 summarizes the total number and average diameter of trees located within proposed property parcels within the site.

Table 1. Number and Average Total Diameter of Trees on the James Donlon Boulevard Extension Project Sites

Family	Common Name	Scientific Name	Quantity	Average Diameter (inches)
Araceae	Canary Island date palm	*Phoenix canariensis*	1	46.0
	Mexican fan palm	*Washingtonia robusta*	1	24.0
Caprifoliaceae	blue elderberry	*Sambucus mexicana*	1	7.0
Elaeagnaceae	Russian olive	*Elaeagnus angustifolia*	1	42.0
Fabaceae	mimosa	*Albizia julibrissin*	1	34.0
Fagaceae	blue oak	*Quercus douglasii*	44	24.8
	valley oak	*Quercus lobata*	17	29.8
Hippocastanaceae	buckeye	*Aesculus californicus*	3	26.7
Myrtaceae	red ironbark	*Eucalyptus sideroxylon*	1	32.0
Rosaceae	toyon	*Heteromeles arbutifolia*	1	30.0
	apricot	*Prunus armeniaca*	1	29.0
	almond	*Prunus dulcis*	9	15.8
Salicaceae	Fremont cottonwood	*Populus fremontii*	18	27.6
	red willow	*Salix laevigata*	1	13.0
	arroyo willow	*Salix lasiolepis*	5	22.0
			Total=105	

Table 2 lists each tree by number and provides the common name, scientific name, approximate diameter, health and vigor rating, and whether it is potentially protected under the Contra Costa County tree ordinance. The County ordinance applies to single-stemmed trees (of protected species) 20 inches or larger in circumference and multi-stemmed trees with an additive circumference of 40 inches or larger. This translates to an approximate dbh of 6.5 inches or more for single-stemmed trees and an approximate additive dbh of 13 inches or more for multi-stemmed tree based. A total of 85 trees within the survey area potentially meet the definition of a "protected tree" under Article 816-6 of the Contra Costa County Code based on a dbh >6 inches for single-stemmed trees and 13 inches additive dbh for multi-stemmed trees. Three trees were mistakenly tagged during survey efforts but are not included in this tree survey as they were all smaller than the 6-inch dbh limit for inclusion in the study. These are two small almonds and a blue oak sapling and correspond to the missing survey numbers 411, 487, and 496 (Table 2).

Table 2. Trees on the James Donlon Boulevard Extension Project Site.

Tree #	Common Name	Scientific Name	Diameter(s) of Each Stem at 4.5 feet (inches)	Additive Diameter (inches)	Health and Vigor Rating (1-5)	Potentially Protected Tree?
1001	Mexican fan palm	*Washingtonia robusta*	24	24	4	No
1002	Canary Island date palm	*Phoenix canariensis*	46	46	5	No
1003	Fremont cottonwood	*Populus fremontii*	28	28	4	Yes
1004	Valley oak	*Quercus lobata*	20	20	4	Yes
1005	toyon	*Heteromeles arbutifolia*	10,10,10	30	4	Yes
400	Valley oak	*Quercus lobata*	23,9	32	4	Yes
401	Fremont cottonwood	*Populus fremontii*	3,3	6	4	No
402	Fremont cottonwood	*Populus fremontii*	3,3,2,2	10	4	No
403	Fremont cottonwood	*Populus fremontii*	18,8	26	2	Yes
404	Fremont cottonwood	*Populus fremontii*	22,18,2	42	3	Yes
405	red willow	*Salix laevigata*	7,6	13	5	Yes
406	Fremont cottonwood	*Populus fremontii*	36,10,8	54	2	Yes
407	Fremont cottonwood	*Populus fremontii*	15,6,4	25	4	Yes
408	Fremont cottonwood	*Populus fremontii*	36,6	42	4	Yes
409	almond	*Prunus dulcis*	4,3	7	4	No
410	almond	*Prunus dulcis*	6,6,4,3,3,3,3,2	30	3	No
412	Valley oak	*Quercus lobata*	14	14	3	Yes
413	Fremont cottonwood	*Populus fremontii*	30,5	35	4	Yes
414	Valley oak	*Quercus lobata*	4,2	6	2	No
415	apricot	*Prunus armeniaca*	8,6,6,5,4	29	3	No
416	red ironbark	*Eucalyptus sideroxylon*	12,7,4,4,3,2	32	3	No
417	Fremont cottonwood	*Populus fremontii*	12,9,7	28	3	Yes
418	Fremont cottonwood	*Populus fremontii*	18,16	34	3	Yes
419	Fremont cottonwood	*Populus fremontii*	14,12,8	34	3	Yes
420	Fremont cottonwood	*Populus fremontii*	14,12,2	28	2	Yes
421	Fremont cottonwood	*Populus fremontii*	19	19	2	Yes
422	Fremont cottonwood	*Populus fremontii*	18	18	4	Yes
423	Fremont cottonwood	*Populus fremontii*	22	22	4	Yes
424	Russian olive	*Elaeagnus angustifolia*	10,10,8,5,3,2,2,2	42	3	No
425	arroyo willow	*Salix lasiolepis*	8,8,4,4,3	27	4	Yes
426	Valley oak	*Quercus lobata*	6,4	10	1	No
427	Valley oak	*Quercus lobata*	22	22	2	Yes
428	almond	*Prunus dulcis*	5,4,3	12	4	No
429	Valley oak	*Quercus lobata*	8	8	1	Yes
430	Valley oak	*Quercus lobata*	22,18,16	56	3	Yes
431	almond	*Prunus dulcis*	4,4,3,2	13	3	No
432	mimosa	*Albizia julibrissin*	6,6,5,4,4,3,3,3,3,2	34	4	No
433	Valley oak	*Quercus lobata*	44,18	62	4	Yes
434	Valley oak	*Quercus lobata*	24	24	3	Yes
435	Valley oak	*Quercus lobata*	60	60	3	Yes
436	blue oak	*Quercus douglasii*	40	40	4	Yes
437	buckeye	*Aesculus californicus*	10,8,6,4,4,4,3,3,3	45	3	Yes
438	blue oak	*Quercus douglasii*	36	36	4	Yes

Tree #	Common Name	Scientific Name	Diameter(s) of Each Stem at 4.5 feet (inches)	Additive Diameter (inches)	Health and Vigor Rating (1-5)	Potentially Protected Tree?
439	blue oak	*Quercus douglasii*	56	56	4	Yes
440	blue oak	*Quercus douglasii*	33,26	59	4	Yes
441	blue oak	*Quercus douglasii*	26	26	3	Yes
442	blue oak	*Quercus douglasii*	24	24	2	Yes
443	blue oak	*Quercus douglasii*	22	22	4	Yes
444	blue oak	*Quercus douglasii*	22,12	34	4	Yes
445	blue oak	*Quercus douglasii*	10	10	2	Yes
446	blue oak	*Quercus douglasii*	20,16	36	4	Yes
447	blue oak	*Quercus douglasii*	13	13	2	Yes
448	blue oak	*Quercus douglasii*	18	18	4	Yes
449	blue oak	*Quercus douglasii*	18,18	36	4	Yes
450	blue oak	*Quercus douglasii*	26	26	4	Yes
451	Valley oak	*Quercus lobata*	42,32	74	3	Yes
452	Valley oak	*Quercus lobata*	16,8	24	4	Yes
453	Valley oak	*Quercus lobata*	40	40	3	Yes
454	Valley oak	*Quercus lobata*	16	16	3	Yes
455	Fremont cottonwood	*Populus fremontii*	20	20	3	Yes
456	Valley oak	*Quercus lobata*	22	22	4	Yes
457	Fremont cottonwood	*Populus fremontii*	26	26	4	Yes
458	blue oak	*Quercus douglasii*	24	24	4	Yes
459	blue oak	*Quercus douglasii*	19	19	4	Yes
460	blue oak	*Quercus douglasii*	11	11	4	Yes
461	blue oak	*Quercus douglasii*	14	14	4	Yes
462	blue oak	*Quercus douglasii*	25	25	4	Yes
463	blue oak	*Quercus douglasii*	21	21	4	Yes
464	blue oak	*Quercus douglasii*	11	11	4	Yes
465	blue oak	*Quercus douglasii*	17	17	4	Yes
466	blue oak	*Quercus douglasii*	11	11	4	Yes
467	blue oak	*Quercus douglasii*	25	25	4	Yes
468	blue oak	*Quercus douglasii*	12,11,6	29	4	Yes
469	blue oak	*Quercus douglasii*	17	17	4	Yes
470	blue oak	*Quercus douglasii*	20	20	4	Yes
471	blue oak	*Quercus douglasii*	14	14	4	Yes
472	blue oak	*Quercus douglasii*	48	48	3	Yes
473	blue oak	*Quercus douglasii*	28,19	47	4	Yes
474	blue oak	*Quercus douglasii*	28	28	4	Yes
475	blue oak	*Quercus douglasii*	21	21	4	Yes
476	blue oak	*Quercus douglasii*	20	20	4	Yes
477	blue oak	*Quercus douglasii*	24	24	4	Yes
478	blue oak	*Quercus douglasii*	38	38	4	Yes
479	blue elderberry	*Sambucus mexicana*	7	7	3	No
480	Valley oak	*Quercus lobata*	16	16	1	Yes
481	arroyo willow	*Salix lasiolepis*	9,8,5	22	4	Yes
482	blue oak	*Quercus douglasii*	28	28	4	Yes
483	blue oak	*Quercus douglasii*	38	38	4	Yes

Tree #	Common Name	Scientific Name	Diameter(s) of Each Stem at 4.5 feet (inches)	Additive Diameter (inches)	Health and Vigor Rating (1-5)	Potentially Protected Tree?
484	buckeye	*Aesculus californicus*	16,10	26	4	Yes
485	almond	*Prunus dulcis*	6,6,5,4	21	1	No
486	buckeye	*Aesculus californicus*	5,2,2	9	4	No
488	blue oak	*Quercus douglasii*	5,4,3,2	14	4	Yes
489	arroyo willow	*Salix lasiolepis*	19	19	3	Yes
490	arroyo willow	*Salix lasiolepis*	20	20	4	Yes
491	arroyo willow	*Salix lasiolepis*	22	22	3	Yes
492	almond	*Prunus dulcis*	5,4,3,2,2	16	4	No
493	almond	*Prunus dulcis*	4,3,3,3,2	15	4	No
494	almond	*Prunus dulcis*	5,5,4,2,2	18	4	No
495	almond	*Prunus dulcis*	6,5	11	4	No
497	blue oak	*Quercus douglasii*	16,16	32	4	Yes
498	blue oak	*Quercus douglasii*	23	23	4	Yes
499	blue oak	*Quercus douglasii*	26	26	4	Yes
501	blue oak	*Quercus douglasii*	24	24	4	Yes
502	blue oak	*Quercus douglasii*	16	16	4	Yes
503	blue oak	*Quercus douglasii*	22	22	4	Yes

REFERENCES

[SCS] Soil Conservation Service. 1977. Soil Survey of Contra Costa County, California. U.S. Department of Agriculture.

Appendix C.3

Special-Status Species Report for CEQA Compliance

H. T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS

JAMES DONLON BOULEVARD EXTENSION SPECIAL-STATUS SPECIES REPORT FOR CEQA COMPLIANCE

Prepared by

H. T. Harvey & Associates

Prepared for

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6 June 2008

Project Number 2739-01

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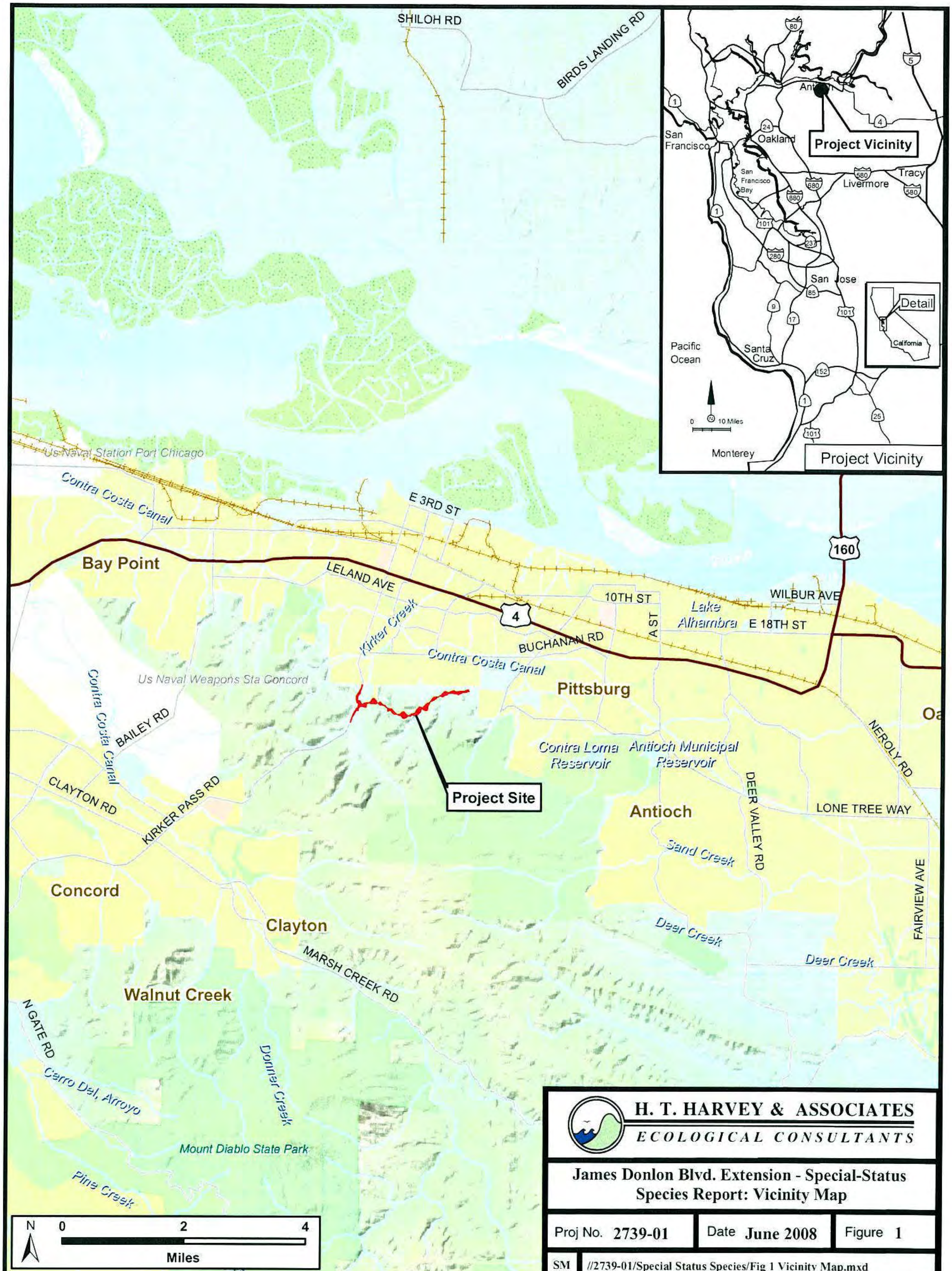
John Sterling, B.A., Wildlife Ecologist
Onkar Singh, B.S., Plant Ecologist

INTRODUCTION

The James Donlon Boulevard Extension Project (Project) is located in Contra Costa County at the southern edge of the City of Pittsburgh, at the base of the Mt. Diablo foothills, approximately 3.5 mi south of Honker Bay (Figure 1). The Project site intercepts Kirker Creek along its western edge, which is one of the five most significant drainages within the vicinity of the Project. The site lies within the Clayton and Antioch South 7.5-minute U.S. Geological Survey (USGS) Quadrangles and is situated at an elevation of approximately 180 - 620 ft mean sea level. Topography within the Project alignment is variable, with rolling hills, swales, rock outcrops, and incised drainages. The average annual precipitation of the site based on soil type is approximately 12-18 in (Soil Conservation Service [SCS] 1977), and the average annual temperature is 59° F.

In accordance with the East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP; 2006), Planning Surveys were completed for several wildlife and plant species that are covered or considered no-take species under the HCP/NCCP as part of HCP/NCCP compliance for the Project. Many special-status species that occur in the region, and that could potentially be impacted by the Project, are discussed in the Planning Survey Report prepared for HCP/NCCP compliance. The special-status species information in the Planning Survey Report will also be used for California Environmental Quality Act (CEQA) compliance purposes for the sake of the Project's impacts on those covered and no-take species. However, certain regionally-occurring special-status species not included in the HCP/NCCP may also occur on-site, and potential impacts to these species must be analyzed to satisfy the requirements of CEQA, regardless of HCP/NCCP coverage of the Project. The purpose of this report is to document the potential for occurrence of additional special-status species, to analyze potential Project-related impacts to these additional species, and to propose mitigation measures as appropriate for the purpose of CEQA compliance.



H. T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS

James Donlon Blvd. Extension - Special-Status Species Report: Vicinity Map

Proj No. **2739-01**	Date **June 2008**	Figure **1**

SM //2739-01/Special Status Species/Fig 1 Vicinity Map.mxd

SPECIAL-STATUS PLANT SPECIES

METHODOLOGY

To develop a complete list of special-status plants that may occur on-site in addition to those species discussed in the HCP/NCCP (2006), a query of special-status plants in the California Department of Fish and Game's (CDFG's) California Natural Diversity Database (CNDDB 2007) was performed. The query included the Clayton and Antioch South, California USGS 7.5 min Topographical Quadrangle Maps in which the Project site occurs and the ten quadrangles surrounding the Clayton and Antioch South quadrangles, including the Honker Bay, Antioch North, Walnut Creek, Las Trampas Ridge, Vine Hill, Diablo, Tassajara, Brentwood, Byron Hot Springs, and Jersey Island quadrangles. Figure 2 shows all known CNDDB occurrences of special-status plant species within 5 mi of the Project footprint. The California Native Plant Society (CNPS) Inventory was then used to produce a similar list for Contra Costa County of all special-status plant species on CNPS Lists, Status 1 through 4. Although the CNPS is not a regulatory agency and plants on these lists have no formal regulatory protection, plants appearing on List 1B or List 2 are, in general, considered to meet CEQA's Section 15380 criteria and adverse effects to these species may be considered significant. Impacts to populations of plants on list 3 or 4 may also meet CEQA threshold of significance in some circumstances.

This background research resulted in an initial list of 90 special-status plant species that could potentially occur within the region. Of these, 11 are covered under the East Contra Costa County HCP/NCCP and 6 are categorized as no-take species as they are considered so rare that no take is allowed. Of the 73 remaining species, 55 were eliminated from consideration due to one or more factors:

1) The Project site does not support suitable habitat or land cover types, such as coastal salt marsh, lower montane coniferous forest, or cismontane woodland types that are pine-oak or pine-dominated.
2) The species' elevation range does not include elevations found within the survey area.
3) the species' elevation range does overlap the site elevations, but only at very low or very high areas of the site; and in these areas suitable habitat or land cover types do not exist.
4) The species requires specific edaphic features not found within the survey area, such as strongly alkaline soils, serpentine soils, or dune sands.
5) The species has a highly endemic range which does not include the Project site.

A list of the species eliminated from consideration, and the reasons why each species was eliminated, is included in Appendix A. The 18 remaining CNPS-listed species not eliminated from consideration due to the factors listed above were considered to have potential to occur on the Project site because any necessary edaphic conditions, namely moderately alkaline soils, clay soils, and/or rocky soils, are present within the Project site, and either (1) known populations are or were located in similar habitats within 5 mi of the Project site and/or within the same or an adjacent quadrangle, or (2) known populations exhibit a wide species range that could reasonably include the Project site even though no populations are known to occur within the Project vicinity. The 18 remaining species are listed in Tables 1 and 2 under *Results* below.

H. T. Harvey & Associates plant ecologist and wetlands specialist Kelly Hardwicke, Ph.D., conducted targeted, protocol-level blooming period surveys for 9 late-blooming special-status (see Table 1), on 10 and 11 July and 1, 7, 8, and 9 August 2007. On 8 and 9 August 2007, H. T. Harvey & Associates field ecologist Onkar Singh assisted in the survey efforts, which also included targeting habitats capable of supporting spring-blooming special-status species. Finally, Dr. Hardwicke returned to the site to conduct protocol-level surveys for spring-blooming plants on 13 March and 30 April 2008. Several site visits were required to adequately cover all areas of the Project site on foot in targeted survey efforts for these species, in addition to other Planning Surveys required by the HCP/NCCP (2006). All areas within the extent of grading and a surrounding 100-ft buffer, to accommodate construction staging and access, were walked using a criss-crossing pattern of informal transects approximately 25 ft apart, and plants were identified using one or several of the following resources: *A California Flora and Supplement* (Munz and Keck 1968), *The Jepson Manual* (Hickman 1993), and *Plants of the San Francisco Bay Region: Mendocino to Monterey* (Biedleman and Kozloff 2003). Appendix B includes a list of plants identified on the Project site.

RESULTS

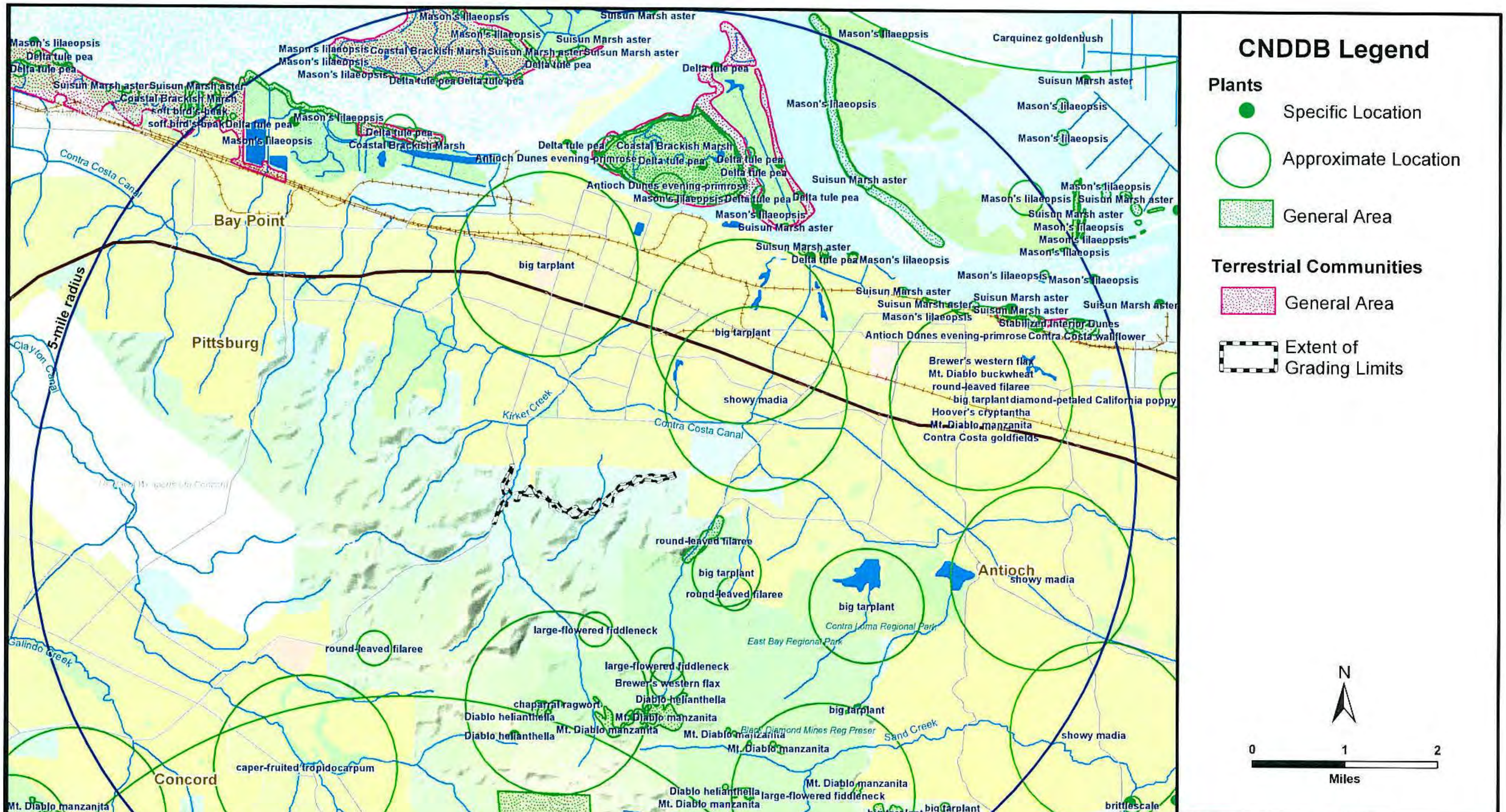
The 18 special-status plant species that are not addressed in the Planning Survey Report, and that were thought to have some potential for occurrence on the Project site, are described in the following sections. They are divided into summer/fall-flowering and spring-flowering species.

Summer/Fall-blooming Special-status Plants

Table 1 includes a summary of results for the July and August 2007 protocol-level surveys for 9 summer/fall-blooming special-status plant species.

Table 1. Results of 2007 Targeted Protocol-level Surveys for Summer or Fall-blooming Special-status Plant Species

Common Name	Species Name	Status	2007 Survey Results
Heartscale	*Atriplex cordulata*	CNPS 1B.2	Not observed, determined to be absent.
Bristly sedge	*Carex comosa*	CNPS 2.1	Not observed, determined to be absent.
Congdon's tarplant	*Centromadia parryi* ssp. *congdonii*	CNPS 1B.2	Not observed, determined to be absent.
Small spikerush	*Eleocharis parvula*	CNPS 4.3	Not observed, *Eleocharis* on-site identified as *E. macrostachya*, determined to be absent.
Hall's bush mallow	*Malacothamnus hallii*	CNPS 1B.1	Not observed, determined to be absent.
Robust monardella	*Monardella villosa* ssp. *globosa*	CNPS 1B.2	Not observed, determined to be absent.
Gairdner's yampah	*Perideridia gairdneri* ssp. *gairdneri*	CNPS 4.2	Not observed, determined to be absent.
Eel-grass pondweed	*Potamogeton zosteriformis*	CNPS 2.2	Not observed, *Potamogeton* on-site identified as *P. foliosus* var. *foliosus*, determined to be absent.
Mad-dog skullcap	*Scutellaria lateriflora*	CNPS 2.2	Not observed, determined to be absent.



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ECOLOGICAL CONSULTANTS

James Donlon Blvd Extension - Special-Status Species Report: CNDDB Plant Records

Proj No. 2739-01	Date June 2008	Figure 2

SM //2739-01/Special Status Species/Fig 2 CNDDB Plants.mxd

Following are discussions of the general distribution and habitat associations of these 9 fall-blooming species. None of these species were observed during protocol-level surveys conducted in appropriate habitat during the appropriate season. Thus, these species are considered absent from the Project's impact areas, and no further surveys are warranted for purposes of impact assessment.

Heartscale (*Atriplex cordulata*). Federal Listing Status: None; State Listing Status: None; CNPS List Status: 1B.2. Heartscale is found at lower elevations in alkaline or saline, sandy soils in chenopod scrublands, meadows and seeps, and valley and foothill grasslands. It has a highly variable blooming period, with potential to bloom from April to October. The range of this species has been reduced to remaining alkaline grasslands in Alameda, Butte, Colusa, Glenn, Kern, Madera, Merced, San Luis Obispo, Solano, and Tulare counties, and it is presumed to be extirpated from its historical range in Stanislaus, San Joaquin, and Yolo counties. No known populations occur within the immediate vicinity of the Project site or any of the surrounding 10 USGS 7.5-minute quadrangles, although known populations encompass a range that extends both north and south of the Project area. Marginally suitable habitat is present on the Project site, primarily within the more alkaline, seasonally mesic areas surrounding or within the sandier intermittent or ephemeral streams on-site, but focused surveys performed on 10 and 11 July and 1, 7, 8, and 9 August 2007 did not detect the species.

Bristly Sedge (*Carex comosa*). Federal Listing Status: None; State Listing Status: None; CNPS List Status: 2.2. This perennial, rhizomatous graminoid occurs in seeps and wetland edges in valley and foothill grassland, marshes or swamps along lake margins, and coastal prairies. The blooming period extends from May through September. The range of this species has been reduced to Contra Costa, Lake, Mendocino, Sacramento, Santa Cruz, Shasta, San Joaquin, and Sonoma counties, as well as in Oregon, Idaho, and Washington. Bristly sedge is presumed to be extirpated from its historical range in San Francisco and San Bernardino counties. The nearest known population occurs over 12 mi away in the extreme northeast area of Contra Costa County (CNDDB 2007). Suitable habitat is present on the Project site, primarily within the alkaline seeps along the banks of Kirker Creek and along the edges of the unnamed perennial stream at the center of the site, but focused surveys performed on 10 and 11 July and 1, 7, 8, and 9 August 2007 did not detect the species.

Congdon's Tarplant (*Centromadia parryi* ssp. *congdonii*). Federal Listing Status: None; State Listing Status: None; CNPS List Status: 1B.2. This annual herb occurs in valley and foothill grassland, particularly those with alkaline substrates, and in slumps or disturbed areas where water collects. The blooming period extends from June through November. The range of this species has been reduced to remaining alkaline grasslands in Alameda, Contra Costa, San Mateo, Monterey, San Luis Obispo, and Santa Clara counties, and it is presumed to be extirpated from its historical range in Solano and Santa Cruz counties. Several populations occur within adjacent USGS 7.5-minute Quadrangles, particularly within the Diablo and Tassajara quads (CNDDB 2007). Suitable habitat is present on the Project site, primarily within the more alkaline, mesic areas surrounding or within Kirker Creek and the unnamed perennial stream at the center of the site; however, focused surveys performed on 10 and 11 July and 1, 7, 8, and 9 August 2007 detected only the common San Joaquin tarweed, *Holocarpha obconica,* but did not detect Congdon's tarplant.

Small Spikerush (*Eleocharis parvula*). Federal Listing Status: None; State Listing Status: None; CNPS List Status: 4.3. This perennial herb occurs over a wide range of elevations from coastal salt marsh to subalpine habitats in marshes and swamps, often those with alkaline or coastal saline influences. The blooming period extends from May through August. The range of this species is circumboreal (planet-wide in arctic and north-temperate areas), although it is uncommon in California. At least three populations occur within Contra Costa County, in the vicinity of the nearby but ecologically dissimilar Antioch Dunes (CalFlora 2007). Suitable habitat is present on the Project site, primarily within the more alkaline, mesic areas surrounding or within Kirker Creek and the unnamed perennial stream at the center of the site; however focused surveys performed on 10 and 11 July, and 1, 7, 8, and 9 August 2007 detected only the common spikerush, *Eleocharis macrostachya,* but did not detect small spikerush. Grazed spikerushes did not exhibit the spongy, short stem structure typical of *E. parvula*.

Hall's Bush Mallow (*Malacothamnus hallii*). Federal Listing Status: None; State Listing Status: None; CNPS List Status: 1B.2. This evergreen shrub occurs in chaparral and coastal scrub habitats. The blooming period extends from May through September. The range of this species extends over lower and mid-elevation scrubby slopes in Contra Costa, Mendocino, Merced, Santa Clara, San Mateo, and Stanislaus counties. Several populations occur or formerly occurred within similar habitats to those found on-site within the Antioch South USGS 7.5-minute Quadrangle and other nearby areas, particularly in the vicinity of Roddy Ranch, south of Antioch (CNDDB 2007). Marginally suitable habitat is present on the Project site, primarily within the rock outcrop areas and some of the brush-dominated riparian banks, but focused surveys performed on 10 and 11 July and 1, 7, 8, and 9 August 2007 did not detect the species.

Robust Monardella (*Monardella villosa* ssp. *globosa*). Federal Listing Status: None; State Listing Status: None; CNPS List Status: 1B.2. This perennial, rhizomatous herb occurs in openings in broadleaf upland forests and chaparral, open oak woodlands, coastal scrub, and valley and foothill grasslands at lower and mid elevations. The blooming period extends from June through July, and sometimes into August. The range of this species includes Alameda, Contra Costa, Humboldt, Lake, Mendocino, Napa, Santa Clara, Santa Cruz, San Mateo, and Sonoma counties. The nearest known population occurs over 12 mi away in the extreme northeast area of Contra Costa County (CNDDB 2007). Suitable habitat is present on the Project site, primarily within the alkaline seeps along the banks of Kirker Creek and along the edges of the unnamed perennial stream at the center of the site, but focused surveys performed on 10 and 11 July and 1, 7, 8, and 9 August 2007 did not detect the species.

Gairdner's Yampah (*Perideridia gairdneri* ssp. *gairdneri*). Federal Listing Status: None; State Listing Status: None; CNPS List Status: 4.2. This perennial herb occurs in vernally mesic wetlands and vernal pools within broadleaf upland forests, chaparral, coastal prairies, and valley and foothill grasslands at elevations up to 1200 ft. The blooming period extends from June through October. The range of this species includes Contra Costa, Del Norte, Kern, Mendocino, Monterey, Marin, Napa, San Benito, Santa Clara, Santa Cruz, Solano, and Sonoma counties. The species is presumed extirpated from its historical range in Los Angeles, Orange, San Diego, and San Mateo counties. No known populations occur within 5 mi of the Project site, or within the Clayton or Antioch South USGS 7.5-minute Quadrangles or any of the surrounding

10 quadrangles (CNDDB 2007), although suitable habitat is present on the Project site, primarily within the intermittent stream beds and the two small depressional wetlands. However, focused, protocol-level surveys performed on 10 and 11 July and 1, 7, 8, and 9 August 2007 did not detect the species.

Eel-grass Pondweed (*Potamogeton zosteriformis*). Federal Listing Status: None; State Listing Status: None; CNPS List Status: 4.2. This aquatic, annual herb occurs in marshes and swamps or other shallow freshwater areas at a wide range of elevations from sea level to 6000 ft. The blooming period for this species occurs in June and July. The known range of eel-grass pondweed includes populations in Contra Costa, Lake, Lassen, Modoc, and Shasta counties, as well as in Oregon, Idaho, Washington, Utah, and elsewhere. The wide range indicates that there are most likely other populations within California, especially within the Central Valley, but this plant is often overlooked due to its short blooming period and submerged growth habit. No known populations occur within 5 mi of the Project site, or within the Clayton or Antioch South USGS 7.5-minute Quadrangles, but a population does occur within the adjacent Jersey Island Quadrangle at the extreme northeast corner of Contra Costa County (CNDDB 2007). Suitable habitat is present on the Project site within deeper pools within the two perennial stream beds on-site, particularly within the Kirker Creek drainage. However, focused, protocol-level surveys performed on 10 and 11 July 2007 only detected the common leafy pondweed, *Potamogeton foliosus* var. *foliosus*, within deeper, perennially ponded pools on-site.

Mad-dog Skullcap (*Scutellaria lateriflora*). Federal Listing Status: None; State Listing Status: None; CNPS List Status: 2.2. This perennial, rhizomatous herb occurs in marshes, swamps, meadows, seeps and other shallow freshwater or perennially mesic areas elevations from sea level to 1600 ft. The blooming period for this species occurs from July to September. Mad-dog skullcap (also known as blue skullcap) is known or expected to occur in Contra Costa, Inyo, and Sacramento counties, as well as in Oregon, New Mexico, and elsewhere. Although mad-dog skullcap is only known from two populations within California, the wide range indicates that there are most likely other in-state populations. No known populations occur within 5 mi of the Project site, or within the Clayton or Antioch South USGS 7.5-minute Quadrangles, but a population was located in 1892 that may occur within one or several quadrangles along the Sacramento River Delta, including the adjacent Jersey Island Quadrangle at the extreme northeast corner of Contra Costa County (CNDDB 2007). Suitable habitat is present on the Project site within seeps or perennially wet freshwater marshes within or adjacent to the two perennial streambeds on-site, particularly those seeps and marshes within the Kirker Creek drainage. However, focused, protocol-level surveys performed on 10 and 11 July and 1, 7, 8, and 9 August 2007 did not detect the species.

Spring-blooming Special-status Plants

Table 2 lists the 9 spring-blooming special-status plants for which it was thought that there was some potential for occurrence within the Project area. For each species, the species' CNPS status, Spring 2008 survey period, and survey results are listed.

Table 2. Protocol-Level Survey 2008 Schedule and Results for Spring-blooming Special-status Plants.

Common Name	Species Name	Status	Spring 2008 Survey Period	2008 Survey Results
Bent-flowered fiddleneck	*Amsinckia lunaris*	CNPS 1B.1	Late April	Not observed, *Amsinckia* on-site identified as the common *Amsinckia menziesii*;, determined to be absent.
California androsace	*Androsace elongata* ssp. *acuta*	CNPS 4.2	Late April	Not observed, determined to be absent.
Coast rock cress	*Arabis blepharophylla*	CNPS 4.3	Early March	Not observed, determined to be absent.
Dwarf downingia	*Downingia pusilla*	CNPS 2.2	March and April	Not observed, determined to be absent.
Hogwallow starfish	*Hesperevax caulescens*	CNPS 4.2	March and April	Not observed, determined to be absent.
Coast iris	*Iris longipetala*	CNPS 4.2	Late April	Not observed, determined to be absent.
Mt. Diablo cottonweed	*Micropus amphibolus*	CNPS 3.2	Late April	Not observed, determined to be absent.
Lobb's aquatic buttercup	*Ranunculus lobbii*	CNPS 4.2	March and April	Not observed, *Ranunculus* on-site identified as *Ranunculus canus*; determined to be absent.
Rayless ragwort	*Senecio aphanactis*	CNPS 2.2	Early March	Not observed, determined to be absent.

Following are discussions of the general distribution and habitat associations of these 9 spring-blooming species.

Bent-flowered Fiddleneck (*Amsinckia lunaris*). Federal Listing Status: None; State Listing Status: None; CNPS List Status: 1B.1. Bent-flowered fiddleneck occurs or has been known to occur in Alameda, Contra Costa, Colusa, Lake, Marin, Napa, San Benito, Santa Clara, Santa Cruz, San Mateo, and Yolo counties within cismontane woodland, coastal bluff scrub, and valley and foothill grassland habitat at elevations of 10-1640 ft (3-500 m). It is an annual herb in the family Boraginaceae that blooms from March to June. It is known from fewer than 35 occurrences in the North and Central Coast Ranges and many of these have not been observed in recent years (CNPS 2007). Potential habitat on the site exists in grassland and rock outcrop areas of the site. However, focused, protocol-level surveys performed on 13 March and 30 April did not detect the species. Only the common congeneric grassland species orange-flowered fiddleneck (*Amsinckia menziesii* var. *intermedia*), rigid fiddleneck (*Amsinckia menziesii* var. *menziesii*), and devil's lettuce (*Amsinckia tessellata*) were detected.

California Androsace (*Androsace elongata* ssp. *acuta*). Federal Listing Status: None; State Listing Status: None; CNPS List Status: 4.2. California androsace occurs on dry, grassy slopes in chaparral, cismontane woodland, coastal scrub, and valley and foothill grassland habitats. The known growing elevations for this species range from 492-3937 ft (150-1,200 m). This annual member of the primrose family (Primulaceae) blooms from March through June. California androsace is found in several counties including Alameda, Contra Costa, Fresno, Kern, San Bernardino, San Diego, Siskiyou, San Joaquin, San Luis Obispo, and possibly Tehema counties. The species is believed to be extirpated from Los Angeles County. California androsace also has been reported from Baja California and is endangered in Oregon (CNPS 2007). Potential habitat for this species occurs on-site on higher-elevation, sloped areas within the project alignment. However, focused, protocol-level surveys performed on 13 March and 30 April 2008 did not detect the species in such habitat or other potentially suitable areas.

Coast Rock Cress (*Arabis blepharophylla*). Federal Listing Status: None; State Listing Status: None; CNPS List Status: 4.3. Coast rock cress is a perennial herb that occurs in broadleaved upland forest, coastal bluff scrub, and coastal prairie habitats and in rocky areas within coastal scrub habitat. The range of the species extends from Lake to Monterey counties, including all the San Francisco Bay counties. Blooming occurs in February or March. Population records exist for sites at elevations from 10-3609 ft (3-1100 m) (CNPS 2007). Only marginal habitat exists for this plant within the project alignment as only some patchy (*i.e.*, discontinuous) areas of the rock outcrops may support a suite of native coastal scrub species. Focused, protocol-level surveys performed on 13 March 2008 did not detect the species in rock outcrop, creekside, or other potentially suitable areas.

Dwarf Downingia (*Downingia pusilla*). Federal Listing Status: None; State Listing Status: None; CNPS List Status: 2.2. Dwarf downingia is an annual herb found in vernal pool and mesic valley and foothill grassland habitats. The blooming period extends from March through May. Populations have been recorded in Fresno, Merced, Napa, Placer, Sacramento, San Joaquin, Solano, Sonoma, Stanislaus, Tehama, and Yuba counties at elevations up to 1460 ft (445 m) (CNPS 2007). Although no populations have been recorded in Contra Costa County, an occurrence does exist in the neighboring Antioch North Quadrangle. Slow-water mesic habitats with appropriate, vernally moist soils exist within the drainages on the Project site. However, focused, protocol-level surveys conducted 13 March and 30 April 2008 failed to detect this species in any wetland areas on-site.

Hogwallow Starfish (*Hesperevax caulescens*). Federal Listing Status: None; State Listing Status: None; CNPS List Status: 4.2. Hogwallow starfish is an annual herb in the sunflower family (Asteraceae). It grows in shallow vernal pools and mesic areas in valley and foothill grassland habitat with clayey soils. The blooming period extends from March through June. Populations are currently known from Alameda, Amador, Butte, Contra Costa, Colusa, Fresno, Glenn, Kern, Merced, Monterey, Sacramento, San Joaquin, San Luis Obispo, Solano, Stanislaus, Sutter, Tehama, and Yolo counties from elevations up to 1657 ft (505 m) (CNPS 2007). Potential habitat occurs on-site within the clayey depressions found within some drainages. However, focused, protocol-level surveys conducted 13 March and 30 April 2008 did not detect this species in any wetland areas on-site.

Coast Iris (*Iris longipetala*). Federal Listing Status: None; State Listing Status: None; CNPS List Status: 4.2. Coast iris occurs in northern and central California within coastal prairies, lower montane coniferous forests, and mesic meadows and seeps at elevations of 0-1969 ft (0-600 m) (CNPS 2007). It is a rhizomatous herb in the Iridaceae family that blooms from March to May. There is suitable habitat for this species surrounding the perennial seeps on-site. However, focused, protocol-level surveys conducted 13 March and 30 April of the seeps on-site (and within other wetlands areas) did not detect this species.

Mount Diablo Cottonweed (*Micropus amphibolus*). Federal Listing Status: None; State Listing Status: None; CNPS List Status: 3.2. Mount Diablo cottonweed occurs on bare, grassy or rocky slopes in broadleaved upland forest, chaparral, cismontane woodland, and valley and foothill grassland. This annual member of the sunflower family (Asteraceae) flowers from March through May. The range of this species includes Alameda, Contra Costa, Colusa, Lake, Monterey, Marin, Napa, Santa Barbara, Santa Clara, Santa Cruz, Solano, and Sonoma counties. Extensive areas of potential habitat for this species exists within the rockier, grassy slopes present within the project alignment. However, focused, protocol-level surveys conducted 13 March and 30 April 2008 showed that much of the grassland areas support a taller, denser cover of grasses than expected, and even within suitably bare grassy or rocky slopes, we did not detect this species on-site.

