BonTerra PSOMAS

Balancing the Natural and Built Environment

October 20, 2014

Mr. Robert Reitenour
Lowe Enterprises Real Estate Group, Inc.
8001 Irvine Center Drive, Suite 1460
Irvine, California 92618

VIA EMAIL AND MAIL
rreitenour@loweenterprises.com

Subject: Results of Special Status Plant Surveys for the 100-acre El Toro Parcel in Orange County, California

Dear Mr. Reitenour:

This Letter Report presents the findings of special status plant surveys conducted for the 100-acre El Toro Parcel (hereinafter referred to as "the study area") located in the City of Irvine, Orange County, California. The purpose of the surveys was to determine the presence or absence of special status plant species in the study area.

PROJECT LOCATION AND DESCRIPTION

The study area is located on the former El Toro Marine Corps Air Station east of Interstate 5 and State Route (SR) 133, north of Barranca Parkway, and west of Irvine Boulevard (Exhibit 1). It is located on the U.S. Geological Survey's (USGS') El Toro and Tustin 7.5-minute quadrangles at Sections 6, 7, and 8 of Township 6 South, Range 8 West (Exhibit 2). The study area is generally surrounded by commercial development, with some open space and agricultural land to the north and east.

Topography in the study area is relatively flat with elevations ranging from approximately 220 to 280 feet above mean sea level (msl). The following five vegetation types and other areas occur in the study area: ruderal, riparian herb, mulefat scrub, developed/ornamental, and disturbed (Exhibit 3). The northwestern half of the study area is primarily ruderal while the southeastern half contains abandoned buildings with surrounding landscaping; the Second Harvest Food Bank warehouse is located at the southeast end of the study area. Soil types in the study area consist of San Emigdio fine sandy loam (0 to 1 percent slopes) and Sorrento loam (0 to 2 percent slopes) (Exhibit 4). Representative photos are included in Attachment A.

The Project proposes a mixed-used, low-impact development that will maximize the benefit derived from proximity to the Irvine Regional Transportation Center. The proposed El Toro Development Plan will be used to guide future development on the site. The anticipated uses are summarized in Table 1.

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TABLE 1
EL TORO DEVELOPMENT PLAN
PROPOSED USES

Land Use	Development Size
Multi-Use (Office)	1,876,000 square feet
Residential	2,103 dwelling units
Community Commercial (Retail)	220,000 square feet
Hotel	242 rooms
Source: County of Orange El Toro Development Plan.	

General infrastructure will be provided on site to support the Project, including streets; storm drain system improvements (including storm water detention and treatment systems); and utility lines for sewer, domestic water, recycled water, gas, electrical, communication, and closed circuit television services.

The following off-site improvements are required to serve the Project and would be provided as part of future development:

- The on-site storm drainage system will be connected to the existing Caltrans SR-133 drainage culvert at the southwestern corner of the Project site. This connection will require access through the adjacent City of Irvine property and Irvine Ranch Water District (IRWD) property, and potentially the Irvine Company property immediately west of the Project site.
- A connection to an existing Agua Chiñon Channel storm drain lateral drainage pipe, located near the southeast corner of the Project site and along the northern property line of the Southern California Regional Rail Authority railroad right-of-way, will also be provided.
- Connections to utilities within the future alignment of Marine Way will also be made.
- Second Harvest site revisions will be made to accommodate the Project.
- Construction of roadway improvements will be required to support to the Project.

METHODS

Botanical surveys were floristic in nature and consistent with the protocols created by the California Department of Fish and Wildlife (CDFW) (CDFG 2009). Prior to the field surveys, a literature search was conducted to identify special status plant species reported from the vicinity of the study area. Sources reviewed include the USGS El Toro, Laguna Beach, San Juan Capistrano, and Tustin 7.5-minute quadrangles in the California Native Plant Society's (CNPS') Electronic Inventory of Rare and Endangered Vascular Plants of California (CNPS 2014) and the CDFW's California Natural Diversity Database (CNDDB) (CDFW 2014).

Rainfall received in the winter and spring determines the germination of many annual and perennial herb species. According to the National Weather Service, the region (data taken from John Wayne Airport) received 3.55 inches of precipitation between June 1, 2013, and May 31, 2014, well below the average annual precipitation of 13.3 inches (NWS 2014); the region is in the third consecutive year of below average rainfall.

Reference populations were monitored for annual and difficult-to-detect target species to ensure that the surveys were comprehensive. This is especially relevant during periods of unusual rainfall patterns or

below average rainfall. If conditions at a nearby reference population are suitable for germination and growth, then it can be inferred that conditions would also be suitable in the study area. Southern tarplant (*Centromadia parryi* ssp. *australis*) was observed blooming on June 19, 2014, in Seal Beach.

Surveys were conducted by BonTerra Psomas Senior Biologists Allison Rudalevige and Jennifer Pareti on May 13, 2014, and by Ms. Rudalevige and Consulting Botanist David Bramlet on June 10, 2014. The total number of person-hours spent was 8.5 hours. A systematic survey was conducted in all areas of suitable special status plant habitat within the study area. All plant species observed were recorded in field notes. Plant species were identified in the field or collected for later identification. Plants were identified to the taxonomic level necessary to determine whether or not they were special status species. Plants were identified using taxonomic keys, descriptions, and illustrations in Baldwin et al. (2012), Hickman (1993), and Munz (1974). Taxonomy and nomenclature follows Baldwin et al. (2012), Hickman (1993), and current scientific journals for scientific and common names.