Lobb's Aquatic Buttercup (*Ranunculus lobbii*). Federal Listing Status: None; State Listing Status: None; CNPS List Status: 4.2. This plant occurs in counties throughout the Bay area and also in Oregon, in mesic areas of woodlands, forests, and grasslands at elevations of 49-1542 ft (15-470 m) (CNPS 2007). This species blooms from February to May. It is known to be threatened by agriculture. Mesic exist within the site's grasslands provide potential habitat for this species. However, focused, protocol-level surveys conducted 13 March and 30 April 2008 did not detect this species in any wetland areas on-site and detected only the common species, Great Valley buttercup (*Ranunculus canus*).

Rayless Ragwort (*Senecio aphanactis*). Federal Listing Status: None; State Listing Status: None; CNPS List Status: 2.2. Rayless ragwort is an annual herb in the sunflower family (Asteraceae). It grows in chaparral, cismontane woodland, and coastal scrub habitats. This species blooms from January to April. Populations have been recorded from 50-2625 ft (15-800 m) in elevation (CNPS 2007). The geographic range includes Alameda, Contra Costa, Fresno, Los Angeles, Merced, Monterey, Orange, Riverside, Santa Barbara, Santa Clara, San Diego, San Luis Obispo, Solano, and Ventura counties. Populations have also been recorded on Santa Catalina Island, Santa Cruz Island, and Santa Rosa Island. Only marginal habitat exists for this plant within the project alignment as only some patchy (*i.e.*, discontinuous) areas of the rock outcrops may support a suite of native coastal scrub species. Focused, protocol-level surveys conducted 13 March and 30 April 2008 did not detect this species in any rock outcrop areas on-site.

SPECIAL-STATUS ANIMAL SPECIES

METHODOLOGY

Prior to conducting site visits, H. T. Harvey & Associates wildlife ecologists queried the CNDDB (2007) for information on the local distribution of special-status animals to identify special-status wildlife species that potentially occur on the site but are not covered by, or considered no-take species under, the HCP/NCCP. Figure 3 shows the locations of all known CNDDB occurrences of special-status animal species within 5 mi of the Project footprint. Aerial photographs of the area were also reviewed prior to the site visit, and used during the survey, to locate potential habitat for potentially occurring special-status wildlife species. In conducting this habitat assessment, we considered the recently revised (2008) lists of California species of special concern (list posted at http://www.dfg.ca.gov/wildlife/species/list.html).

On 10 July 2007, H. T. Harvey & Associates wildlife ecologist John Sterling conducted reconnaissance-level surveys for special-status birds and their habitats within the Project's impact areas. The purpose of this survey was to determine the suitability of habitat for special-status bird species that could potentially occur on the site but that are not included under the HCP/NCCP. The entire Project study area within the limits of grading and a 100 ft buffer area were covered on foot.

On 1 August 2007, wildlife ecologist and mammalogist Dave Johnston, Ph.D., conducted a reconnaissance-level field survey of the Project alignment to evaluate the potential for occurrence of other (*i.e.*, non-avian) special-status wildlife species not included under the HCP/NCCP. The impact areas for the planned road were surveyed by walking the entire Project area, plus a 100-ft buffer around the Project area.

RESULTS

Of the special-status wildlife species considered in this assessment (*i.e.*, those not considered by the HCP/NCCP), one is known to occur in the vicinity of the Project site but is not expected to occur on the site due to the absence of suitable habitat. The Yellow-breasted Chat (*Icteria virens*, a California species of special concern) breeds and forages in dense, woody riparian habitat, which is absent from the site. There are no special-status fish, amphibians, reptiles, or invertebrates that are not covered by the HCP/NCCP for which potential habitat occurs on the Project site.

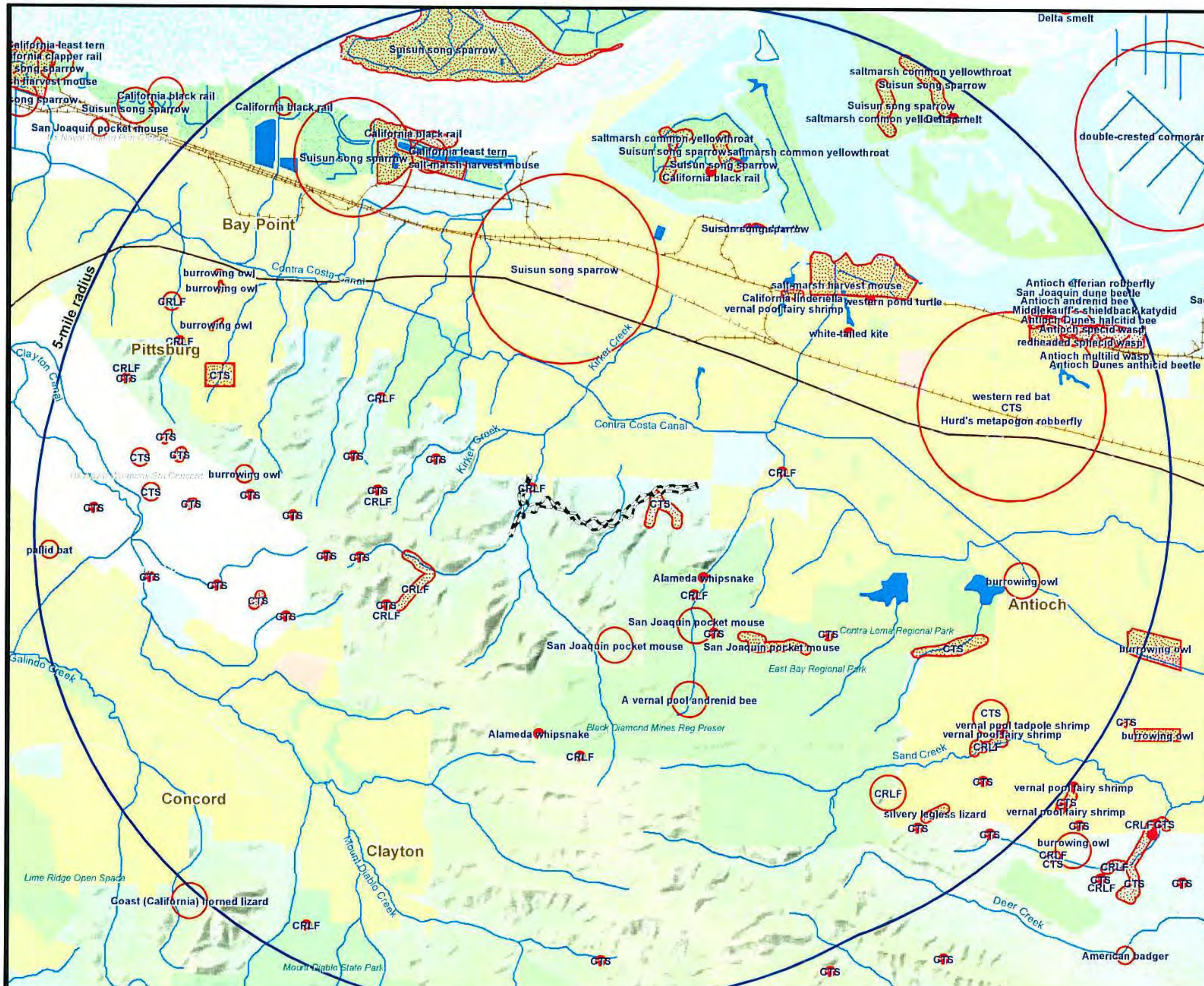
Some other special-status wildlife species may occur in the Project area only as uncommon to rare visitors, migrants, or transients, or may forage on the site while breeding in adjacent areas. However, these species are not expected to breed on the site, or to be affected substantially by the Project. The Northern Harrier (*Circus cyaneus*), Long-eared Owl (*Asio otus*), Short-eared Owl (*Asio flammeus*), Vaux's Swift (*Chaetura vauxi*), Loggerhead Shrike (*Lanius ludovicianus*), and Yellow Warbler (*Dendroica petechia*) could all potentially forage on the Project site in low numbers and/or infrequently, primarily during migration and in winter. Suitable breeding habitat for these species is absent from the site, although Loggerhead Shrikes could potentially breed nearby. These 6 species are on the recently revised list of California bird species of special concern; they are considered species of special concern only when breeding in the state, and thus have no special status away from breeding areas.

Of the special-status species not addressed in the Planning Survey Report, 3 could potentially breed on the site: the Grasshopper Sparrow (*Ammodramus savannarum*), pallid bat (*Antrozous pallidus*), and San Joaquin pocket mouse (*Perognathus inornatus*). The potential status of these species on the Project site is discussed in detail below.

Grasshopper Sparrow (*Ammodramus savannarum*). Federal Listing Status: None; State Listing Status: Species of Special Concern. The Grasshopper Sparrow is on the recently revised list of state bird species of special concern. The Grasshopper Sparrow nests very locally in the Central Valley and in grassy hills in the Diablo Range in annual grasslands, especially those with wild rye and forbs. Although no Grasshopper Sparrows were detected during the reconnaissance-level field survey, the grassland on the Project site provides potentially suitable breeding habitat for Grasshopper Sparrows. However, only a few pairs, at most, are expected to nest in the grassland on the Project site.

Pallid Bat (*Antrozous pallidus*). Federal Listing Status: None; State Listing Status: Species of Special Concern. Pallid bats are pale to light brown in color, and, at about 24 grams, the Pacific race is one of the state's largest bats. They may occur in oak woodlands and at the edge of redwood forests along the coast. Coastal colonies commonly roost in deep crevices in rocky outcroppings, in buildings, under bridges, and in hollow trees. Colonies can range from a few individuals to over a hundred and are non-migratory. Males and females typically occupy the same late-fall and winter roosts found in canyon bottoms and riparian areas. After mating during the late-fall and winter season, females leave to form a separate maternity colony, often on ridge tops or other warmer situations (Johnston et al. 2006). Although crevices are important for day roosts, night roosts often include porches, garages, barns, and highway bridges. Pallid bats may travel up to several miles for water or foraging sites if roosting sites are limited. This bat prefers to forage on terrestrial arthropods in dry open grasslands near water and rocky outcroppings or old structures. Pallid bats are sensitive to human disturbances at roost sites.

Potential habitat for the pallid bat was observed in scattered locations throughout the Project study area. Mature arroyo willows (*Salix lasiolepis*), Fremont cottonwoods (*Populus fremontii*), valley oaks (*Quercus lobata*), and blue oaks (*Q. douglasii*) with loose bark and cavities, as well as rocky outcroppings, provide potential day roosting habitat, and rock grottos provide potential night roosting habitat for the pallid bat (Figure 4). Day roosting habitat used by females during the breeding season between March 1 and August 31 would be considered maternity colony roosting habitat. These areas were evaluated for their potential as roosting habitat and mapped as having a lower, moderate, or higher potential for being used by pallid bats (Figure 4). CNDDB (2007) records indicate that a pallid bat was caught approximately 2.5 mi from the Project site (Figure 3) and several other records for pallid bats occur in the vicinity. The on-site rocky outcroppings and mature oaks provide suitable roosting habitat, and the open grasslands provide excellent foraging habitat for this species. Therefore, the pallid bat is expected to forage on the Project site and may also day roost and night roost within the Project alignment.



CNDDB Legend

Animals

- Specific Location
- Approximate Location
- General Area
- Extent of Grading Limits

N

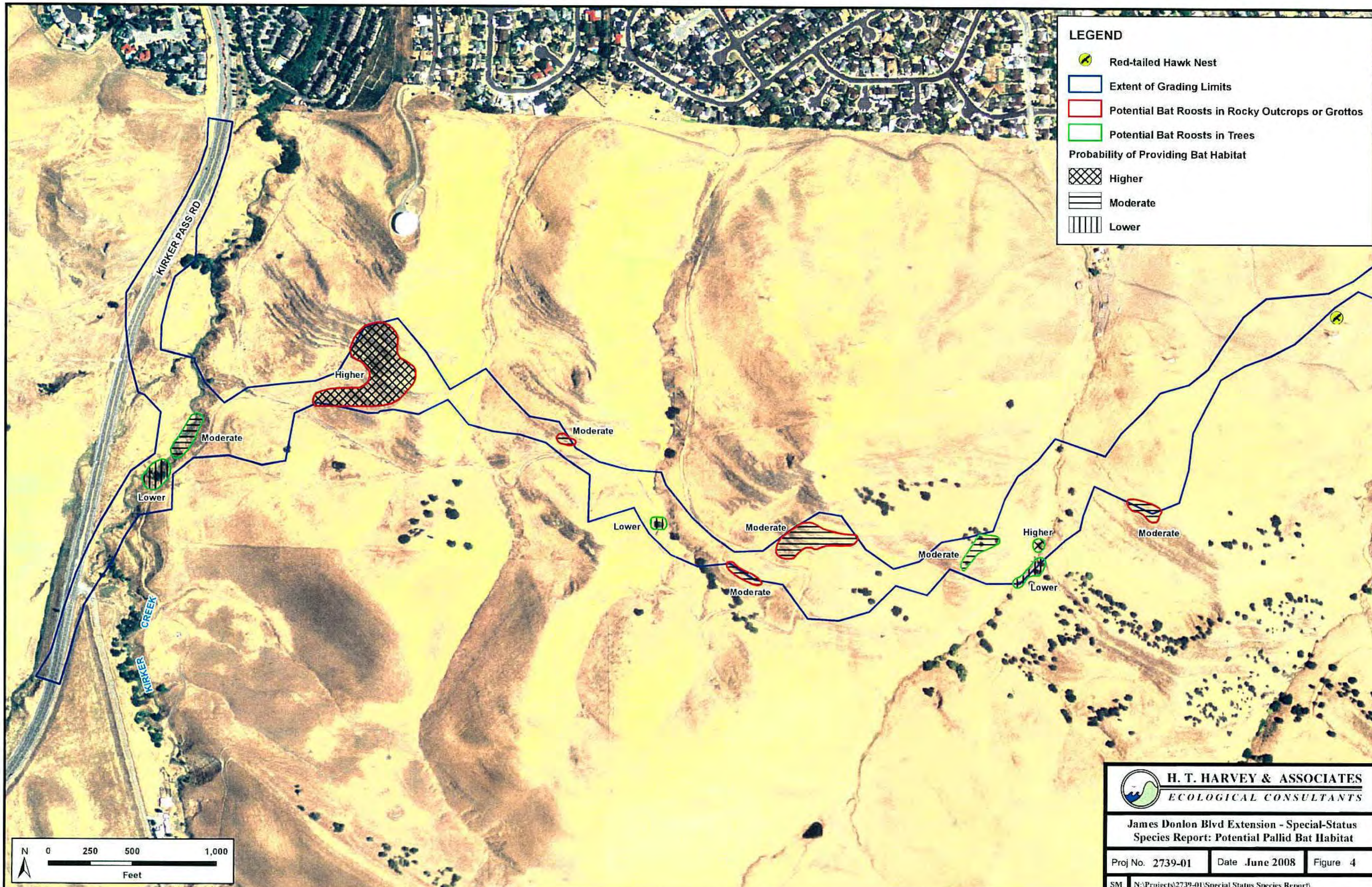
0 1 2
Miles

H. T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS

James Donlon Blvd Extension - Special-Status Species Report: CNDDB Animal Records

Proj No. 2739-01	Date June 2008	Figure 3

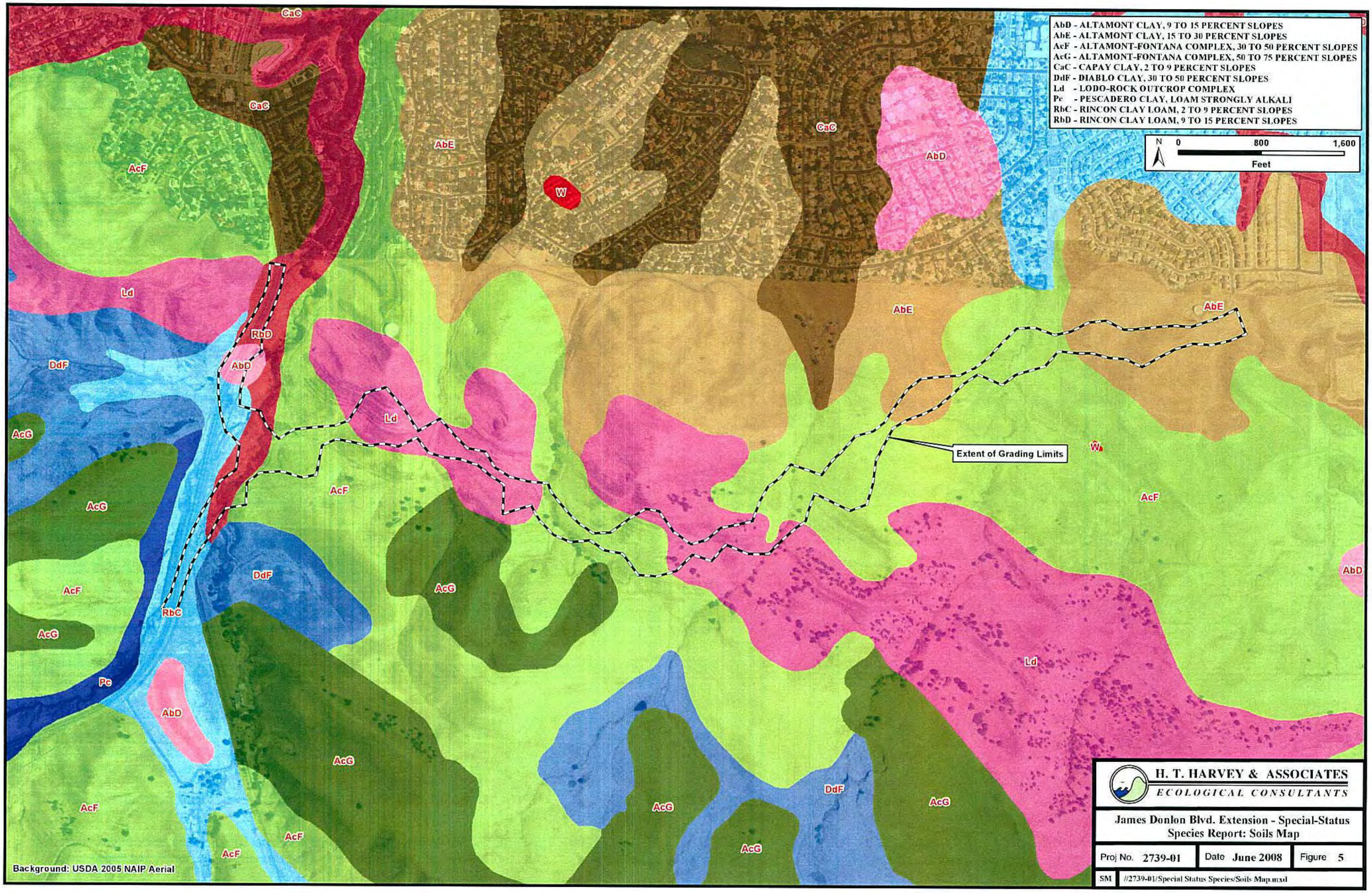
SM //2739-01/Special Status Species/Fig 3 CNDDB Animals.mxd


LEGEND
Red-tailed Hawk Nest
Extent of Grading Limits
Potential Bat Roosts in Rocky Outcrops or Grottos
Potential Bat Roosts in Trees
Probability of Providing Bat Habitat
Higher
Moderate
Lower
KIRKER PASS RD
KIRKER CREEK
Higher
Moderate
Lower
Moderate
Lower
Moderate
Moderate
Moderate
Higher
Lower
Moderate
N 0 250 500 1,000
Feet
H. T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS
James Donlon Blvd Extension - Special-Status Species Report: Potential Pallid Bat Habitat
Proj No. 2739-01
Date June 2008
Figure 4
SM
N:\Projects\2739-01\Special Status Species Report\

San Joaquin Pocket Mouse (*Perognanthus inornatus*). Federal Listing Status: None; State Listing Status: Species of Special Concern. Like other heteromyid rodents, this species has a long tail and external fur-lined cheek pouches. The San Joaquin pocket mouse has an orange back with blackish-brown hairs, a pale orange lateral line, and a white underside. This species prefers fine textured friable soils but is know to burrow in rocky soils in the northernmost portion of its range. Habitats include grassland, savannah, and brush lands up to 2000 ft in and around the Central Valley, Carrizo Plains, and Salinas Valley (Best 1993). The species prefers ridge tops and hillsides with grasslands, shrubs, or blue oak savannah (Hawbecker 1951). Burrows are typically closed during the day and this species is known to use the burrows of larger species, such as a kangaroo rat (Best 1993).

While this species has been extirpated through much of its range, it likely remains in the undeveloped portions of the central valley and surrounding hills below 2000 ft. CNDDB (2007) records indicate that several San Joaquin pocket mice have been found within 5 mi of the Project site (Figure 3). The nearest record occurs in similar habitat as that of the Project site, about 2 mi to the southeast. Two additional records, in similar habitat along the same ridgeline, occur 2.5 mi and 3.5 mi to the southeast of the Project site. Another record occurs in open grassland habitat approximately 4 mi to the northeast of the Project site. Onsite Altamont clays, Altamont Fontana complex, and Rincon clay loams (Figure 5) are fine-grained friable soils that are considered suitable for the San Joaquin pocket mouse. Additionally, in the northernmost portion of this species' range in Lake County, California, the San Joaquin pocket mouse is known to use rocky situations, and may use the Lodo Rock complex soil type on the Project site. Based on these considerations, this species has a high probability of occurring on the Project site, especially along the ridge tops and hillsides. Although appropriate burrows were not detected on the Project site during reconnaissance-level surveys, the Project site occurs well within this species' range, and potential habitat for the San Joaquin pocket mouse was observed in many parts of the impact areas.

Nesting Raptors. Common raptors such as Red-tailed Hawk (*Buteo jamaicensis*), Red-shouldered Hawk (*Buteo lineatus*), and Great Horned Owl (*Bubo virginianus*) nest in trees, and Red-tailed Hawks also nest on artificial structures such as transmission line towers. The breeding season for these species generally lasts from approximately February 1 to August 15. Only one raptor nest structure was observed during the survey, a Red-tailed Hawk nest on a transmission line tower to the south of the survey area (Figure 4). No other remnant raptor nests were identified within the Project study area or the adjacent riparian area during the field survey. A Great Horned Owl was seen roosting in a tree (non-nesting) during the reconnaissance-level field survey and could potentially nest in the area, but no nests were found on or near the Project study area. Suitable nesting habitat is present in the isolated trees and on transmission line towers on and adjacent to the Project site, and there is a moderate potential for at least one pair of raptors to nest within the vicinity of the study area. All of these raptor species are common in the region (none are considered special-status species). However, these species (and most native birds) are protected by the Migratory Bird Treaty Act and California Fish and Game Code. Compliance with these laws, and with the HCP/NCCP (2006), will be necessary during construction.


AbD - ALTAMONT CLAY, 9 TO 15 PERCENT SLOPES
AbE - ALTAMONT CLAY, 15 TO 30 PERCENT SLOPES
AcF - ALTAMONT-FONTANA COMPLEX, 30 TO 50 PERCENT SLOPES
AcG - ALTAMONT-FONTANA COMPLEX, 50 TO 75 PERCENT SLOPES
CaC - CAPAY CLAY, 2 TO 9 PERCENT SLOPES
DdF - DIABLO CLAY, 30 TO 50 PERCENT SLOPES
Ld - LODO-ROCK OUTCROP COMPLEX
Pc - PESCADERO CLAY, LOAM STRONGLY ALKALI
RbC - RINCON CLAY LOAM, 2 TO 9 PERCENT SLOPES
RbD - RINCON CLAY LOAM, 9 TO 15 PERCENT SLOPES
N
0
800
1,600
Feet
Extent of Grading Limits
CaC
AbE
AbD
AcF
AcG
Ld
RbD
RbC
DdF
Pc
W
Background: USDA 2005 NAIP Aerial
H. T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS
James Donlon Blvd. Extension - Special-Status Species Report: Soils Map
Proj No. 2739-01
Date June 2008
Figure 5
SM
//2739-01/Special Status Species/Soils Map.mxd

IMPACTS AND MITIGATION

The California Environmental Quality Act (CEQA) and the CEQA Guidelines provide guidance in evaluating Project impacts and determining which impacts will be significant. CEQA defines "significant effect on the environment" as "a substantial adverse change in the physical conditions which exist in the area affected by the proposed Project." Under CEQA Guidelines section 15065 (Mandatory Findings of Significance), a Project's effects on biotic resources are deemed significant where the Project would:

- "substantially reduce the habitat of a fish or wildlife species"
- "cause a fish or wildlife population to drop below self-sustaining levels"
- "threaten to eliminate a plant or animal community"
- "reduce the number or restrict the range of an endangered, threatened, or rare species"

In addition to the section 15065 criteria that trigger mandatory findings of significance, Appendix G of the CEQA Guidelines provides a checklist of other potential impacts to consider when analyzing the significance of Project effects. The impacts listed in Appendix G may or may not be significant, depending on the level of the impact. For biological resources, these impacts include whether the Project would:

- "have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service"
- "have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service"
- "have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means"
- "interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites"
- "conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance"
- "conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan."

Below, we have identified potential impacts of the proposed Project on special-status species, and described mitigation measures that would be necessary to mitigation potentially significant impacts to less-than-significant levels.

IMPACTS FOUND TO BE LESS-THAN-SIGNIFICANT

Minor Impacts to Regionally Widespread Special-status Species

A number of special-status wildlife species occur on the Project site only as occasional visitors, migrants, or transients. These species may occasionally forage on the site, but they are not expected to breed there. These species include the Northern Harrier, Sharp-shinned Hawk, Cooper's Hawk, Ferruginous Hawk, Merlin, Prairie Falcon, Long-eared Owl, Short-eared Owl, Vaux's Swift, Loggerhead Shrike, California Horned Lark, and Yellow Warbler. The project will have no effect on the breeding success of any of these species, although it may result in a very small reduction of foraging habitat available to them locally or regionally. Due to the abundance of similar habitats locally and regionally and the infrequency with which (or low density at which) most of these species occur on the project site, the project is expected to have a less-than-significant impact on these species that may occasionally occur, but not breed, on the site. Project implementation will not substantially reduce the foraging habitat available for these species, restrict their range, or cause their regional populations to drop below a self-sustaining level.

The Project may also impact small numbers of breeding pairs of Grasshopper Sparrow, and possibly small numbers of San Joaquin pocket mouse. However, this small number of individuals or nests that could be impacted by the Project represents only a very small proportion of the regional populations of these species. Impacts to very small numbers of individuals or to breeding habitat of these species will not substantially impact regional populations. As a result, such an impact would be less than significant under CEQA, in our opinion.

POTENTIALLY SIGNIFICANT IMPACTS

Potential Impacts to Special-status Plant Species

Protocol-level surveys during the blooming period are required to determine presence of 9 spring-blooming, special-status plant species that are not covered or no-take species under the HCP/NCCP. Whether or not the project's impacts to occurrences of these species are considered significant under CEQA would depend on the rarity of the species in question and the magnitude of the impact (*i.e.*, the number of individuals, or extent of occupied habitat, that is to be impacted relative to the regional abundance of the species). If any of these species are found within or directly adjacent to the proposed work area, a species-specific determination of potential significance will be conducted for each plant species by a qualified plant ecologist familiar with that species' distribution and abundance. If this plant ecologist determines that the project will not result in a substantial impact to regional populations of the species, the impact would be considered less than significant, and none of the following mitigation measures need to be implemented for project-related impacts. It is likely that if found, impacts to small populations of list 4 species, including California androsace, coast rock cress, hogwallow starfish, coast iris, and Lobb's aquatic buttercup, would be considered less-than-significant. These plant species are widely distributed, with many known, extant populations occurring in many counties. In other cases, such as with rayless ragwort and dwarf Downingia, the species are considered to be more rare but the amount of suitable habitat present on-site is limited, meaning that any potentially present populations are likely to be small in size and therefore impacts to these would likely also be less-than-significant. However, impacts to large numbers of any of the aforementioned species, or to any populations of more restricted, rare, or declining species such as bent-flowered fiddleneck (CNPS list 1), are likely to be considered significant unless mitigated. Finally, for those grassland species that have a potential to occur on-site as a large population due to the abundance of potentially suitable habitat on-site, impacts to a large population of so-called "watch-list" species such as Mount Diablo cottonweed (CNPS list 3) may be considered significant unless mitigated.

If project-related impacts are found to be significant, implementation of mitigation measures will reduce project-related impacts to special-status plants to a less-than-significant level. This mitigation will include implementation of avoidance (Mitigation 1) and minimization (Mitigation 2), and if avoidance and minimization are infeasible, either habitat restoration (Mitigation 3) or off-site acquisition and preservation (Mitigation 4).

Mitigation Measure 1. Avoidance of Direct Effects through Project Re-design. In consultation with a plant ecologist, the project should be redesigned, constructed, and operated in such a way as to avoid direct impacts to the special-status plant population, if such avoidance is feasible.

Mitigation Measure 2. Minimization of Indirect Effects. Indirect impacts to the species (*e.g.*, shading, siltation, or alteration of hydrologic regime) should be reduced by the creation of a buffer zone during and after construction. Prior to site grading, any populations should be identified by a qualified plant ecologist. Buffer zones between special-status plant occurrences and areas of project-related disturbance should be established; these buffer zones should be of sufficient width (as determined by a qualified plant ecologist) to eliminate potential disturbance to the plants from human activity and any other potential sources of disturbance. Temporary fences should be constructed between any populations and project activities to ensure that no accidental disturbance occurs.

The size of the buffer depends upon the proposed activities within and use of the immediately adjacent lands, and includes consideration of the plant's ecological requirements (*i.e.*, sunlight, moisture, shade tolerance, edaphic physical and chemical characteristics) that are designated by a plant ecologist based upon the growth requirements of the species. Public access to the area should be restricted after the construction phase of the project.

Mitigation Measure 3. Replacement of Impacted Species through Development of a Special-Status Plant Habitat Restoration Plan. If the project cannot be designed to avoid and minimize substantial impacts (as discussed above), then a Restoration Plan should be developed by a qualified restoration ecologist prior to any groundbreaking on the project. The objective of this mitigation measure would be to replace the special-status plants and the habitat lost during project implementation. The proposed restoration program would be monitored for a period of approximately five years from the implementation of the habitat restoration. The restoration plan would contain at a minimum the following:

1. Location of areas to restore populations of the impacted plant species. Habitat restoration areas may occur on-site or off-site, but must be within 10 miles of the project site in areas that have appropriate soils, hydrology and topography.
2. Describe the propagation and planting techniques to be employed in the restoration effort. Depending on the species, plants could be established through direct seeding and/or transplanting container grown plants into existing suitable habitat.
3. Develop a timetable for implementation of the restoration plan.
4. Develop a monitoring plan and performance criteria. Overall, the goal is to replace the functions and values of the plant population on the site. The size of the restoration area depends upon the number of plants impacted, their density in natural environments, and adjacent land uses. The special-status plant restoration area must be situated within a parcel of sufficient size so as to preclude disturbance. At the end of the five-year monitoring period, at a minimum, all impacted plants will have been replaced on a plant for plant basis (*i.e.*, restoration of comparable numbers as plants lost). The site will be designed to create a self-sustaining population.
5. Describe remedial measures to be performed in the event that initial restoration measures are unsuccessful in meeting the performance criteria.
6. Describe the site maintenance activities to follow restoration activities. These may include weed control, irrigation, and management of disturbance factors such as fire or herbivory.

Mitigation Measure 4. Acquisition and Preservation of Off-site Populations. In lieu of implementation of restoration (*i.e.*, Mitigation Measure 3), an off-site area or areas, which already support native populations of the impacted special-status plant, will be purchased and set aside in perpetuity. This will, if possible, be within an area considered desirable for East Contra Costa County HCP preserve lands (HCP/NCCP 2006). The acreage of the conservation area will be determined by the relative number and density of individuals impacted so that the total population of the species that is preserved will be comparable to the impacted population. This preservation can be in the form of fee acquisition, deed restriction, or conservation easement that effectively prevents future disturbance of the off-site populations. Preservation of the site (funded by the project proponent) will be finalized within 6 months of the impact to the species on-site.

Potential Impacts to Pallid Bats

Since being classified as a California Species of Special Concern in 1984, researchers and resource managers in the Western Bat Working Group have concluded that numbers of both subspecies of the pallid bat that occur in California have continued to decline substantially in recent years. Although all the causes of these declines have not been determined, loss of habitat, pesticides, and eviction from man-made structures leading to the loss of individuals are suspect. Removing buildings, rocky outcrops, or large trees with cavities from the Project site could potentially result in the direct loss of a pallid bat colony, including the direct loss of a maternity colony. The direct loss of individuals in a hibernaculum could also eliminate an entire colony due to the loss of pregnant females. These potential impacts would be significant due to the magnitude of the effect of such an impact on regional populations of the species.

Implementation of Mitigation Measures 1 and 3, and, if applicable, 2 and 4 would reduce these potential impacts to a less-than-significant level.

Mitigation Measure 1. Maternity Colony or Hibernaculum Surveys. A survey for roosting bats should be conducted during the maternity season (1 March to 31 July) prior to any grading of rocky outcrops or removal of trees, particularly trees ≥12 inches in diameter at 4.5 ft above grade with loose bark or other cavities. Trees and rocky outcrops must be surveyed by a qualified bat biologist (*e.g.*, a biologist holding a CDFG collection permit and a Memorandum of Understanding with CDFG allowing the biologist to handle bats).

If no active roosts are found, then no further action would be warranted. If active maternity roosts are absent, but a hibernaculum (*i.e.*, a non-maternity roost) is present, then Mitigation Measure 2 is not necessary, but Mitigation Measures 3 and 4 would still apply.

If active maternity roosts or hibernacula are found, the rock outcrop or tree occupied by the roost should be avoided (*i.e.*, not removed) by the Project, if feasible. If avoidance of the maternity roost is not feasible, the bat biologist should survey (through the use of radio telemetry or other means) for nearby alternative maternity colony sites. If the bat biologist determines that there are alternative roost sites used by the maternity colony, then it will not be necessary to provide mitigation roosting habitat (*i.e.*, Mitigation Measure 2 would not apply though Mitigation Measures 3 and 4 would still apply). However, if there are no alternative roost sites used by the maternity colony, Mitigation Measure 2 will have to be implemented as well.

Mitigation Measure 2. Provision of Substitute Roosting Habitat. If a maternity roost will be impacted by the Project, and no alternative maternity roosts are in use near the site, substitute roosting habitat for the maternity colony should be provided on, or in close proximity to, the Project site no less than three months prior to the eviction of the colony. By making the roosting habitat available prior to eviction (Measure 3 below), the colony will have a better chance of finding and using the roost. Large concrete walls (*e.g.*, on bridges) on south or southwestern slopes that are retrofitted with slots and cavities are an example of structures that may provide alternative potential roosting habitat appropriate for maternity colonies. Alternative roost sites must be of comparable size and proximal in location to the impacted colony. The CDFG should also be notified of any hibernacula or active nurseries within the construction zone.

Mitigation Measure 3. Pre-activity Surveys and Protective Zones. A qualified bat biologist will conduct a pre-activity (*e.g.*, vegetation removal, grading) survey for roosting bats within 15 days prior to any grading of rocky outcrops or removal of trees (particularly trees ≥12 inches in diameter at 4.5 ft above grade with loose bark or other cavities) whether the colony surveys (Measure 1) detected pallid bats or not. Bats can change roosts and, particularly if a colony roost is located under Measure 1 and excluded under Measure 4, may find alternate habitat in other potential roosting habitat on the site. Activities that would result in disturbance to active roosts will not proceed prior to completing the surveys. If no active roosts are found, then no further action would be warranted. If a maternity roost that was not identified previously (*i.e.*, during the surveys conducted for Mitigation Measure 1) is detected, a qualified bat biologist would determine the extent of construction-free protective zones around active nurseries since these species are known to abandon young when disturbed. If either maternity roosts or hibernacula are present, Mitigation Measure 4 should also be implemented. The CDFG should be notified of any hibernacula or active nurseries within the construction zone.

Mitigation Measure 4. Exclude Bats Prior to Demolition of Roosts. If non-breeding bat hibernacula are found in trees scheduled to be removed or in crevices in rock outcrops within the grading footprint, the individuals should be safely evicted, under the direction of a qualified bat biologist, by opening the roosting area to allow airflow through the cavity or other means determined appropriate by the bat biologist (*e.g.*, installation of one-way doors). In situations requiring one-way doors, a minimum of one week should pass after doors are installed and temperatures should be sufficiently warm for bats to exit the roost because bats do not typically leave their roost daily during winter months in central coastal California. This action should allow all bats to leave during the course of one week. Roosts that need to be removed in situations where the use of one-way doors is not necessary in the judgment of the qualified bat biologist should first be disturbed by various means at the direction of the bat biologist at dusk to allow bats to escape during the darker hours, and the roost tree should be removed or the grading should occur the next day (*i.e.*, there should be no less or more than one night between initial disturbance and the grading or tree removal). These actions should allow bats to leave during nighttime hours, thus increasing their chance of finding new roosts with a minimum of potential predation during daylight.

If an active maternity roost is located on the Project site, and alternative roosting habitat (either pre-existing or provided per Measure 2) is available, the demolition of the roost site must commence before maternity colonies form (*i.e.*, prior to March 1) or after young are flying (*i.e.*, after July 31) using the exclusion techniques described above.

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APPENDIX A.
SPECIAL-STATUS PLANT SPECIES
CONSIDERED BUT REJECTED FOR OCCURRENCE

Appendix A. Special-Status Plant Species Considered but Rejected for Occurrence.							
SCIENTIFIC NAME	**COMMON NAME**	**Outside the Elevation Range**	**No Suitable Land Cover Type**	**Lack of Serpentine Soils**	**Lack of Strongly Alkaline Soils**	**Other Edaphic Requirements**	**Highly Endemic Range/No Nearby Population**
Amsinckia grandiflora	large-flowered fiddleneck	X					
Anomobryum julaceum	slender silver-moss		X				
Arctostaphylos auriculata	Mt. Diablo manzanita	X	X				
Arctostaphylos manzanita ssp. laevigata	Contra Costa manzanita	X	X				
Arctostaphylos pallida	pallid manzanita		X			X	
Aster lentus	Suisun Marsh aster	X					
Atriplex coronata var. coronata	crownscale				X		
Calandrinia breweri	Brewer's Calandrinia		X			X	
Calochortus umbellatus	Oakland star-tulip			X			
Calystegia atriplicifolia ssp. *buttensis*	Butte County morning-glory	X	X				
Calystegia purpurata ssp. *saxicola*	coastal bluff morning-glory	X	X				
Campanula exigua	chaparral harebell	X	X	X			
Centromadia parryi ssp. *congdonii*	Congdon's tarplant				X		
Cirsium andrewsii	Franciscan thistle		X	X			
Cirsium fontinale var. campylon	Mt. Hamilton thistle			X			
Collomia diversifolia	serpentine collomia	X		X			
Convolvulus simulans	small-flowered morning-glory			X			
Cordylanthus mollis ssp. mollis	soft bird's-beak	X	X				
Cordylanthus nidularius	Mt. Diablo bird's-beak	X	X	X			X
Cryptantha hooveri	Hoover's cryptantha					X	
Delphinium californicum ssp. interius	Hospital Canyon larkspur	X					
Didymodon norrisii	Norris' beard-moss	X					
Dirca occidentalis	western leatherwood		X			X	
Eriastrum brandegeeae	Brandegee's eriastrum	X				X	
Eriogonum umbellatum var. bahiiforme	bay buckwheat	X		X			
Eriophyllum jepsonii	Jepson's woolly sunflower	X		X			
Eryngium racemosum	Delta button-celery	X					X
Erysimum capitatum ssp. angustatum	Contra Costa wallflower	X	X			X	X
Fritillaria agrestis	stinkbells			X			
Fritillaria liliacea	fragrant fritillary			X			
Galium andrewsii ssp. gatense	serpentine bedstraw			X			
Hibiscus lasiocarpus	rose-mallow						X
Hoita strobilina	Loma Prieta hoita			X			X
Isocoma arguta	Carquinez goldenbush	X			X		
Juglans hindsii	Northern California black walnut						X

Appendix A. Special-Status Plant Species Considered but Rejected for Occurrence.

SCIENTIFIC NAME	COMMON NAME	Outside the Elevation Range	No Suitable Land Cover Type	Lack of Serpentine Soils	Lack of Strongly Alkaline Soils	Other Edaphic Requirements	Highly Endemic Range/No Nearby Population
Lasthenia ferrisiae	Ferris' goldfields		X		X		
Lathyrus jepsonii var. jepsonii	Delta tule pea	X					
Leptosiphon ambiguus	serpentine leptosiphon			X			
Lilaeopsis masonii	Mason's lilaeopsis	X					
Limosella subulata	Delta mudwort	X					
Meconella oregana	Oregon Meconella	X					
Microseris sylvatica	sylvan microseris			X			
Monardella antonina ssp. antonina	San Antonio Hills monardella	X					X
Myosurus minimus ssp. apus	little mousetail		X		X		
Navarretia cotulifolia	cotula navarretia					X	
Neostapfia colusana	Colusa grass		X			X	
Oenothera deltoides ssp. howellii	Antioch Dunes evening-primrose	X	X			X	X
Phacelia phacelioides	Mt. Diablo Phacelia	X					
Piperia michaelii	Michael's rein orchid		X				
Plagiobothrys glaber	hairless popcorn-flower		X		X		X
Plagiobothrys hystriculus	bearded popcorn-flower	X					X
Potamogeton filiformis	slender-leaved pondweed	X					
Sanicula saxatilis	rock sanicle	X					
Streptanthus albidus ssp. peramoenus	most beautiful jewel-flower			X			
Streptanthus hispidus	Mt. Diablo jewel-flower	X					
Suaeda californica	California seablite	X	X				
Triquetrella californica	coastal triquetrella		X			X	
Viburnum ellipticum	oval-leaved viburnum	X					

APPENDIX B.
PLANT SPECIES OF THE
JAMES DONLON BOULEVARD EXTENSION PROJECT SITE

Appendix B. Plant Species Identified on the James Donlon Blvd. Extension Project Site.		
FAMILY NAME	**SCIENTIFIC NAME**	**COMMON NAME**
Anacardiaceae	*Toxicodendron diversilobum*	poison oak
Apiaceae	*Berula erecta*	cutleaf water parsnip
	Cicuta maculata	water hemlock
	Daucus carota	wild carrot
	Eryngium vaseyi	coyote thistle
	Foeniculum vulgare	fennel
	Hydrocotyle verticillata	whorled marsh pennywort
	Sanicula bipinnatifida	purple sanicle
	Sanicula tuberosa	tuberous sanicle
Araceae	*Phoenix canariensis*	Canary Island date palm
	Washingtonia robusta	Mexican fan palm
Asclepiadaceae	*Asclepias fascicularis*	narrow-leaf milkweed
Asteraceae	*Achillea millefolium*	yarrow
	Artemisia californica	California sagebrush
	Baccharis pilularis	coyotebrush
	Carduus pycnocephalus	Italian thistle
	Centaurea calcitrapa	purple star-thistle
	Centaurea solstitialis	yellow star-thistle
	Cirsium vulgare	bull thistle
	Cotula coronopifolia	brassbuttons
	Cynara cardunculus	cardoon
	Dittrichia graveolens	stinkwort
	Gnaphalium luteo-album	cudweed
	Grindelia camporum var. camporum	Great Valley gumplant
	Gutierrezia californica	California matchweed
	Helianthus californicus	California sunflower
	Heterotheca sessiliflora	hairy golden aster
	Holocarpha obconica	San Joaquin tarweed
	Hypochaeris glabra	smooth cat's ear
	Lactuca serriola	prickly lettuce
	Picris echioides	bristly ox-tongue
	Senecio vulgare	old-man-of-spring
	Silybum marianum	milk thistle
	Solidago californica	California goldenrod
	Sonchus oleraceus	sow thistle
	Taraxacum officinale	dandelion
	Wyethia helenioides	gray mule ears
	Xanthium spinosum	spiny cocklebur
	Xanthium strumarium	rough cocklebur
Boraginaceae	*Amsinckia menziesii* var. *intermedia*	orange-flowered fiddleneck

Appendix B. Plant Species Identified on the James Donlon Blvd. Extension Project Site.		
FAMILY NAME	**SCIENTIFIC NAME**	**COMMON NAME**
	Amsinckia menziesii var. *menziesii*	rigid fiddleneck
	Amsinckia tessellata	Devil's lettuce
	Borago officinalis	common borage
Brassicaceae	*Brassica nigra*	black mustard
	Hirschfeldia incana	Short pod mustard
	Lepidium latifolium	broadleaf peppergrass
	Lepidium nitidum	common peppergrass
	Raphanus sativus	wild radish
	Rorippa nasturtium-aquaticum	water cress
	Sisymbrium officinale	hedge mustard
	Thysanocarpus curvipes	hairy lace pod
Caprifoliaceae	*Sambucus mexicana*	blue elderberry
Caryophyllaceae	*Arenaria serpyllifolia*	thyme-leaved sandwort
	Cerastrium glomeratum	sticky chickweed
	Silene gallica	windmill pink
	Spergularia macrotheca	sticky sand-spurry
Chenopodiaceae	*Chenopodium album*	lamb's quarters
	Salsola tragus	Russian thistle
Convolvulaceae	*Convolvulus arvensis*	field bindweed
	Cressa truxillensis	alkali weed
Crassulaceae	*Crassula connata*	pygmy weed
Cucurbitaceae	*Marah fabaceus*	California manroot
Cyperaceae	*Eleocharis macrostachya*	common spikerush
	Scirpus acutus	common tule
	Scirpus pungens	three square
Elaeagnaceae	*Elaeagnus angustifolius*	Russian olive
Euphorbiaceae	*Chamaesyce prostrata*	prostrate spurge
	Eremocarpus setigerus	doveweed
Fabaceae	*Albizia julibrissin*	mimosa tree
	Lotus corniculatus	bird's-foot trefoil
	Lupinus bicolor	miniature lupine
	Lupinus luteolus	butter lupine
	Lupinus succulentus	arroyo lupine
	Melilotus indica	yellow sweet-clover
	Trifolium hirtum	rose clover
	Trifolium willdenovii	tomcat clover
Fagaceae	*Quercus douglasii*	blue oak
	Quercus lobata	Valley oak
Geraniaceae	*Erodium botrys*	white-stemmed filaree
	Erodium cicutarium	red-stemmed filaree

Appendix B. Plant Species Identified on the James Donlon Blvd. Extension Project Site.		
FAMILY NAME	**SCIENTIFIC NAME**	**COMMON NAME**
	Geranium dissectum	cut-leaf geranium
Hippocastanaceae	*Aesculus californica*	buckeye
Hydrophyllaceae	*Phacelia ciliata*	Great Valley phacelia
Juncaceae	*Juncus bufonius*	toad rush
Lamiaceae	*Trichostema lanceolatum*	vinegarweed
Liliaceae	*Dichelostemma capitatum*	blue dicks
Malvaceae	*Malvella leprosa*	alkali-mallow
	Malva parviflora	cheeseweed
Moraceae	*Ficus carica*	fig
Myrtaceae	*Eucalyptus sideroxylon*	red ironbark
Onagraceae	*Camissonia ovata*	suncups
	Epilobium brachycarpum	panicled willowherb
Papaveraceae	*Eschscholzia californica*	California poppy
Plantaginaceae	*Plantago erecta*	California plantain
Poaceae	*Avena* barbata	slender wild oats
	Avena fatua	wild oats
	Bromus diandrus	ripgut brome
	Bromus hordeaceus	soft chess brome
	Distichlis spicata	saltgrass
	Hordeum marinum ssp. *gussoneanum*	Mediterranean barley
	Hordeum murinum	mouse barley
	Hordeum vulgare	cultivated barley
	Leymus triticoides	alkali wild-rye
	Lolium multiflorum	Italian ryegrass
	Nasella pulchra	purple needlegrass
	Polypogon monspeliensis	annual beard grass
	Vulpia myuros	rattail fescue
Polemoniaceae	*Gilia clivorum*	manystemmed gilia
Polygonaceae	*Eriogonum* nudumvar. nudum	buckwheat
	Rumex crispus	curly dock
Portulacaceae	*Calandrinia ciliata*	red maids
Potamogetaceae	*Potamogeton foliosus* var. *foliosus*	leafy pondweed
Pteridaceae	*Pentagramma triangularis*	goldback fern
Ranunculaceae	*Ranunculus canus*	Great Valley buttercup
Rosaceae	*Heteromeles arbutifolia*	toyon
	Prunus armeniaca	apricot
	Prunus dulcis	almond
	Rubus leucodermis	Western raspberry
Rubiaceae	*Galium aparine*	common bedstraw
Salicaceae	*Populus fremontii*	Fremont cottonwood

Appendix B. Plant Species Identified on the James Donlon Blvd. Extension Project Site.		
FAMILY NAME	**SCIENTIFIC NAME**	**COMMON NAME**
	Salix lasiolepis	arroyo willow
	Salix laevigata	red willow
Saururaceae	*Anemopsis californica*	yerba mansa
Saxifragaceae	*Saxifraga californica*	California saxifrage
Scrophulariaceae	*Bellardia trixago*	Mediterranean lineseed
	Castilleja exerta	purple owl's clover
Solanaceae	*Nicotiana glauca*	tree tobacco
	Solanum americanum	small-flowered nightshade
The species are arranged alphabetically by family name for all vascular plants encountered during the plant survey. Plants are also listed alphabetically within each family. Species nomenclature is from Hickman (1993) except where different nomenclature has been adopted by Reed (1988).		

Appendix C.4

Alternatives Alignment Assessent

24 May 2012

William Conyers
RBF Consulting
500 Ygnacio Valley Road, Ste. 270
Walnut Creek, CA 94596-3847

SUBJECT: James Donlon Boulevard Extension Project Alternative Alignment Assessment (HTH #2739-01)

Dear Mr. Conyers:

Per your request, we are providing an assessment of the potential impacts of six alternative alignments for the James Donlon Boulevard Extension Project (Project) on biological resources covered under the East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan (Plan, 2006[1]) and the California Environmental Quality Act (CEQA). The Project proposes to construct a four-lane major arterial road extension from Kirker Pass Road to the approved Sky Ranch II Subdivision to the east, and is a covered activity under the Plan as a rural infrastructure project.

An original alignment for the Project was previously assessed per the requirements of the Plan and CEQA. Results of surveys and a quantification of potential impacts on biological resources covered under the Plan and under CEQA were provided in the following reports:

- James Donlon Boulevard Extension Tree Survey Report (Tree Survey Report; H. T. Harvey & Associates 2007a[2])
- James Donlon Boulevard Special-Status Species Report for CEQA Compliance (H. T. Harvey & Associates 2007b[3])
- James Donlon Boulevard Extension Preliminary Delineation of Wetlands and Other Waters (H. T. Harvey & Associates 2008a[4])
- James Donlon Boulevard Extension Planning Survey Report (H. T. Harvey & Associates 2008b[5])
- James Donlon Boulevard Extension Environmental Impact Report (EIR; RBF Consulting 2008[6])

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[1] East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan. 2006. East Contra Costa County Habitat Conservation Plan Association. Prepared by Jones and Stokes. October 2006.
[2] H. T. Harvey & Associates. 2007a. James Donlon Boulevard Extension Tree Survey Report for CEQA Compliance. Prepared for RBF Consulting. October 2007.
[3] H. T. Harvey & Associates. 2007b. James Donlon Boulevard Extension Special-Status Species Report for CEQA Compliance. Prepared for RBF Consulting. November 2007.
[4] H. T. Harvey & Associates. 2008a. James Donlon Boulevard Extension Project Contra Costa, California Preliminary Delineation of Wetlands, Other Waters, and Riparian Habitats. Prepared for the City of Pittsburg. June 2008.
[5] H. T. Harvey & Associates. 2008b. James Donlon Boulevard Extension Planning Survey Report. Project No. 2739-01. Prepared for RBF Consulting. June 2008.
[6] RBF Consulting. 2008. James Donlon Boulevard Extension Environmental Impact Report Administrative Draft.

Since the preparation of the EIR, the City of Pittsburg (City) has proposed a revised original alignment (Alignment C1) and five additional alignments (Alignments C1-Low Profile, C2, C2-Low Profile, C3, and C3-Low Profile) as potential alternatives to the original alignment design, with the goal of minimizing Project impacts on biological resources. These alternatives are nearly identical to each other at either end of the alignment but differ in the central portion. It is our understanding that the City wishes to assess the relative potential impacts of Alignments C1, C1-Low Profile, C2, C2-Low Profile, C3, and C3-Low Profile on biological resources covered under the Plan and under CEQA to assist in the identification of a preferred alignment.

STUDY AREA

The Project is located at the southern edge of the City at the base of the Mt. Diablo foothills, approximately 3.5 miles (mi) south of Honker Bay in Contra Costa County, California. The Project is bounded by Kirker Pass Road to the west and undeveloped ranchland to the east, south, and north. It is located within the *Clayton* and *Antioch South* 7.5-minute quadrangles, Township 2 North, Range 1 East, Sections 28, 29 and 30. It is our understanding that the six alternative alignments are located within the central portion of the Project's central alignment.

The study area for this analysis consists of the grading footprints of Alignments C1, C1-Low Profile, C2, C2-Low Profile, C3, and C3-Low Profile (Figure 1). We assume that impacts within any temporary impact areas located outside of the grading footprint (e.g., staging or access areas) will be similar between the alternatives, with implementation of standard avoidance and minimization measures. In addition, we assume that temporary impacts, which are limited to contractor access and staging, will be located in the least sensitive available areas (i.e., existing ranch roads and disturbed or heavily grazed areas away from drainages and in areas that do not contain sensitive biological resources) and will also be similar under all of the alternatives. Based on these assumptions, we do not include any potential temporary impact areas located outside of the grading footprints within the study area for this analysis.

SURVEY METHODS

Because portions of the grading footprints of the six alternative alignments overlap areas that have been previously surveyed, this analysis incorporates results from surveys conducted for the reports listed above. Surveys conducted by H. T. Harvey & Associates ecologists within the survey area for the original alignment (original survey area) were as follows:

- Senior plant ecologist, wetland ecologist, and entomologist Kelly Hardwicke, Ph.D., mapped habitats; conducted a tree survey; and conducted targeted, protocol-level blooming period surveys for late-blooming special-status plant species on 10, 11, and 12 July and 1, 7, 8, and 9 August 2007. She was assisted on 8 and 9 August 2007 by plant ecologist Onkar Singh, B.S. Kelly Hardwicke returned to the site to conduct protocol-level surveys for spring-blooming plants on 13 March and 30 April 2008.
- Kelly Hardwicke, Onkar Singh, and senior plant and wetland ecologist Patrick Boursier, Ph.D., conducted surveys on 10, 11, and 12 July and 1, 7, 8, and 9 August 2007 for areas potentially meeting the regulatory definition of Waters of the U.S., Waters of the State,

and those areas considered to be sensitive riparian or bed and banks-channel habitat by the California Department of Fish and Game (CDFG).

- Mammalogist and kit fox biologist Howard Clark, M.S., conducted a survey on 31 July 2007 for suitable habitat for San Joaquin kit foxes.
- Senior wildlife ecologist and mammalogist Dave Johnston, Ph.D., conducted a field survey on 1 August 2007 for potential habitat for Townsend's big-eared bats and ringtails.
- Senior herpetologist Jeff Wilkinson, Ph.D., conducted a survey on 1 August 2007 to evaluate potentially suitable habitat for the giant garter snake and potentially suitable breeding habitat for the California red-legged frog and California tiger salamander.

In addition, Brent Helm, Ph.D., and Todd Wood of Helm Biological Consulting conducted a survey on 8 August 2007 for potential habitat for covered branchiopod species.

For the purpose of assessing biological resources for the six new alternatives, H. T. Harvey & Associates ecologists conducted the following surveys in 2011 along the portions of Alignments C1, C1-Low Profile, C2, C2-Low Profile, C3, and C3-Low Profile that were not part of the original survey area (alternative alignment survey area):

- Senior plant ecologist and wetland ecologist Brian Cleary, Ph.D., conducted a reconnaissance-level survey on 29 and 30 November 2011 and 1 December 2011 to map jurisdictional habitats, identify habitats that could potentially support special-status plant species, and map land cover types based on the definitions in the Plan.
- Kelly Hardwicke and wildlife ecologist Robin Carle, M.S., conducted a reconnaissance-level survey on 29 November 2011 for special-status wildlife species and their habitats.

ALTERNATIVE ALIGNMENT IMPACTS NOT CONSIDERED FURTHER

For some of the biological resources that are covered under the Plan or that would be assessed under CEQA, a quick comparison of the alternatives determined that impacts of the Project would not differ substantially between the six alignments and that no detailed analysis was needed, or that additional surveys would be needed to allow for a comparison of the alternatives. These include the following resources, which are listed here but not discussed further in this comparative analysis:

- **Covered and No-Take Plant Species (Plan[7]).** Protocol-level surveys determined that all covered and no-take plant species are absent from the original survey area. However, those surveys did not cover all areas within the alternative alignment survey area. Due to the absence of covered and no-take plant species during the survey of the original alignment and habitat similarities between those areas that were and were not surveyed to protocol level, there is a very low probability of occurrence of any covered or no-take plant species within any of the alternative alignments. However, protocol-level surveys

[7] Potential Project impacts on biological resources covered under the Plan are indicated by (Plan).

involving a series of surveys throughout the flowering period for the covered and no-take plants (i.e., during early spring, mid-summer, and late summer/early fall) would be necessary to conclusively determine presence or absence of these species. Because additional surveys are needed, the presence of covered and no-take plant species was not compared between the six alternative alignments.

- **Special-Status Plant Species (CEQA[8]).** No special-status plant species (i.e., species of special status other than the covered and no-take plant species addressed above) were observed during protocol-level surveys conducted in appropriate habitat during the appropriate season along the original alignment, and it is likely that such species are absent from the six alternative alignments as well. However, as discussed for covered and no-take plant species, protocol-level surveys of the additional areas within the six alternative alignments would be necessary to determine presence or absence of these species definitively. Therefore, the presence of special-status plant species within each of the six alignments was not compared in this analysis.
- **Certain Covered and No-take Wildlife Species and Their Habitats (Plan).** Our site visits determined that there is no suitable habitat within the study area for foothill yellow-legged frogs (*Rana boylii*), giant garter snakes (*Thamnophis gigas*), Alameda whipsnakes (*Masticophis lateralis euryxanthus*), silvery legless lizards (*Anniella pulchra pulchra*), breeding California tiger salamanders (*Ambystoma californiense*), breeding tricolored blackbirds (*Agelaius tricolor*), Townsend's big-eared bats (*Corynorhinus townsendii*), and ringtails (*Bassariscus astutus*), and therefore no impacts on these species will occur as a result of the Project. In addition, the Project will not result in take of Swainson's hawks (*Buteo swainsoni*), golden eagles (*Aquila chrysaetos*), and American peregrine falcons (*Falco peregrinus anatum*), although these no-take species may forage within the study area. Therefore, impacts on these species will not differ substantially among alternatives.
- **Certain Non-breeding Special-Status Wildlife Species and Their Habitats (CEQA).** Site visits determined that there is no suitable habitat within the study area for yellow-breasted chats (*Icteria virens*) and no suitable breeding habitat for northern harriers (*Circus cyaneus*), long-eared owls (*Asio otus*), short-eared owls (*Asio flammeus*), loggerhead shrikes (*Lanius ludovicianus*), Vaux's swifts (*Chaetura vauxi*), and yellow warblers (*Setophaga petechia*). None of the alternatives will impact important foraging habitat for these species. Therefore, impacts on foraging habitat for these species will not differ among alternatives.
- **Certain Breeding Special-Status Wildlife Species and Their Habitats (CEQA).** The proposed Project may impact small numbers of breeding pairs of common nesting raptors, grasshopper sparrows (*Ammodramus savannarum*), common roosting bats, and possibly small numbers of San Joaquin pocket mice (*Perognathus inornatus*). However, implementation of the proposed Project would result in a less-than-significant impact on each of these species regardless of the alignment selected. Therefore, there are no substantive differences in impacts of the six Project alternatives on these species.

[8] Potential Project impacts on biological resources not covered under the Plan but that would be assessed under CEQA are indicated by (CEQA).

ALTERNATIVE ALIGNMENT IMPACT ANALYSIS

Potential impacts of the Project on covered biological resources under the Plan or under CEQA that differ between Alignments C1, C1-Low Profile, C2, C2-Low Profile, C3, and C3-Low Profile are described below.

Land Cover Types and Uncommon Vegetation or Landscape Features (Plan)

Plant communities are described in terms of dominant tree, shrub, and herbaceous vegetation composition and structure, and classified according to the nomenclature and definitions provided by the Plan. Uncommon vegetation types and landscape features, as described in the Plan, are also included in the assessment of relative impacts. Eight distinct land cover types and one landscape feature are present within the study area (Figures 2, 3, 4, 5, 6, and 7). The Plan requires that the Project minimize impacts on some land cover types and uncommon landscape features (i.e., rock outcrops and streams); however, the development fee required by the Plan is based on the total area developed, not on the land cover types present (see *Impact Fee Estimates* below).

Annual Grassland. Permanent impacts on annual grassland habitat would differ little among the six alternative alignments (Table 1). Because annual grassland habitat is a regionally and locally common land cover type (and thus less "sensitive" than many other cover types in the study area), the difference of less than 1 or 2 acres (ac) of impacts between the different alignments is considered to be of marginal importance in comparing the alternatives.

Rock Outcrops. Rock outcrops are considered an uncommon landscape feature by the Plan. No mandatory compensation ratios are required for uncommon landscape features under the Plan; however, the Plan requires avoidance of uncommon landscape features to the greatest extent feasible. Alignments C1 and C1-Low Profile would achieve the greatest avoidance of these landscape features (impacting 14.87 ac and 14.82 ac, respectively) while Alignments C2 (16.02 ac), C2-Low Profile (16.82), C3 (17.42), and C3-Low Profile (17.90) would result in greater impacts on these landscape features.

Oak Savannah. A belt of oak savannah habitat intercepts the central portion of the study area (Figures 2, 3, 4, 5, 6, and 7). Avoidance of impacts on oak savannah habitat to the greatest extent feasible is required by the Plan. Alignment C1-Low Profile would impact the smallest acreage of oak savannah habitat (7.71 ac), while Alignments C1, C2, C2-Low Profile, C3, and C3-Low Profile would impact slightly larger areas of this habitat (8.24 ac, 9.13 ac, 9.04 ac, 9.76 ac, and 9.46 ac, respectively). This acreage comparison should be considered along with the estimates of impacts on numbers of trees within each alignment (see *Protected Trees* below).

Developed and Ruderal. Avoidance of developed and ruderal habitats is not required for Plan compliance.

Table 1. Summary of Land Cover Types and Uncommon Landscape Features within the Extent of Grading.

Land Cover Types / Uncommon Landscape Features	Alignment C1 Total Acreage (ac)	Alignment C1-Low Profile Total Acreage (ac)	Alignment C2Total Acreage (ac)	Alignment C2-Low Profile Total Acreage (ac)	Alignment C3 Total Acreage (ac)	Alignment C3-Low Profile Total Acreage (ac)
Annual Grassland	35.15	35.35	35.12	33.59	35.06	34.38
Rock Outcrops*	14.87	14.82	16.02	16.82	17.42	17.90
Oak Savannah	8.24	7.71	9.13	9.04	9.76	9.46
Developed	5.27	5.26	5.27	5.26	5.27	5.26
Ruderal	1.42	1.35	1.07	0.94	0.67	0.64
Streams						
Intermittent	0.82	0.78	0.82	0.78	0.82	0.80
Perennial	0.45	0.45	0.43	0.39	0.40	0.35
Ephemeral	0.53	0.52	0.57	0.50	0.56	0.55
Total Streams	**1.80**	**1.75**	**1.80**	**1.67**	**1.78**	**1.70**
Oak Woodland	0.07	0.07	0.11	0.08	0.23	0.23
Total	**66.82**	**66.31**	**68.54**	**67.40**	**70.19**	**69.57**

* Considered an "uncommon landscape feature" by the Plan

Streams. Several perennial, intermittent, and ephemeral streams occur in drainages throughout the study area (Figures 2, 3, 4, 5, 6, and 7). The Plan's avoidance and minimization measures require that planned roads avoid, to the greatest extent feasible, impacts on sensitive natural communities such as streams. Alignments C1 and C2-High Profile would impact 1.80 ac of stream habitats, Alignment C3 would impact 1.78 ac, Alignment C1-Low Profile would impact 1.75 ac, Alignment C3-Low Profile would impact 1.70 ac, and Alignment C2-Low Profile would impact 1.67 ac. Thus, these six alignments differ little with respect to the acreage of steam impacts. These acreages are based on the land cover types defined by the Plan, jurisdictional boundaries of streams, which were used to compare impacts in the *Jurisdictional Habitats* section below, differ somewhat from the Plan's land cover boundaries.

The Plan requires compensation in fees for impacts on stream habitats. This compensation is based upon acreages and linear feet determined in the verified wetland delineation, and not upon acreages of these land cover types. Therefore, for purposes of comparing potential mitigation requirements of the alternative alignments, see the discussion under *Jurisdictional Habitats* below.

Oak Woodland. One ephemeral drainage within the study area supports several (>10) blue oak (*Quercus douglasii*) trees that are rooted along the upper stream banks. Avoidance of impacts on oak woodland habitat to the greatest extent feasible is required by the Plan. Of the six alternative alignments, Alignments C1 and C1-Low Profile would have the smallest impact on oak woodland habitat (0.07 ac), and alignment C2-Low Profile would impact a similarly small acreage of oak woodland habitat (0.08 ac). Alignment C2-High Profile would impact 0.11 ac of oak woodland habitat and Alignments C3 and C3-Low Profile would impact 0.23 acof oak woodland habitat. These acreages should be considered along with the estimates of impacts on numbers of trees within each alignment (see *Protected Trees* below).

Wildlife Movement (Plan)

Implementation of the proposed Project could adversely affect the north-south movement of wildlife within the study area vicinity. The James Donlon Boulevard Extension is located in the foothills of Mount Diablo, which are steep with deeply incised drainages that cross perpendicular to the proposed roadway. Therefore, the roadway crosses highly variable topographic features, which creates the necessity for significant cut and fill to site a roadway appropriately designed for safe transportation. As a result, there will be significant fill in the drainages, necessitating very long culverts carrying drainages under roads. The lengths of the three planned culverts along the alternative alignments are provided in Table 2.

Some wildlife species may preferentially use drainages for dispersal. Different wildlife species prefer culverts of different sizes and shapes, with different environmental characteristics (i.e., light, noise, temperature, moisture). In general, longer tunnels require a greater openness ratio (a measure of how "open" a culvert appears to animals, taking into account its height, width, and length) to encourage animals to move through the tunnel. Most animals that occur within the study area are unlikely to move through culverts that are several hundred feet long (i.e., any of the stream crossing culverts proposed for the six alignments). As a result, differences in the

Table 2. Summary of Proposed Culvert Lengths at Stream Crossings.

Land Cover Types/ Uncommon Landscape Features	Alignment C1 Culvert Lengths (ft)	Alignment C1-Low Profile Culvert Lengths (ft)	Alignment C2 Culvert Lengths (ft)	Alignment C2-Low Profile Culvert Lengths (ft)	Alignment C3 Culvert Lengths (ft)	Alignment C3-Low Profile Culvert Lengths (ft)
Culvert 1	381.82	381.82	381.82	381.82	381.82	381.82
Culvert 2	594.09	585.01	593.14	457.00	599.07	582.81
Culvert 3	1072.56	1012.40	882.06	760.00	798.38	729.46
Total	**2048.47**	**1979.23**	**1857.02**	**1598.82**	**1779.27**	**1694.09**

lengths of the proposed culverts would not result in substantial differences in wildlife movement through those culverts. However, Alignment C2-Low Profile minimizes the total lengths of culverts that will cross the study area compared to the other alignments.

The Project includes several additional wildlife undercrossings that can be installed in a number of potential areas along the final alignment where the grading footprint is the narrowest, as shown on the Kirker Pass Road/James Donlon Boulevard Extension Four Leg Intersection Configuration Preliminary Profile and Grading plans (15 July 2011) that were prepared for the original alignment. Based on the plans for the previously designed undercrossings, we assume that similar wildlife undercrossings can be installed for the six alternative alignments in similar or nearby locations. In some cases, the locations of these culvert undercrossings may vary between the different alignments, but it appears that length of these culverts would not vary substantially. As a result, in our opinion the opportunities for installing these culvert undercrossings and their potential value to wildlife do not vary substantially between the six alternatives. Therefore, effects on wildlife movement would not vary substantially among the six alternatives.

Jurisdictional Habitats (Plan, Permitting[9])

Per the requirements of the Plan, for each acre of impacts on stream habitats the Project will pay an appropriate development fee as well as a wetland mitigation fee based on the verified jurisdictional wetland delineation (see Appendix F of the Plan). In addition to these Plan requirements, three key agencies regulate activities within inland streams, wetlands, and riparian areas in the Project area: the U.S. Army Corps of Engineers (USACE) regulates activities pursuant to Section 404 of the Federal Clean Water Act (CWA), the CDFG regulates activities under the California Fish and Game Code Sections 1600-1607, and the Regional Water Quality Control Board (RWQCB) regulates pursuant to Section 401 of the CWA and the Porter-Cologne Water Quality Control Act. Project-related impacts on jurisdictional habitats, as determined by a verified wetland delineation, will require permits from these agencies. These agencies may also require fees and/or mitigations in addition to those required by the Plan.

Jurisdictional Waters of the U.S. Jurisdictional waters of the U.S. identified within Alignments C1, C1-Low Profile, C2, C2-Low Profile, C3, and C3-Low Profile are shown on Figures 8, 9, 10, 11, 12 and 13, respectively. Areas identified as depressional wetlands, linear wetland drainages, or groundwater seeps were classified as potential jurisdictional wetlands. Several linear drainages either did not satisfy wetland parameters due to insufficient or infrequent hydrology to saturate soils (i.e., for long or very long duration during normal rainfall conditions) or were not wetlands due to the absence of soils and vegetation and because they were underlain by incised bedrock. However, these linear drainages convey surface water and are considered jurisdictional "other waters" under Section 404 of the Clean Water Act. Acreages of potential impacts on jurisdictional Waters of the U.S. are presented in Table 3, and the impacts on streams by linear feet within each alternative alignment are presented in Table 4.

[9] In addition to Plan requirements, permits from regulatory agencies are required for impacts on jurisdictional habitats.

Table 3. Summary of Potential Jurisdictional Habitat Impacts.

Potential Jurisdictional Waters of the U.S./State	Alignment C1 Total Acreage (ac)	Alignment C1-Low Profile Total Acreage (ac)	Alignment C2 Total Acreage (ac)	Alignment C2-Low Profile Total Acreage (ac)	Alignment C3 Total Acreage (ac)	Alignment C3-Low Profile Total Acreage (ac)
Wetlands	1.17	1.15	1.14	1.09	1.10	1.08
Other Waters	0.04	0.04	0.05	0.05	0.06	0.06
Total Jurisdictional Waters	**1.21**	**1.19**	**1.19**	**1.14**	**1.16**	**1.14**

Table 4. Summary of Stream Impacts.

	Alignment C1	Alignment C1-Low Profile	Alignment C2 Profile	Alignment C2-Low Profile	Alignment C3	Alignment C3-Low Profile
Total Linear Feet	3628 ft	3470 ft	3811 ft	3318 ft	3708 ft	3521 ft

Because impacts on waters of the U.S. within each of the alternative alignments are greater than 0.5 ac (Table 3) and impacts on streams cumulate to greater than 300 linear ft (Table 4), the Project is ineligible for a Nationwide Permit and will need to apply for an Individual 404 permit from the USACE regardless of which alternative is selected. Alignment C2-Low Profile minimizes impacts on jurisdictional habitats; however, the differences between the impacts of Alignment C2-Low Profile (1.14 ac) and Alignments C1 (1.21 ac), C1-Low Profile (1.19 ac), C2 (1.19 ac), C3 (1.16 ac), and C3-Low Profile (1.14 ac) are not substantial, with all having impacts no more than 6% greater than Alignment C2-Low Profile. Alignment C2-Low Profile has the smallest impact on linear feet of streams (3318 ft); however, the impacts of Alignments C1 (3628 ft), C1-Low Profile (3470 ft) C2 (3811 ft), C3 (3708 ft), and C3-Low Profile (3521 ft) on linear feet of streams are not substantially different from Alignment C2-Low Profile, with all having impacts no more than 15% greater than Alignment C2-Low Profile. Mitigation requirements for impacts on wetlands and streams are based on wetland impact acreage and the linear footage of stream impacts, and thus, relative mitigation requirements of the six alternative alignments are directly proportional to their impacts.

Jurisdictional Waters of the State. After conducting field surveys and reviewing recent guidance provided by the USACE and Environmental Protection Agency (i.e., regarding regulatory issues raised by court decisions), we believe that no habitats on the site would be disclaimed by the USACE that would be subsequently claimed by the RWQCB. Therefore, based on experience with similar projects, all areas identified as Waters of the U.S. within the study area can also be considered Waters of the State, and it is our opinion that no features in the study area would be considered Waters of the State that are not also identified as Waters of the U.S. Therefore, the impacts in Tables 3 and 4 pertain to Waters of the State as well.

CDFG Regulated Habitats. Streams, ditches, and drainages that contain a defined bed, bank, and channel are under the regulatory jurisdiction of the CDFG. All riverine channels on the site (including all areas mapped as perennial, intermittent, and ephemeral streams that had a defined bed and banks out to the edge of any riparian woodland or forest canopies) fit the above definition. Based upon our previous experience with similar features, all of these features would likely be claimed by the CDFG, although ultimate determination of jurisdiction lies with the CDFG. CDFG regulated habitats that we identified within Alignments C1, C1-Low Profile, C2 Profile, C2-Low Profile, C3, and C3-Low Profile are shown on Figures 8, 9, 10, 11, 12, and 13, respectively, and acreages of these habitats are presented in Table 5.

Alignment C2-Low Profile minimizes impacts on CDFG regulated habitats (4.77 ac); however, the impacts of Alignments C1 (5.83 ac), C1-Low Profile (5.63 ac), C2 (5.52 ac), C3 (5.25 ac), and C3-Low Profile (5.01 ac) on CDFG regulated habitats are only moderately different from Alignment C2-Low Profile.

Stream Setback Encroachment (Plan)

Conservation Measure 1.7 in Chapter 6 of the Plan requires all developments, including roads and bridges, to establish setbacks adjacent to perennial, intermittent, and ephemeral streams. The width of the setback required for a stream varies based on the type of stream (i.e., first and second-order streams versus third or higher-order streams) and its location (i.e., urban areas

Table 5. Summary of Impacts on CDFG-Regulated Habitats.

	Alignment C1	Alignment C1-Low Profile	Alignment C2	Alignment C2-Low Profile	Alignment C3	Alignment C3-Low Profile
Total Acreage (ac)	5.83	5.63	5.52	4.77	5.25	5.01

versus agricultural or natural areas). Per the requirements of the Plan, the East Contra Costa County Habitat Conservancy provides a map that identifies all streams within the Plan's Inventory Area based on stream type and location[10]; according to the Habitat Conservancy, this map, rather than field determinations, governs the determinations of stream order[11]. This map indicates that all streams within the study area are located within "agricultural or natural areas". Kirker Creek is identified as a "third or higher order stream" requiring a 75-ft setback, while all other streams within the study area are identified as "first or second order reaches" requiring 25-ft setbacks.

Stream setbacks for Alignments C1, C1-Low Profile, C2, C2-Low Profile, C3, and C3-Low Profile are shown on Figures 14, 15, 16, 17, 18, and 19, respectively. Acreages of potential encroachment of stream setbacks under each alternative alignment are presented in Table 6. Although a bridge will span Kirker Creek under all of the proposed alternatives, the Project's preliminary plans indicate that the bridge will not span Kirker Creek's 75-ft setback (which begins at the top-of-bank and extends outwards on either side). The Project's preliminary plans do not propose bridges over any other creeks or setback areas. Therefore, the Project will impact all of the setback areas provided in Table 6.

Table 6. Summary of Impacts on Acreages of Stream Setbacks.

	Alignment C1	Alignment C1-Low Profile	Alignment C2	Alignment C2-Low Profile	Alignment C3	Alignment C3-Low Profile
Total Acreage (ac)	4.04	3.79	4.26	3.82	4.32	4.13

The differences between the impacts of Alignments C1 (4.04 ac), C1-Low Profile (3.79 ac), C2 (4.26 ac), C2-Low Profile (3.82 ac), C3 (4.32 ac), and C3-Low Profile (4.13 ac) are not substantial. Under the Plan, road projects are required to be located as far from streams as practicable, but minimization of road impacts on stream setbacks is not required for Plan compliance. Mitigation requirements for encroachment on stream setbacks are based on impact acreage, and thus the relative mitigation requirements of the six alternative alignments are directly proportional to their impacts.

Certain Covered and No-Take Wildlife Species and Their Habitats (Plan)

Under the Plan, no species-specific mitigation for impacts on covered and no-take wildlife species is required. Instead, impacts of Plan-covered projects on habitat for covered and no-take wildlife species are covered by the payment of general impact fees for the acreages of impacts on certain land cover types (Table 1) and/or jurisdictional habitats (Tables 3 and 4). The suitability of certain land cover types for covered and no-take wildlife species does not influence the impact fees required under the Plan. Therefore, the impacts of the alternatives on land cover types and jurisdictional habitats compared above under *Land Cover Types and Uncommon Vegetation or*

[10] East Contra Costa County Habitat Conservacy. 2008. Map of Streams Illustrating Applicability of the East Contra Costa County HCP/NCCP Stream Setback Provisions. http://www.co.contra-costa.ca.us/depart/cd/water/hcp/Meetings/pdfs/6-18-08/6_map_of_streams_and_setback_provisions.pdf. Accessed 21 May 2012.
[11] John Kopchik, pers. comm. to S. Rottenborn, 13 April 2012 telephone conversation.

Landscape Features and *Jurisdictional Habitats* apply to habitat for these species, and the relative impacts of the alignments on suitable habitat are not an important factor in assessing the relative mitigation costs associated with the alternative alignments.

Covered Large Branchiopods. Branchiopod species covered by the Plan are the longhorn fairy shrimp (*Branchinecta longiantenna*), vernal pool fairy shrimp (*Branchinecta lynchi*), midvalley fairy shrimp (*Branchinecta mesovallensis*), and vernal pool tadpole shrimp (*Lepidurus packardi*). Habitat for all of these species is similar, and is defined as any seasonally inundated depression that, on average, ponds (or gently coveys water) 2 inches or greater in depth for 14 or more consecutive days. Seven sites within the study area were determined to have the potential to support covered branchiopods. The locations of these sites are shown on Figure 14, and the estimated area of each site is provided in Table 7.

The majority of the potential sites for covered large branchiopods fall within the western portion of the study area, where the boundaries of the alignments are nearly identical (Figure 20). Site 6 is located within portions of Alignments C3 and C3-Low Profile that do not fall within Alignments C1, C2-High Profile, or C2-Low Profile. Therefore, Alignments C3 and C3-Low Profile will impact an additional 4.0 ac of potential habitat for covered large branchiopods compared to the other alignments.

It should be noted that regardless of the alternative, surveys for vernal pool branchiopods will need to be conducted, particularly in the rock outcrops, during an appropriate wet season prior to construction. If longhorn fairy shrimp are present, occupied pools should be avoided if possible. Otherwise, because the Plan did not account for impacts to this species from the James Donlon Boulevard Extension Project and thus did not plan on having to create and preserve new habitat for this species, Project-specific habitat mitigation (rather than payment of fees to the Habitat Conservancy) may be required.

San Joaquin Kit Fox (*Vulpes macrotis mutica*). No dens (natal or escape) were observed during field surveys, nor were any canid latrines found among the rock outcrops. No evidence of kit fox (sign, scats, dens) was observed in the study area, but potentially suitable breeding or denning habitat occurs within the annual grassland and oak savannah habitats in the study area. The Plan considers any occurrence of land cover types with which San Joaquin kit foxes may be associated (grasslands, oak savannah, or agriculture) to be potentially suitable habitat. Therefore, potential impacts on suitable denning and breeding habitat for San Joaquin kit foxes within each of the alternative alignments are commensurate with impacts on the grassland and oak savannah habitats in Table 1. The total acreage of permanent impacts on potential denning and breeding habitat of San Joaquin kit foxes is the total acreage of these land cover types within the Project grading limits (Table 8). As indicated by this table, kit fox habitat impact acreages differ little among the six alternatives.

Burrowing Owl (*Athene cunicularia*). Burrowing owls nest and roost in burrows of California ground squirrels (*Spermophilus beecheyi*). No California ground squirrel burrows and no signs of burrowing owls (e.g., whitewash, pellets, or feathers) were detected within the study area during any of the field surveys. Therefore, no suitable nesting or roosting habitat for burrowing owls is present within the study area. The Plan does not define specific habitat elements that are

Table 7. Potential Impacts on Potential Habitat of Covered Large Branchiopods That Occur Within Alignments C1, C2-High Profile, C2-Low Profile, and/or C3.

Site No.	Habitat Type	Alignment C1 Sites (ft^2)	Alignment C1-Low Profile Sites (ft^2)	Alignment C2 Sites (ft^2)	Alignment C2-Low Profile Sites (ft^2)	Alignment C3 Sites (ft^2)	Alignment C3-Low Profile Sites (ft^2)
1	Rock outcrop	21.8	21.8	21.8	21.8	21.8	21.8
2	Seasonal Depression	3.0	3.0	3.0	3.0	3.0	3.0
3	Rock outcrop	34.8	34.8	34.8	34.8	34.8	34.8
4	Rock outcrop	5.0	5.0	5.0	5.0	5.0	5.0
5	Rock outcrop	2.5	2.5	2.5	2.5	2.5	2.5
6	Rock outcrop	N/A	N/A	N/A	N/A	4.0	4.0
7	Seasonal Depression	49.5	49.5	49.5	49.5	49.5	49.5
	Total	**116.6**	**116.6**	**116.6**	**116.6**	**120.6**	**120.6**

Table 8. Acreages of Potential Impacts on San Joaquin Kit Fox and Burrowing Owl Habitat Within the Grading Limits of Alignments C1, C1-Low Profile, C2, C2-Low Profile, C3, and C3-Low Profile.

	Alignment C1 Total Acreage (ac)	Alignment C1-Low Profile Total Acreage (ac)	Alignment C2 Total Acreage (ac)	Alignment C2-Low Profile Total Acreage (ac)	Alignment C3 Total Acreage (ac)	Alignment C3-Low Profile Total Acreage (ac)
Permanent Impacts on San Joaquin Kit Fox and Burrowing Owl Habitat	43.39	43.06	44.25	42.63	44.82	43.84

components of burrowing owl nesting and roosting habitat. Rather, the Plan considers any occurrence of land cover types with which the species may be associated (e.g., grasslands, oak savannah, and agricultural) to be potentially suitable habitat. Therefore, potential impacts on suitable nesting and roosting habitats for burrowing owls are commensurate with the grassland and oak savannah habitats in Table 1. The total acreage of permanent impacts on potential nesting and roosting habitat are provided in Table 8, and vary little among the six alternatives.

California Red-legged Frog (*Rana draytonii*). There is no suitable breeding habitat for California red-legged frogs in the study area. Portions of Kirker Creek and the perennial creek near the eastern end of the Project area could be used as dispersal habitat, foraging habitat, or aquatic refugia (as defined in the Plan) by California red-legged frogs. However, the portion of the study area that intersects Kirker Creek is nearly identical for all six alignments, and the six alternatives vary little in terms of the extent of impacts on the eastern perennial creek. California red-legged frogs may also use the intermittent and ephemeral creeks in the Project area for foraging or dispersal, particularly during the wet season, and they could potentially disperse over any upland portions of the Project site.

Impacts on potential California red-legged frog aquatic habitat (as defined in the Plan) are commensurate with the impacts on the "streams" land cover type (Table 1). These impacts differ little between the Project alternatives (≤ 0.2 ac). Impacts on potential red-legged frog upland dispersal habitat (as defined in the Plan) include the combined impacts on the annual grassland, oak savannah, ruderal, and oak woodland land cover types (Table 1). These impacts also differ little between the Project alternatives (≤ 2.2 ac). The total acreage of permanent impacts on potential aquatic and upland dispersal habitats is the total acreage of these land cover types within the Project limits (Table 9).

Western Pond Turtle (*Actinemys marmorata*). There is no high-quality aquatic habitat for western pond turtles in the study area. Suitable movement habitat (as defined in the Plan) for this species is present within the study area, primarily in perennial creeks such as Kirker Creek and a creek near the eastern end of the Project area. Due to the lack of large pools in these creeks and the intermittent/ephemeral nature of other streams in the Project area, western pond turtles are expected to occur on the site very infrequently, and primarily (or solely) along the perennial creeks, if at all. The six alternatives do not vary in their impacts in the Kirker Creek vicinity, and vary little in terms of the extent of impacts on the eastern perennial creek. Impacts on potential western pond turtle aquatic habitat, which can be estimated by the impacts on the perennial stream land cover type provided in Table 1, differ little between the Project alternatives (≤ 0.6 acres).

White-tailed Kite (*Elanus leucurus*). Potentially suitable breeding habitat for white-tailed kites is present in trees within the study area, and suitable foraging habitat is present in the surrounding grassland habitat. Because there are no current known nests within the study area, there are no known differences in potential impacts between the six potential alignments. However, the six alternative alignments do differ with respect to the number of trees that would be impacted, as discussed under *Protected Trees* below. Alignment C2 minimizes impacts on protected trees (and, concurrently, on nesting habitat for white-tailed kites).

Table 9. Acreages of Potential Impacts on California Red-legged Frog Habitat Within the Grading Limits of Alignments C1, C2-High Profile, C2-Low Profile, and C3.