Special status plant species, if observed during surveys, would be mapped with a Global Positioning System (GPS) unit. For each special status plant species population observed, data would be collected on the number and phenology of individuals, microsite characteristics such as slope, aspect, soil texture, surrounding habitat, and associated species. Any voucher specimens collected would be deposited in an indexed, regional herbarium.

SURVEY RESULTS

Table 2 identifies the special status plants with potential to occur within the study area and the survey results. No special status species were observed in the study area. A list of all plants observed within the study area during focused surveys can be found in Attachment B.

TABLE 2
SPECIAL STATUS PLANT SPECIES REPORTED
FROM THE STUDY AREA VICINITY

Species	Status			Potential to Occur in the Study Area; Results of Survey
	USFWS	CDFW	CRPR	
Aphanisma blitoides aphanisma	–	–	1B.2	No suitable habitat; not expected to occur and not observed during focused surveys.
Atriplex coulteri Coulter's saltbush	–	–	1B.2	No suitable habitat; not expected to occur and not observed during focused surveys.
Atriplex pacifica south coast saltscale	–	–	1B.2	No suitable habitat; not expected to occur and not observed during focused surveys.
Atriplex parishii Parish's brittlescale	–	–	1B.1	No suitable habitat; not expected to occur and not observed during focused surveys.
Atriplex serenana var. *davidsonii* Davidson's saltscale	–	–	1B.2	No suitable habitat; not expected to occur and not observed during focused surveys.
Brodiaea filifolia thread-leaved brodiaea	FT	SE	1B.1	No suitable habitat; not expected to occur and not observed during focused surveys.
Calochortus catalinae Catalina mariposa lily	–	–	4.2	No suitable habitat; not expected to occur and not observed during focused surveys.

TABLE 2
SPECIAL STATUS PLANT SPECIES REPORTED FROM THE STUDY AREA VICINITY

Species	Status			Potential to Occur in the Study Area; Results of Survey
	USFWS	CDFW	CRPR	
Calochortus weedii var. *intermedius* intermediate mariposa lily	–	–	1B.2	No suitable habitat; not expected to occur and not observed during focused surveys.
Camissoniopsis lewisii Lewis' evening-primrose	–	–	3	No suitable habitat; not expected to occur and not observed during focused surveys.
Centromadia parryi ssp. *australis* southern tarplant	–	–	1B.1	Marginally suitable habitat; not observed during focused surveys.
Chaenactis glabriuscula var. *orcuttiana* Orcutt's pincushion	–	–	1B.1	No suitable habitat; not expected to occur and not observed during focused surveys.
Comarostaphylis diversifolia ssp. *diversifolia* summer holly	–	–	1B.2	No suitable habitat; not expected to occur and not observed during focused surveys.
Convolvulus simulans small-flowered morning-glory	–	–	4.2	No suitable habitat; not expected to occur and not observed during focused surveys.
Dodecahema leptoceras slender-horned spineflower	FE	SE	1B.1	No suitable habitat; not expected to occur and not observed during focused surveys.
Dudleya multicaulis many-stemmed dudleya	–	–	1B.2	No suitable habitat; not expected to occur and not observed during focused surveys.
Dudleya stolonifera Laguna Beach dudleya	FT	ST	1B.1	No suitable habitat; not expected to occur and not observed during focused surveys.
Euphorbia misera cliff spurge	–	–	2B.2	No suitable habitat; not expected to occur and not observed during focused surveys.
Harpagonella palmeri Palmer's grapplinghook	–	–	4.2	No suitable habitat; not expected to occur and not observed during focused surveys.
Hesperocyparis forbesii Tecate cypress	–	–	1B.1	No suitable habitat; not expected to occur and not observed during focused surveys.
Helianthus nuttallii ssp. *parishii* Los Angeles sunflower	–	–	1A	No suitable habitat; not expected to occur and not observed during focused surveys.
Horkelia cuneata var. *puberula* mesa horkelia	–	–	1B.1	No suitable habitat; not expected to occur and not observed during focused surveys.
Isocoma menziesii var. *decumbens* decumbent goldenbush	–	–	1B.2	No suitable habitat; not expected to occur and not observed during focused surveys.
Lasthenia glabrata ssp. *coulteri* Coulter's goldfields	–	–	1B.1	No suitable habitat; not expected to occur and not observed during focused surveys.

TABLE 2
SPECIAL STATUS PLANT SPECIES REPORTED FROM THE STUDY AREA VICINITY

Species	Status			Potential to Occur in the Study Area; Results of Survey
	USFWS	CDFW	CRPR	
Lepidium virginicum var. *robinsonii** Robinson's pepper-grass	–	–	4.3	Marginally suitable habitat; not observed during focused surveys.
Monardella hypoleuca ssp. *intermedia* intermediate monardella	–	–	1B.3	No suitable habitat; not expected to occur and not observed during focused surveys.
Nama stenocarpum mud nama	–	–	2B.2	No suitable habitat; not expected to occur and not observed during focused surveys.
Navarretia prostrata prostrate vernal pool navarretia	–	–	1B.1	No suitable habitat; not expected to occur and not observed during focused surveys.
Nolina cismontana chaparral nolina	–	–	1B.2	No suitable habitat; not expected to occur and not observed during focused surveys.
Pentachaeta aurea ssp. *allenii* Allen's pentachaeta	–	–	1B.1	No suitable habitat; not expected to occur and not observed during focused surveys.
Phacelia ramosissima var. *austrolitoralis** south coast branching phacelia	–	–	3.2	No suitable habitat; not expected to occur and not observed during focused surveys.
Pseudognaphalium leucocephalum white rabbit-tobacco	–	–	2B.2	No suitable habitat; not expected to occur and not observed during focused surveys.
Quercus dumosa Nuttall's scrub oak	–	–	1B.1	No suitable habitat; not expected to occur and not observed during focused surveys.
Romneya coulteri Coulter's matilija poppy			4.2	No suitable habitat; not expected to occur and not observed during focused surveys.
Senecio aphanactis chaparral ragwort	–	–	2B.2	No suitable habitat; not expected to occur and not observed during focused surveys.
Sidalcea neomexicana salt spring checkerbloom	–	–	2B.2	No suitable habitat; not expected to occur and not observed during focused surveys.
Suaeda esteroa estuary seablite	–	–	1B.2	No suitable habitat; not expected to occur and not observed during focused surveys.
Symphyotrichum defoliatum San Bernardino aster	–	–	1B.2	Marginally suitable habitat; not observed during focused surveys.

TABLE 2
SPECIAL STATUS PLANT SPECIES REPORTED FROM THE STUDY AREA VICINITY

Species	Status			Potential to Occur in the Study Area; Results of Survey
	USFWS	CDFW	CRPR	
Verbesina dissita big-leaved crownbeard	FT	ST	1B.1	No suitable habitat; not expected to occur and not observed during focused surveys.

LEGEND:

USFWS: U.S. Fish and Wildlife Service; CDFW: California Department of Fish and Wildlife; CRPR: California Rare Plant Rank.

Federal (USFWS)		State (CDFW)	
FE	Endangered	SE	Endangered
FT	Threatened	ST	Threatened

California Rare Plant Rank (CRPR)
1A Plants Presumed Extirpated in California and Either Rare or Extinct Elsewhere
1B Plants Rare, Threatened, or Endangered Throughout Their Range
2B Plants Rare, Threatened, or Endangered in California But More Common Elsewhere
3 Plants of About Which We Need More Information – A Review List
4 Plants of Limited Distribution – A Watch List

CRPR Threat Rank Extensions
None Plants lacking any threat information
.1 Seriously Endangered in California (over 80% of occurrences threatened; high degree and immediacy of threat)
.2 Fairly Endangered in California (20–80% of occurrences threatened; moderate degree and immediacy of threat)
.3 Not very threatened in California (<20% of occurrences threatened; low degree and immediacy of threat or no current threats known)

* Variety not currently recognized by Baldwin et al. (2012); however, it is still tracked by the CNDDB.

Although reference populations and regional rainfall amounts were monitored to ensure the scientific adequacy of these focused surveys, there is always a minimal potential for false negative survey results as species could possibly be present on a site but may not be detectable at the time of the surveys. Should the Project improvement footprint extend beyond the existing study area boundary, additional surveys may be necessary.

If you have any comments or questions, please call Amber Heredia at (714) 444-9199.

Sincerely,
BonTerra Psomas

Kathleen Brady, AICP
Vice President, Environmental Services

Amber O. Heredia
Senior Project Manager, Natural Resources

Enclosures: Exhibit 1 – Project Location
Exhibit 2 – U.S. Geological Survey 7.5-minute Quadrangle
Exhibit 3 – Vegetation Types and Other Areas
Exhibit 4 – Soil Types
Attachment A – Site Photographs
Attachment B – Plant Compendium

REFERENCES

Baldwin, B.G., D.J. Keil, R. Patterson, T.J. Rosatti, and D.H. Wilken (Eds.). 2012. *The Jepson Manual: Vascular Plants of California* (Second ed.). Berkeley, CA: University of California Press.