	Alignment C1 Total Acreage (ac)	Alignment C1-Low Profile Total Acreage (ac)	Alignment C2 Total Acreage (ac)	Alignment C2-Low Profile Total Acreage (ac)	Alignment C3 Total Acreage (ac)	Alignment C3-Low Profile Total Acreage (ac)
California Red-legged Frog Aquatic Habitat	1.80	1.75	1.80	1.67	1.78	1.70
California Red-legged Frog Upland Habitat	44.88	44.48	45.43	43.65	45.72	44.71
Total Impacts	**46.68**	**46.23**	**47.23**	**45.32**	**47.50**	**46.41**

Certain Biological Resources Covered Under CEQA

Pallid Bats (*Antrozous pallidus*). Suitable breeding and roosting habitat for pallid bats (*Antrozous pallidus*) is present within all six of the alternative alignments in the form of rock outcrops and trees, and the proposed Project may impact small numbers of breeding or roosting pallid bats. Potential impacts on breeding pallid bats would be potentially significant under CEQA. The implementation of mitigation measures to conduct surveys for bats and potentially exclude bats from active roosts prior to the breeding season would reduce such impacts on less-than-significant levels regardless of the alignment selected. Nevertheless, the six alignments do vary with respect to their impacts on rock outcrops (Table 1) and trees (see *Protected Trees* below). Alignment C1-Low Profile minimizes impacts on rock outcrops (14.82 ac), while Alignment C2 minimizes impacts on trees (20 trees).

Protected Trees. The Tree Survey Report noted 105 trees of 6 inches dbh or additive dbh within the original survey area. Using aerial mapping, we determined that 42 of these trees occur within Alignments C1, C1-Low Profile, C2, C2-Low Profile, C3, and/or C3-Low Profile. In addition to the 42 previously surveyed trees, aerial mapping suggested that at least 24 additional trees of unknown species and diameter occur within the alternative alignment survey area. These trees have not been surveyed, but based on our observations of these trees in the field we believe that all of these trees are natives. The majority of these trees are blue oaks, with possibly one or two valley oaks (*Quercus lobata*), arroyo willows (*Salix lasiolepis*), and/or buckeyes (*Aesculus californica*). All or most of these trees have large dbh and would potentially be protected under the Contra Costa County Code. Estimates of the total numbers of trees to be potentially impacted within each of the alignments are provided in Table 10. Our assessment of the numbers and types of trees present within each of the six alignments, as well as a summary of previously surveyed trees and trees estimated using aerial mapping, is as follows:

- All of the trees within Alignments C1 and C1-Low Profile have been previously surveyed; 29 would potentially be protected under the Contra Costa County Code. These protected trees consist of 22 blue oaks, 4 arroyo willows, 2 buckeyes, and 1 valley oak.
- Seventeen of the trees within Alignment C2 have been previously surveyed. All of these trees would potentially be protected under the Contra Costa County Code. These protected trees consist of 10 blue oaks, four arroyo willows, two buckeyes, and one valley oak. Aerial mapping indicates that at least three additional trees of unknown species and dbh are also present in this alignment.
- Twenty of the trees within Alignment C2-Low Profile have been previously surveyed. All of these trees would potentially be protected under the Contra Costa County Code. These protected trees consist of 12 blue oaks, four arroyo willows, two buckeyes, one almond, and one valley oak. Aerial photo interpretation indicates that at least nine additional trees of unknown species and dbh are also present in this alignment.
- Nine of the trees within Alignments C3 and C3-Low Profile have been previously surveyed. All of these trees would potentially be protected under the Contra Costa County Code. These protected trees consist of 4 blue oaks, 3 arroyo willows, 1 buckeye, and 1 valley oak. Aerial mapping indicates that at least 22 additional trees of unknown species and dbh are also present in this alignment.

Table 10. Numbers of Trees to be Potentially Impacted within Alignments C1, C1-Low Profile, C2, C2-Low Profile, C3, and C3-Low Profile.

	Alignment C1		Alignment C1-Low Profile		Alignment C2		Alignment C2-Low Profile		Alignment C3		Alignment C3-Low Profile	
	PS[1]	NPS[2]	PS	NPS	PS	NPS	PS	NPS	PS	NPS	PS	NPS
# Trees	29	0	29	0	17	3	20	9	9	22	9	22
Total	**29**		**29**		**20**		**29**		**31**		**31**	

[1] Previously Surveyed
[2] Not Previously Surveyed (approximate)

Although the numbers of unsurveyed trees are estimated for Alignments C2, C2-Low Profile, C3, and C3-Low Profile, these counts of trees indicate that Alignments C1, C1-Low Profile, C2-Low Profile, C3, and C3-Low Profile will potentially impact greater numbers of trees (29, 29, 29, 31, and 31, respectively), while Alignment C2 will potentially impact fewer trees (20). These estimates also indicate that Alignment C2 will have a lower impact on the oak savannah and oak woodland habitats compared to the other two alignments.

CONCLUSIONS

A summary of the relevant impacts discussed above that differ between the alternative alignments is provided in Table 11. The relative potential impacts of Alignments C1, C1-Low Profile, C2, C2-Low Profile, C3, and C3-Low Profile vary among specific biological resources, and none of the alignments minimizes impacts on all or most of the biological resources we evaluated.

The impacts of Alignments C1 and C1-Low Profile on biological resources are similar, and minimize impacts on land cover types, with the exception of impacts on streams. However, Alignments C1 and C1-Low Profile will result in impacts on 29 trees, which reveals a proportionately greater impact on oak savannah and oak woodland habitats than the acreages indicate. Alignments C1 and C1-Low Profile would have the least impact on acreages of jurisdictional other waters, and the greatest impact on jurisdictional wetlands and CDFG regulated habitats. These alignments minimize impacts on potential habitat for covered branchiopods.

The potential impacts of Alignment C2 on biological resources are generally intermediate compared to the other alternatives. This alignment impacts the greatest area of streams and the longest linear footage of streams. However, the relatively low number of trees that would be impacted by this alignment suggests a proportionately lower impact on oak savannah and oak woodland habitats than the acreages indicate. This alignment minimizes impacts on potential branchiopod breeding sites.

Alignment C2-Low Profile minimizes impacts on streams, jurisdictional waters, CDFG regulated habitats, and potential branchiopod breeding sites. This alignment would have moderate impacts on acreages of rock outcrops and oak savannah habitat, but would minimize impacts on oak woodland habitat. Alignment C2-Low Profile would impact a relatively high number of trees.

The impacts of Alignments C3 and C3-Low Profile on biological resources are similar. These Alignments would potentially impact the largest areas of rock outcrops (and, correspondingly, potential branchiopod breeding sites), oak savannah, and oak woodland habitats. These alignments would impact moderate areas of streams, moderate areas of jurisdictional waters, and moderate lengths of linear footage of streams. Alignments C3 and C3-Low Profile would impact relatively high numbers of trees.

Table 11. Summary of Impacts on Biological Resources that Differ Between Alignments C1, C1-Low Profile, C2, C2-Low Profile, C3, and C3-Low Profile.

	Alignment C1	Alignment C1-Low Profile	Alignment C2	Alignment C2-Low Profile	Alignment C3	Alignment C3-Low Profile
Land Cover Types/Landscape Features						
Rock Outcrops (ac)	14.87	14.82	16.02	16.82	17.42	17.90
Oak Savannah (ac)	8.24	7.71	9.15	9.04	9.81	9.46
Total Streams (ac)	1.80	1.75	1.80	1.67	1.73	1.70
Oak Woodland (ac)	0.07	0.07	0.11	0.08	0.23	0.23
Wildlife Movement						
Culvert 2 Length (ft)	594.09	585.01	593.14	457.00	599.07	582.81
Culvert 3 Length (ft)	1072.56	1012.40	882.06	760.00	798.38	729.46
Jurisdictional Habitats						
Wetlands (ac)	1.17	1.15	1.14	1.09	1.10	1.08
Other Waters (ac)	0.04	0.04	0.05	0.05	0.06	0.06
Total Jurisdictional Waters (ac)	1.21	1.19	1.19	1.14	1.16	1.14
CDFG Regulated Habitats (ac)	5.83	5.63	5.52	4.77	5.25	5.01
Linear Feet of Stream Impacts (ft)	3628	3470	3811	3318	3708	3521
Stream Setback Encroachment (ac)	4.04	3.79	4.26	3.82	4.32	4.13
Certain Covered Wildlife Species						
Branchiopod Breeding Sites (ft^2)	116.60	116.60	116.60	116.60	120.60	120.60
Protected Trees						
Approx. number of trees	29	29	20	29	31	31

The differences in impacts between the alignment alternatives are, in most cases, relatively minor. Acreages of oak savannah habitat, streams, jurisdictional habitats, CDFG-regulated habitats, and habitats for covered and no-take wildlife species are relatively similar for the six alignments. Impacts on wildlife movement would not differ substantially among the six alignments. No one alignment clearly minimizes impacts on biological resources more than the others. However, Alignment C2 would result in a relatively low impact on trees (and associated oak savannah and oak woodland habitats) and only a moderate impact on most other resources that were evaluated, while Alignment C2-Low Profile would result in relatively low impacts on streams and jurisdictional wetlands.

Impact Fee Estimates

The Project is covered as a rural road project (a subset of Plan rural infrastructure projects) under the Plan, and is referred to in the Plan as the Buchannan Bypass Project (the title of the Project when the Plan was drafted in 2006). The Plan requires rural road projects to pay a rural road fee that is calculated by multiplying a Project's development fee by a fee multiplier.

A project's development fee is based on its total impact acreage, its location within one of three fee zones defined by the Plan, and the acreage or linear footage of impacts to wetlands and streams. In determining the overall impact fee, the types of individual land cover types that comprise a project's footprint do not influence a project's development fee; as a result, the acreages of annual grassland, rock outcrop, streams, and other land cover types are not considered individually when calculating the development fee for a project. Rather, it is the total acreage of non-developed habitat that will be impacted that is used for the calculation of impact fees. The Project is located within Fee Zone II, which was assigned a per-acre fee of $23,838 when the Plan was drafted in 2006. This fee was updated to $21,324.30/acre in January 2012 following a required audit of the Plan.

The fee multiplier applies only to rural road projects, and takes into consideration the greater impacts of rural road projects compared to other development projects (i.e., habitat fragmentation and impacts on wildlife movement). Therefore, while most development projects covered under the Plan pay only a base development fee, rural road projects pay the development fee multiplied by a fee multiplier. The Plan assigned a fee multiplier of 1.75 to the Buchannan Bypass Project (assuming optional design measures, provided in Table 6-6 of the Plan, will be implemented), which is provided in Table 9-6 of the Plan. The fee multiplier for the Project has not changed since the Plan was adopted.

Table 12 illustrates how the rural road fees were calculated for each of the six alternative alignments. These estimates assume the same parameters as the estimates calculated for the Buchannan Bypass Project in Table 9-6 of the Plan (i.e., that the Project is covered as a rural road project under the Plan, is located within Fee Zone II, and will implement optional design measures from Table 6-6 of the Plan). We used the updated fee of $21,324.30/acre for projects located in Fee Zone II, the acreages provided above in Table 1, and the fee multiplier of 1.75 provided in Table 9-6 of the Plan to calculate these fees.

Table 12. Calculation of Rural Road Fees for Alignments C1, C1-Low Profile, C2, C2-Low Profile, C3, and C3-Low Profile.

Alignment	Acres for Development Fee*	Fee Per Acre of Impact	Development Fee (acres*fee per acre)	Fee Multiplier	Rural Road Fee (development fee*fee multiplier)
C1	61.55 ac	$21,324.30	$1,312,511	1.75	$2,296,893
C1-Low Profile	61.05 ac	$21,324.30	$1,301,849	1.75	$2,278,236
C2	63.27 ac	$21,324.30	$1,349,188	1.75	$2,361,080
C2-Low Profile	62.14 ac	$21,324.30	$1,325,092	1.75	$2,318,911
C3	64.31 ac	$21,324.30	$1,371,366	1.75	$2,399,890
C3-Low Profile	64.92 ac	$21,324.30	$1,384,374	1.75	$2,422,654

* The total acreages for calculation of the development fees include the acreages all land cover types within each footprint, except for developed habitat.

In addition to the rural road fee, the Plan requires covered projects to pay a wetland mitigation fee for impacts (i.e., dredging and filling) on jurisdictional habitats. Per section 9.3.1 of the Plan, the acreages of streams contribute to the acreage for the development fee and the linear feet of streams are used to calculate the wetland mitigation fee. Therefore, streams are assigned fees twice under the Plan, once under the development fee and again under the wetland mitigation fee. Wetland mitigation fees required by the Plan are estimated based on the linear footages of streams, and separate fees are required for streams 25 ft or less in width and streams greater than 25 ft in width. Table 9-5 of the Plan provides the wetland mitigation fees for both types of streams as of 2006. These fees were updated in January 2012 to $407 per linear foot of impacts on streams 25 ft wide or less from top-of-bank to top-of bank, and $613 per linear foot of impacts on streams greater than 25 ft in width. Table 13 indicates how the wetland mitigation fees were calculated for each of the six alternative alignments.

Projects granted an exception to stream setback requirements are required by the Plan to mitigate the loss of habitat within setback areas by restoring riparian vegetation on-site or off-site at a 0.5:1 ratio, or by paying a setback encroachment fee. The setback encroachment fee is paid in addition to the rural road and wetland fees described above, and consists of one-half the riparian impact fee (one-half of $58,140, per Table 9-5 of the Plan) per acre of encroachment within the setback area. Table 14 provides the setback encroachment acreages and fees for each of the six alternative alignments.

Estimates of total Plan-related impact fees for the six alternative alignments, including the rural road fees listed in Table 12, the wetland mitigation fees listed in Table 13, and the setback encroachment fees listed in Table 14, are provided in Table 15.

Overall, Plan-related fees are minimized by Alignment C2-Low Profile, which has both the lowest rural road fee and the lowest wetland mitigation fee. However, the fees differ little (i.e., by 7.7% or less) among the six alternative alignments.

Table 13. Calculation of Wetland Mitigation Fees for Alignments C1, C1-Low Profile, C2, C2-Low Profile, C3, and C3-Low Profile.

	Alignment C1		Alignment C1-Low Profile		Alignment C2		Alignment C2-Low Profile		Alignment C3		Alignment C3-Low Profile	
	Linear Feet	Wetland Fee	Linear Feet	Wetland Fee	Linear Feet	Wetland Fee	Linear Feet	Wetland Fee	Linear Feet	Wetland Fee	Linear Feet	Wetland Fee
Streams ≤ 25 ft wide ($407/lf)	538	$218,966	503	$204,721	521	$212,047	480	$195,360	510	$207,570	479	$194,953
Streams > 25 ft wide ($613/lf)	3090	$1,894,170	2967	$1,818,771	3290	$2,016,770	2838	$1,739,694	3198	$1,960,374	3042	$1,864,746
Totals	3628	$2,113,136	3470	$2,023,492	3811	$2,228,817	3318	$1,935,054	3708	$2,167,944	3521	$2,059,699

Table 14. Setback Encroachment Acreages and Fees for Alignments C1, C1-Low Profile, C2, C2-Low Profile, C3, and C3-Low Profile.

Alignment C1		Alignment C1-Low Profile		Alignment C2		Alignment C2-Low Profile		Alignment C3		Alignment C3-Low Profile	
Acreage	Fee	Acreage	Fee	Acreage	Fee	Acreage	Fee	Acreage	Fee	Acreage	Fee
4.04 ac	$117,443	3.79 ac	$110,175	4.26 ac	$123,838	3.82 ac	$111,047	4.32 ac	$125,582	4.13 ac	$120,059

Table 15. Summary of Plan-related Fees for Alignments C1, C1-Low Profile, C2, C2-Low Profile, C3, and C3-Low Profile.

	Alignment C1	Alignment C1-Low Profile	Alignment C2	Alignment C2-Low Profile	Alignment C3	Alignment C3-Low Profile
Rural Road Fee	$2,296,893	$2,278,236	$2,361,080	$2,318,911	$2,422,654	$2,399,890
Wetland Mitigation Fee	$2,113,136	$2,023,492	$2,228,817	$1,925,054	$2,167,944	$2,059,699
Setback Encroachment Fee	$117,443	$110,175	$123,838	$111,047	$125,582	$120,059
Total Fees	**$4,527,472**	**$4,411,903**	**$4,713,735**	**$4,355,012**	**$4,716,180**	**$4,579,648**

In meetings with the Habitat Conservancy about the Project, the Conservancy indicated that Project impacts on jurisdictional habitats would exceed the maximum allowable linear impact (300 ft) and maximum allowable area of impact within setback (15%) provided in the Plan (see Table 6-2 in the Plan). As a result, the Project will need to obtain approval from the Conservancy and from jurisdictional agencies (i.e., the USACE, CDFG, and RWQCB) to exceed these maximum allowable impacts. Although this will affect the Project's approval process, it will not affect the Project's wetland mitigation fees under any of the alternatives.

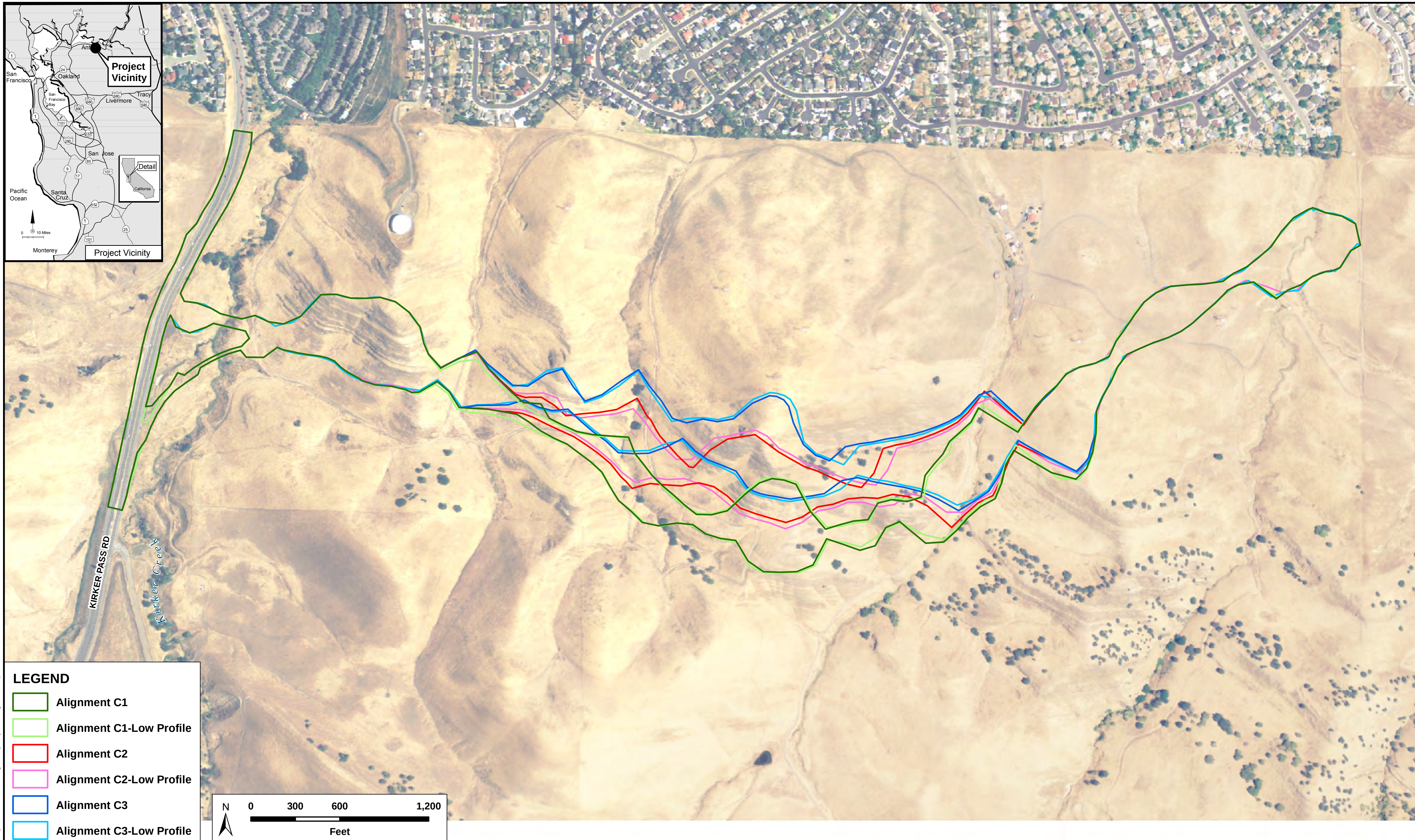
The assessments of potential impacts presented in this report are based upon preliminary roadway grading and alignment plans prepared by RBF Consulting. These alternative plans were developed in a similar fashion for purposes of comparing the degree of impacts of the alternative alignments against one another. As the design of the selected alignment is advanced, it is anticipated that the impacts will increase somewhat; these impacts will be noted at an appropriate time. This report is for a comparable analysis of the environmental impacts of the various alternatives and does not represent the final assessment of the selected alternative.

Please feel free to contact me at srottenborn@harveyecology.com or (408) 458-3205 if you have any questions regarding this report.

Sincerely,

Stephen C. Rottenborn

Stephen C. Rottenborn, Ph.D.
Principal – Wildlife Ecologist



N:\Projects\2739-01\Planning Survey May 2012\Fig 1 Site Map.mxd

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Figure 1: Study Area Map

James Donlon Boulevard Extension Project Alternative Alignment Assessment (2739-01)
May 2012

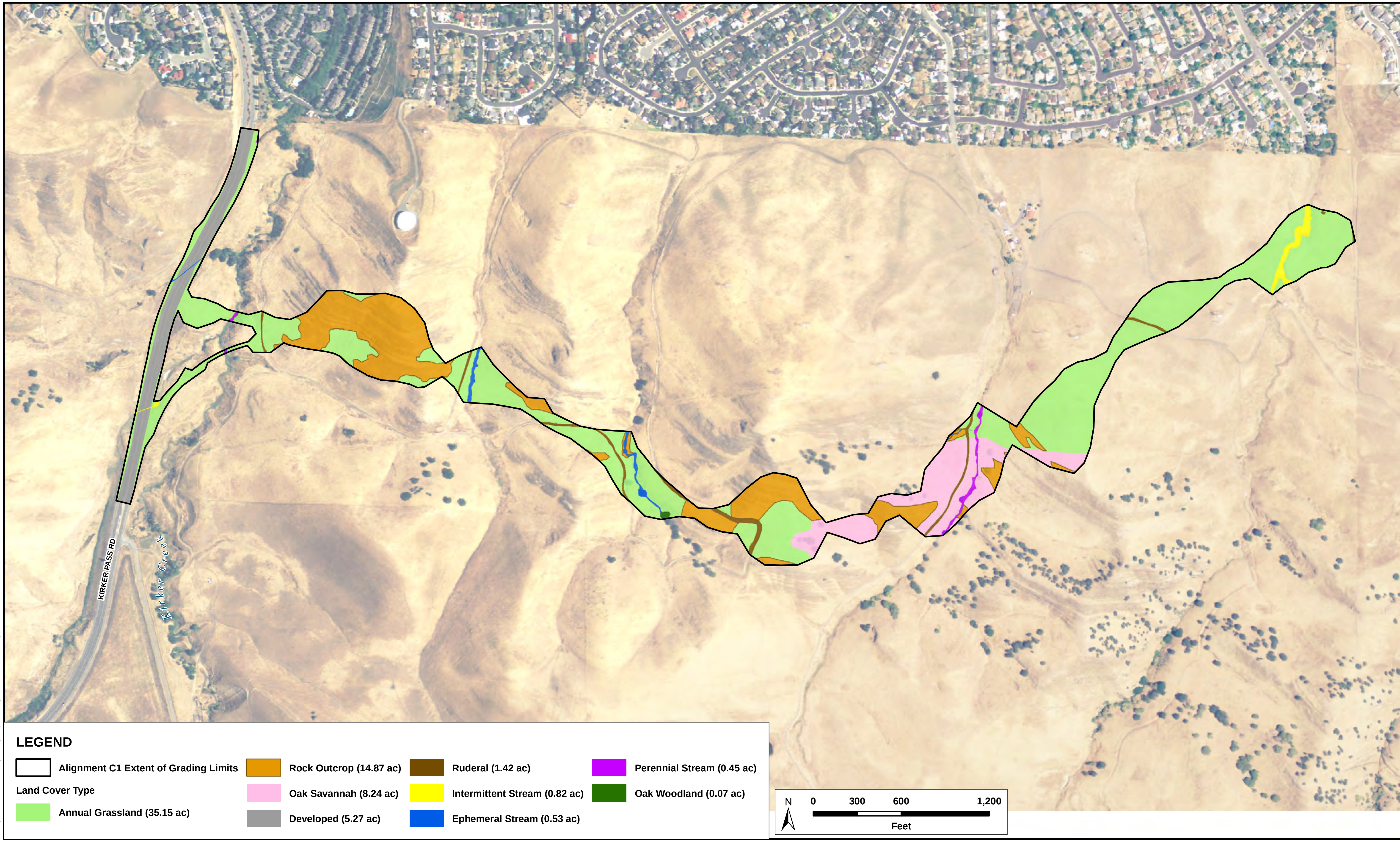

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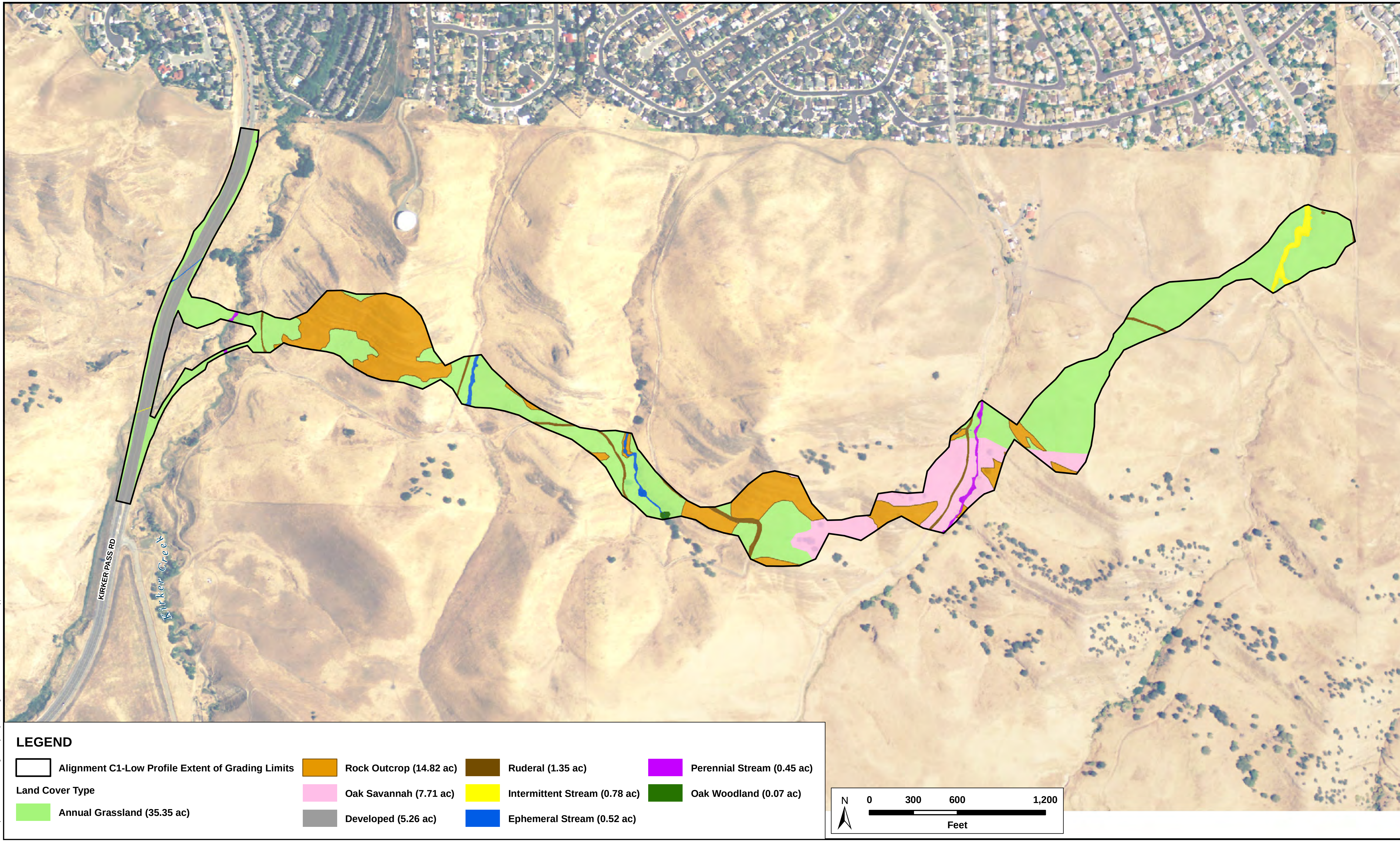
Figure 2: Alignment C1 Land Cover Types

James Donlon Boulevard Extension Project Alternative Alignment Assessment (2739-01)

May 2012



N:\Projects\2739-01\Planning Survey May 2012\Fig 3 C1 Alt Low Profile Land Cover Types.mxd

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Figure 3: Alignment C1-Low Profile Land Cover Types

James Donlon Boulevard Extension Project Alternative Alignment Assessment (2739-01)
May 2012

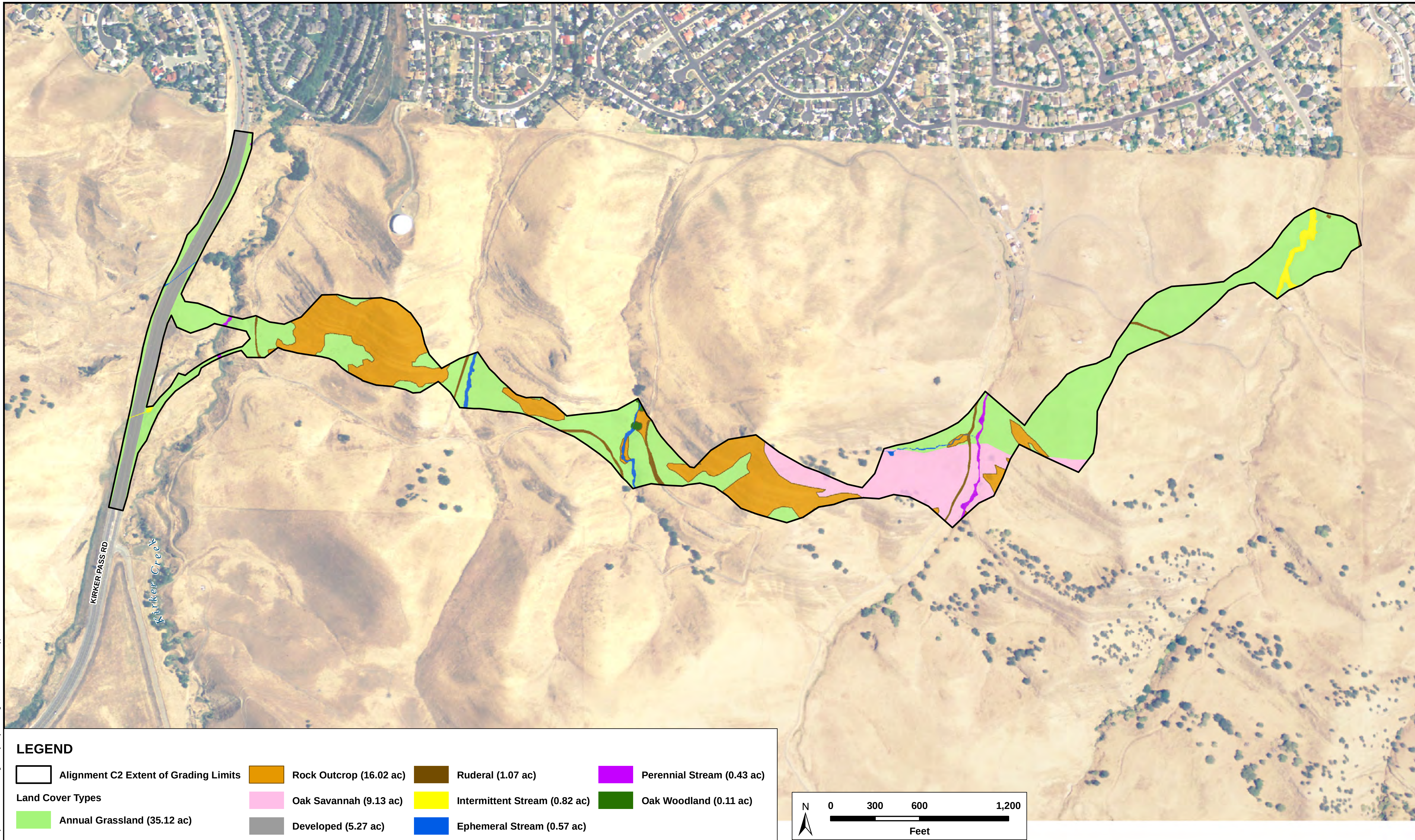

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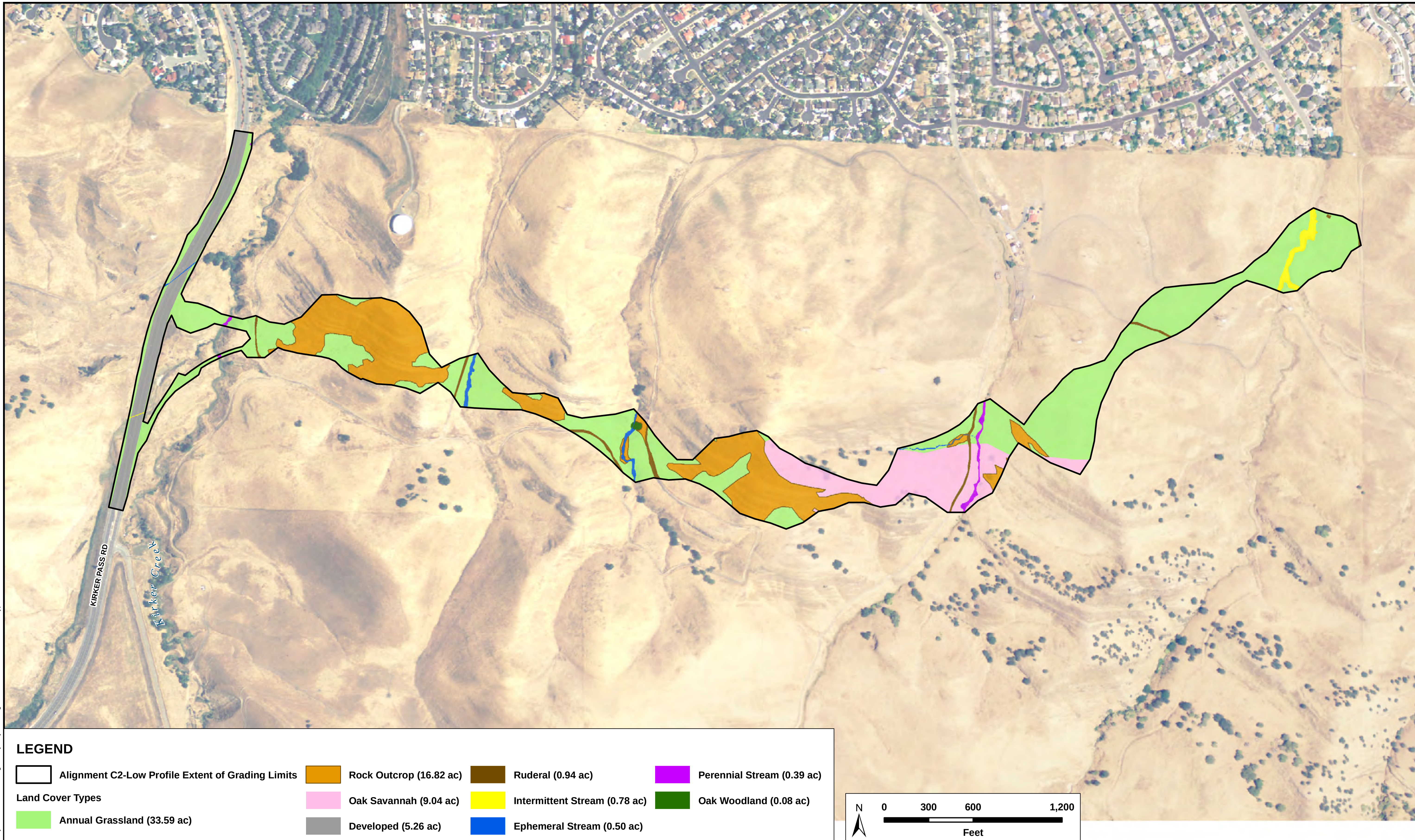
Figure 4: Alignment C2 Land Cover Types

James Donlon Boulevard Extension Project Alternative Alignment Assessment (2739-01)
May 2012



N:\Projects\2739-01\Planning Survey May 2012\Fig 5 C2 Alt Low Profile Land Cover Types.mxd

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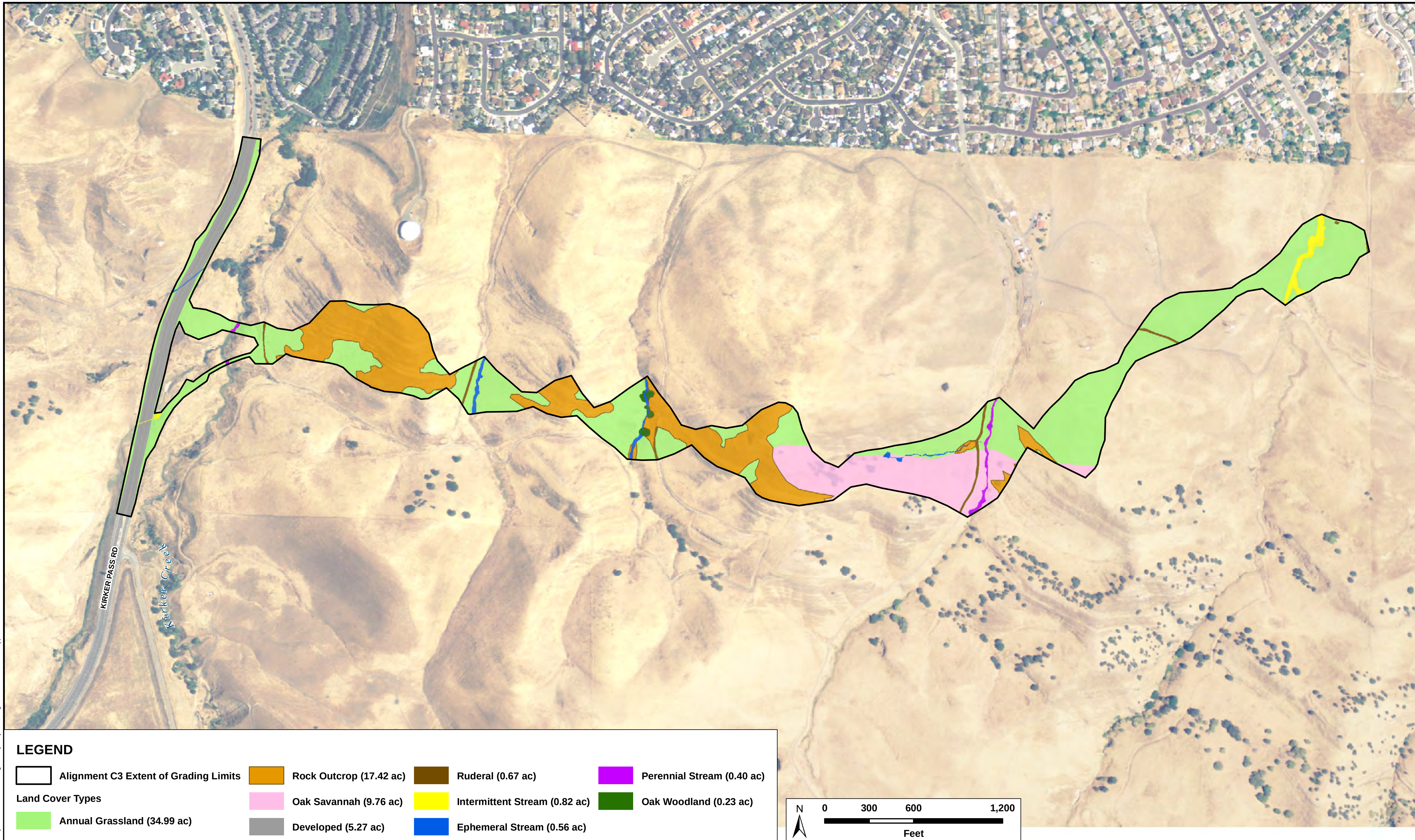
Figure 5: Alignment C2-Low Profile Land Cover Types

James Donlon Boulevard Extension Project Alternative Alignment Assessment (2739-01)

May 2012



N:\Projects\2739-01\Planning Survey May 2012\Fig 6 C3 Alt Land Cover Types.mxd

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Figure 6: Alignment C3 Land Cover Types

James Donlon Boulevard Extension Project Alternative Alignment Assessment (2739-01)
May 2012

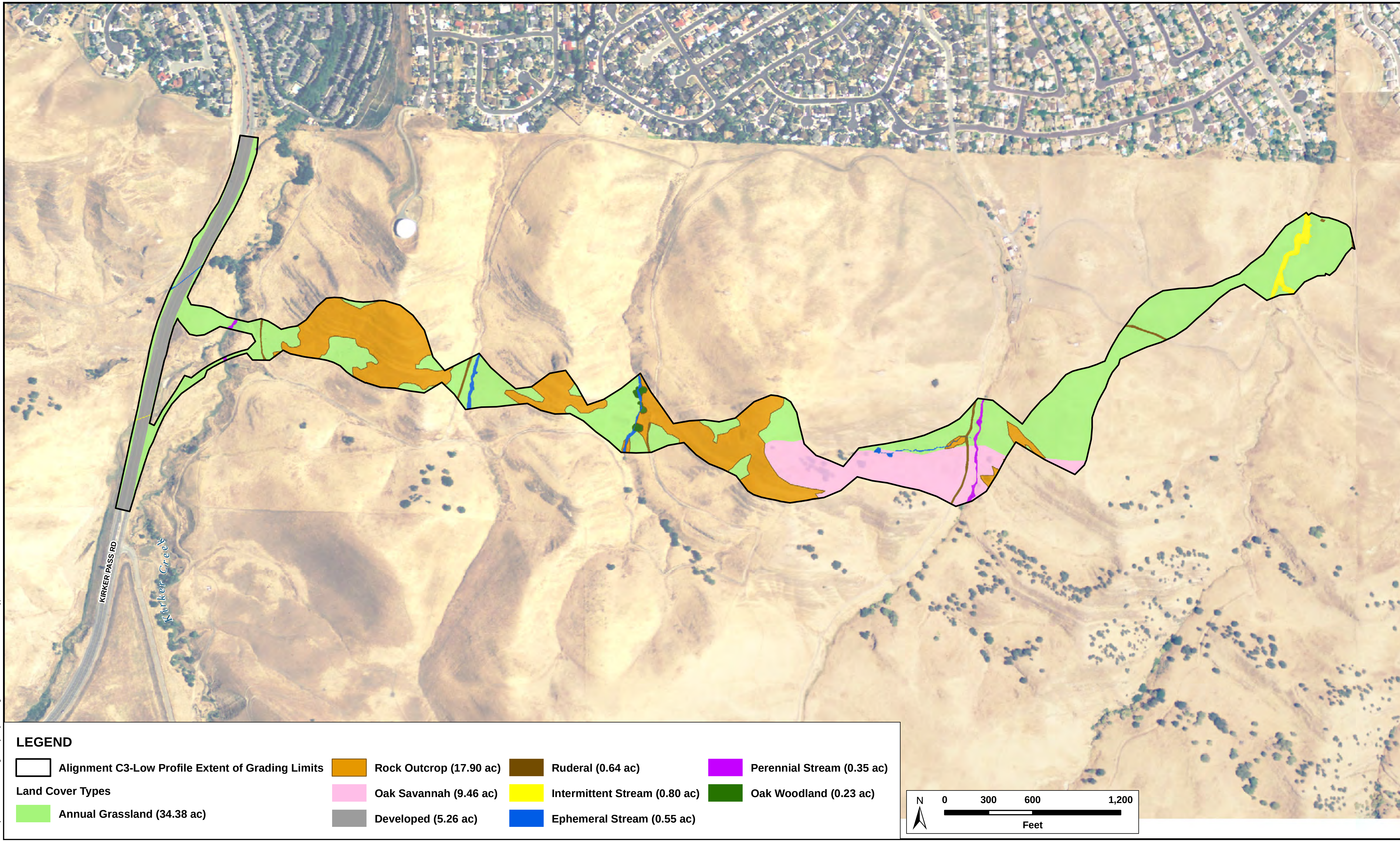

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Figure 7: Alignment C3-Low Profile Land Cover Types

James Donlon Boulevard Extension Project Alternative Alignment Assessment (2739-01)
May 2012

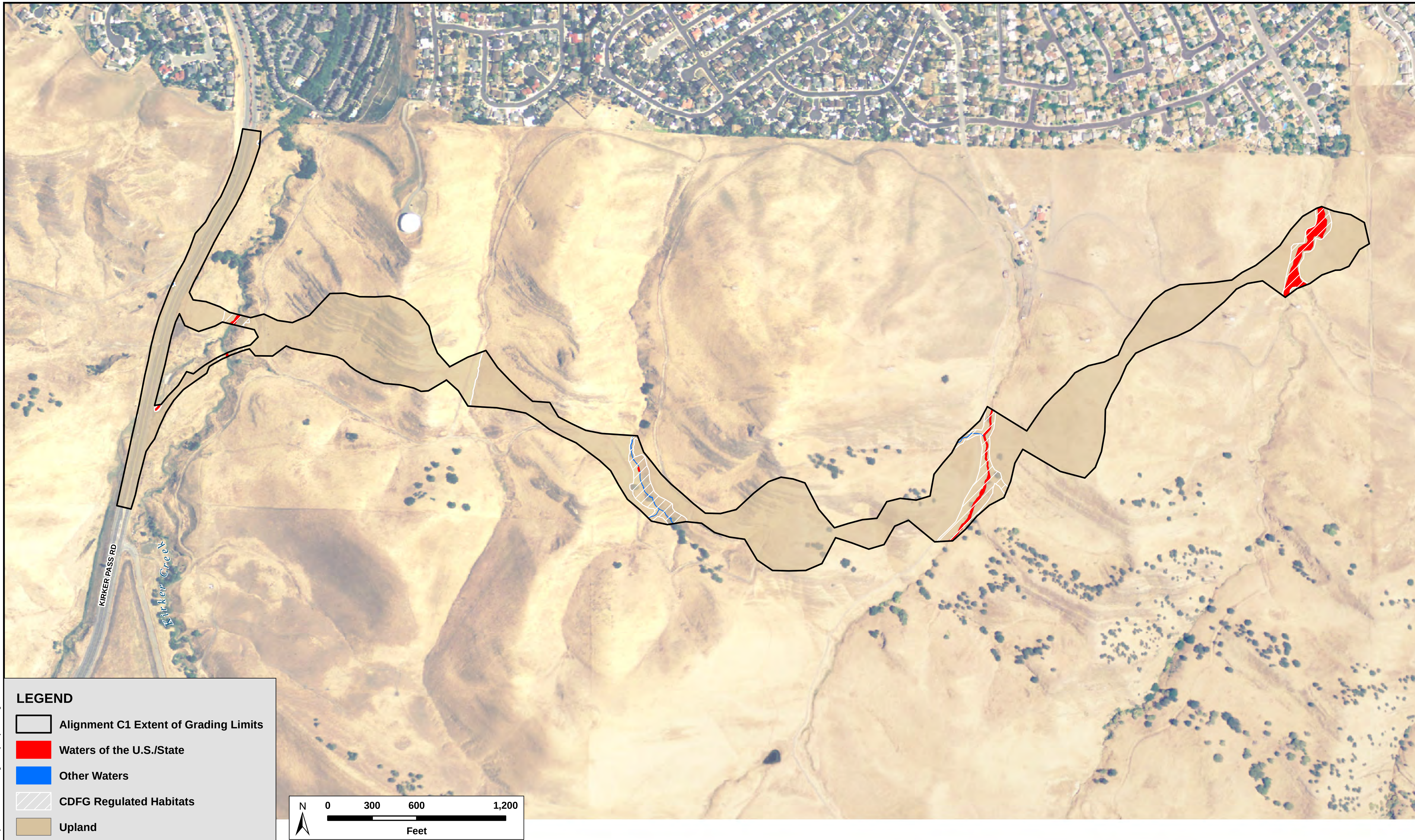

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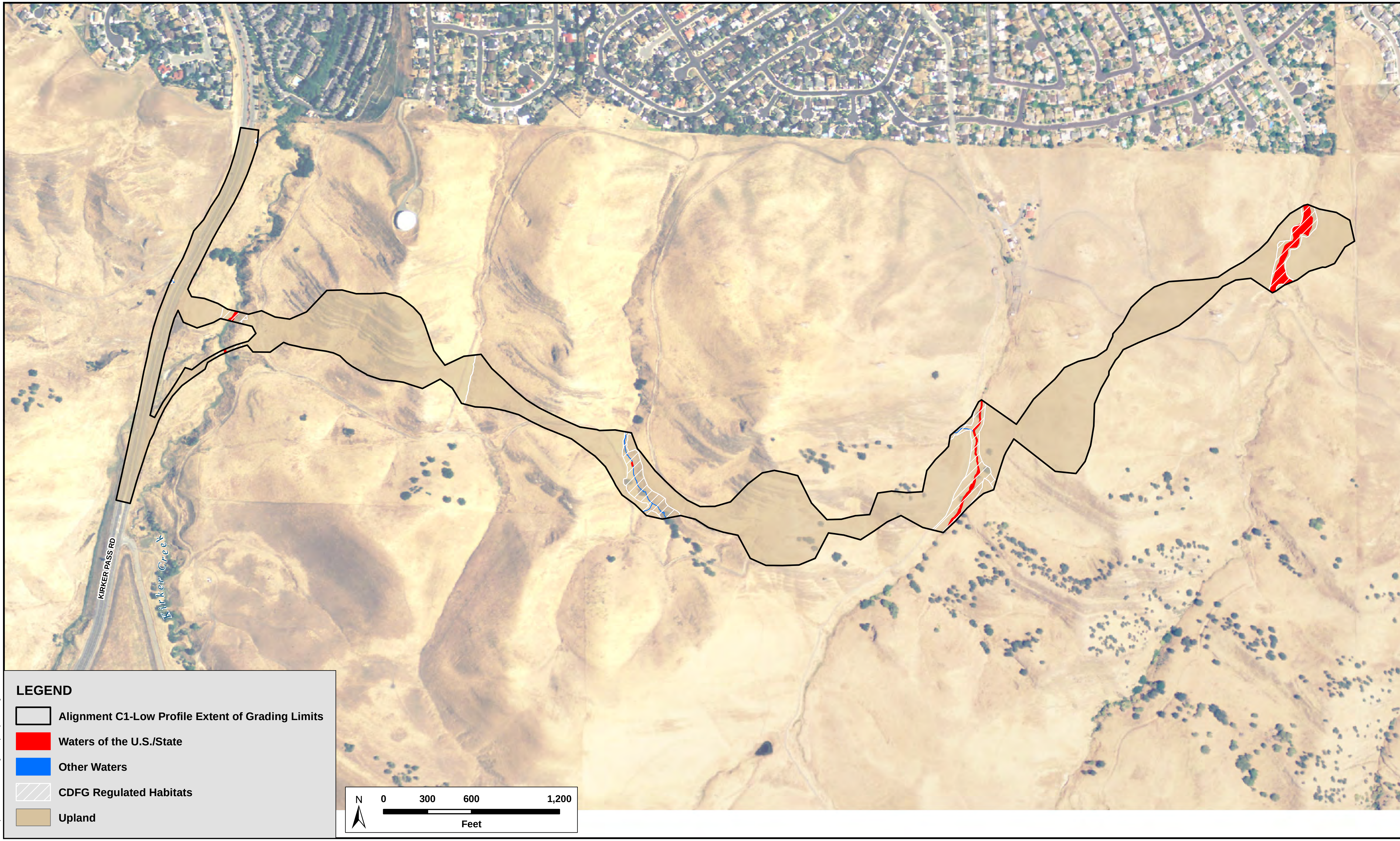
Figure 8: Alignment C1 Jurisdictional Habitats

James Donlon Boulevard Extension Project Alternative Alignment Assessment (2739-01)
May 2012



N:\Projects\2739-01\Planning Survey May 2012\Fig 9 C1 Alt Low Profile Jurisdictional Habitats.mxd

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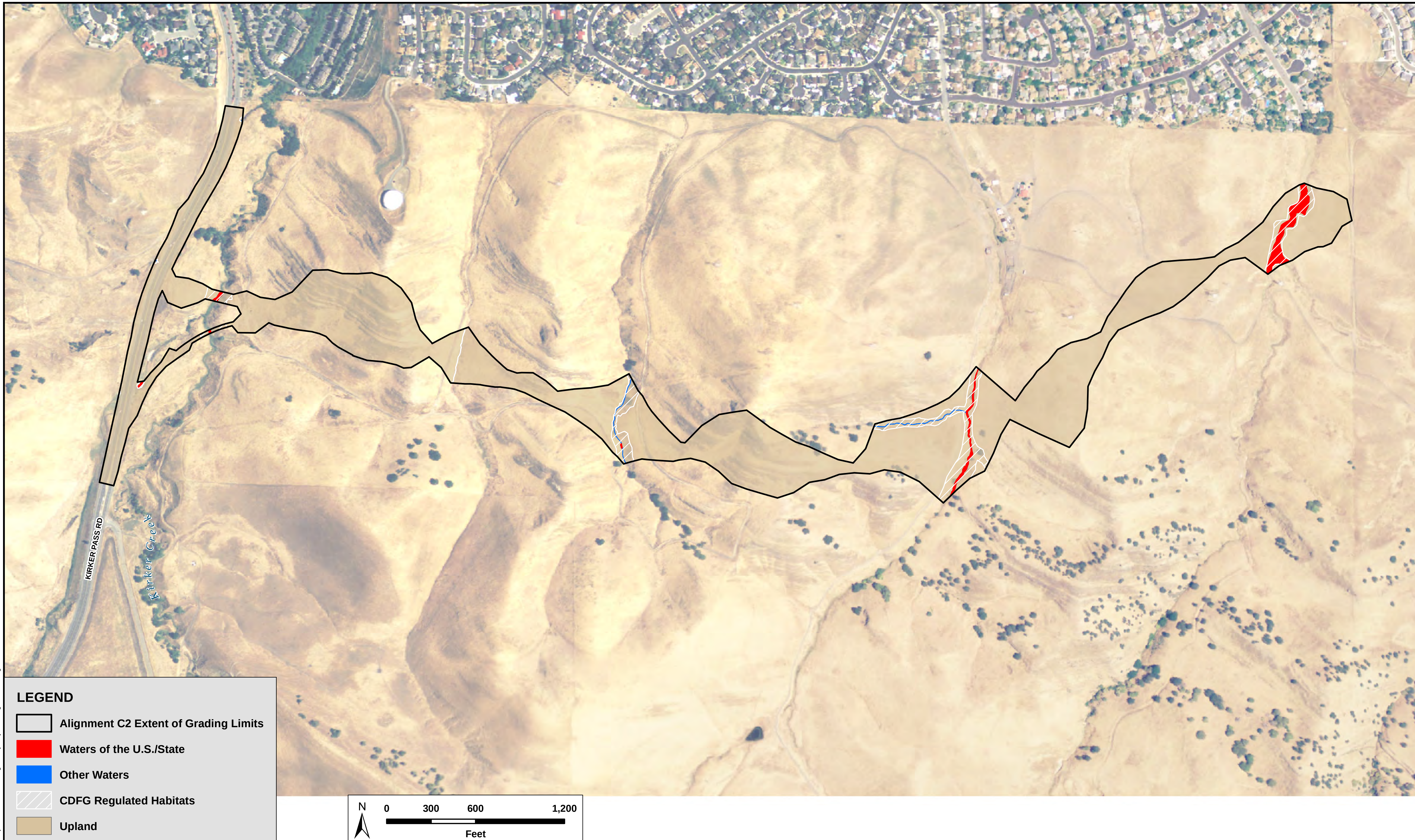
Figure 9: Alignment C1-Low Profile Jurisdictional Habitats

James Donlon Boulevard Extension Project Alternative Alignment Assessment (2739-01)

May 2012



N:\Projects\2739-01\Planning Survey May 2012\Fig 10 C2 Alt High Profile Jurisdictional Habitats.mxd

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Figure 10: Alignment C2 Jurisdictional Habitats

James Donlon Boulevard Extension Project Alternative Alignment Assessment (2739-01)
May 2012

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Figure 11: Alignment C2-Low Profile Jurisdictional Habitats

James Donlon Boulevard Extension Project Alternative Alignment Assessment (2739-01)

May 2012

N:\Projects\2739-01\Planning Survey May 2012\Fig 12 C3 Alt Jurisdictional Habitats.mxd

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Figure 12: Alignment C3 Jurisdictional Habitats

James Donlon Boulevard Extension Project Alternative Alignment Assessment (2739-01)
May 2012

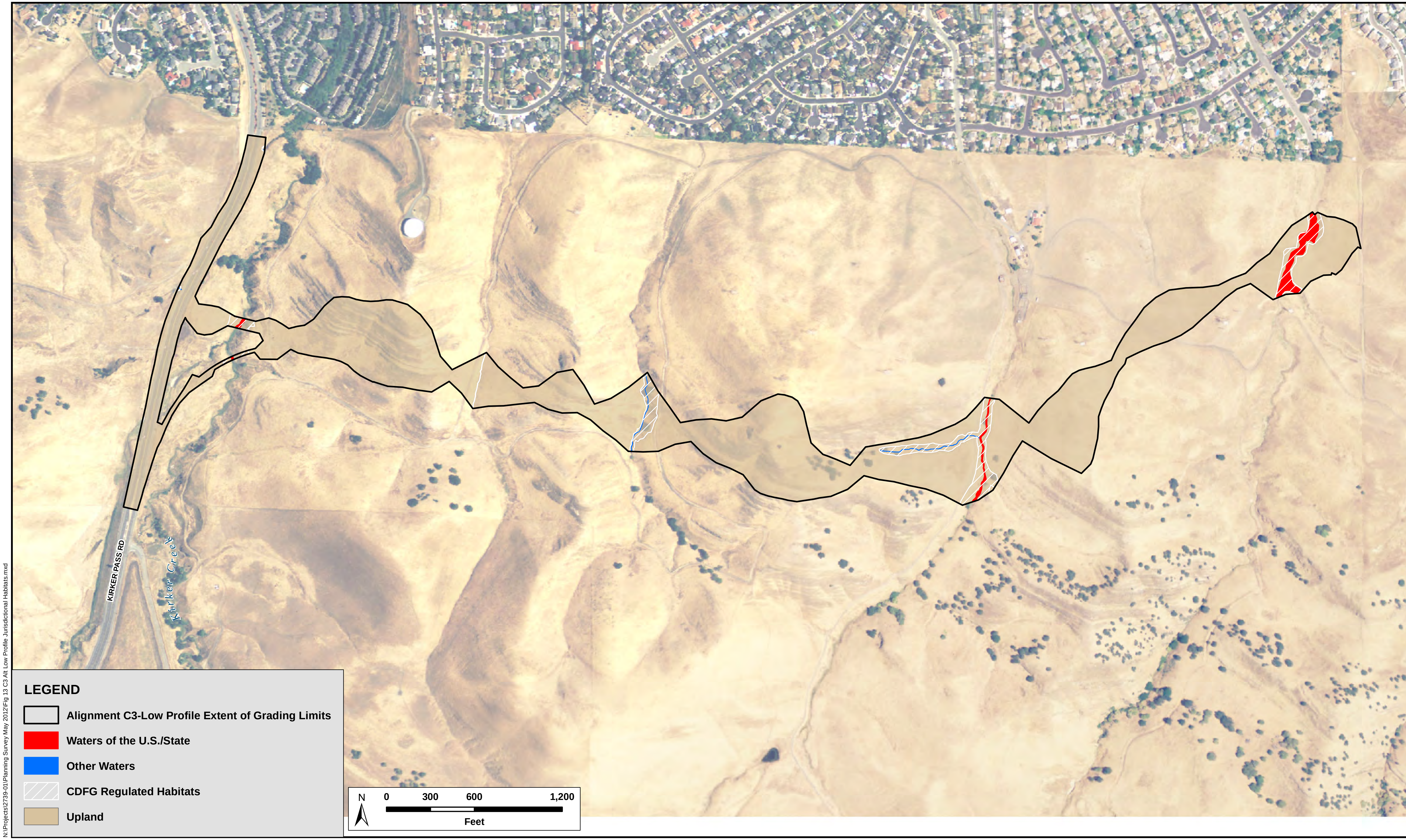

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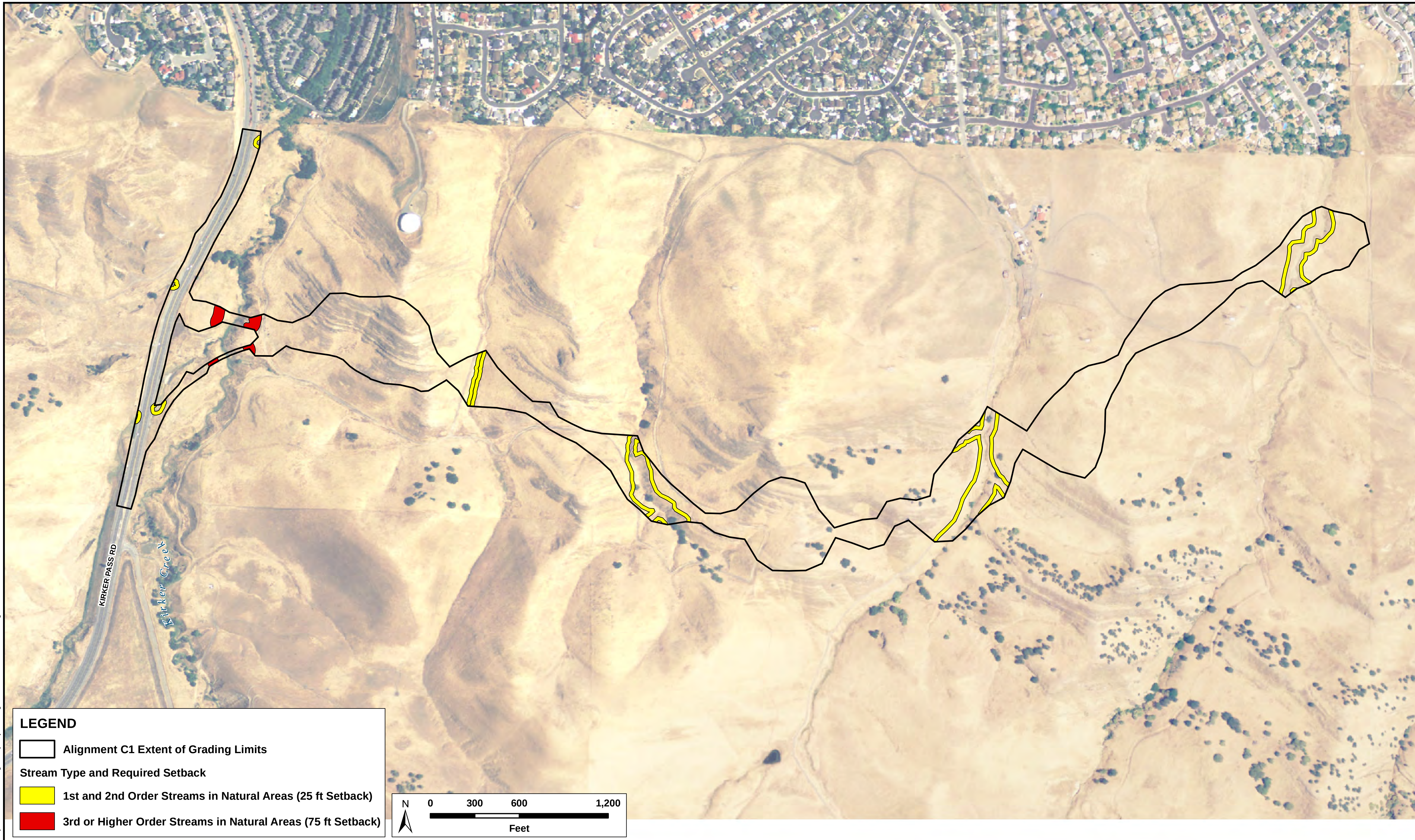
Figure 13: Alignment C3-Low Profile Jurisdictional Habitats

James Donlon Boulevard Extension Project Alternative Alignment Assessment (2739-01)

May 2012



N:\Projects\2739-01\Planning Survey May 2012\Fig 14 C1 Alt Stream Setback Categories.mxd

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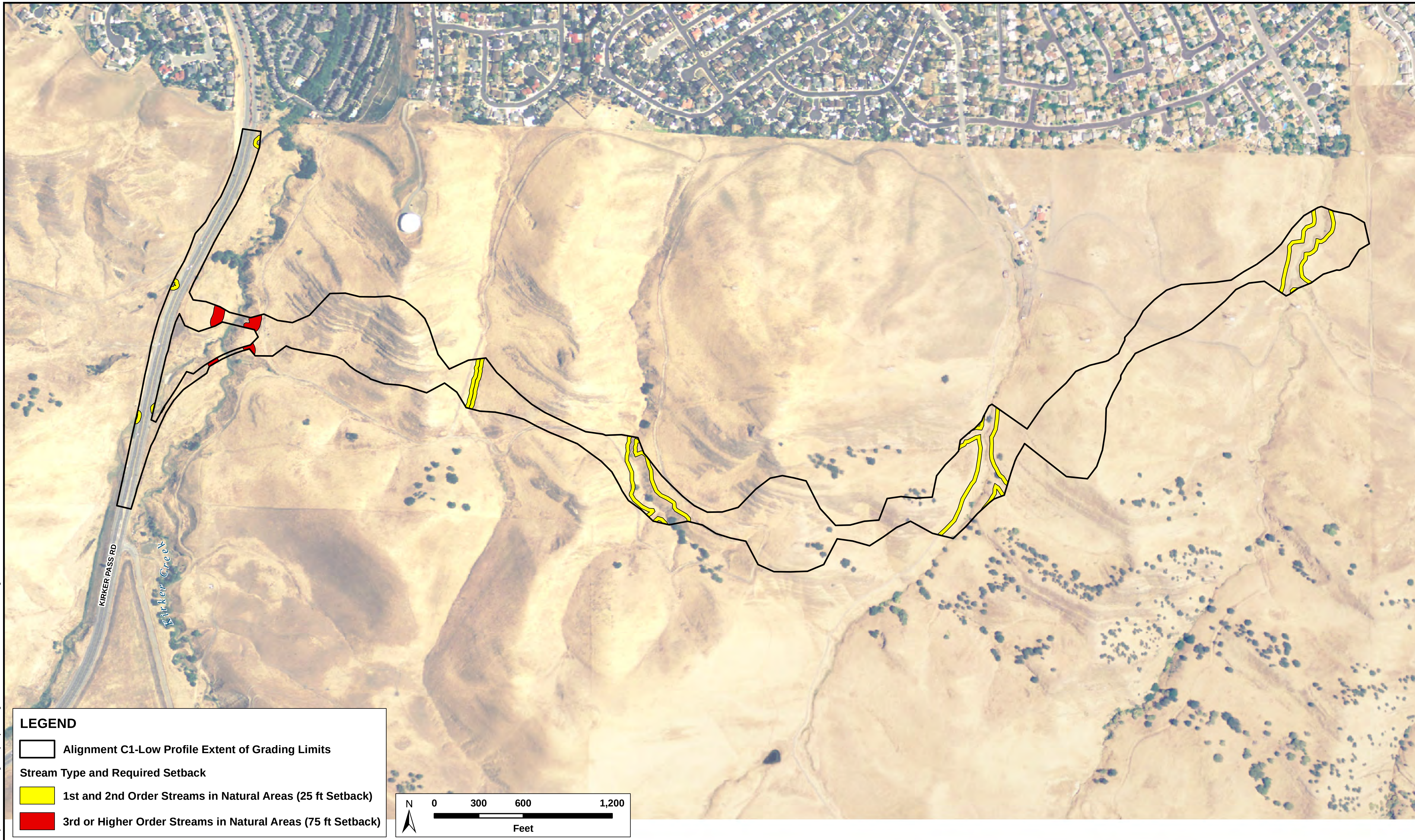
Figure 14: Alignment C1 Stream Setback Categories

James Donlon Boulevard Extension Project Alternative Alignment Assessment (2739-01)

May 2012



N:\Projects\2739-01\Planning Survey May 2012\Fig 15 C1 Alt Low Profile Stream Setback Categories.mxd

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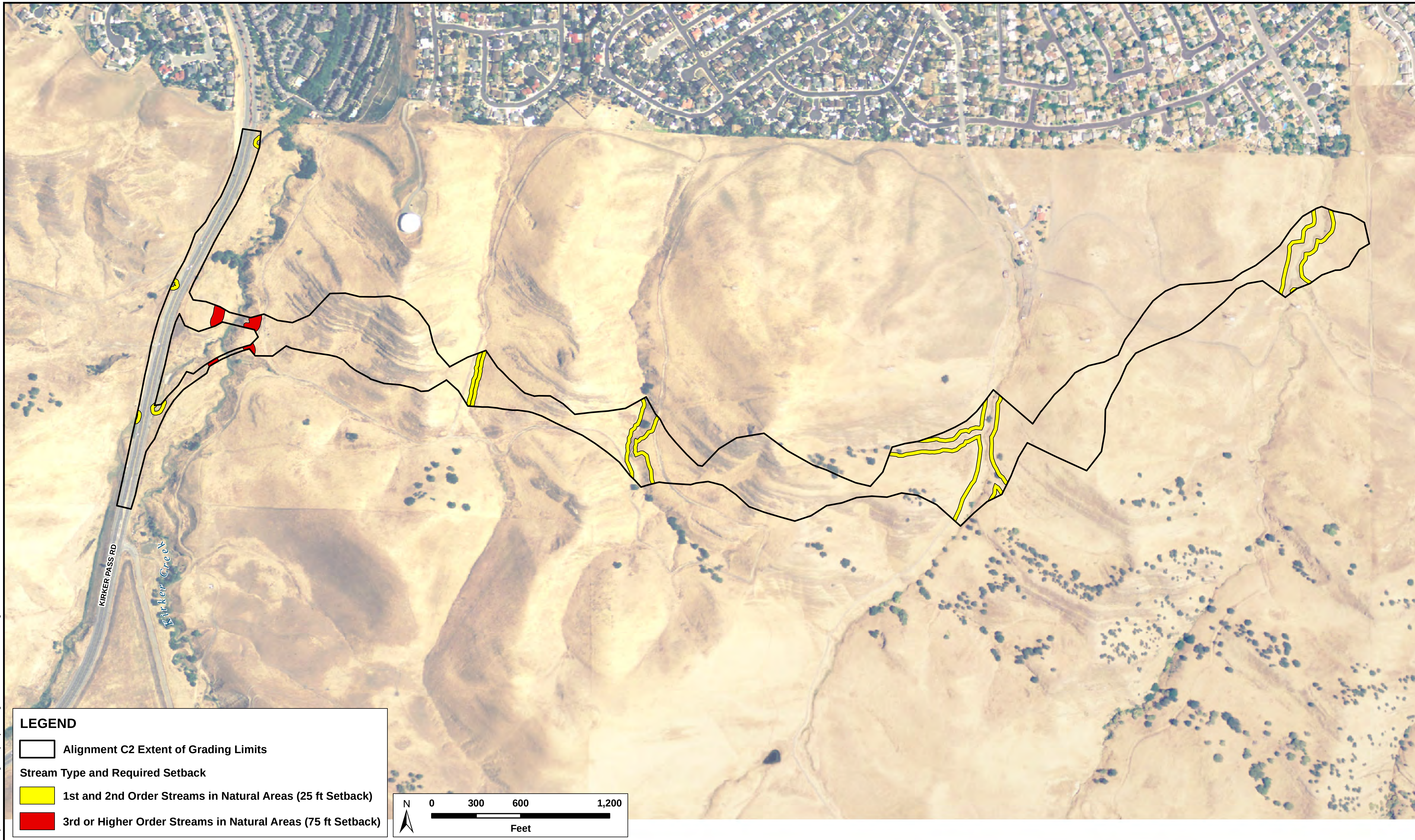
Figure 15: Alignment C1-Low Profile Stream Setback Categories

James Donlon Boulevard Extension Project Alternative Alignment Assessment (2739-01)
May 2012



N:\Projects\2739-01\Planning Survey May 2012\Fig 16 C2 Alt Stream Setback Categories.mxd

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Figure 16: Alignment C2 Stream Setback Categories

James Donlon Boulevard Extension Project Alternative Alignment Assessment (2739-01)

May 2012

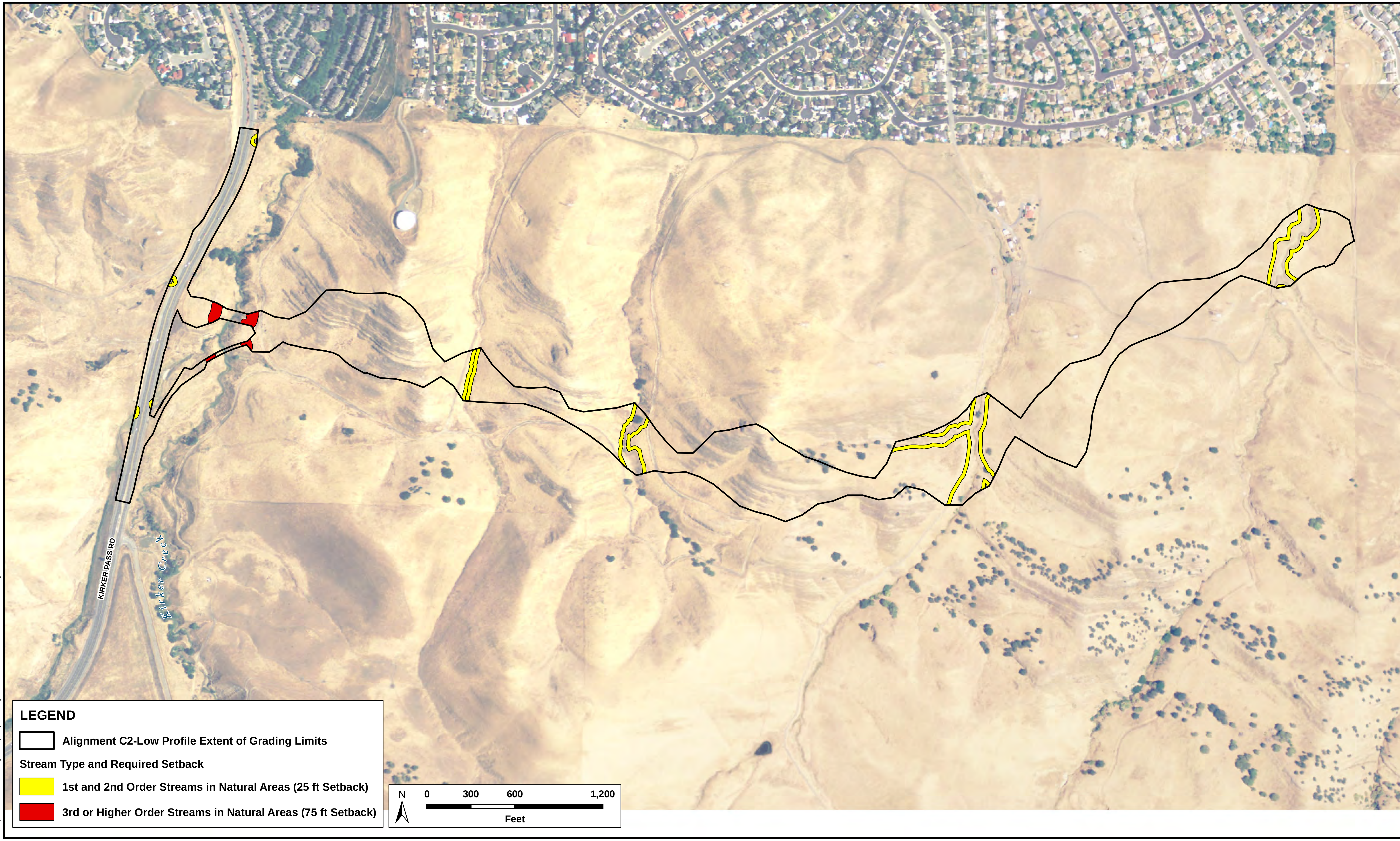

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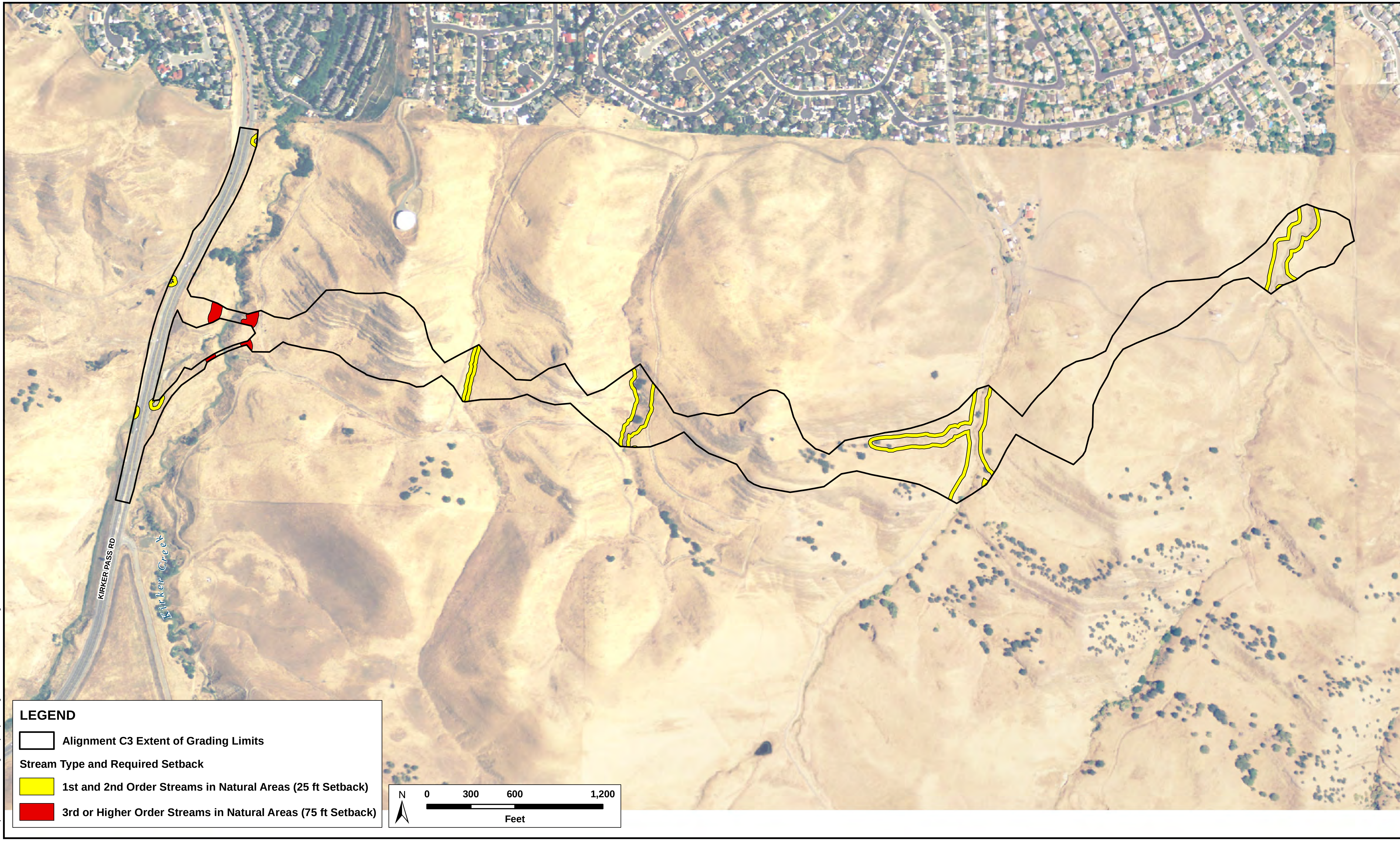
Figure 17: Alignment C2-Low Profile Stream Setback Categories

James Donlon Boulevard Extension Project Alternative Alignment Assessment (2739-01)

May 2012



N:\Projects\2739-01\Planning Survey May 2012\Fig 18 C3 Alt Stream Setback Categories.mxd

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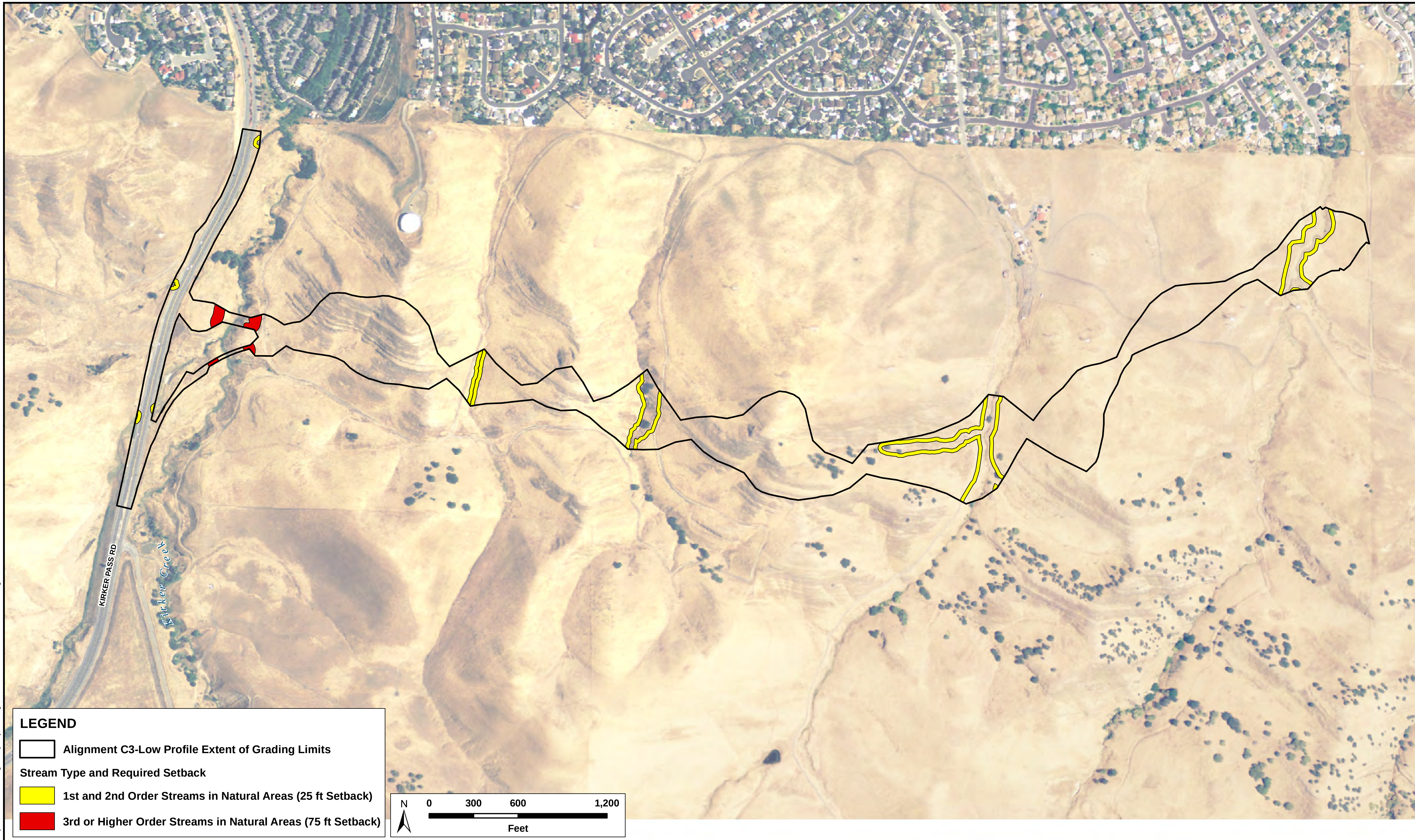
Figure 18: Alignment C3 Stream Setback Categories

James Donlon Boulevard Extension Project Alternative Alignment Assessment (2739-01)

May 2012



N:\Projects\2739-01\Planning Survey May 2012\Fig 19 C3 Alt Low Profile Stream Setback Categories.mxd

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Figure 19: Alignment C3-Low Profile Stream Setback Categories

James Donlon Boulevard Extension Project Alternative Alignment Assessment (2739-01)

May 2012

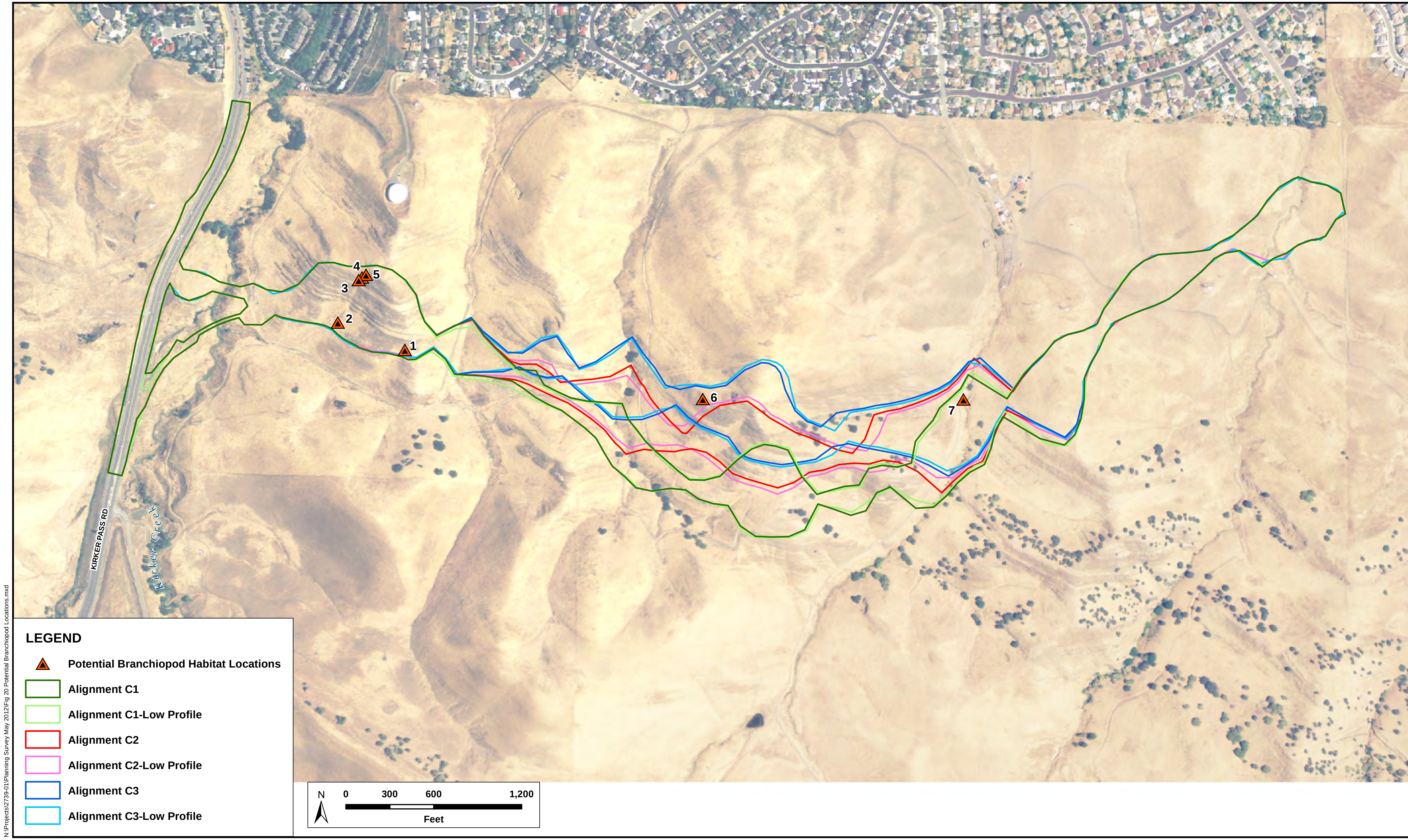

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Figure 20: Potential Branchiopod Habitat Locations

James Donlon Boulevard Extension Project Alternative Alignment Assessment (2739-01)
May 2012

Appendix C.5

East Contra Costa County HCP/NCCP Planning Survey Report

East Contra Costa County
Habitat Conservation Plan
Natural Community
Conservation Plan

City of Brentwood
City of Clayton
City of Oakley
City of Pittsburg
Contra Costa County
ECCC Habitat Conservancy

Template prepared by the
ECCC Habitat Conservancy

651 Pine Street, North Wing, 4th Floor
Martinez, CA 94533-0095
Phone: 925/335-1290
Fax: 925/335-1299
www.cocohcp.org

City of Pittsburg
Application Form and Planning Survey Report to Comply with and Receive Permit Coverage under the East Contra Costa County Habitat Conservation Plan and Natural Community Conservation Plan

Project Applicant Information:

Project Name: James Donlon Boulevard Extension Project

Project Applicant's Company/Organization: City of Pittsburg

Contact's Name: Paul Reinders

Contact's Phone: 510-439-4930 Fax: 510-439-0527

Contact's Email: preinders@ci.pittsburg.ca.us

Mailing Address: Paul Reinders
City of Pittsburg
65 Civic Avenue
Pittsburg, CA 94565

Project Description:

Lead Planner: Leigha Shimdt

Project Location: 4723 Suzanne Drive, along the southern edge of the City of Pittsburg.