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Project Location

Exhibit 1

100-acre El Toro Parcel

N W E S

3,000 1,500 0 3,000 Feet

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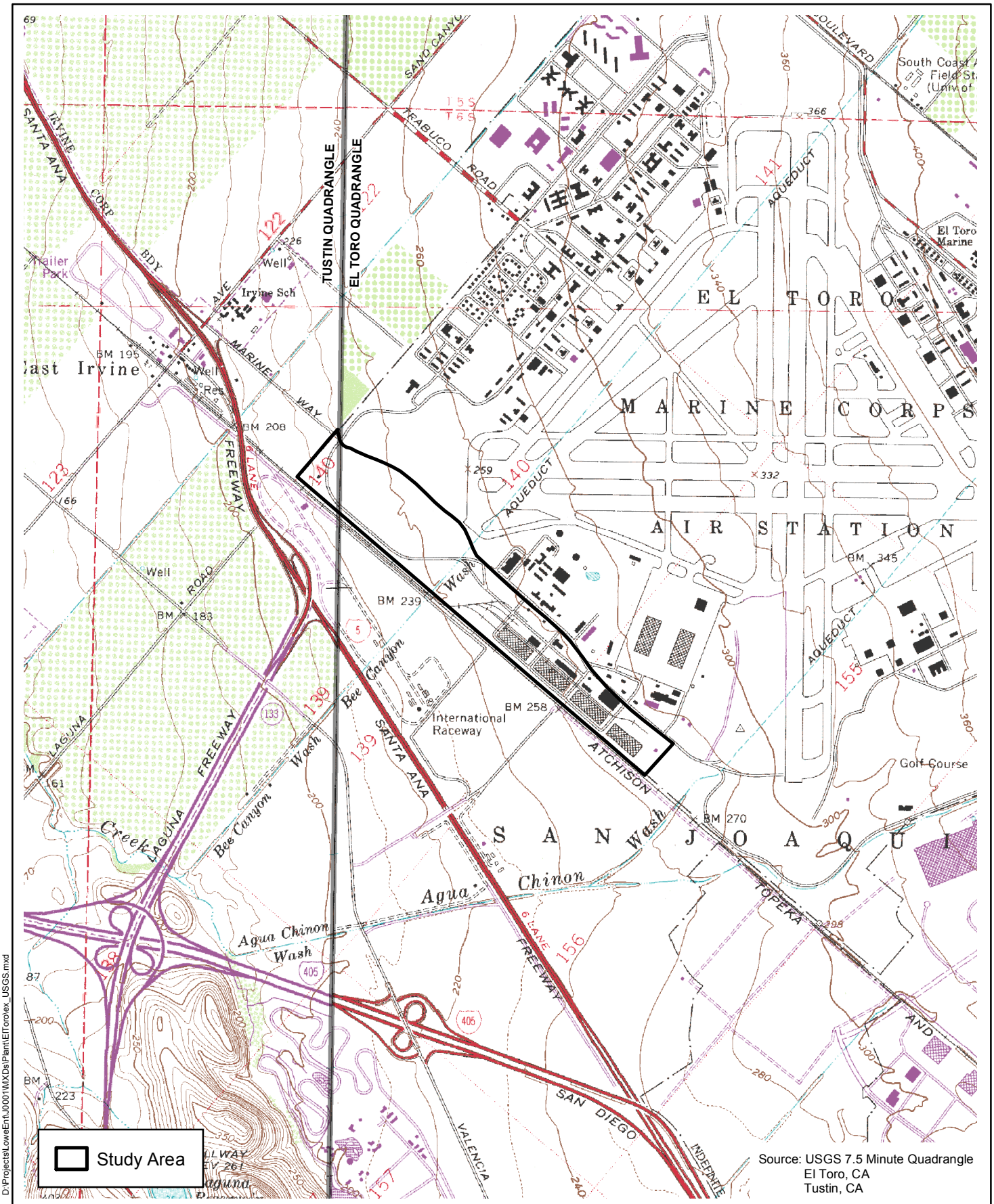

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U.S. Geological Survey 7.5-Minute Quadrangle

Exhibit 2

100-acre El Toro Parcel

N W E S

2,000 1,000 0 2,000 Feet

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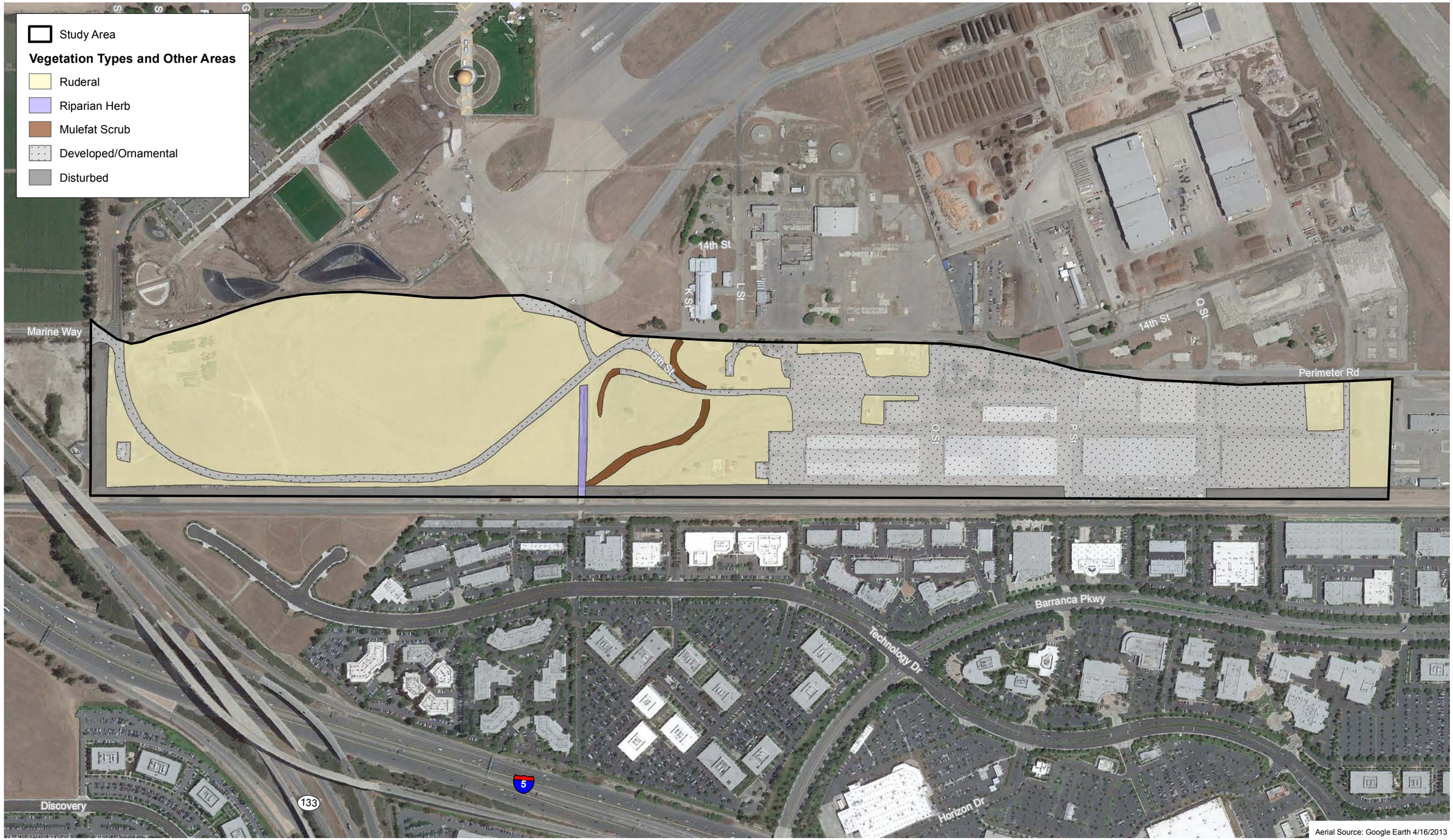