Project APN(s) #: The proposed road extension would be constructed through two privately-owned properties (APNs 089-050-056 and 089-020-011). Slope easements or roadway widening along Kirker Pass Road may affect five additional properties (APNs 089-050-055, 075-060-007, 089-020-009, 089-020-014 and 089-020-015).

Number of Parcels/Units: Seven (7)

Size of Parcel(s): N/A (linear project crossing multiple parcels)

Project Description/Purpose (Brief): The proposed project is the construction of a four-lane major arterial road extension from Kirker Pass Road to the approved Sky Ranch II Subdivision to the east, and is a covered activity under the East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan as a rural infrastructure project.

Biologist Information:

Biological/Environmental Firm: H. T. Harvey & Associates

Lead Contact: Steve Rottenborn

Contact's Phone: 408-458-3205 Fax: 408-458-3210

Contact's Email: srottenborn@harveyecology.com

Mailing Address: H. T. Harvey & Associates
983 University Avenue, Bldg. D
Los Gatos, CA 95032

East Contra Costa County HCP/NCCP Planning Survey Report for James Donlon Boulevard Extension City of Pittsburg

I. Project Overview

Project proponent:	City of Pittsburg
Project Name:	James Donlon Boulevard Extension
Application Submittal Date:	October 2012
Jurisdiction:	☐ Contra Costa County ☐ City of Oakley ☒ City of Pittsburg ☐ City of Clayton ☐ City of Brentwood ☐ Participating Special Entity[1]
Check appropriate Development Fee Zone(s):	☐ Zone I ☒ Zone II ☐ Zone III ☐ Zone IV See Figure 9-1 of the Final HCP/NCCP for a generalized development fee zone map. Detailed development fee zone maps by jurisdiction are available from the jurisdiction or at www.cocohcp.org.
Total Parcel Acreage:	N/A (linear project crossing multiple parcels)
Acreage of land to be permanently disturbed[2]:	18.48 acres
Acreage of land to be temporarily disturbed[3]:	67.99 acres

[1] *Participating Special Entities* are organizations not subject to the authority of a local jurisdiction. Such organizations may include school districts, water districts, irrigation districts, transportation agencies, local park districts, geologic hazard abatement districts, or other utilities or special districts that own land or provide public services.

[2] *Acreage of land permanently disturbed* is broadly defined in the HCP/NCCP to include all areas removed from an undeveloped or habitat-providing state and includes land in the same parcel or project that is not developed, graded, physically altered, or directly affected in any way but is isolated from natural areas by the covered activity. Unless such undeveloped land is dedicated to the Preserve System or is a deed-restricted creek setback, the development fee will apply. The development fees were calculated with the assumption that all undeveloped areas within a parcel (e.g., fragments of undisturbed open space within a residential development) would be charged a fee; the fee per acre would have been higher had this assumption not been made. See Chapter 9 of the HCP/NCCP for details.

[3] *Acreage of land temporarily disturbed* is broadly defined in the HCP/NCCP as any impact to vegetation or habitat that does not result in permanent habitat removal (i.e. vegetation can eventually recover).

Project Description

Concisely and completely describe the project and location. *Reference and attach a project vicinity map* ***(Figure 1)*** *and the project site plans* ***(Figure 2)*** *for the proposed project. Include all activities proposed for site, including those disturbing ground (roads, bridges, outfalls, runoff treatment facilities, parks, trails, etc.) to ensure the entire project is covered by the HCP/NCCP permit. Also include proposed construction dates. Reference a City/County application number for the project where additional project details can be found.*

City/County Application Number:

N/A

Anticipated Construction Date:

2015 to 2017

Project Overview. The City of Pittsburg (City) proposes the construction of a 1.71-mile (mi) extension of James Donlon Boulevard from the western edge of the approved Sky Ranch II Subdivision to Kirker Pass Road (Figure 1). The proposed roadway extension would provide a limited access arterial roadway to serve regional circulation needs and relieve existing traffic congestion on Buchanan Road, which currently receives a high volume of east-west commute traffic between the City of Antioch and the City of Concord. The extension of James Donlon Boulevard would provide an alternative access route that would link the eastern portion of Contra Costa County (e.g., the cities of Brentwood, Antioch, and Pittsburg) to the central portion of Contra Costa County (e.g. the cities of Concord and Walnut Creek). In addition, the City proposes to upgrade Kirker Pass Road from Nortonville Road to the City limit line (approximately 0.63 mi) from a four-lane rural road to a four-lane urban road. A northbound to eastbound free right-turn from Kirker Pass Road to the extension of James Donlon Boulevard is also proposed. Project plans, including all temporary and permanent impact areas, are provided in Figure 2. The 92.2-acre (ac) project area includes all areas within the limits of grading, all temporary impact areas (e.g., staging areas, buttresses), and a 10 to 20-foot (ft) wide construction easement (Figure 2).

The proposed project was previously referred to as the Buchanan Road Bypass in various planning documents, including the City's 2004 General Plan and the East Contra Costa Habitat Conservation Plan/Natural Communities Conservation Plan (HCP/NCCP). The James Donlon Boulevard Extension is the same project, but has undergone a name change along with other alignment modifications.

Project Location. The project area encompasses portions of seven parcels in Contra Costa County. The proposed road extension would extend across two privately owned properties (APNs 089-050-056 and 089-020-011) in unincorporated Contra Costa County. These two parcels are proposed for annexation to the City as part of the roadway extension project. In addition, slope easements or roadway widening along Kirker Pass Road may affect five additional parcels (APNs 089-050-055, 075-060-007, 089-020-009, 089-020-014, and 089-020-015). Four of these additional parcels are located within unincorporated Contra Costa County, near the western limits of the City of Antioch and the southern limits of the City of Pittsburg. Parcel No. 089-050-055 is City-owned and is already located within the City limits. Approximately 70 ac of right-of-way and/or slope easements for grading would be required for the proposed project and would be purchased from the property owners or acquired through the use of eminent domain.

Project Characteristics. From the Sky Ranch II Subdivision, the proposed roadway would narrow from a four-lane road to a two-lane road and would meet City and California Department of Transportation standards and regulations for highway design for vehicles traveling up to 55 miles per hour (mph).

The intersection configuration at Kirker Pass Road would generally maintain the existing alignment of Kirker Pass Road and create a four-way, signalized, tee intersection with proposed Montreux Drive as the eastbound approach, proposed James Donlon Boulevard as the westbound approach, and Kirker Pass Road as the northbound/southbound approaches. The intersection would include the following design features:

- Northbound Kirker Pass Road – One left-turn lane, two through lanes, and one free right-turn lane not controlled by the signal with a design speed of 50 mph.
- Westbound James Donlon Boulevard – Two left-turn lanes, one through lane, and one right-turn lane.
- Southbound Kirker Pass Road – One left-turn lane, two through lanes, and one right-turn lane.
- Eastbound Montreux Drive approach – One left-turn lane, one through lane, and one right-turn lane.

Kirker Pass Road from Nortonville Road to the City limits would be upgraded from rural road standards to urban road standards. The profile of Kirker Pass Road would be raised to provide acceptable grades at the intersection with James Donlon Boulevard.

The four-lane portion of James Donlon Boulevard at the Kirker Pass Road intersection would be designed to urban road standards with medians, curbs, gutters, sidewalks and streetlights. The two-lane portion of James Donlon Boulevard would be designed to rural road standards. Additional project features on James Donlon Boulevard include:

- Four-ft-wide concrete interceptor ditches at the top and toe of each slope;
- Six-ft-wide concrete terrace drains on all earthwork benches;
- 30-ft-wide earthworks buttress excavation limits on all north facing cut slopes;
- 20-ft clearing limits beyond the earthwork daylight line to provide access and movement at the top and toe of slopes;
- 100 ft wide by 50 ft long grading limits at the beginning and end of each culvert to complete all anticipated remedial grading;
- The placement of rip-rap at the beginning and end of all culverts to control erosion;
- The identification of potential earthwork borrow sites; and
- The identification of staging areas for construction equipment.

The proposed project would include culverts and bridges, as necessary, in order to cross several existing stream and drainage features, including Kirker Creek. The proposed culverts and bridges would require construction within these drainage features, and would be sized to facilitate a 100-year storm event. Additional culverts of various sizes would also be provided to accommodate wildlife movement and cattle ranch operations crossing James Donlon Boulevard. Culverts are anticipated to range in size from 24-inch to 132-inch.

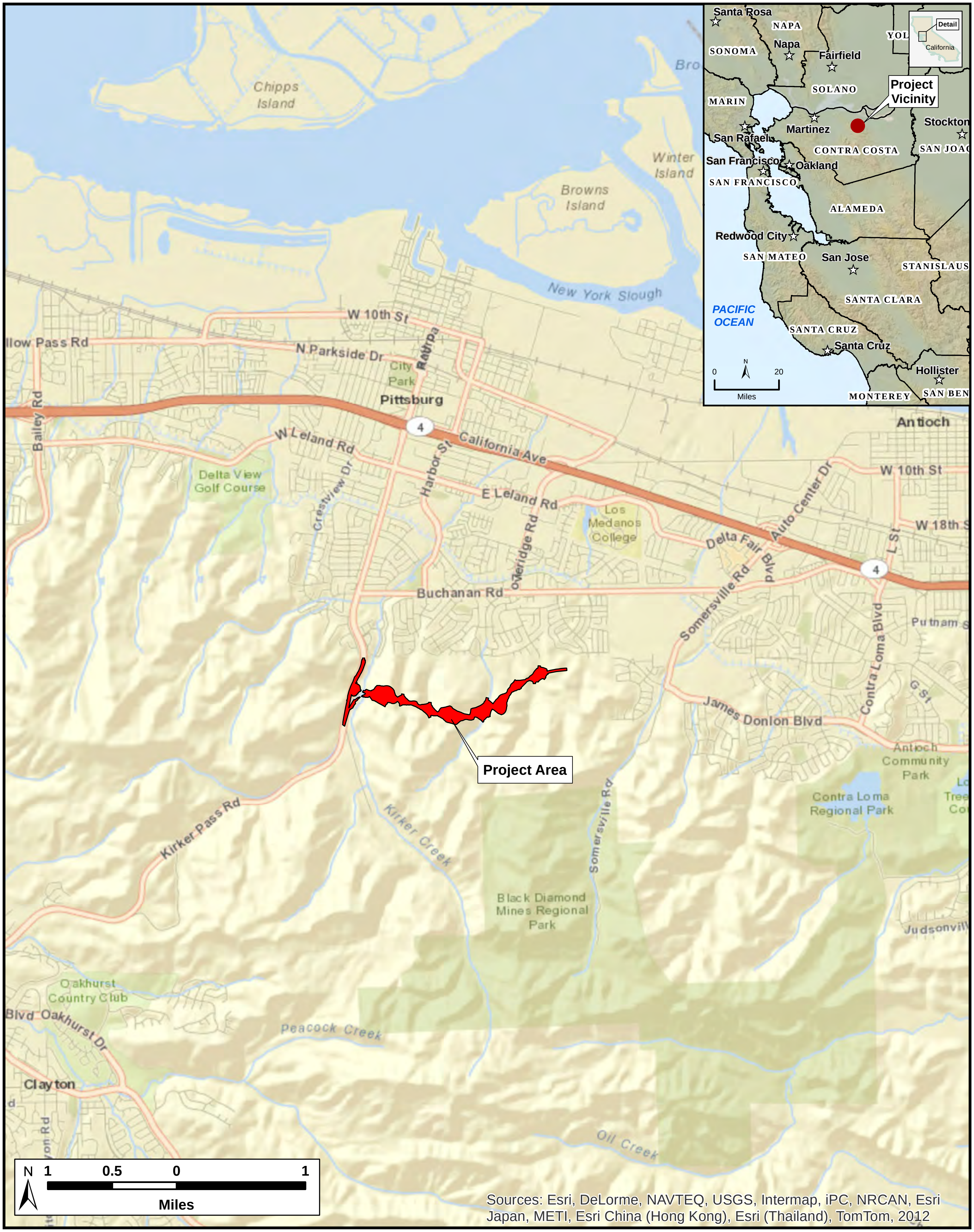
The proposed project would include wildlife movement corridors that would provide safe access routes for wildlife to cross from one side of the proposed roadway to the other. Wildlife movement corridors would be located in accordance with HCP/NCCP requirements and designed for the type of species that would utilize the corridor.

Landscaping would be provided for the proposed medians, using native drought-tolerant species and ornamental vegetation, consistent with City-approved landscaping themes. In addition, areas outside the roadway that would be impacted and/or graded would be revegetated using a native seed mixture. No permanent irrigation is proposed for these revegetated areas.

Project grading would require a substantial amount of cut and fill due to the steep terrain within the project area. Grading activities may require the export of native soils and the import of engineered fill material. Approximately 2,165,000 cubic yards of grading would be required for the roadway. Additionally, landslides have been identified within the project area and would require remediation prior to the start of construction activities. Where landslide deposits are found to underlie fill, these areas would be overexcavated and replaced as engineered fill. In addition, the project would utilize a buttressing technique to support slopes at a 2:1 gradient. This technique would minimize the grading required in several cut slopes within the project area. Buttressed areas would be seeded and thus would provide steeply-sloped grassland following construction. Areas on the western side of the project area would be used as staging and borrow areas; because these areas provide easy access off Kirker Pass Road, using these areas for staging would reduce construction vehicle traffic through the site considerably compared to using areas on the eastern side for staging.

The proposed project's stormwater drainage system would follow California Department of Transportation Design Manual procedures and be configured to contain stormwater flow spread width to the roadway shoulder during a 25-year design storm based on a minimum time of concentration of ten minutes. Stormwater inlet spacing would generally be a function of roadway width, longitudinal slope and access to culverts. Storm drainage networks would be configured to discharge toward logical stream crossings to maintain existing drainage patterns and minimize erosion potential. In accordance with the Contra Costa Clean Water Program, bio-retention facilities would be designed and implemented to address stormwater quality from the additional impervious surface area that would result from the proposed roadway improvements.

There are several Pacific Gas and Electric (PG&E) transmission lines that traverse the project area. It would be necessary to relocate or raise three transmission towers in order to implement the proposed project. The proposed project would not require a permanent source of water or wastewater facilities and would not include the extension of water or wastewater pipelines within the roadway. However, the project would require a source of electricity for the proposed streetlights. Electricity would be provided by extending PG&E service to the proposed roadway. In addition, Kinder Morgan has a 10-inch, high–pressure, natural gas pipeline within the project area that may be lowered in certain locations.



N:\Projects\2739-01\Planning Survey Nov 2012\Fig 1 Vicinity Map.mxd

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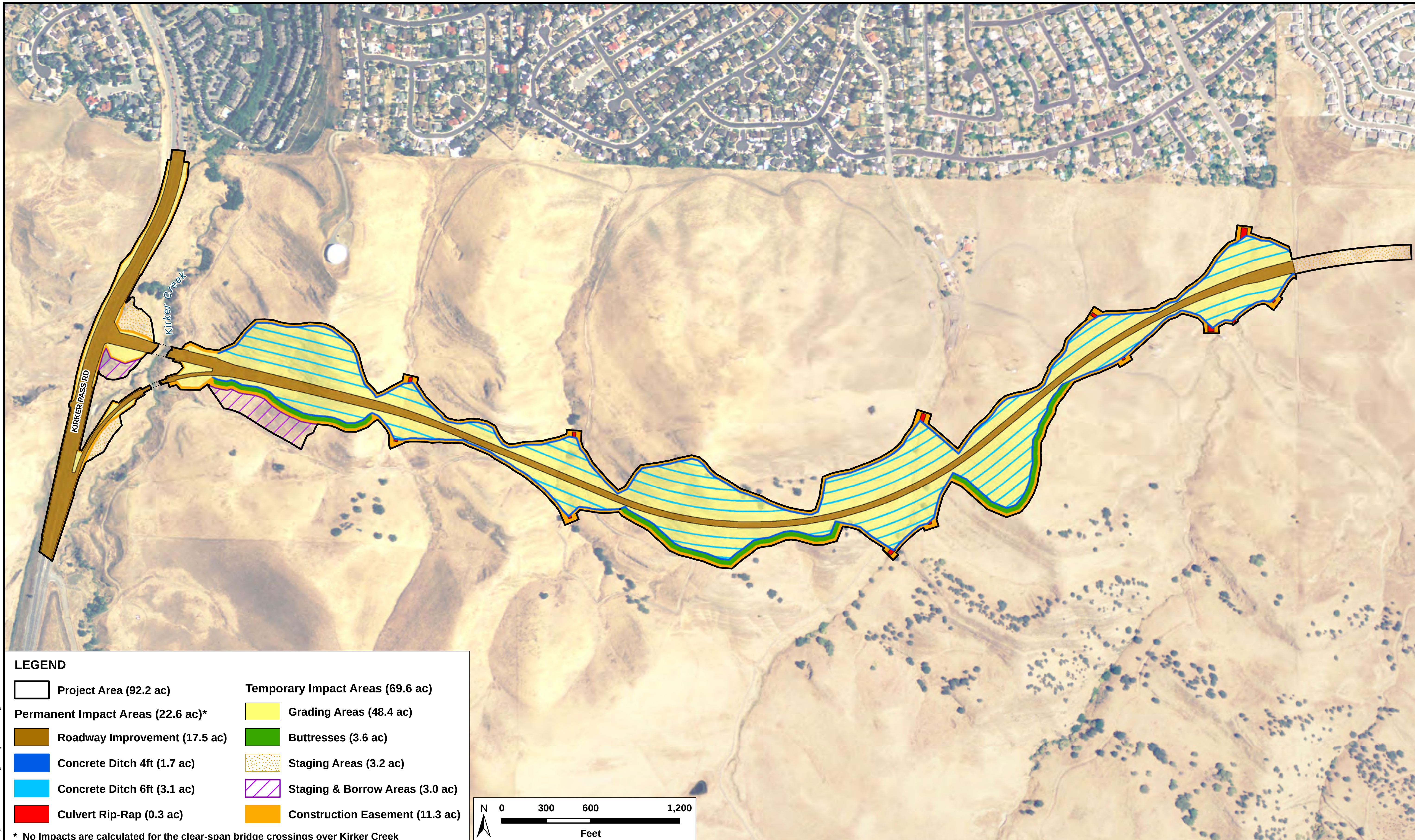
Figure 1: Vicinity Map

James Donlon Boulevard Extension Planning Survey Report (2739-01)
November 2012



N:\Projects\2739-01\Planning Survey Nov 2012\Fig 2 Site Plan.mxd

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Figure 2: Site Plans

James Donlon Boulevard Extension Planning Survey Report (2739-01)
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II. Existing Conditions and Impacts

Land Cover Types

In completing the checklist in Table 1, click in the appropriate fields and type the relevant information. Please calculate acres of terrestrial land cover types to nearest tenth of an acre. Calculate the areas of all jurisdictional wetlands and waters land cover types to the nearest hundredth of an acre. If the field is not applicable, please enter N/A. The sum of the acreages in the Acreage of land to be "permanently disturbed" and "temporarily disturbed" by project column should equal the total impact acreage listed above.

Land cover types and habitat elements identified with an (a) in Table 1 require identification and mapping of habitat elements for selected covered wildlife species. In Table 2a and 2b below, check the land cover types and habitat elements found in the project area and describe the results. Insert a map of all land cover types present on-site and other relevant features overlaid on an aerial photo below as Figure 3.

Table 1 provides acreages of land cover types and uncommon vegetation types described in Section 3.3.2 of the HCP/NCCP, acreages and counts of uncommon landscape features and habitat features described in Section 6.3.1 of the HCP/NCCP, and acreages and extents of jurisdictional habitats that would be permanently and temporarily disturbed as a result of the proposed project. No land is proposed for HCP/NCCP dedication in the project area.

Table 1. Land Cover Types, Landscape Features, Habitat Elements, and Jurisdictional Habitats in the Project Area as Determined in the Field and Shown in Figures 3a.1 and 3a.2.

			Land Proposed for HCP/NCCP Dedication in the Project Area	
	Permanently Disturbed[b]	Temporarily Disturbed[b]	Stream Setback	Preserve System
Land Cover Types				
Grassland[a]				
☒ Annual grassland	10.7 ac	40.6 ac	N/A	N/A
☒ Native grassland	0.0 ac	<0.1 ac	N/A	N/A
☐ Alkali grassland	N/A	N/A	N/A	N/A
☒ Ruderal	0.3 ac	1.0 ac	N/A	N/A
☐ **Chaparral and scrub**	N/A	N/A	N/A	N/A
☒ **Oak savanna[a]**	1.9 ac	9.3 ac	N/A	N/A
☒ **Oak woodland**	<0.1 ac	0.1 ac	N/A	N/A
☐ **Mixed evergreen forest**	N/A	N/A	N/A	N/A
☐ **Riparian woodland/scrub**	N/A	N/A	N/A	N/A
Wetland[a]				
☐ Permanent wetland	N/A	N/A	N/A	N/A
☐ Seasonal wetland	N/A	N/A	N/A	N/A
☐ Alkali wetland	N/A	N/A	N/A	N/A
Aquatic[a, c]				
☐ Perennial stream[d]	N/A	N/A	N/A	N/A
☒ Intermittent stream	1.25 ac	0.09 ac	N/A	N/A
☒ Ephemeral stream	0.56 ac	0.06 ac	N/A	N/A
☐ Aquatic (Reservoir)	N/A	N/A	N/A	N/A

	Permanently Disturbed[b]	Temporarily Disturbed[b]	Land Proposed for HCP/NCCP Dedication in the Project Area: Stream Setback	Preserve System
☐ Pond	N/A	N/A	N/A	N/A
☐ Slough/Channel	N/A	N/A	N/A	N/A
☒ **Rock Outcrop**[a]	3.9 ac	16.8 ac	N/A	N/A
Irrigated Agriculture[a]				
☐ Pasture	N/A	N/A	N/A	N/A
☐ Cropland	N/A	N/A	N/A	N/A
☐ Orchard	N/A	N/A	N/A	N/A
☐ Vineyard	N/A	N/A	N/A	N/A
Developed				
☒ Urban[e]	5.6 ac	0.2 ac	N/A	N/A
☐ Aqueduct	N/A	N/A	N/A	N/A
☐ Nonnative Woodland	N/A	N/A	N/A	N/A
☐ Turf	N/A	N/A	N/A	N/A
☐ Wind Turbine	N/A	N/A	N/A	N/A
☐ Landfill	N/A	N/A	N/A	N/A
Uncommon Vegetation Types				
☐ Purple needlegrass grassland	N/A	N/A	N/A	N/A
☐ Wildrye grassland	N/A	N/A	N/A	N/A
☐ Wildflower fields	N/A	N/A	N/A	N/A
☐ Squirreltail grassland	N/A	N/A	N/A	N/A
☐ One-sided bluegrass grassland	N/A	N/A	N/A	N/A
☐ Serpentine grassland	N/A	N/A	N/A	N/A
☐ Saltgrass (Alkali) grassland	N/A	N/A	N/A	N/A
☐ Alkali sacaton bunchgrass grassland	N/A	N/A	N/A	N/A
☐ Other (please describe)	N/A	N/A	N/A	N/A
Uncommon Landscape Features and Habitat Elements				
☒ Rock outcrops[a]	3.9 ac	16.8 ac	N/A	N/A
☐ Caves[a]	N/A	N/A	N/A	N/A
☐ Mines[a]	N/A	N/A	N/A	N/A
☐ Buildings (bat roosts) [a]	N/A	N/A	N/A	N/A
☐ Springs and seeps	N/A	N/A	N/A	N/A
☐ Scalds	N/A	N/A	N/A	N/A
☐ Sand deposits	N/A	N/A	N/A	N/A
☒ Potential nest sites (trees, cliffs) [f]	40 trees[e]	N/A	N/A	N/A
Jurisdictional Waters of the U.S./State				
☒ Wetlands	1.19 ac	0.09 ac	N/A	N/A
☒ Other Waters	0.05 ac	<0.01 ac	N/A	N/A
CDFG Regulated Habitats				
☒ CDFG-Regulated	5.27 ac	0.77 ac	N/A	N/A
Stream Impacts[d]				
Total Linear Feet (Streams ≤ 25 ft Wide)	155 ft	34 ft	N/A	N/A
Total Linear Feet (Streams > 25 ft Wide)	3265 ft	131 ft	N/A	N/A
Total Linear Feet (All Streams)	3420 ft	165 ft	N/A	N/A

	Permanently Disturbed[b]	Temporarily Disturbed[b]	Land Proposed for HCP/NCCP Dedication in the Project Area: Stream Setback	Preserve System
Setback Acreage - First and Second-Order Streams	3.63 ac	0.71 ac	N/A	N/A
Setback Acreage - Third or Higher-Order Streams	0.69 ac	1.03 ac	N/A	N/A
Total (Developed Acres)[g]	**18.5 ac**	**68.0 ac**	**N/A**	**N/A**

[a] Designates land cover types or habitat elements that may trigger specific survey requirements and/or best management practices for key covered wildlife species. See Chapter 6 in the HCP/NCCP for details.

[b] See Section 9.3.1 of the HCP/NCCP for a definition of "permanently disturbed" and "temporarily disturbed." In nearly all cases, all land in the subject parcel is considered permanently disturbed.

[c] All streams within the project area would be channelized in culverts. Thus, all impacts to streams are considered permanent, with the exception of portions of streams that occur within the construction easement.

[d] Although the HCP/NCCP classifies Kirker Creek as perennial, all streams in the project area are considered intermittent because they lack continuous flow during the dry season[4].

[e] All developed areas within the project area are rural, but were categorized as urban because the HCP/NCCP does not define a rural developed land cover type.

[f] All trees within temporary and permanent impact areas would be removed as part of the proposed project, and tree removal is considered a permanent impact. Counts of trees are approximate and were obtained from the 2007 Tree Survey Report[5] and from aerial imagery.

[g] Includes acreages of all land cover types, except for urban (developed). Acreages do not sum to the exact totals due to rounding error; the provided values are correct based on land cover mapping.

Field-Verified Land Cover Map

Insert field-verified land cover map. *The map should contain all land cover types present on-site. The map should be representative of an aerial photo. Identify all pages of the field-verified land cover map as* ***(Figure 3a.1). Please attach representative photos of the project site (Figure 3b).***

Maps of the land cover types and jurisdictional habitats in the project area are provided as Figures 3a.1 and 3a.2, respectively. Per the request of the East Contra Costa Habitat Conservancy (Conservancy), the land cover types to the north of the project area and south of the City are also mapped in Figure 3a.2. The acreages provided in Figure 3a.1 and Table 1 are the acreages of land cover types within the project area only, and do not include the area to the north.

[4] John Kopchik, Executive Director, East Contra Costa County Habitat Conservancy. Pers. comm. to S. Rottenborn during a 19 June 2012 site visit.

[5] H. T. Harvey & Associates. 2007. James Donlon Boulevard Extension Tree Survey Report for CEQA Compliance. Prepared for RBF Consulting. November 2007.

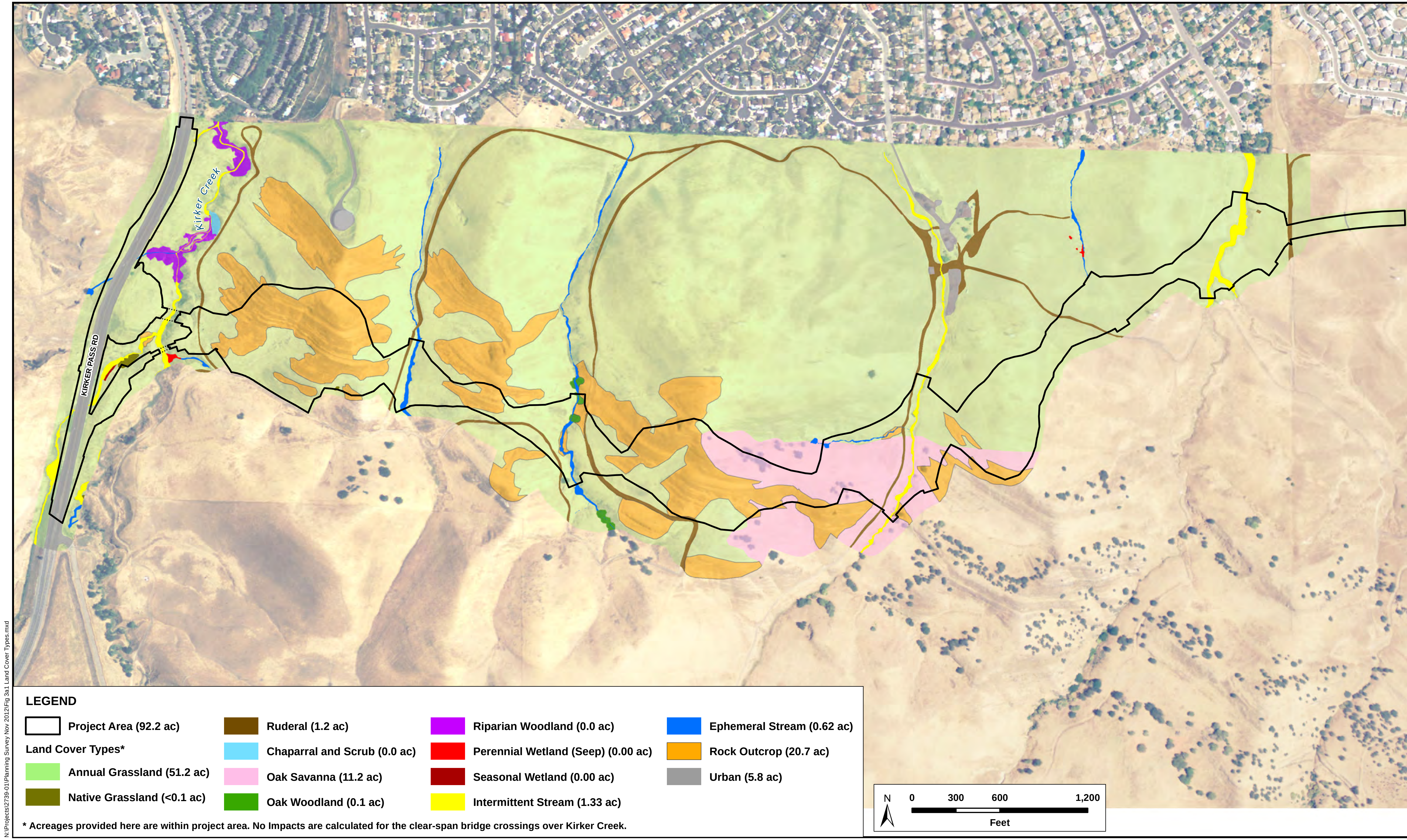

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Figure 3a.1: Land Cover Map

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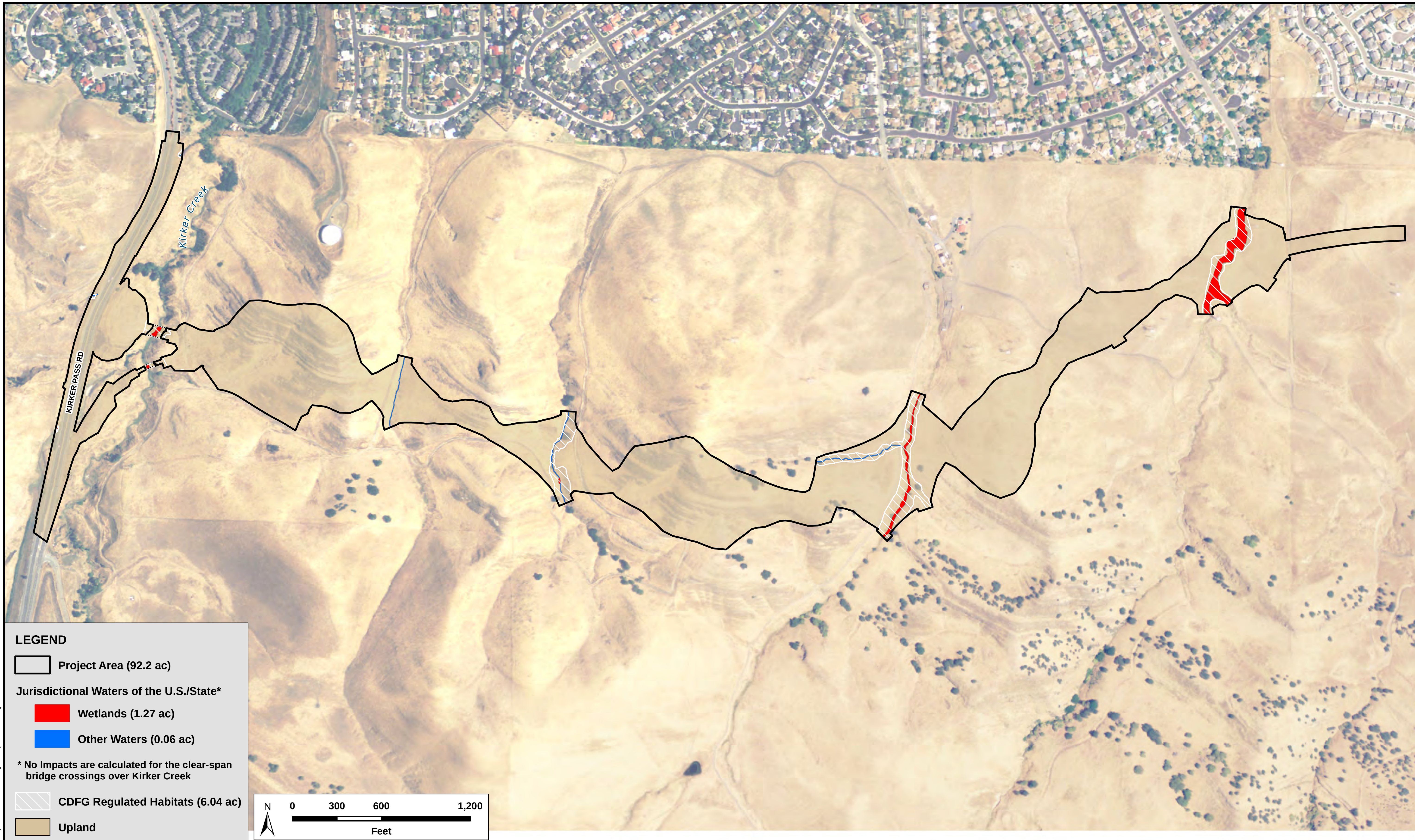

N:\Projects\2739-01\Planning Survey Nov 2012\Fig 3a2 Jurisdictional Habitats.mxd

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Figure 3a.2: Jurisdictional Habitats

James Donlon Boulevard Extension Planning Survey Report (2739-01)
November 2012

Figure 3b – Representative Site Photos

Jurisdictional Wetlands and Waters

Jurisdictional wetlands and waters are defined on pages 1-18 and 1-19 of the Final HCP/NCCP as the following land cover types: permanent wetland, seasonal wetland, alkali wetland, aquatic, pond, slough/channel, and stream. (It should be noted that definitions of these features differ for state and federal jurisdictions.) If you have identified any of these land cover types to be present on the project site in Table 1, complete the section below.

Table 1 provides acreages of jurisdictional habitats, linear feet of streams, and acreages of stream setbacks that would be permanently and temporarily disturbed as a result of the proposed project. No land is proposed for HCP/NCCP dedication in the project area. All stream segments within the project area would be channelized in culverts, and all impacts to jurisdictional habitats and stream setbacks within the project area are considered permanent with the exception of impacts that occur within the construction easement. Kirker Creek is located outside of the project area in that construction will not occur within this creek, and it would not be channelized as part of the proposed project. However, portions of the CDFG regulated habitat and the setback alongside Kirker Creek fall within permanent and temporary impact areas on the project plans, and impacts to these areas are correspondingly classified as permanent or temporary.

Land cover types in the project area that comprise jurisdictional waters of the U.S. and jurisdictional waters of the State are ephemeral stream and intermittent stream (Figure 3a). Although the HCP/NCCP classifies Kirker Creek as a perennial stream, all streams on the site are considered intermittent because they lack continuous flows during the dry season[6]. All of these stream land cover types are classified by the HCP/NCCP as aquatic. The California Department of Fish and Game (CDFG)-regulated habitats in the project area also include upland areas within the banks of streams, which are mapped as annual grassland, oak woodland, rock outcrop, and oak savanna land cover types (Figure 3a.1).

Indicate agency that certified the wetland delineation:

☐ USACE, ☐ RWQCB, or ☐ the ECCC Habitat Conservancy.

☐ Wetland delineation is attached (Jurisdictional Determination)

A wetland delineation has not been prepared for the proposed project.

Provide any additional information on Impacts to Jurisdictional Wetland and Waters below.

Jurisdictional Waters of the U.S. Areas on the project site identified as depressional wetlands, linear wetland drainages, or groundwater seeps were classified as potential jurisdictional wetlands. Several linear drainages either did not satisfy wetland parameters due to insufficient or infrequent hydrology to saturate soils (i.e., for long or very long duration during normal rainfall conditions) or were not wetlands due to the absence of soils and vegetation and because they were underlain by incised bedrock. However, these linear drainages convey surface water and are considered jurisdictional “other waters” under Section 404 of the Clean Water Act. The proposed project would impact a total of 1.27 ac of potential jurisdictional wetlands and 0.06 ac of other waters, including 3,585 linear feet of streams.

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6 John Kopchik, Executive Director, East Contra Costa County Habitat Conservancy. Pers. comm. to S. Rottenborn during a 19 June 2012 site visit.

Jurisdictional Waters of the State. After conducting field surveys and reviewing recent guidance provided by the U.S. Army Corps of Engineers (USACE) and Environmental Protection Agency (i.e., regarding regulatory issues raised by court decisions), we believe that no habitats on the site would be disclaimed by the USACE that would be subsequently claimed by the Regional Water Quality Control Board (RWQCB). Therefore, based on experience with similar projects, all areas identified as Waters of the U.S. within the project area can also be considered Waters of the State, and it is our opinion that no features in the project area would be considered Waters of the State that are not also identified as Waters of the U.S. Therefore, the impacts described above for jurisdictional waters of the U.S. pertain to Waters of the State as well.

CDFG Regulated Habitats. Streams, ditches, and drainages that contain a defined bed, bank, and channel are under the regulatory jurisdiction of the CDFG. All riverine channels on the site (including all areas mapped as perennial, intermittent, and ephemeral streams that had a defined bed and banks out to the edge of any riparian woodland or forest canopies) fit the above definition.

One ephemeral stream within the project area is swale-like in cross-section and does not have a defined bank. In addition, this stream does not support aquatic life, riparian vegetation, or stream-dependent terrestrial wildlife. Based on these characteristics, this stream does not meet any of the published CDFG criteria for jurisdiction, and no CDFG regulated habitat was mapped or quantified along this ephemeral stream (Figure 3a.2).

Based upon our previous experience with similar features, all of the remaining features in the project area would likely be claimed by the CDFG, although ultimate determination of jurisdiction lies with the CDFG. The proposed project would impact a total of 6.04 ac of habitats regulated by the CDFG.

Species-Specific Planning Survey Requirements

Based on the land cover types found on-site and identified in Table 1, check the applicable boxes in Table 2a then provide the results of the planning surveys below. In Table 3 check corresponding preconstruction survey or notification requirements that are triggered by the presence of particular land cover types or species habitat elements as identified in Table 2a. The species-specific planning survey requirements are described in more detail in Section 6.4.3 of the HCP/NCCP.

Table 2a. Species-Specific Planning Survey Requirements Triggered by Land Cover Types and Habitat Elements in the Project Area based on Chapter 6 of the Final HCP/NCCP.