Aerial Source: Google Earth 4/16/2013

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Vegetation Types and Other Areas

Exhibit 3

100-acre El Toro Parcel

500 250 0 500 Feet

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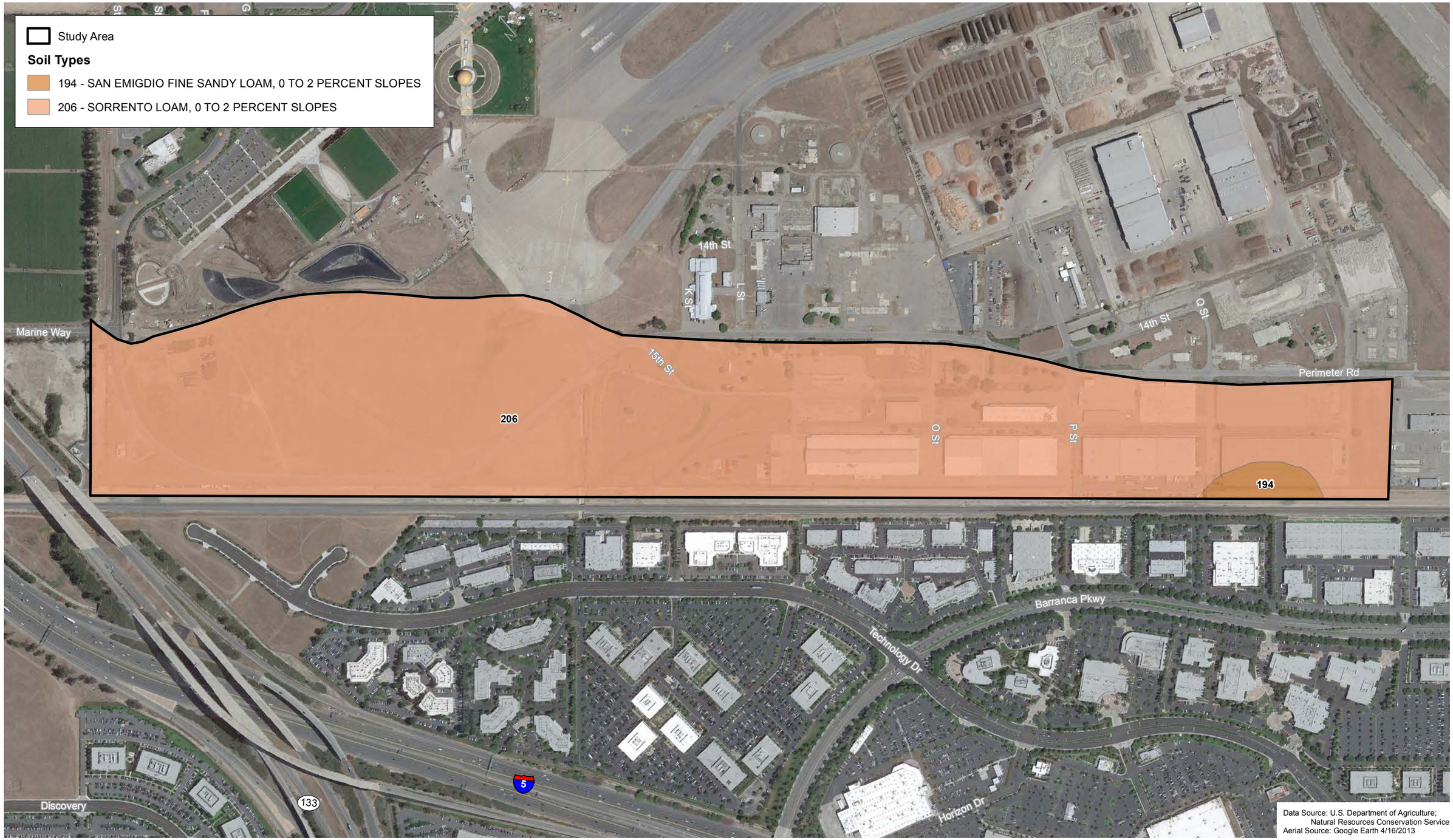

Data Source: U.S. Department of Agriculture; Natural Resources Conservation Service
Aerial Source: Google Earth 4/16/2013

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Soil Types

Exhibit 4

100-acre El Toro Parcel

500 250 0 500 Feet

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ATTACHMENT A

SITE PHOTOGRAPHS

Overview of the western portion of the study area.

Riparian herb vegetation in the center of the study area.

Representative developed/ornamental area in the eastern portion of the study area.

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Site Photographs

Attachment A

100-acre El Toro Parcel

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ATTACHMENT B

PLANT COMPENDIUM

PLANTS OBSERVED WITHIN THE STUDY AREA DURING FOCUSED SURVEYS

Species	
GYMNOSPERMS	
CUPRESSACEAE – CYPRESS FAMILY	
Juniperus sp.*	juniper
PINACEAE – PINE FAMILY	
Pinus sp.*	pine
***ANGIOSPERMAE* – FLOWERING PLANTS**	
EUDICOTS	
ADOXACEAE – MUSKROOT FAMILY	
Sambucus nigra ssp. *caerulea* [*S. mexicana*]	blue elderberry
AIZOACEAE – FIG-MARIGOLD FAMILY	
*Carpobrotus edulis**	freeway iceplant
AMARANTHACEAE – AMARANTH FAMILY	
*Amaranthus albus**	tumbleweed
ANACARDIACEAE – SUMAC FAMILY	
*Schinus molle**	Peruvian pepper tree
APIACEAE – CARROT FAMILY	
*Apium graveolens**	common celery
*Foeniculum vulgare**	sweet fennel
APOCYNACEAE – DOGBANE FAMILY	
*Nerium oleander**	common oleander
ASTERACEAE – SUNFLOWER FAMILY	
Ambrosia acanthicarpa	annual bur-sage
Ambrosia psilostachya	western ragweed
Artemisia californica	California sagebrush
Baccharis pilularis ssp. *consanguinea* [*B. pilularis*]	coyote brush
Baccharis salicifolia ssp. *salicifolia* [*B. salicifolia*]	mule fat
Carduus pycnocephalus ssp. *pycnocephalus**	Italian thistle
*Centaurea melitensis**	tocalote, Malta star-thistle
*Cynara cardunculus**	cardoon, globe artichoke
Ericameria sp.	goldenbush
Erigeron bonariensis [*Conyza b.*]*	flax-leaved horseweed
Erigeron canadensis [*Conyza c.*]	common horseweed
*Gazania linearis**	gazania
Glebionis coronaria [*Chrysanthemum coronarium*]*	garland daisy
*Hedypnois cretica**	Crete weed
Helminthotheca echioides [*Picris e.*]*	bristly ox-tongue
Heterotheca grandiflora	telegraph weed
*Hypochaeris glabra**	smooth cat's-ear
Isocoma menziesii	coastal goldenbush
*Lactuca serriola**	prickly lettuce
Pseudognaphalium californicum [*Gnaphalium c.*]	California everlasting
Pseudognaphalium luteoalbum [*Gnaphalium l.*]*	weedy cudweed
*Pulicaria paludosa**	Spanish sunflower

PLANTS OBSERVED WITHIN THE STUDY AREA DURING FOCUSED SURVEYS

Species	
Sonchus asper ssp. *asper**	prickly sow thistle
*Sonchus oleraceus**	common sow thistle
Xanthium strumarium	cocklebur
BIGNONIACEAE – BIGNONIA FAMILY	
*Jacaranda mimosifolia**	jacaranda
BORAGINACEAE – BORAGE FAMILY	
Amsinckia intermedia [*Amsinckia menziesii* var. *i.*]	common fiddleneck
BRASSICACEAE – MUSTARD FAMILY	
*Brassica nigra**	black mustard
*Capsella bursa-pastoris**	shepherd's purse
*Hirschfeldia incana**	shortpod mustard
Lepidium nitidum	peppergrass, shining peppergrass
*Raphanus sativus**	radish
*Sisymbrium irio**	London rocket
CARYOPHYLLACEAE – PINK FAMILY	
*Spergularia bocconei**	Boccone's sand-spurrey
CHENOPODIACEAE – GOOSEFOOT FAMILY	
*Atriplex semibaccata**	Australian saltbush
*Chenopodium album**	lamb's quarters
*Chenopodium murale**	nettle-leaved goosefoot
*Salsola tragus**	Russian thistle
CONVOLVULACEAE – MORNING-GLORY FAMILY	
*Convolvulus arvensis**	bindweed
CUCURBITACEAE – GOURD FAMILY	
Cucurbita foetidissima	coyote melon, calabazilla
EUPHORBIACEAE – SPURGE FAMILY	
Chamaesyce maculata [*Euphorbia m.*]*	spotted spurge
*Ricinus communis**	castor bean
FABACEAE – LEGUME FAMILY	
Acacia sp.*	acacia
Acmispon americanus [*Lotus purshianus*]	American lotus
*Medicago lupulina**	black medick
*Medicago polymorpha**	California burclover
*Melilotus indicus**	sourclover
FAGACEAE – OAK/BEECH FAMILY	
Quercus agrifolia	coast live oak
GERANIACEAE – GERANIUM FAMILY	
*Erodium botrys**	long-beaked filaree
*Erodium cicutarium**	red-stemmed filaree
LAMIACEAE – MINT FAMILY	
*Rosmarinus officinalis**	rosemary