Land Cover Type	Wildlife Species	Habitat Element	Planning Survey Requirement
☒ Grasslands, oak savanna, agriculture, ruderal	San Joaquin kit fox	Assumed if within modeled range of species	Identify and map potential breeding and denning habitat and potential dens if within modeled range of species (see Appendix D of HCP/NCCP).
	Western burrowing owl	Assumed	Identify and map potential breeding habitat.
☒ Aquatic (ponds, wetlands, streams, slough, channels, & marshes)	Giant garter snake	☐ Aquatic habitat accessible from San Joaquin River	Identify and map potential habitat.
	California tiger salamander	☐ Ponds and wetlands in grassland, oak savanna, oak woodland ☐ Vernal pools ☐ Reservoirs ☐ Small lakes	Identify and map potential breeding habitat. Document habitat quality and features. Provide Habitat Conservancy with photo-documentation and report.
	California red-legged frog	☒ Slow-moving streams, ponds, and wetlands	Identify and map potential breeding habitat. Document habitat quality and features. Provide Habitat Conservancy with photo-documentation and report.
☐ Seasonal wetlands	Covered shrimp	☐ Vernal pools ☒ Sandstone rock outcrops[b] ☐ Sandstone depressions	Identify and map potential breeding habitat.
☒ Any	Townsend's big-eared bat	☐ Rock formations with caves ☐ Mines ☐ Abandoned buildings outside urban areas	Map and document potential breeding or roosting habitat.
	Swainson's hawk	☒ Potential nest sites (trees within species' range usually below 200')	Inspect large trees for presence of nest sites.
	Golden eagle	☒ Potential nest sites (secluded cliffs with overhanging ledges; large trees)	Document and map potential nests.

[a] Vernal pool fairy shrimp, vernal pool tadpole shrimp, longhorn fairy shrimp, and midvalley fairy shrimp.
[b] Sandstone rock outcrops are mapped as the rock outcrop land cover type.

Results of Species-Specific Planning Surveys Required in Table 2a

1. ***Describe the results of the planning survey conducted as required in Table 2a.*** *Planning surveys will assess the location, quantity, and quality of suitable habitat for specified covered wildlife species on the project site. Covered species are assumed to occupy suitable habitat in impact areas and mitigation is based on assumption of take.*

2. ***Reference and attach the Planning Survey Species Habitat Maps as required in Table 2a (Figure 4)***.

   Planning surveys for the City's original alignment for the proposed project were conducted in 2007 per the requirements of the HCP/NCCP and were incorporated into a previous planning survey report in 2008. The City's revised alignment, assessed in this report, overlaps with the original alignment in most areas, although approximately 24 percent of the revised alignment falls outside of the original survey area. Surveys for specified covered wildlife species conducted by H. T. Harvey & Associates ecologists within the survey area for the original alignment (original survey area) were as follows:

   - Wildlife ecologist John Sterling, B.A., conducted a reconnaissance-level planning survey to evaluate suitable breeding and roosting habitat for burrowing owls (*Athene cunicularia*) and suitable breeding habitat for Swainson's hawks (*Buteo swainsoni*), golden eagles (*Aquila chrysaetos*), white-tailed kites (*Elanus leucura*), and other raptors on 10 July 2007. John walked the original survey area on-foot, examining all areas for the presence of suitable burrows and all trees for nests of raptors.
   - Mammalogist and San Joaquin kit fox (*Vulpes macrotis mutica*) biologist Howard Clark, M.S., conducted a survey on 31 July 2007 for suitable habitat for San Joaquin kit foxes. Howard covered the entire project area, searching for suitable dens of kit foxes and burrows of prey, such as California ground squirrels (*Spermophilus beecheyi*).
   - Senior herpetologist Jeff Wilkinson, Ph.D., conducted a survey on 1 August 2007 to evaluate potentially suitable habitat for the California red-legged frog (*Rana draytonii*). Jeff walked all of the lowland drainage areas within the original survey area on-foot assessing breeding habitat suitability for red-legged frogs.

   In addition, Brent Helm, Ph.D., and Todd Wood of Helm Biological Consulting conducted a survey on 8 August 2007 for potential habitat for covered branchiopod species within the original survey area.

   H. T. Harvey & Associates ecologists conducted the following surveys for specified covered wildlife species in 2011 along the portions of the revised alignment that were not part of the original survey area (revised survey area):

   - Ecologist Kelly Hardwicke, Ph.D., and wildlife ecologist Robin Carle, M.S., conducted a reconnaissance-level survey on 29 November 2011 for covered wildlife species and their habitats. Robin and Kelly walked the portions of the revised project area that had not been covered previously due to recent changes in project design. Kelly mapped locations of suitable breeding habitat for covered branchiopods, and Robin searched for suitable roosting and breeding habitat for covered wildlife species per the methods described above.

   Results of the species-specific surveys required in Table 2a are provided below.

San Joaquin Kit Fox (*Vulpes macrotis mutica*)

Survey Results. No evidence of kit foxes (e.g., scat, dens, or latrines) was observed in the project area during the planning surveys. High densities of coyotes (*Canis latrans*) can act as a limiting factor to kit fox occupation of suitable habitats, as coyotes are a main source of kit fox mortality[7]. However, no coyote sign was observed during the survey. California ground squirrel burrows were also not observed in the project area during the surveys. Ground squirrels are a major prey item for kit foxes, and a lack of a suitable prey base, as well as burrows that can be used as den starts, may limit the suitability of the project area for use by kit foxes for denning or breeding.

Quantification of Suitable Habitat. The HCP/NCCP does not define specific habitat elements as components of San Joaquin kit fox habitat. Rather, the HCP/NCCP considers any occurrence of land cover types with which the species may be associated, defined for kit foxes as annual grassland, oak savanna, and irrigated agriculture land cover types, to be potentially suitable habitat. Therefore, per the HCP/NCCP, suitable denning and breeding habitat for San Joaquin kit foxes within the project area is represented by the grassland and oak savannah habitats shown in Figure 3a.1. The total acreage of permanent impacts to potential denning and breeding habitat is the total acreage of permanent impacts to these land cover types within the project area limits (i.e., 12.5 ac). Temporary impacts to these land cover types comprise an additional 49.9 ac.

In the absence of any specific habitat elements defined by the HCP/NCCP for this species, we refined the area that we consider to represent potential kit fox breeding or denning habitat based on the results of the planning surveys. The project area consists of a mix of rugged hills and flatter valley areas with characteristic grassland habitats, and the higher elevations contain oak woodland/grassland matrices. The valleys, although sloped, are flatter and more conducive to kit fox movement than the steeper, adjacent hills, but the valleys quickly taper upslope and become unappealing for foraging and denning due to their narrow nature. Therefore, the portions of the site composed of flatter valleys provide potentially suitable San Joaquin kit fox denning and breeding habitat, whereas steeper slopes and ridgelines do not (Figure 4). The flatter areas of the site that are similar to preferred San Joaquin kit fox breeding or denning habitat comprise a total of 43.2 ac. Permanent impacts within these flatter areas comprise 9.6 ac, and temporary impacts comprise 33.6 ac.

Burrowing Owl (*Athene cunicularia*)

Survey Results. No burrows or signs of burrowing owls (e.g., whitewash, pellets, or feathers) were detected in the project area during the field surveys (Figure 4). One group of ground squirrel burrows was detected approximately 2000 ft east of the eastern end of the project area, and a single burrow was detected west of the project area. These were the only burrows detected in the project vicinity. Because no burrows occur in the project area, suitable roosting or breeding habitat for burrowing owls is absent from the site and the species is not expected to roost or breed within the project area. Further, because few burrows are present in the vicinity of the project area, there is limited potential for burrowing owls to occur in nearby areas.

Quantification of Suitable Habitat. The HCP/NCCP does not define specific habitat elements that are components of burrowing owl breeding and roosting habitat. Rather, the HCP/NCCP considers any occurrence of land cover types with which the species may be associated, defined for burrowing owls as the grassland, oak savanna, and irrigated agriculture land cover types, to be potential suitable habitat. Therefore, potential impacts to

[7] Disney, M. and L. K. Spiegel. 1992. Sources and rates of San Joaquin kit fox mortality in western Kern County, California. Transactions of the Western Section Wildlife Society 28:73-82.

suitable nesting and roosting habitat for burrowing owls within the project area are represented by the grassland and oak savannah habitats shown in Figure 3a.1. The total acreage of permanent impacts to potential nesting and roosting habitat is the total acreage of these land cover types within the project area. Permanent impacts to these areas comprise 12.5 ac, and temporary impacts comprise an additional 49.9 ac.

However, because no suitable burrows for nesting or roosting are present, suitable roosting and breeding habitat for burrowing owls is absent from the project area. Nevertheless, burrowing owls may forage in the project area, especially if individuals are breeding or roosting in nearby areas.

California Red-legged Frog (*Rana draytonii*)

Survey Results. All streams within the project area were surveyed to determine the locations of potential breeding habitat for California red-legged frogs. These streams are ephemeral or intermittent, and lack the slow-moving, longer-ponding habitat typically used by California red-legged frogs for breeding. The only portions of streams with slow-moving segments that hold water long enough for successful breeding occur within Kirker Creek. Several pools within Kirker Creek provide breeding habitat for California red-legged frogs beneath and adjacent to the proposed clear-span bridges (Figure 4).

Quantification of Suitable Habitat. The HCP/NCCP defines specific habitat elements of California red-legged frog breeding habitat as slow-moving streams, ponds, or marshes. The pools within Kirker Creek provide suitable habitat for California red-legged frogs per the definition of the HCP/NCCP. However, because the proposed bridges would clear-span the habitat within Kirker Creek, no impacts to California red-legged frog breeding habitat would occur as a result of the project (Figure 4).

Swainson's Hawk (*Buteo swainsoni*)

Survey Results. No Swainson's hawks or their nests were detected during the planning surveys. The majority of the project area is located above 200 ft in elevation, which is outside typical breeding habitat for Swainson's hawks in the HCP/NCCP area. In addition, the surveys determined that the trees in the project area are relatively small and do not provide suitable nesting habitat for Swainson's hawks.

Quantification of Suitable Habitat. The HCP/NCCP defines specific habitat elements of Swainson's hawk breeding habitat as potential nest sites (i.e., trees within the species' range that are typically below 200 ft in elevation). Planning surveys determined that the trees in the project area are not of suitable size to support nesting Swainson's hawks. Further, only the very lowest portions of the project area are located below 200 ft in elevation, and the high topographic relief of the project area is not typical of breeding habitat for this species. Thus, Swainson's hawks are not expected to breed within the project area, and no impacts to Swainson's hawks would occur as a result of the project.

Golden Eagle (*Aquila chrysaetos*)

Survey Results. No golden eagles or nests of golden eagles were detected during the field surveys. There are no high cliffs on the site, and potential suitable nesting habitat is present only in large trees and on transmission line towers. All trees and transmission line towers in the project area were examined for eagle nests. The surveys determined that the trees in the project area are not of suitable size to support nesting golden eagles. No eagle nests were observed on transmission line towers in the project area.

Quantification of Suitable Habitat. The HCP/NCCP does not define specific habitat elements that are components of golden eagle breeding habitat. Instead, the HCP/NCCP requires the avoidance of take of this species. No nests of golden eagles were observed in the project area, and surveys determined that the trees in the project area are not of suitable size to support nesting golden eagles. Golden eagles could potentially nest on transmission line towers, although no nests of golden eagles are currently present on towers in the project area.

Covered Branchiopods

Branchiopod species covered by the HCP/NCCP are the longhorn fairy shrimp (*Branchinecta longiantenna*), vernal pool fairy shrimp (*Branchinecta lynchi*), midvalley fairy shrimp (*Branchinecta mesovallensis*), and vernal pool tadpole shrimp (*Lepidurus packardi*).

Survey Results. Planning surveys examined rock outcrops and aquatic habitats in the project area for suitable habitat for covered branchiopods. Habitat for the four branchiopod species covered under the HCP/NCCP consists of any seasonally inundated depression that, on average, ponds (or gently coveys water) 2 inches or greater in depth for 14 or more consecutive days. Six sites within the project area were determined to have the potential to support covered branchiopods. The locations of these sites are shown in Figure 4, and the estimated area of each site is provided in the table below[8].

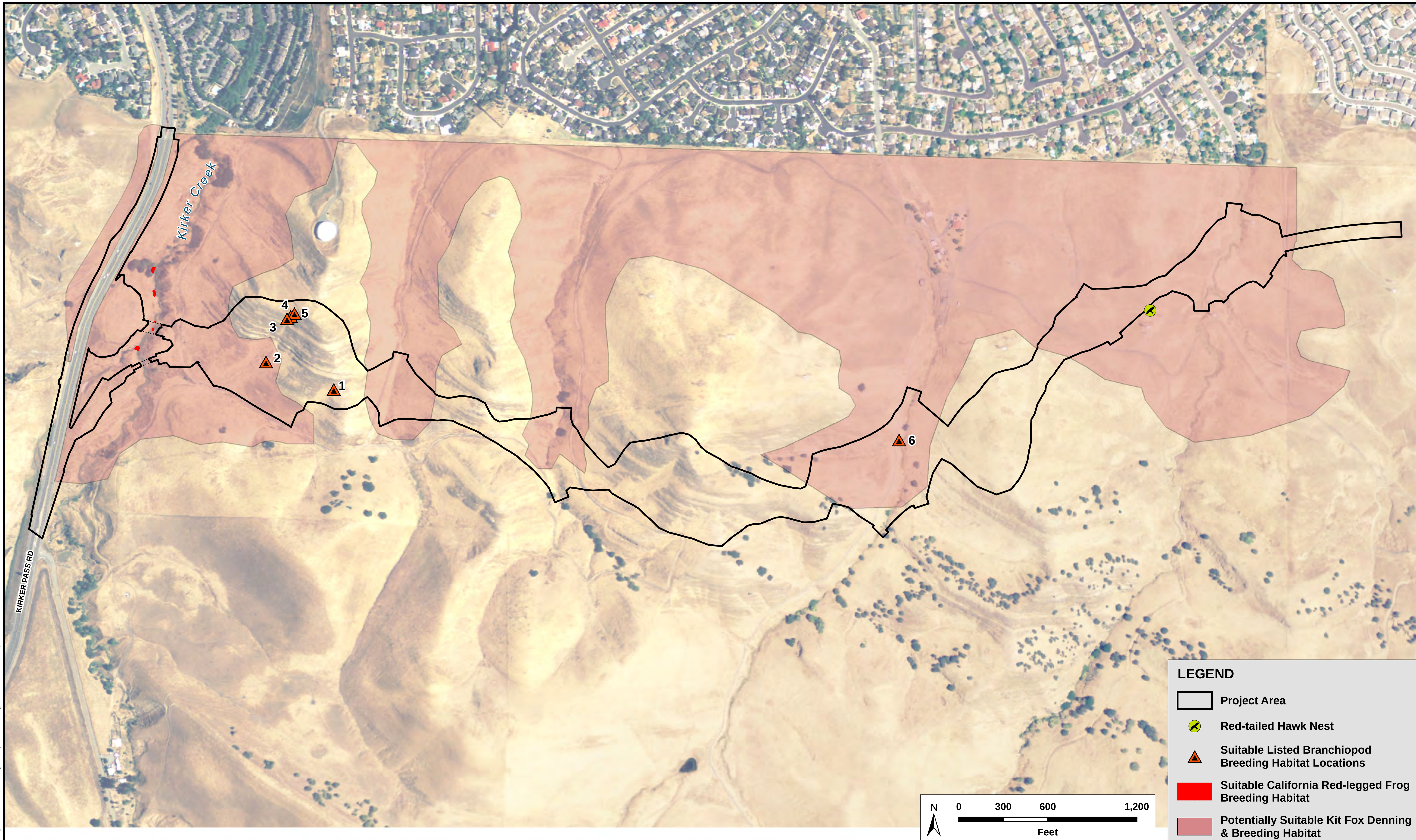
Impacts to Potential Branchiopod Habitat within the Project Area.

Site No.	Habitat Type	Area (ft^2)
1	rock outcrop	21.8
2	depression	3.0
3	rock outcrop	34.8
4	rock outcrop	5.0
5	rock outcrop	2.5
6	depression	49.5

Quantification of Suitable Habitat. The HCP/NCCP defines specific land cover types as components of covered branchiopod breeding habitat: vernal pools, sandstone rock outcrops, and sandstone depressions within seasonal wetlands. Of note, sandstone depressions within the project area are mapped as rock outcrops and not as seasonal wetlands (Figure 3a.1). The six locations within the project area where potential breeding habitat for covered branchiopods occurs provide a total of 116.6 ft^2 of suitable breeding habitat for these species. No covered branchiopods were observed during site surveys; however, the HCP/NCCP does not require planning surveys to determine presence/absence of these species, and surveys to determine presence/absence were not performed.

It should be noted that surveys for vernal pool branchiopods would need to be conducted, particularly in the rock outcrops, during an appropriate wet season prior to construction. If longhorn fairy shrimp are present, occupied pools shall be avoided if possible. Otherwise, because the HCP/NCCP did not account for impacts to this species as a result of the proposed project and thus did not plan on having to create and preserve new habitat for this species, project-specific habitat mitigation in the form of creation and preservation of suitable habitat for this species (rather than payment of fees to the Conservancy) may be required.

[8] Tables added to this report, but that were not specified in the report template, are not numbered in order to retain the numbering in the template instructions.



N:\Projects\2739-01\Planning Survey Nov 2012\Fig 4 Wildlife Habitat Map.mxd

H. T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS

Figure 4: Suitable Wildlife Habitat

James Donlon Boulevard Extension Planning Survey Report (2739-01)
November 2012

Covered and No-Take Plants

On suitable land cover types, surveys for covered and no-take plants must be conducted using approved CDFG/USFWS methods during the appropriate season to identify any covered or no-take plant species that may occur on the site (see page 6-9 of the Final HCP/NCCP). Based on the land cover types found in the project area and identified in Table 1, check the applicable boxes in Table 2b and provide a summary of survey results as required below. If any no-take plants are found in the project area, the provisions of Conservation Measure 1.11 must be followed (see Avoidance and Minimization Measures below).

Table 2b. Covered and No-Take Plant Species, Typical Habitat Conditions, and Typical Blooming Periods.

Land Cover Type	Plant Species	Covered (C) or No-Take (N)?	Typical Habitat or Physical Conditions, if Known	Typical Blooming Period[a]
☒ Oak savanna	Diablo Helianthella (*Helianthella castanea*)	C	Elevation above 650 ft[b]	Mar–Jun
	Mount Diablo fairy-lantern (*Calochortus pulchellus*)	C	Elevation between 650 ft and 2,600 ft[b]	Apr–Jun
☒ Oak woodland	Brewer's dwarf flax (*Hesperolinon breweri*)	C		May–Jul
	Diablo Helianthella (*Helianthella castanea*)	C	Elevation above 650 ft[b]	Mar–Jun
	Mount Diablo fairy-lantern (*Calochortus pulchellus*)	C	Elevation between 650 ft and 2,600 ft[b]	Apr–Jun
	Showy madia (*Madia radiata*)	C		Mar–May
☐ Chaparral and scrub	Brewer's dwarf flax (*Hesperolinon breweri*)	C		May–Jul
	Diablo Helianthella (*Helianthella castanea*)	C	Elevation above 650 ft[b]	Mar–Jun
	Mount Diablo buckwheat (*Eriogonum truncatum*)	N		Apr–Sep; uncommonly Nov–Dec.
	Mount Diablo fairy-lantern (*Calochortus pulchellus*)	C	Elevation between 650 ft and 2,600 ft[b]	Apr–Jun
	Mount Diablo Manzanita (*Arctostaphylos auriculata*)	C	Elevation between 700 ft and 1,860 ft; restricted to the eastern and northern flanks of Mt. Diablo[b]	Jan–Mar
☐ Alkali grassland	Brittlescale (*Atriplex depressa*)	C	Restricted to soils of the Pescadero or Solano soil series; generally found in southeastern region of Plan area[b]	May–Oct

Land Cover Type	Plant Species	Covered (C) or No-Take (N)?	Typical Habitat or Physical Conditions, if Known	Typical Blooming Period[a]
	Caper-fruited tropidocarpum (*Tropidocarpum capparideum)*	N		Mar-Apr
	Contra Costa goldfields (*Lasthenia conjugens*)	N	Generally found in vernal pools	Mar–Jun
	Recurved larkspur (*Delphinium recurvatum*)	C		Mar–Jun
	San Joaquin spearscale (*Atriplex joaquiniana*)	C		Apr-Oct
☐ Alkali wetland	Alkali milkvetch (*Astragalus tener* ssp. *tener*)	N		Mar–Jun
	Brittlescale (*Atriplex depressa*)	C	Restricted to soils of the Pescadero or Solano soil series; generally found in southeastern region of Plan area[b]	May–Oct
	San Joaquin spearscale (*Atriplex joaquiniana*)	C		Apr–Oct
☒ Annual grassland	Alkali milkvetch (*Astragalus tener* ssp. *tener*)	N		Mar–Jun
	Big tarplant (*Blepharizonia plumosa*)	C	Elevation below 1500 ft[b]	Jul–Oct
	Brewer's dwarf flax (*Hesperolinon breweri*)	C	Restricted to grassland areas within a 500-ft+ buffer from oak woodland and chaparral/scrub[b]	May–Jul
	Contra Costa goldfields (*Lasthenia conjugens*)	N	Generally found in vernal pools	Mar–Jun
	Diamond-petaled poppy (*Eschscholzia rhombipetala*)	N		Mar–Apr
	Large-flowered fiddleneck (*Amsinckia grandiflora*)	N		Apr–May

Land Cover Type	Plant Species	Covered (C) or No-Take (N)?	Typical Habitat or Physical Conditions, if Known	Typical Blooming Period[a]
	Mount Diablo buckwheat (*Eriogonum truncatum*)	N		Apr–Sep; uncommonly Nov–Dec
	Mount Diablo fairy-lantern (*Calochortus pulchellus*)	C	Elevation between 650 ft and 2,600 ft[b]	Apr–Jun
	Round-leaved filaree (*California macrophylla*)[1]	C		Mar–May
	Showy madia (*Madia radiata*)	C		Mar–May
☐ Seasonal wetland	Adobe navarretia (*Navarretia nigelliformis* ssp. *nigelliformis*)	C	Generally found in vernal pools[b]	Apr–Jun
	Alkali milkvetch (*Astragalus tener* sp. *tener*)	N		Mar–Jun
	Contra Costa goldfields (*Lasthenia conjugens*)	N	Generally found in vernal pools	Mar–Jun

[a] From California Native Plant Society. 2007. *Inventory of Rare and Endangered Plants* (online edition, v7-07d). Sacramento, CA. Species may be identifiable outside of the typical blooming period; a professional botanist shall determine if a covered or no take plant occurs in the project area.

[b] See Species Profiles in Appendix D of the Final HCP/NCCP.

Results of Covered and No-Take Plant Species Planning Surveys Required in Table 2b

Describe the results of the planning survey conducted as required in Table 2b. *Describe the methods used to survey the site for all covered and no-take plants, including the dates and times of all surveys conducted (see Tables 3-8 and 6-5 of the HCP/NCCP for covered and no-take plants). In order to complete all the necessary covered and no-take plant surveys, both spring and fall surveys are required, check species survey requirements below.*

If any covered or no-take plants were found, include the following information in the results summary:

- *Description and number of occurrences and their rough population size.*
- *Description of the "health" of each occurrence, as defined on pages 5-49 and 5-50 of the HCP/NCCP.*
- *A map of all the occurrences.*
- *Justification of surveying time window, if outside of the plant's blooming period.*
- *The CNDDB form(s) submitted to CDFG (if this is a new occurrence).*
- *A description of the anticipated impacts that the covered activity will have on the occurrence and/or how the project will avoid impacts to all covered and no-take plant species. All projects must demonstrate avoidance of all six no-take plants (see table 6-5 of the HCP/NCCP).*

Survey Methodology

Surveys were conducted by H. T. Harvey & Associates ecologists for covered and no-take plants within the original survey area as follows:

- Senior plant/wetlands ecologist Kelly Hardwicke, Ph.D. conducted targeted, protocol-level blooming period surveys for late-blooming special-status plant species on 10, 11, and 12 July and 1, 7, 8, and 9 August 2007. She was assisted on 8 and 9 August 2007 by plant ecologist Onkar Singh, B.S. Kelly Hardwicke returned to the site to conduct protocol-level surveys for spring-blooming plants on 13 March and 30 April 2008.

H. T. Harvey & Associates ecologists conducted the following surveys for suitable habitat to support covered and no-take plant species in 2011 within the revised survey area:

- Senior plant/wetlands ecologist Brian Cleary, M.S., conducted a reconnaissance-level survey on 29 and 30 November 2011 and 1 December 2011 to identify habitats that could potentially support special-status plant species.

Protocol-level surveys for covered and no-take plants have not been conducted within portions of the revised survey area that do not overlap with the original survey area.

Results

Eleven special-status plant species are covered under the HCP/NCCP: Mount Diablo manzanita (*Arctostaphylos auriculata*), brittlescale (*Atriplex depressa*), San Joaquin spearscale (*Atriplex joaquiniana*), big tarweed (*Blepharizonia plumosa*), round-leaved filaree

(*California macrophylla*), Mt. Diablo fairy lantern (*Calochortus pulchellus*), recurved larkspur (*Delphinium recurvatum*), Diablo helianthella (*Helianthella castanea*), Brewer's dwarf flax (*Hesperolinon breweri*), showy madia (*Madia radiata*), and adobe navarretia (*Navarretia nigelliformis* ssp. *nigelliformis*). An additional six species are on the HCP/NCCP's no-take list: large-flowered fiddleneck (*Amsinckia grandiflora*), alkali milk-vetch (*Astragalus tener* var. *tener*), Mt. Diablo buckwheat (*Eriogonum truncatum*), diamond-petaled California poppy (*Eschscholzia rhombipetala*), Contra Costa goldfields (*Lasthenia conjugens*), and caper-fruited tropidocarpum (*Tropidocarpum capparideum*).

Two species, the large-flowered fiddleneck and Mount Diablo manzanita, are not expected to occur in the project area. These species occur at an elevation range that is hundreds of feet higher (in the upper portions of the Mt. Diablo Range) than the maximum elevation range of the project area. In addition, the Mount Diablo manzanita occurs in chaparral or coast live oak woodland habitats, which do not occur on the site. Thus, protocol-level surveys were not performed for these species. The remaining 15 covered and no-take plant species could potentially occur in the project area, and protocol-level surveys were performed for five summer or fall blooming plants in 2007 and 11 spring-blooming species in spring 2008. The results of these surveys are described below.

Summer-Fall Blooming Period Surveys. The table below presents a summary of results for the July and August 2007 protocol-level surveys for summer and fall-blooming covered and no-take plants.

Results of 2007 Targeted Protocol-level Surveys of Summer or Fall-Blooming Covered and No-Take Plant Species.

Common Name	Species Name	Status	2007 Survey Results
Brittlescale	*Atriplex depressa*	HCP/NCCP covered, CNPS 1B.2	Not observed, determined to be absent.
San Joaquin spearscale	*Atriplex joaquiniana*	HCP/NCCP covered, CNPS 1B.2	Not observed, determined to be absent.
Big tarweed	*Blepharizonia plumosa*	HCP/NCCP covered, CNPS 1B.1	Not observed, determined to be absent.
Mt. Diablo buckwheat	*Eriogonum truncatum*	HCP/NCCP no-take, CNPS 1B.1	Not observed, but some Eriogonum sp. on-site unidentifiable due to grazing, will reassess in April 2008.
Brewer's dwarf flax	*Hesperolinon breweri*	HCP/NCCP-covered, CNPS 1B.2	Not observed, determined to be absent.

The five late-blooming species listed above were initially considered to have potential to occur in the project area because they are covered in the HCP/NCCP and they are known to occur at similar elevations and habitat types to those present in the project area. Expanded descriptions of these species and the results of the targeted, protocol-level surveys are reported below. All of these species are considered absent from the project area; further surveys for these species are not warranted for purposes of impact assessment or HCP/NCCP compliance. The Mt. Diablo buckwheat was included in both the 2007 and 2008 surveys, as surveys during July and August 2007 were inconclusive.

Brittlescale (*Atriplex depressa*). Potential habitat for brittlescale occurs in the project area, primarily within the more alkaline, mesic areas surrounding or within Kirker Creek and the unnamed intermittent stream at the center of the site, as well as in grassland areas underlain with Altamont clays. Brittlescale was not found during focused surveys performed in July and August 2007.

San Joaquin spearscale (*Atriplex joaquiniana*). Potential habitat for San Joaquin spearscale occurs in the project area, primarily within the more alkaline, mesic areas surrounding or within Kirker Creek and the unnamed intermittent stream at the center of the site. San Joaquin spearscale was not found during focused surveys performed in July and August 2007.

Big Tarweed (*Blepharizonia plumosa*). Potential habitat for big tarweed occurs in the project area, primarily within the upland grassland areas underlain by Altamont clays but also within other upland grassy areas of the site. The protocol-level surveys detected only the common San Joaquin tarweed (*Holocarpha obconia*) and did not detect big tarweed.

Mt. Diablo Buckwheat (*Eriogonum truncatum*). Only marginally suitable potential habitat for Mt. Diablo buckwheat occurs in the project area, as most of the soils on the site are heavy clays or clay loams, but in areas surrounding the soft sandstone-based outcrops, acceptably coarse soils may exist in patches. Focused surveys performed in July and August 2007 detected only the common buckwheat (*Eriogonum nudum*) and did not detect Mt. Diablo buckwheat, although some buckwheat plants had been grazed such that they were unidentifiable. Areas with unidentifiable buckwheat were resurveyed on 30 April 2008, and Mt. Diablo buckwheat was not detected.

Brewer's Western Flax (*Hesperolinon breweri*). Only marginally suitable potential habitat for Brewer's western flax occurs in the project area within the upland grassland and oak savannah areas, as the site lacks serpentinite or other ultramafic features. Focused surveys performed in July 2007 did not detect Brewer's western flax.

Spring Blooming Period Surveys. The table below lists covered and no-take plants that bloom in the spring and that could potentially be present in the project area. H. T. Harvey & Associates conducted targeted, protocol-level surveys on 13 March and 30 April 2008.

Results of Spring 2008 Targeted Protocol-level Surveys of Spring-Blooming Covered and No-Take Plant Species.

Common Name	Species Name	Status	2008 Survey Results
Alkali milk-vetch	*Astragalus tener var. tener*	HCP/NCCP no-take, CNPS 1B.2	Not observed, determined to be absent.
Round-leaved filaree	*California macrophylla*	HCP/NCCP-covered, CNPS 1B.1	Not observed, determined to be absent.
Mt. Diablo fairy-lantern	*Calochortus pulchellus*	HCP/NCCP-covered, CNPS 1B.2	Not observed, determined to be absent.
Recurved larkspur	*Delphinium recurvatum*	HCP/NCCP-covered, CNPS 1B.2	Not observed, determined to be absent.
Mt. Diablo buckwheat	*Eriogonum truncatum*	HCP/NCCP no-take, CNPS 1B.1	Not observed during fall or spring surveys, determined to be absent.
Diamond-petaled California poppy	*Eschscholzia rhombipetala*	HCP/NCCP no-take, CNPS 1B.1	Not observed, determined to be absent.
Diablo helianthella	*Helianthella castanea*	HCP/NCCP covered, CNPS 1B.2	Not observed, determined to be absent.
Contra Costa goldfields	*Lasthenia conjugens*	HCP/NCCP no-take, Federal Endangered, CNPS 1B.1	Not observed, determined to be absent.
Showy madia	*Madia radiata*	HCP/NCCP-covered, CNPS 1B.1	Not observed, determined to be absent.
Adobe navarretia	*Navarretia nigelliformis* ssp. *nigelliformis*	HCP/NCCP-covered, CNPS 4.2	Not observed, determined to be absent.
Caper-fruited tropidicarpum	*Tropidocarpum capparideum*	HCP/NCCP no-take, CNPS 1B.1	Not observed, determined to be absent.

Alkali milk-vetch (*Astragalus tener* var. *tener*). Potential habitat for alkali milk-vetch occurs in the project area, primarily along the periphery of Kirker Creek in seasonally wet areas with alkaline soils. Focused surveys performed on 13 March and 30 April 2008 did not detect the species.

Round-leaved filaree (*California macrophylla*). There is an abundance of potentially suitable habitat for round-leaved filaree in the project area, especially within the grassland and oak savannah areas underlain by heavy Altamont clay soils. Several occurrences of round-leaved filaree have been located within 5 mi of the site, all to the south within similar rolling grassland and oak savannah habitat within the foothills of Mt. Diablo[9]. We performed targeted surveys for the species within potential habitat on 13 March and 30 April 2008; however, no round-leaved filaree was found in the project area.

Mt. Diablo fairy lantern (*Calochortus pulchellus*). Potential habitat for Mt. Diablo fairy lantern occurs in the project area, primarily within wooded, shady slopes and stream banks. We performed targeted surveys for the species within potentially suitable habitat on 30 April 2008; however, no Mt. Diablo fairly-lantern was detected on the site, even in areas supporting known associate species such as *Ranunculus canus*.

Recurved larkspur (*Delphinium recurvatum*). Potential habitat for recurved larkspur occurs in the more alkaline grassland and scrubby areas of the project area, particularly near Kirker Creek. We surveyed all potentially suitable habitat on 13 March and 30 April 2008, but did not detect recurved larkspur.

Mt. Diablo buckwheat (*Eriogonum truncatum*). Due to this species' long blooming period (April – September) and the fact that some grazed buckwheat plants observed during July and August 2007 were unidentifiable, surveys for this species were performed during both survey periods. We surveyed all potentially suitable habitat on 30 April 2008 as a follow-up to July and August 2007 surveys (described above), but did not detect Mt. Diablo buckwheat.

Diamond-petaled California poppy (*Eschscholzia rhombipetala*). Potential habitat for diamond-petaled California poppy occurs in the project area, primarily within grassland areas underlain with Altamont clays or heavy clay loams. We surveyed all potential habitat on 30 April 2008, but only detected the common species of California poppy (*Eschscholzia californica*).

Diablo helianthella (*Helianthella castanea*). This species has been known to occur in a wide range of land cover types and microhabitats, and at least marginally suitable potential habitat for Diablo helianthella occurs in the project area. We performed targeted surveys for the species within potential habitat on 13 March and 30 April 2008; however, no Diablo helianthella was detected on the site.

Contra Costa Goldfields (*Lasthenia californica*). Potential habitat for Contra Costa goldfields occurs in the project area, primarily within the more alkaline, mesic areas surrounding or within Kirker Creek and the depressional seasonal wetland to the east of Kirker Creek. Targeted surveys were performed for this species on 13 March and 30 April 2008; however, Contra Costa goldfields were not detected in the project area.

Showy madia (*Madia radiata*). Showy madia is threatened by grazing and invasive non-native plants, and thus is considered to have only a moderate to fairly low likelihood of occurring in the project area. However, areas of potential habitat occur within grassy or even shrubby areas underlain by Altamont clays in the project area. Targeted surveys were performed in all potential grassland and oak savannah habitat underlain by clay soils on 13 March and again on 30 April, but showy madia was not detected on the site.

Adobe navarretia (*Navarretia nigelliformis* ssp. *nigelliformis*). Ostensibly suitable habitat for adobe navarretia occurs in the project area, primarily within the more alkaline, mesic

[9] CNDDB. 2012. Rarefind Version 3.1.1. California Department of Fish and Game, Biogeographic Data Branch.

areas surrounding or within Kirker Creek and the unnamed intermittent stream at the center of the site, as well as in grassland areas underlain with Altamont clays. No serpentinite features were observed on-site, although some species with a weak affinity for serpentine soils were detected on the site, such as California plantain (*Plantago erecta*), and these areas were also targeted for surveys for Adobe navarretia. However, surveys performed 13 March and 30 April did not detect this species on the site.

Caper-fruited tropidocarpum (*Tropidocarpum capparideum*). Potential alkaline, grassy hills occur within the project area, and on 13 March and 30 April 2008, targeted surveys were conducted for this species. However, the surveys did not detect the species. Only common, weedy mustard species such as black mustard and field mustard were observed during the surveys.

2011 Reconnaissance-level Surveys. Reconnaissance-level surveys of the revised survey area determined that the habitat within this area is similar to the habitats within the original survey area. Because protocol-level surveys determined that covered and no-take plant species were absent from the original survey area, there is a very low probability of occurrence of any covered or no-take plant species within the limited areas that are in the revised survey area but not in the original survey area. However, approximately 24 percent of the revised survey area was not surveyed according to protocol in 2007 and 2008, and thus protocol-level surveys during the flowering periods of covered and no-take plants (i.e., early spring, mid-summer, and late summer/early fall) would be necessary to conclusively determine the presence or absence of these plant species within the revised survey area per the requirements of the HCP/NCCP.

Quantification of Impacts. To date, surveys have not detected occurrences of HCP/NCCP-covered or no-take plant species, and therefore no potential project-related impacts to hese species are expected to occur. However, protocol-level surveys of the new portions of the revised alignment are needed to determine whether these species may be present in these areas.

III. Species-Specific Monitoring and Avoidance Requirements

This section discusses subsequent actions that are necessary to ensure project compliance with Plan requirements. Survey requirements and Best Management Practices pertaining to selected covered wildlife species are detailed in Section 6.4.3, Species-Level Measures, beginning on page 6-36 of the Final HCP/NCCP.

Preconstruction Surveys for Selected Covered Wildlife

If habitat for selected covered wildlife species identified in Table 2a was found to be present in the project area. In Table 3, identify the species for which preconstruction surveys or notifications are required based on the results of the planning surveys. Identify whether a condition of approval has been inserted into the development contract to address this requirement.

Table 3. Applicable Preconstruction Survey and Notification Requirements based on Land Cover Types and Habitat Elements Identified in Table 2a.

Species	Preconstruction Survey and Notification Requirements
☐ None	
☒ San Joaquin kit fox (p. 6-38)	• Map all dens (>5 inches in diameter) and determine status. • Determine if breeding or denning foxes are in the project area. • Provide written preconstruction survey results to FWS within 5 working days after surveying.
☒ Western burrowing owl (p. 6-40)	• Map all burrows and determine status. • Document use of habitat (e.g. breeding, foraging) in/near disturbance area (within 500 ft).
☐ Giant garter snake (p. 6-44)	• Delineate aquatic habitat up to 200 ft. from water's edge. • Document any sightings of garter snake.
☐ California tiger salamander (p. 6-46) (notification only)	• Provide written notification to USFWS and CDFG regarding timing of construction and likelihood of occurrence in the project area.
☒ California red-legged frog (p. 6-47) (notification only)	• Provide written notification to USFWS and CDFG regarding timing of construction and likelihood of occurrence in the project area.
☒ Covered shrimp species (p. 6-47)	• Document and evaluate use of all habitat features (e.g., vernal pools, rock outcrops). • Document occurrences of covered shrimp.
☐ Townsend's big-eared bat (p. 6-37)	• Determine if site is occupied or shows signs of recent occupation (guano).
☐ Swainson's hawk (p. 6-42)	• Determine whether nests are occupied.
☒ Golden eagle (p. 6-39)	• Determine whether nests are occupied.

Note: Page numbers refer to the HCP/NCCP.

Preconstruction Surveys as Required for Selected Covered Wildlife in Table 3

Describe the preconstruction surveys or notification conditions applicable to any species checked in Table 3. *All preconstruction surveys shall be conducted in accordance with the requirements set forth in Section 6.4.3, Species-Level Measures, and Table 6-1 of the HCP/NCCP.*

The covered and no-take species for which habitat (of the appropriate designation [e.g., breeding, roosting, or denning] as defined by the HCP/NCCP) is present within the project area are:

- San Joaquin kit fox
- Western burrowing owl
- California red-legged frog
- Covered large branchiopods

San Joaquin Kit Fox – As described in Section 6.4.3, pages 6-37 to 6-38 of the HCP/NCCP, pre-construction surveys for San Joaquin kit foxes and/or suitable dens shall be conducted by a U.S. Fish and Wildlife Service (USFWS)/CDFG-approved biologist in potential habitat in accordance with USFWS survey guidelines, within 30 days prior to the start of ground disturbance. Surveys would be conducted within 250 ft of the project area, but not on adjacent parcels under different ownership.

The status of any kit fox dens detected during the surveys would be submitted to the USFWS within five days following the completion of the survey and before ground disturbance begins.

Western Burrowing Owl – As described in Section 6.4.3, pages 6-39 to 6-41 of the HCP/NCCP, pre-construction surveys for burrowing owls shall be conducted by a qualified biologist in potential habitat in conformance with CDFG guidelines, no more than 30 days prior to the start of construction. Surveys would be conducted within 500 ft of the project area, but not on adjacent parcels under different ownership. Surveys during the breeding season (1 February – 31 August) would document whether burrowing owls are nesting on or directly adjacent to disturbance areas. During the nonbreeding season (1 September – 31 January), surveys would document whether burrowing owls are using habitat in or directly adjacent to disturbance areas.

California Red-legged Frog – No pre-construction surveys are required. Written notification to the USFWS, CDFG, and the Habitat Conservancy is required prior to disturbance of any suitable breeding habitat. However, the proposed project would not impact any suitable breeding habitat within Kirker Creek; thus, notification is not required for this species.

Covered Shrimp – As described in Section 6.4.3, pages 6-46 to 6-48 of the HCP/NCCP, pre-construction surveys for covered shrimp species shall be conducted by a USFWS-approved biologist in potential habitat in accordance with modified USFWS survey guidelines. Surveys would determine whether covered shrimp species are present on the site, and evaluate the use of habitat features by these species.

Golden Eagle – As described in Section 6.4.3, pages 6-38 to 6-39 of the HCP/NCCP, pre-construction surveys for golden eagles would be conducted by a qualified biologist to determine whether nests of golden eagles are occupied.

Construction Monitoring & Avoidance and Minimization Measures for Selected Covered Species

If preconstruction surveys for key covered wildlife species establish the presence of any such species, construction monitoring will be necessary. In Table 4, check the boxes for the species that will be assessed during the preconstruction surveys (see Table 3). A summary of the construction monitoring requirements for each species is provided in Table 4 and these measures must be implemented in the event that preconstruction surveys described in Table 3 detect the covered species. A summary of avoidance measures is also provided in Table 4 and these *measures must be implemented if construction monitoring detects the species or its sign. These construction monitoring and avoidance requirements are described in detail in Section 6.4.3, Species-Level Measures, of the Final HCP/NCCP.*

Construction Monitoring HCP/NCCP Requirements in Section 6.3.3, Construction Monitoring, of the Final HCP/NCCP:

☒ **Before implementing a covered activity, the applicant will develop and submit a construction-monitoring plan to the Habitat Conservancy[10] for approval.**

Table 4. Applicable Construction Monitoring Requirements.

Species Assessed by Preconstruction Surveys	Monitoring Action Required if Species Detected
☐ None	N/A
☒ San Joaquin kit fox (p. 6-38)	• Establish exclusion zones (>50 ft) for potential dens. • Establish exclusion zones (>100 ft) for known dens. • Notify USFWS of occupied natal dens.
☒ Western burrowing owl (p. 6-40)	• Establish buffer zones (250 ft) around nests. • Establish buffer zones (160 ft) around burrows.
☐ Giant garter snake (p. 6-44)	• Delineate 200-ft buffer around potential habitat. • Provide field report on monitoring efforts. • Stop construction activities if snake is encountered; allow snake to passively relocate. • Remove temporary fill or debris from construction site. • Mandatory training for construction personnel.
☒ Covered shrimp species (p. 6-47)	• Establish buffer around outer edge of all hydric vegetation associated with habitat (50 ft of limit of immediate watershed supporting the wetland, whichever is larger). • Mandatory training for construction personnel.
☐ Swainson's hawk (p. 6-42)	• Establish 1,000-ft buffer around active nest and monitor compliance.
☒ Golden eagle (p. 6-39)	• Establish 0.5-mi buffer around active nest and monitor compliance.