PLANTS OBSERVED WITHIN THE STUDY AREA DURING FOCUSED SURVEYS

Species	
MALVACEAE – MALLOW FAMILY	
Hibiscus sp.*	hibiscus
Malacothamnus fasciculatus	chaparral bushmallow
*Malva nicaeensis**	bull mallow
*Malva parviflora**	cheeseweed
MYRSINACEAE – MYRSINE FAMILY	
*Anagallis arvensis**	scarlet pimpernel
MYRTACEAE – MYRTLE FAMILY	
Eucalyptus sp.*	gum
*Bougainvillea sp.**	bougainvillea
OLEACEAE – OLIVE FAMILY	
Fraxinus sp.*	ash
*Olea europaea**	olive
PAPAVERACEAE – POPPY FAMILY	
Eschscholzia californica	California poppy
PLANTAGINACEAE – PLANTAIN FAMILY	
Plantago erecta	dwarf plantain, California plantain
*Plantago lanceolata**	English plantain
*Veronica anagallis-aquatica**	water speedwell
POLYGONACEAE – BUCKWHEAT FAMILY	
Eriogonum fasciculatum	California buckwheat
Persicaria lapathifolia [*Polygonum lapathifolium*]	willow weed
Polygonum aviculare ssp. *depressum* [*Polygonum arenastrum*]*	common knotweed
*Rumex crispus**	curly dock
*Rumex pulcher**	fiddle dock
PORTULACACEAE – PURSLANE FAMILY	
*Portulaca oleracea**	common purslane
ROSACEAE – ROSE FAMILY	
Prunus sp.*	flowering plum
SALICACEAE – WILLOW FAMILY	
Salix gooddingii	Goodding's black willow
Salix lasiolepis	arroyo willow
SAPINDACEAE – SOAP BERRY FAMILY	
*Cupaniopsis anacardioides**	carrotwood
*Koelreuteria paniculata**	golenrain tree
SOLANACEAE – NIGHTSHADE FAMILY	
Datura wrightii	jimson weed
*Nicotiana glauca**	tree tobacco
Solanum americanum	white nightshade
Solanum douglasii	Douglas' nightshade
ULMACEAE – ELM FAMILY	
*Ulmus parvifolia**	Chinese elm

PLANTS OBSERVED WITHIN THE STUDY AREA DURING FOCUSED SURVEYS

Species	
VERBENACEAE – VERVAIN FAMILY	
*Lantana sp.**	lantana
ZYGOPHYLLACEAE – CALTROP FAMILY	
*Tribulus terrestris**	puncture vine
***MONOCOTYLEDONES* – MONOCOTS**	
AGAVACEAE – CENTURY PLANT FAMILY	
Yucca sp.*	ornamental yucca
ARECACEAE – PALM FAMILY	
*Phoenix canariensis**	Canary Island palm
*Washingtonia robusta**	Mexican fan palm
CYPERACEAE – SEDGE FAMILY	
Cyperus eragrostis	tall umbrella-sedge
POACEAE – GRASS FAMILY	
*Avena barbata**	slender wild oat
*Bromus diandrus**	ripgut grass
*Bromus hordeaceus**	soft chess
Bromus madritensis ssp. *rubens**	red brome
*Cynodon dactylon**	bermuda grass
Festuca perennis [*Lolium perenne, L. multiflorum*]*	perennial ryegrass
Hordeum murinum var. *leporinum**	hare barley
*Lamarckia aurea**	goldentop
*Pennisetum setaceum**	crimson fountain grass
*Polypogon monspeliensis**	annual beard grass
TYPHACEAE – CATTAIL FAMILY	
Typha latifolia	broad-leaved cattail
* non-native to the region it was found	

October 20, 2014

Mr. Robert Reitenour
Lowe Enterprises Real Estate Group, Inc.
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VIA EMAIL AND MAIL
rreitenour@loweenterprises.com

Subject: Results of a Western Burrowing Owl Survey for the 100-Acre El Toro Parcel in Orange County, California

Dear Mr. Reitenour:

This Letter Report presents the results of focused surveys for the western burrowing owl (*Athene cunicularia hypugaea*) for the 100-acre El Toro Parcel (hereinafter referred to as "the study area") in Orange County, California. The purpose of the survey was to determine the presence or absence of the western burrowing owl during the breeding period (i.e., March 1 to August 31) on or immediately adjacent to the study area. The surveys were completed in accordance with guidelines provided in the California Burrowing Owl Consortium's (CBOC's) 1993 survey protocol for this species, with additional technical guidelines from the California Department of Fish and Wildlife's (CDFW) *Staff Report on Burrowing Owl Mitigation* (CDFW 2012).

PROJECT LOCATION AND DESCRIPTION

The study area is located on the former El Toro Marine Corps Air Station east of Interstate 5 and State Route (SR) 133, north of Barranca Parkway, and west of Irvine Boulevard (Exhibit 1). It is located on the U.S. Geological Survey's El Toro and Tustin 7.5-minute quadrangles at Sections 6, 7, and 8 of Township 6 South, Range 8 West (Exhibit 2). The study area is generally surrounded by commercial development, with some open space and agricultural land to the north and east.

Topography in the study area is relatively flat with elevations ranging from approximately 220 to 280 feet above mean sea level. The following five vegetation types and other areas occur in the study area: ruderal, riparian herb, mulefat scrub, developed/ornamental, and disturbed (Exhibit 3). The northwestern half of the study area is primarily ruderal while the southeastern half contains abandoned buildings with surrounding landscaping; the Second Harvest Food Bank warehouse is located at the southeast end of the study area. Representative photographs are included in Attachment A.

The Project proposes a mixed-used, low-impact development that will maximize the benefit derived from proximity to the Irvine Regional Transportation Center. The proposed El Toro Development Plan will be used to guide future development on the site. The anticipated uses are summarized in Table 1.

TABLE 1
EL TORO DEVELOPMENT PLAN
PROPOSED USES

Land Use	Development Size
Multi-Use (Office)	1,876,000 square feet
Residential	2,103 dwelling units
Community Commercial (Retail)	220,000 square feet
Hotel	242 rooms
Source: County of Orange El Toro Development Plan.	