Construction Monitoring & Avoidance and Minimization Measures as Required for Selected Covered Wildlife in Table 4

Describe the construction monitoring and avoidance and minimization measures applicable to any species checked in Table 4. *A summary of avoidance measures is provided in Table 4, these measures must be implemented if construction monitoring detects the presence of the species. The construction monitoring & avoidance and minimization measures requirements are described in detail in Section 6.4.3, Species-Level Measures, of the HCP/NCCP.*

San Joaquin Kit Fox – If a den of San Joaquin kit foxes is detected on or immediately adjacent to the project area, the monitoring and avoidance measures described in Section 6.4.3, pages 6-37 to 6-38 of the HCP/NCCP, would be implemented. These measures include:

[10] The Conservancy and the local land use Jurisdiction must review and approve the plan prior to the commencement of all covered activities (i.e. construction).

- A USFWS/CDFG-approved biologist would monitor the den for three days to determine if the den is currently active.
- If kit fox activity is detected, the USFWS and CDFG would be notified immediately. A natal or pupping den shall not be destroyed until the adults and pups have vacated the den, and only with further consultation with the USFWS and CDFG.
- For dens other than natal or pupping dens, use of the den can be discouraged under the direction of a qualified biologist, and with additional monitoring.

Western Burrowing Owl – If burrowing owls are detected on or immediately adjacent to the project area, the monitoring and avoidance measures described in Section 6.4.3, pages 6-39 to 6-41 of the HCP/NCCP shall be implemented. These measures include:

- If burrowing owls are found during the breeding season (1 February – 31 August), the project will avoid nest sites that could be disturbed by project-related activities during the remainder of the breeding season or while the nest is occupied by adults or young. Avoidance will include establishing a non-disturbance buffer zone. Project activities can occur during the breeding season if a qualified biologist monitors the nest and determines that the birds have not begun egg-laying and incubation, or that the juveniles from the occupied burrows have fledged. During the nonbreeding season (1 September – 31 January), the project shall avoid burrowing owls and occupied burrows, if possible.
- If project activities are unable to avoid occupied burrows, passive relocation of burrowing owls will be implemented. Owls shall be excluded from burrows in project impact areas and within a 160-ft buffer zone via the installation of one-way doors in burrow entrances. The project area shall be monitored daily for one week to confirm that the owl has abandoned the burrow.

Covered Shrimp Species – The species-level measures in Section 6.4.3 of the HCP/NCCP address potential impacts to covered shrimp species in seasonal wetland habitats (including vernal pools), but not in rock outcrops. However, planning surveys identified suitable habitat for covered shrimp species in rock outcrops in the project area, and the species-level measures require pre-construction surveys and avoidance and minimization measures for covered shrimp species if suitable habitat is identified. To meet these requirements, we have adapted the species-level measures in Section 6.4.3 to apply to impacts to covered shrimp species in rock outcrops.

Prior to ground disturbance, the proposed project would conduct pre-construction surveys for covered shrimp species within suitable habitat in the project area. If covered shrimp species are detected, the following avoidance and minimization measures, adapted from the measures provided in pages 6-46 to 6-48 of Section 6.4.3 of the HCP/NCCP, would be implemented. These measures include:

- If suitable habitat for covered shrimp will be retained on the site, a buffer will be established from the outer edge of all areas of rock outcrops occupied by covered shrimp.
- Grading of rock outcrops, if unavoidable, will be delayed until pools are dry.
- Construction personnel will be trained to avoid affecting covered shrimp species. A qualified biologist approved by the USFWS will inform all construction personnel about the life history of covered shrimp, the importance of avoiding their habitat, and the terms and conditions of the HCP/NCCP related to avoiding and minimizing impacts to covered shrimp.
- The loss of occupied pools in rock outcrops within the project area will be offset through the preservation and creation of suitable habitat in accordance with the ratios and requirements provided in Conservation Measure 3.8. If the pools in the rock outcrops are occupied by covered shrimp, the applicant will first determine if the

Habitat Conservancy has preserved 2 acres of occupied habitat for the same shrimp species for every acre impacted, and restored 1 acre of suitable habitat for the shrimp species for every acre impacted, and the restored habitat is occupied. If the Habitat Conservancy has not accomplished these tasks, then the applicant will compensate for impacts to these pools through 2 acres of preservation and 1 acre of creation of occupied habitat (or purchase of an equivalent amount of preservation credits in a USFWS-approved mitigation bank) for each acre of pools affected. The HCP/NCCP did not anticipate impacts to the longhorn fairy shrimp from covered development activities, and thus the Habitat Conservancy is not planning any habitat acquisition or creation to benefit this species. Thus, if the longhorn fairy shrimp will be impacted by the James Donlon Boulevard Extension project, the applicant will need to perform project-specific mitigation for this species.

Golden Eagle – If an occupied golden eagle nest is found during the pre-construction survey, the avoidance and minimization measures described on pages 6-38 to 6-39 of Section 6.4.3 of the HCP/NCCP will be implemented. These measures include:

- Covered activities will be prohibited within 0.5 mi of active nests. Nests can be built and active at almost any time of the year, although mating and egg incubation occur in late January through August, with peak activity in March through July. If site-specific conditions or the nature of the covered activity (e.g., steep topography, dense vegetation, limited activities) indicate that a smaller buffer could be appropriate or that a larger buffer shall be implemented, the Habitat Conservancy will coordinate with the CDFG/USFWS to determine the appropriate buffer size.
- Construction monitoring will focus on ensuring that no covered activities occur within the buffer zone established around an active nest. Construction monitoring will ensure that direct effects to golden eagles are minimized.

IV. Landscape and Natural Community-Level Avoidance and Minimization Measures

Describe relevant avoidance and minimization measures required to address the conservation measures listed below. <u>If a conservation measure is not relevant to the project, explain why.</u>

<u>For All Projects</u>

HCP/NCCP Conservation Measure 1.10. Maintain Hydrologic Conditions and Minimize Erosion

Briefly describe how the project complies with this measure. See page 6-21 of the Final HCP/NCCP for details.

The proposed project would impact four ephemeral streams and three intermittent streams (Figure 3a.1). Clear-span bridges would span Kirker Creek, and no impacts would occur to this stream as a result of the proposed project. As described on pages 6-21 to 6-22 of Section 6.4.1 of the HCP/NCCP, the proposed project shall incorporate applicable Provision C.3 Amendments of the Contra Costa County Clean Water Program's amended NPDES Permit No. CAS0029912 to avoid and minimize direct and indirect impacts to local hydrological conditions within these streams and within Kirker Creek. Thus, hydrologic conditions shall be maintained.

HCP/NCCP Conservation Measure 1.11. Avoid Direct Impacts on Extremely Rare Plants, Fully Protected Wildlife Species, or Covered Migratory Birds

Briefly describe how the project complies with this measure. See page 6-23 of the Final HCP/NCCP for details.

Extremely Rare Plants. As described on page 6-23 of Section 6.4.1 of the HCP/NCCP, covered activities shall avoid impacts to the six extremely rare plants listed in Table 6-5 of the HCP/NCCP as no-take species. As noted previously, the large-flowered fiddleneck is not expected to occur in the project area. Spring-blooming season planning surveys determined that none of the remaining five no-take plants, (alkali milk-vetch, Mt. Diablo buckwheat, diamond-petaled California poppy, Contra Costa goldfields, and caper-fruited tropidocarpum) occur in the project area.

The documentation of planning surveys for no-take plants provided in this report and the negative results of those surveys demonstrates the project's compliance with Conservation Measure 1.11 for extremely rare plants.

Fully Protected Wildlife Species. Planning surveys have established that the only fully protected wildlife species (as defined under Section 3511 of the California Fish and Game Code) that could occur in the project area is the white-tailed kite. The CDFG cannot issue permits for take of this species. To comply with the California Fish and Game Code, covered activities will avoid any take of white-tailed kites. White-tailed kites can potentially nest in trees within the project area; however, planning surveys determined that no nests are currently present in the project area. To comply with Conservation Measure 1.11, the proposed project will avoid direct impacts to white-tailed kites by implementing the avoidance guidelines provided below for compliance with the California Fish and Game Code and the Migratory Bird Treaty Act (MBTA) for covered migratory birds. These guidelines indicate that the proposed project will not disturb or destroy nests of migratory birds, including white-tailed kites, and the proposed project shall be designed to avoid take of this species should they be found to occur within or adjacent to the project area.

Covered Migratory Birds. Planning surveys have determined that the western burrowing owl and white-tailed kite are the only HCP/NCCP-covered migratory birds that could potentially nest in the project area. These species are protected under Sections 3500 and 4511 of the California Fish and Game Code, and under the MBTA. In addition, most native bird species that occur within the project area are also covered under these regulations, which prohibit the take of migratory birds and their eggs, nests, or young. Conservation Measure 1.11 requires that the proposed project comply with the California Fish and Game Code and the MBTA for migratory birds that occur within impact areas. Thus, activities conducted under the HCP/NCCP must avoid killing or possessing migratory birds, as well as their young, nests, feathers, or eggs.

Avoidance and minimization measures for project-related impacts to migratory birds are described on pages 6-17, 6-24, 6-25, 6-26, and 6-40 to 6-42 of the HCP/NCCP, as well as in Table 6-1. To comply with these measures, the proposed project will implement the following measures to avoid impacts to migratory birds:

Measure 1. Avoidance. If construction activities could be scheduled to take place outside the nesting season, all impacts to nesting birds protected under the MBTA and California Fish and Game Code will be avoided. The nesting season for most birds, including most raptors, in the Pittsburg area of Contra Costa County extends from 1 February through 31 August.

Measure 2. Pre-construction/Pre-disturbance Surveys. Because it will not be possible to schedule all construction activities between 1 September and 31 January, pre-construction surveys for nesting birds shall be conducted by a qualified ornithologist to ensure that no nests will be disturbed during implementation of the proposed project. During this survey, the ornithologist will inspect all potential nesting habitats (e.g., trees, shrubs, grasslands) in and immediately adjacent to the impact areas for nests of migratory birds. If an active nest is found sufficiently close to work areas to be disturbed by these activities, the ornithologist will determine the extent of a construction-free buffer to be established around the nest (typically 250 ft for raptors and 100 ft for other species), to ensure that no nests of species protected under the MBTA will be disturbed during project implementation.

For Projects on or adjacent to Streams or Wetlands

HCP/NCCP Conservation Measure 1.7. Establish Stream Setbacks

Briefly describe how the project complies with this measure. See page 6-15 and Table 6-2 of the Final HCP/NCCP for details. For questions on the stream setback requirements, please contact the Conservancy.

Conservation Measure 1.7 in Chapter 6 of the HCP/NCCP requires all developments, including roads and bridges, to establish setbacks adjacent to intermittent and ephemeral streams. Stream setback requirements are provided in Table 6-2 of the HCP/NCCP. The HCP/NCCP defines the width of the setback required for a stream varies based on the type of stream (i.e., first and second-order streams versus third or higher-order streams) and its location (i.e., urban areas versus agricultural or natural areas). Per the requirements of the HCP/NCCP, the Conservancy provides a map that identifies all streams within the

HCP/NCCP's Inventory Area based on stream type and location[11]. According to the Conservancy, this map, rather than field determinations, governs the determinations of stream order[12]. This map indicates that all streams within the project area are located within "agricultural or natural areas". Kirker Creek is identified as a "third or higher order stream" requiring a 75-ft setback, while all other streams within the project area are identified as "first or second order reaches" requiring 25-ft setbacks. HCP/NCCP-required setbacks for streams within the project area are shown in Figure 5.

Project design sited the James Donlon Boulevard Extension to cross drainages in the project area at angles as close to perpendicular as possible, in order to minimize impacts to streams and stream setbacks. Bridges would clear-span Kirker Creek to avoid impacts to stream habitat; however, they would not span Kirker Creek's 75-ft setback, which begins at the top-of-bank and extends outward on either side (Figure 5). The project does not propose bridges over any additional streams or setbacks in the project area.

Because all first and second-order streams in the project area would be channelized in culverts, all impacts to setbacks of these streams are considered permanent with the exception of portions of setbacks that occur in the construction easement. The project would permanently impact a total of 3.63 ac of setbacks along first and second-order streams, and would temporarily impact a total of 0.71 ac of setbacks along these streams. However, the stream setback requirements provided in Conservation Measure 1.7 and Table 6-1 of the HCP/NCCP provide no limitations on the maximum allowable area of impacts or linear footage of impacts to first and second-order streams for covered projects. Thus, the project is in compliance with this requirement for all first and second-order streams.

Because the project bridges will clear-span Kirker Creek, the project would not impact the bed and banks of this intermittent stream. However, project impacts to Kirker Creek's 75-ft setback area include permanent roadway improvements as well as temporary grading, staging, and borrow impacts (Figure 2). Based on project plans, the project would permanently impact 0.69 ac of Kirker Creek's setback area, and would temporarily impact 1.03 ac of this setback area. The stream setback requirements provided in Conservation Measure 1.7 and Table 6-2 of the HCP/NCCP provide a maximum allowable area of impact of 15 percent of a project's setback area. However, because the project is a linear roadway, the project area encompasses all of the setback along Kirker Creek (Figure 5) and it is not feasible for the project to avoid impacts to this setback area. Per Conservation Measure 1.7 of the HCP/NCCP, projects may be granted an exception to the setback requirement if avoidance of the setback is not practicable. If granted an exception, project impacts to more than 15 percent of the Kirker Creek setback would be mitigated by paying one-half of the riparian impact fee (one-half of $58,140 per acre, or $29,070 per acre).

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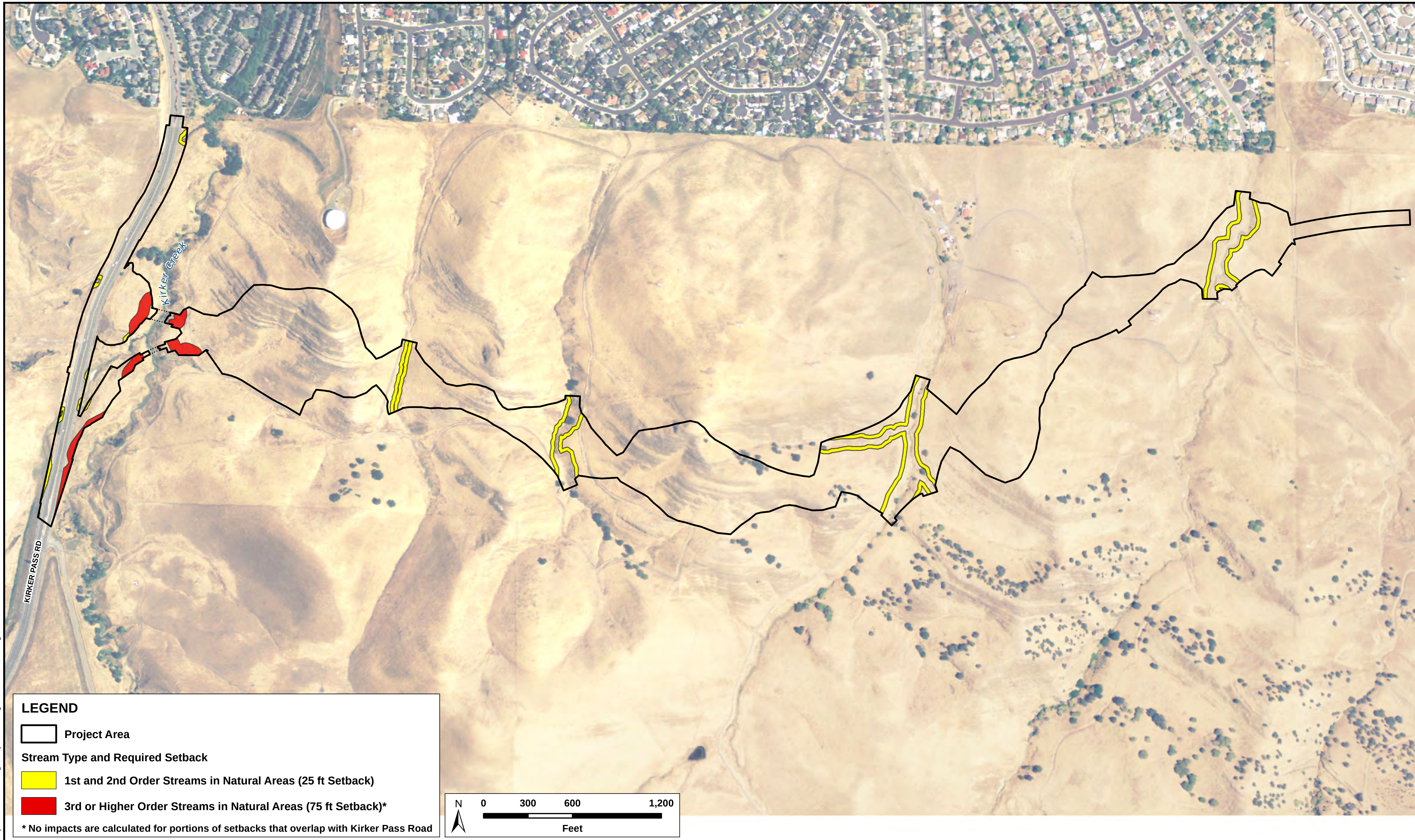
[11] East Contra Costa County Habitat Conservancy. 2008. Map of Streams Illustrating Applicability of the East Contra Costa County HCP/NCCP Stream Setback Provisions. http://www.co.contra-costa.ca.us/depart/cd/water/hcp/Meetings/pdfs/6-18-08/6_map_of_streams_and_setback_provisions.pdf. Accessed 21 May 2012.

[12] John Kopchik, Executive Director, East Contra Costa County Habitat Conservancy. Pers. comm. to S. Rottenborn during a 19 June 2012 site visit.



N:\Projects\2739-01\Planning Survey Nov 2012\Fig 5 Stream Setback Categories.mxd

H. T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS

Figure 5: Stream Setback Categories

James Donlon Boulevard Extension Planning Survey Report (2739-01)
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HCP/NCCP Conservation Measure 2.12. Wetland, Pond, and Stream Avoidance and Minimization

Briefly describe how the project complies with this measure. See page 6-33 of the Final HCP/NCCP for details.

Project construction will necessitate discharge of fill into Waters of the U.S. and Waters of the State. Per Conservation Measure 2.12 on page 6-34 of the HCP/NCCP, because the proposed project would fill less than 3.0 ac of jurisdictional waters, no additional avoidance analysis is needed beyond that in the HCP/NCCP. However, Conservation Measure 1.14 on page 6-28 of the HCP/NCCP indicates that proponents of covered road projects, such as the James Donlon Boulevard Extension, must submit their applications to the CDFG in addition to the Habitat Conservancy.

The proposed project shall implement the measures described in Section 6.4.3 on page 6-33 to 6-35 to avoid and minimize impacts of covered activities on streams, including the following:

- Applicants must follow the requirements in Conservation Measures 1.7 and 1.10 in Section 6.4.3 of the HCP/NCCP.
- All streams to be avoided (i.e., Kirker Creek) will be temporarily staked by a qualified biologist.
- Personnel conducting ground-disturbing activities within or adjacent to wetlands and other waters will be trained in the avoidance and minimization measures and permit requirements by a qualified biologist.
- Vehicles and equipment will be parked in previously disturbed areas or on pavement, and will be refueled at least 200 ft from streams.
- Appropriate erosion-control measures will be used to reduce siltation and runoff.
- Trash will be promptly removed from the project area.

For Projects adjacent to Protected Natural Lands (existing and projected)

Covered activities adjacent to permanently protected natural lands will require a variety of special considerations to address issues associated with characteristics of the urban-wildland interface. These considerations are intended to minimize the impacts of development on the integrity of habitat preserved and protected under the terms of the Plan. Permanently protected natural lands are defined as any of the following (see the latest Preserve System map on the Conservancy web site, www.cocohcp.org).

- *Publicly owned open space with substantial natural land cover types including but not limited to state and regional parks and preserves and public watershed lands (local and urban neighborhood parks are excluded).*
- *Deed-restricted private conservation easements.*
- *HCP/NCCP Preserve System lands.*
- *Potential HCP/NCCP Preserve System lands (see Figure 5-3 in the HCP/NCCP).*

HCP/NCCP Conservation Measure 1.6. Minimize Development Footprint Adjacent to Open Space

Briefly describe how the project complies with this measure. See page 6-14 of the Final HCP/NCCP for details.

This measure does not apply to the proposed project, because the project is not located adjacent to open space.

HCP/NCCP Conservation Measure 1.8. Establish Fuel Management Buffer to Protect Preserves and Property

Briefly describe how the project complies with this measure. See page 6-18 of the Final HCP/NCCP for details.

This measure does not apply to the project, because the project is not adjacent to HCP/NCCP preserves.

HCP/NCCP Conservation Measure 1.9. Incorporate Urban-Wildland Interface Design Elements

Briefly describe how the project complies with this measure. See page 6-20 of the Final HCP/NCCP for details.

This measure does not apply to the project, because the project is not located adjacent to wildland areas.

For Rural Infrastructure Projects

Rural infrastructure projects provide infrastructure that supports urban development within the urban development area. Such projects are divided into three categories: transportation projects, flood protection projects, and utility projects. Most rural road projects covered by the Plan will be led by Contra Costa County. All flood protection projects covered by the Plan will be led by the County Flood Control District. Utility projects will likely be led by the private companies that own the utility lines. A complete discussion of rural infrastructure projects is presented in Section 2.3.2 of the Final HCP/NCCP beginning on page 2-18.

HCP/NCCP Conservation Measure 1.12. Implement Best Management Practices for Rural Road Maintenance

Briefly describe how the project complies with this measure. See page 6-25 of the Final HCP/NCCP for details.

The HCP/NCCP indicates (Section 2.3.2, page 2-18) that the operation and maintenance of covered rural infrastructure projects, such as the James Donlon Boulevard Extension, are covered activities under the HCP/NCCP. As such, Conservation Measure 1.12 applies to the proposed project. To avoid and minimize impacts of introduced sediment and other pollutants on downstream waterways, the proposed project shall implement best management practices as described in Section 6.4.3 on page 6-24 of the HCP/NCCP, including the following:

- Sediment control devices, such as silt fencing, will be installed downslope from soil-disturbing maintenance activities. No erodible materials will be deposited into watercourses in the course of maintenance activities. Brush, soils, or other debris will not be stockpiled within stream channels or on adjacent banks.
- The application of herbicides and pesticides shall occur only when necessary, and in compliance with state and federal regulations.
- Maintenance activities (e.g., right-of-way mowing, brush clearing) will be timed to avoid or minimize adverse effects on active nests or birds, including covered species (e.g., burrowing owls). Mowing equipment will be cleaned before use so they are free of noxious weeds.
- If possible, maintenance or repair of road medians shall improve the ability of wildlife to traverse these structures.

HCP/NCCP Conservation Measure 1.13. Implement Best Management Practices for Flood Control Facility Maintenance

Briefly describe how the project complies with this measure. See page 6-26 of the Final HCP/NCCP for details.

This measure does not apply to the proposed project, as the project does not involve a flood control facility.

HCP/NCCP Conservation Measure 1.14. Design Requirements for Covered Roads outside the Urban Development Area

Briefly describe how the project complies with this measure. See page 6-27 of the Final HCP/NCCP for details.

Table 6-6 of the HCP/NCCP contains the siting, design, and construction requirements that shall be implemented as part of the James Donlon Boulevard Extension, per the requirement of Conservation Measure 1.14. These requirements, and project measures to comply with these requirements, are described below. Details of the requirements are described in the HCP/NCCP on pages 6-29 to 6-33.

Road Conservation Measures

Site in Least Sensitive Locations (R[13]) – The City proposed a revised original alignment and five additional alignments as potential alternatives to the original alignment design, with the goal of minimizing Project impacts on biological resources. These alternatives were analyzed in an alternative alignment analysis[14]. The revised alignment shown on Figure 2 was selected based on this analysis.

Site Equipment Storage away from Sensitive Areas (R) – All equipment storage, fueling, and staging areas will be sited on existing disturbed areas (e.g., farm roads), upland areas that need to be disturbed for grading purposes (and thus will be impacted anyway), or non-native grassland land cover areas. No storage, fueling, or staging will occur in sensitive habitats such as wetlands or streams.

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[13] R = Required
[14] H. T. Harvey & Associates. 2012. James Donlon Boulevard Extension Project Alternative Alignment Assessment. 24 May 2012.

Conduct Project Surveys well in Advance of Design (R) – Planning surveys for the proposed project were conducted in 2007, and a planning survey report was prepared in 2008 analyzing the original alignment design. This alignment was modified based on the results of these surveys, and of additional surveys conducted in 2011 for the alternative alignment analysis.

Wildlife Design Requirements

Design Requirements Superceded by Latest Research (R) – Design requirements to minimize project impacts to wildlife movement would be updated as advances in designs determine new, effective roadway designs to facilitate safe wildlife movement across roads. Advances in designs will be evaluated during the project's wildlife movement study, described below.

Collect Data on Wildlife Movement for at Least 1 year Prior to Design (R) – The applicant has discussed scope of a wildlife movement study with the Habitat Conservancy, USFWS, and CDFG. This is a new road, and the area it traverses lacks obvious corridors by which wildlife would move. In addition, due to the steep topography within and surrounding the project area, locations along the proposed roadway where wildlife undercrossings can be feasibly constructed will be dictated primarily by the existing topography and the design standards and requirements for project grading. As a result, it is difficult to conceive a study that would inform design of the road, and of undercrossings for wildlife. In previous meetings, the Conservancy, City, USFWS, and CDFG determined that the scope and scale of the wildlife movement study would be determined after the design of the project has progressed further.

Use Bridges, Viaducts, or Causeways (O[15]) – As outlined in the project plans (Figure 2) and project description above, the proposed project includes designs for clear-span bridges of Kirker Creek, to minimize impacts on jurisdictional habitats.

Construct Road Undercrossings at Frequent Intervals (P[16]) – The proposed project includes several additional wildlife undercrossings that can be installed in a number of potential areas along the final alignment where the grading footprint is the narrowest, as shown on the Kirker Pass Road/James Donlon Boulevard Extension Four Leg Intersection Configuration Preliminary Profile and Grading plans (15 July 2011) that were prepared for the original alignment. Based on the plans for the previously designed undercrossings, we assume that similar wildlife undercrossings can be installed for the revised alignment in similar or nearby locations.

Install Crossing Facilities at Known Travel Routes (P) – As described above, data would be collected as part of a wildlife movement study to determine the locations of existing wildlife corridors within the project area. However, the area to be traversed lacks obvious corridors by which wildlife would move, and the steep topography and requirements of grading for the roadway restricts potential locations for crossing facilities. Thus, the Conservancy, City, USFWS, and CDFG determined that the scope and scale of the wildlife movement study would be determined after the design of the project has progressed further.

Large Wildlife Crossings Every Mile or Less (P) – At least four large undercrossings 5 to 8 ft in diameter (or the preferred diameter for large wildlife species as determined by the wildlife movement study) would be constructed along the 1.71-mi roadway extension to

[15] O = Optional (measure can be implemented at agency's discretion; if implemented, it will reduce mitigation fee; fee reduction determined case-by-case by Implementing Entity)

[16] P = Possible (required unless data demonstrates measure would not benefit wildlife and CDFG and USFWS agree to omit)

accommodate the movement of medium-to-large mammals. These undercrossings would be distributed such that the minimum distance between them would be less than 1.0 mi.

Small Wildlife Crossings Every 1,000 ft or Less (P) – Small undercrossings 18 to 48 inches in diameter (or the preferred diameter for small wildlife species as determined by the wildlife movement study) would be constructed along the 1.71-mi roadway extension to accommodate the movement of small wildlife species. These undercrossings would be constructed every 1,000 ft or less, or where small wildlife species are most likely to use them.

Minimum Sizing for Culverts (P) – Undercrossings would be the minimum length, height, and width necessary to provide safe passage under the roadway extension. The appropriate minimum sizing for project undercrossings would be determined as part of the wildlife movement study.

Use Grating Over Tunnels/Culverts for Light Penetration (P) – To the extent feasible, wildlife undercrossings would use grating on the inactive part of the road (e.g., along the road shoulder) to allow light and moisture to filtrate into the tunnel.

Fencing Designs to Maximize Crossing Use (P) – Directional fencing will be added along the roadway extension to keep wildlife from moving across the road surface and to direct animals to undercrossings. The fencing design would be informed by the wildlife movement study and customized for the wildlife species expected to use the undercrossings.

Road Median Designs for Wildlife (P) – Road medians would be designed to allow wildlife to cross over or under the median, should animals become trapped on the roadway.

Construction Actions

Best Management Practices (R) – In accordance with the HCP/NCCP, the project will implement the following best management practices:

- No erodible materials will be deposited into streams, and debris material will not be stockpiled within stream channels or on adjacent banks.
- The project will avoid all no-take species.
- The project will comply with the MBTA.
- If temporary stream diversions are necessary, they will utilize sand bags or other approved methods that minimize in-stream effects to wildlife.
- Silt fencing will be installed downslope from construction activities to minimize the transport of sediment off-site.
- Barriers will be constructed to keep wildlife out of the project area, as appropriate.
- On-site monitoring will be conducted throughout construction to ensure that project boundaries, best management practices, and Plan requirements are being properly implemented.
- Dust control will be used regularly in active construction areas, as needed, to minimize the impact of dust on adjacent vegetation and wildlife habitats.

Install Monitoring Boxes (Cameras) (P) – At each construction wildlife undercrossing, sturdy lock-boxes with monitoring cameras shall be installed to monitor wildlife movement. The boxes would be at least 1 ft square, have a removable door, and be pre-wired for electricity. They would be mounted on adjustable pedestals to vary the height of the box.

Post-construction Actions

Control Roadside Vegetation Adjacent to Preserves and Open Space (R) – This measure does not apply to the project, as the project area is not adjacent to HCP/NCCP preserves or open space.

Revegetate Cut/Fill Slopes with Natives (R) – As described in the project description above, areas outside the roadway that would be impacted and/or graded would be revegetated using a native seed mixture.

Monitor Structures for Wildlife Use (P) – All structures constructed for wildlife movement (i.e., undercrossings) would be monitored at regular intervals and repairs made as needed to ensure that the structure is in proper condition.

Because the proposed project would result in new ground disturbance and may create or worsen a wildlife movement barrier, the project shall submit an application to the Habitat Conservancy, CDFG, and USFWS that explains how project siting, design and construction would comply with the terms of this conservation measure according to the requirements and options in Table 6-6 of the HCP/NCCP. In order to receive take coverage under the HCP/NCCP, the CDFG and USFWS must approve the application as consistent with Conservation Measure 1.14 and any other applicable conservation measures in the HCP/NCCP. This additional compliance step is necessary because of the complexity of rural road projects and their expected substantial effects on covered species.

V. Mitigation Measures

Complete and Attach Exhibit 1 (Permanent Impact Fees) and/or Exhibit 2 (Temporary Impact Fees) Fee Calculator(s) for Permanent and Temporary Impacts.

- *Briefly describe the amount of fees to be paid and when.*
- *See Section 9.3.1 of the HCP/NCCP for details. If land is to be dedicated in lieu of fees or if restoration or creation of jurisdictional wetlands or waters is to be performed in lieu of fees, summarize these actions here and attach written evidence that the Conservancy has approved these actions in lieu of fees.*

This planning survey report provides two worksheets, Exhibit 1 and Exhibit 2 (attached), to assist in the calculation of the project's permanent and temporary impact fees. Exhibit 1 calculates the project's development and wetland mitigation fees for permanent impacts, and Exhibit 2 calculates the project's development and wetland mitigation fees for temporary impacts. These calculations are shown in the worksheets and described in detail below.

However, the proposed project is covered as a rural road project under the HCP/NCCP, and its development fee for permanent impacts must be multiplied by a fee multiplier that is assigned by the HCP/NCCP. This "rural road fee" (development fee * fee multiplier) is paid in lieu of the development fee for permanent impacts that are calculated in the Exhibit 1 worksheet. The fee multiplier calculation is not included in the attached worksheets, but is provided below.

Also, as discussed for Conservation Measure 1.7 above, the project is required to pay a setback encroachment fee for impacts to more than 15 percent of the Kirker Creek setback. The calculation of this fee is described below, as it is not included in the attached worksheets. This fee is added to the permanent and temporary impact fees to calculate the total fee.

Permanent Impact Fees

Development Fee. Exhibit 1, attached, calculates permanent impact fees for the proposed project. Based on the project's location in Fee Zone II and the total acreage of permanent impacts to non-developed land cover types (i.e., all land cover types mapped in Figure 3a.1 except for urban, a total of 18.5 ac), the proposed project's development fee for permanent impacts is $391,620.

Rural Road Fee. The proposed project is covered as a rural road project (a subset of HCP/NCCP rural infrastructure projects) under the HCP/NCCP, and is referred to as the Buchanan Bypass Project (the title of the proposed project when the HCP/NCCP was drafted in 2006). The HCP/NCCP requires rural road projects to pay a rural road fee that is calculated by multiplying a project's development fee by a fee multiplier. The HCP/NCCP assigned a fee multiplier of 1.75 to the Buchannan Bypass Project (assuming that optional design measures, provided in Table 6-6 of the HCP/NCCP, shall be implemented). The fee multiplier for the proposed project has not changed since the HCP/NCCP was adopted. Based on the fee multiplier of 1.75, the proposed project's rural road fee is $685,335.

Wetland Mitigation Fee. Exhibit 1, attached, calculates the proposed project's wetland mitigation fee based on permanent impacts to jurisdictional habitats. The proposed project would permanently impact 1.81 ac of streams in the project area. These permanent impacts would occur on 155 linear feet of streams 25 ft wide or less, and on 3265 linear feet of streams greater than 25 ft wide. Based on these impacts, Exhibit 1 calculates the proposed project's wetland mitigation fee as $2,839,621.

Temporary Impact Fees

Development Fee. Exhibit 2, attached, calculates temporary impact fees for the proposed project. Based on the project's location in Fee Zone II, the acreage of temporary impacts to non-developed land cover types (68.0 ac), and the anticipated duration of project construction (3 years), the proposed project's development fee for temporary impacts is $191,929. The years of disturbance used to calculate the temporary development impact fee (4) is equal to the number of years of project grading, plus one year to allow the vegetation to recover.

Rural Road Fee. Per the discussion of rural road fees in Chapter 9 of the HCP/NCCP, rural road fees are charged only for the acreage of land permanently disturbed by a rural road project, and not for temporarily impacted areas.

Wetland Mitigation Fee. Exhibit 2, attached, calculates the project's temporary wetland mitigation fee based on temporary impacts to jurisdictional habitats. The proposed project would temporarily impact 0.15 ac of streams in the project area. These impacts would occur on 34 linear feet of streams 25 ft wide or less, and on 131 linear feet of streams greater than 25 ft wide. Based on these impacts, Exhibit 2 calculates the proposed project's wetland mitigation fee as $9,359.

Setback Encroachment Fee

Exceptions to the HCP/NCCP stream setback requirements may be granted for the proposed project with approval from jurisdictional agencies. Per the requirement in Conservation Measure 1.7, impacts to the setback area along Kirker Creek greater than the maximum allowed (15 percent of the 1.72-ac setback area, or 0.26 ac) would be mitigated by paying a setback encroachment fee, which consists of one-half of the riparian impact fee (one-half of $58,140 per acre, or $29,070 per acre). Thus, the proposed project would pay a fee of $42,442 for impacts to 1.46 ac of stream setbacks, if granted an exception.

Total Fee

Calculation of Total Fee

	Development Fee	Fee Multiplier	Rural Road Fee[a]	Wetland Mitigation Fee	Total
Permanent Impact Fees	$391,620	1.75	$685,335	$2,839,621	$3,524,956
Temporary Impact Fees	$191,929	N/A	N/A	$9,359	$201,288
			Total Rural Road and Wetland Fees		$3,726,244
			Setback Encroachment Fee		$42,442
			Total Fees		**$3,768,686**

[a] The rural road fee is calculated for permanent impacts by multiplying the development fee by the fee multiplier. This fee is added to the wetland mitigation fee to calculate the total fee.

In total, the proposed project's fees to be paid are **$3,768,686**.

Timing of Payment of Fees

Per the requirements outlined in Chapter 9 of the HCP/NCCP, the wetland mitigation and setback encroachment fees shall be paid up front in their entirety and the rural road/development fee shall be paid at the time of development.

Exhibit 1: HCP/NCCP FEE CALCULATOR WORKSHEET

PROJECT APPLICANT INFO:

Project Applicant: City of Pittsburg

Project Name: James Donlon Boulevard Extension

APN (s): 089-050-056, 089-020-011, 089-050-055, 075-060-007, 089-020-009, 089-020-014, 089-020-015

Date: November 8, 2012 Jurisdiction:

DEVELOPMENT FEE (see appropriate ordinance or HCP/NCCP Figure 9-1 to determine Fee Zone)

	Acreage of land to be permanently disturbed (from Table 1)[1] Full Development Fee		Fee per Acre (subject to change on 3/15/13[2])		
Fee Zone 1	0.00	x	$10,584.32	=	$0.00
Fee Zone 2	18.50	x	$21,168.64	=	$391,619.93
Fee Zone 3	0.00	x	$5,292.61	=	$0.00
Fee Zone 4[3]	0.00	x	$15,876.48	=	$0.00
Development Fee Total =					**$391,619.93**

****WETLAND MITIGATION FEE**

	Acreage of wetland		Fee per Acre (subject to change on 3/15/13[2])		
Riparian woodland / scrub	0.00	x	$66,461.82	=	$0.00
Perennial Wetland	0.00	x	$90,947.75	=	$0.00
Seasonal Wetland	0.00	x	$197,053.47	=	$0.00
Alkali Wetland	0.00	x	$186,559.50	=	$0.00
Ponds	0.00	x	$99,109.73	=	$0.00
Aquatic (open water)	1.81	x	$50,137.86	=	$90,749.54
Slough / Channel	0.00	x	$113,101.70	=	$0.00
Streams	**Linear Feet**				
Streams 25 Feet wide or less (Fee is per Linear Foot)	155.00	x	$541.85	=	$83,986.07
Streams greater than 25 feet wide (Fee is per Linear Foot)	3265.00	x	$816.20	=	$2,664,885.82
Wetland Mitigation Fee Total =					**$2,839,621.42**

FEE REDUCTION

Development Fee reduction (authorized by Implementing Entity) for land in lieu of fee	$0.00
Development Fee reduction (up to 33%, but must be approved by Conservancy) for permanent assessments	$0.00
Wetland Mitigation Fee reduction (authorized by Implementing Entity) for wetland restoration/creation performed by applicant	$0.00
Reduction Total =	**$0.00**

CALCULATE FINAL FEE

Development Fee Total	$391,619.93
Wetland Mitigation Fee Total +	$2,839,621.42
Fee Subtotal	$3,231,241.35
Contribution to Recovery +	$0.00
TOTAL AMOUNT TO BE PAID =	**$3,231,241.35**

Notes:

1 City/County Planning Staff will consult the land cover map in the Final HCP/NCCP and will reduce the acreage subject to the Development Fee by the acreage of the subject property that was identified in the Final HCP/NCCP as urban, turf, landfill or aqueduct land cover.

2 The Conservancy is currently conducting the periodic fee audit required by the HCP/NCCP which could result in further adjustment to some or all fees in 2012.

3 "Fee Zone 4" is not shown on Figure 9.1 of the HCP/NCCP but refers to the fee applicable to those few covered acitivities located in northeastern Antioch (see page 9-21 of the HCP).

Template date: March 15, 2012

Exhibit 2: TEMPORARY IMPACT FEE CALCULATOR WORKSHEET

PROJECT APPLICANT INFO:

Project Applicant: City of Pittsburg

Project Name: James Donlon Boulevard Extension

APN (s): 089-050-056, 089-020-011, 089-050-055, 075-060-007, 089-020-009, 089-020-014, 089-020-015

Date: November 8, 2012 Jurisdiction:

TEMPORARY DEVELOPMENT IMPACT FEE (see appropriate ordinance or HCP/NCCP Figure 9-1 to determine Fee Zone)

	Acreage of land to be temporarily disturbed (from Table 1)[1]		Years of Disturbance (2 years is the minimum for ground-disturbing)			Fee per Acre (subject to change on 3/15/13[2])		
Fee Zone 1	0	x		/30	x	$10,584.32	=	$0.00
Fee Zone 2	68.00	x	4	/30	x	$21,168.64	=	$191,929.05
Fee Zone 3	0	x		/30	x	$5,292.61	=	$0.00
Fee Zone 4[3]	0	x		/30	x	$15,876.48	=	$0.00

Temporary Impact Fee Total = $191,929.05

**TEMPORARY WETLAND MITIGATION FEE	Acreage of wetland	Yrs. Of Disturbance (minimum shown)		Fee per Acre (subject to change on 3/15/13[2])		
Riparian woodland / scrub	0.00	5.00	x	$66,461.82	=	$ -
Perennial Wetland	0.000	2.00	x	$90,947.75	=	$ -
Seasonal Wetland	0.00	2.00	x	$197,053.47	=	$ -
Alkali Wetland	0.00	2.00	x	$186,559.50	=	$ -
Ponds	0.00	2.00	x	$99,109.73	=	$ -
Aquatic (open water)	0.15	4.00	x	$50,137.86	=	$ 1,002.76
Slough / Channel	0.00	2.00	x	$113,101.70	=	$ -

Streams

	Linear Feet					
Streams 25 Feet wide or less (Fee is per Linear Foot)	34.00	2.00	x	$541.85	=	$1,228.18
Streams greater than 25 feet wide (Fee is per Linear Foot)	131.00	2.00	x	$816.20	=	$7,128.13

Wetland Mitigation Fee Total = $ 9,359.07

FEE REDUCTION

Development Fee reduction (authorized by Implementing Entity) for land in lieu of fee

Development Fee reduction (up to 33%, but must be approved by Conservancy) for permanent assessments

Wetland Mitigation Fee reduction (authorized by Implementing Entity) for wetland restoration/creation performed by applicant

Reduction Total = $0.00

CALCULATE FINAL TEMPORARY IMPACT FEES

Development Fee Total	$191,929.05
Wetland Mitigation Fee Total +	$9,359.07
Fee Subtotal =	$201,288.11
TOTAL TEMPORARY IMPACT FEES TO BE PAID =	**$201,288.11**

Notes:

1 City/County Planning Staff will consult the land cover map in the Final HCP/NCCP and will reduce the acreage subject to the Development Fee by the acreage of the subject property that was identified in the Final HCP/NCCP as urban, turf, landfill or aqueduct land cover.

2 The Conservancy is currently conducting the periodic fee audit required by the HCP/NCCP which could result in further adjustment to some or all fees in 2012.

3 "Fee Zone 4" is not shown on Figure 9.1 of the HCP/NCCP but refers to the fee applicable to those few covered acitivities located in northeastern Antioch (see page 9-21 of the HCP).

Template date: March 15, 2012