General infrastructure will be provided on site to support the Project, including streets; storm drain system improvements (including storm water detention and treatment systems); and utility lines for sewer, domestic water, recycled water, gas, electrical, communication, and closed circuit television services.

The following off-site improvements are required to serve the Project and would be provided as part of future development:

- The on-site storm drainage system will be connected to the existing Caltrans SR-133 drainage culvert at the southwestern corner of the Project. This connection will require access through the adjacent City of Irvine property and Irvine Ranch Water District property, and potentially the Irvine Company property immediately west of the Project.
- A connection to an existing Agua Chiñon Channel storm drain lateral drainage pipe, located near the southeast corner of the Project and along the northern property line of the Southern California Regional Rail Authority railroad right-of-way, will also be provided.
- Connections to utilities within the future alignment of Marine Way will also be made.
- Second Harvest site revisions will be made to accommodate the Project.
- Construction of roadway improvements will be required to support to the Project.

BACKGROUND

The western burrowing owl is a grassland specialist distributed throughout western North America, where it occupies open areas with short vegetation and bare ground within shrub, desert, and grassland environments. Burrowing owls use a wide variety of arid and semi-arid environments, with well-drained, level to gently sloping areas characterized by sparse vegetation and bare ground (Haug et al. 1993; Dechant et al. 2003). Burrowing owls in Florida excavate their own burrows, but western burrowing owls depend upon the presence of burrowing mammals whose burrows are used for roosting and nesting (Haug et al. 1993). The presence or absence of colonial mammal burrows (e.g., California ground squirrels [*Spermophilus beecheyi*]) is often a major factor that limits the presence or absence of burrowing owls. Where mammal burrows are scarce, burrowing owls have been found occupying man-made cavities, such as buried and non-functioning drain pipes, stand-pipes, and dry culverts. Burrowing mammals may burrow beneath rocks; debris; or large, heavy objects such as abandoned cars, concrete blocks, or concrete

pads. Large, hard objects at burrow entrances stabilize the entrance from collapse, and may inhibit excavation by predators.

Burrowing owls often use “satellite”, or non-nesting burrows, moving chicks into them from the nesting burrow, presumably to reduce the risk of predation (Desmond and Savidge 1998) and possibly to avoid nest parasites (Dechant et al. 2003). One pair may use up to ten satellite burrows (James and Seabloom 1968). Individual burrowing owls have a moderate to high site fidelity to previously used burrow complexes and often use the same burrows for nesting year after year.

The western burrowing owl was once abundant and widely distributed within coastal Southern California, but it has declined precipitously in Los Angeles, Orange, San Diego, Riverside, and San Bernardino Counties. Although a petition was submitted to list the California population of the western burrowing owl as an Endangered or Threatened species, the CDFW declined to list the burrowing owl as either Threatened or Endangered in consideration of its overall population throughout the state. However, the CDFW considers the burrowing owl to be a California Species of Special Concern (CDFW 2011).

SURVEY METHODOLOGY

The Burrowing Owl Survey Protocol and Mitigation Guidelines, which were prepared by the CBOC (CBOC 1993) and adopted by the CDFW, detail a sequence of surveys based on the findings of each previous level of survey. In addition, the CDFW has also published a document entitled *Staff Report on Burrowing Owl Mitigation* to assist biological consultants and agency personnel in conducting breeding and non-breeding season surveys more effectively (CDFW 2012). The CBOC protocol follows a sequence of surveys that are separated in three phases: (1) habitat assessment; (2) burrow surveys; and (3) crepuscular (dawn or dusk) owl surveys.

The habitat assessment was conducted on April 1, 2014, by BonTerra Psomas Biologists Jonathan Aguayo and Allison Rudalevige. The habitat assessment was conducted by walking the study area (i.e., the project site plus a 500-foot buffer around the project site) to visually inspect it and assess its potential to support burrowing owls.

Mr. Aguayo conducted the burrow survey on April 15, 2014. Mr. Aguayo walked through all suitable habitat in the study area using transects spaced no more than 65 feet apart in order to ensure 100 percent visual coverage of the ground surface. Any natural or man-made cavities large enough to allow a burrowing owl to enter were inspected for evidence of occupation. Evidence of occupation may include prey remains, cast pellets, white-wash, feathers, and observations of owls adjacent to burrows. The burrow survey was conducted at least five days after rain, which could have washed away potential sign.

The CDFW guidelines specify time periods in which the four focused crepuscular surveys should be conducted during the breeding season: at least one survey between February 15 and April 15; and three surveys between April 15 and July 15; with at least one survey after June 15. Surveys should be conducted at least three weeks apart. Mr. Aguayo conducted the focused crepuscular surveys on April 15; May 29; June 20 and July 14, 2014. These surveys were conducted from either one hour before sunrise to two hours after, or from two hours before sunset to one hour after. The surveys were conducted when light conditions were sufficient to observe burrowing owl flights. All potential habitat within the study area was surveyed by walking in straight-line transects to allow 100 percent visual coverage of the study area. The transects were spaced no more than approximately 65 feet apart in order to ensure 100 percent visual coverage of the ground surface. At the start of each transect and, at least, every approximately 300 feet, the study area was scanned for burrowing owls or burrowing owl sign (e.g., pellets, prey remains, whitewash, or decoration) using binoculars. Periodically, binoculars were used to inspect holes; crevices; and potential perches such as rocks, fence posts, and other elevated structures for the presence of owls

while listening for owl calls. All wildlife observed were recorded in field notes (Attachment B). Survey times and weather conditions are summarized in Table 2 below.

TABLE 2
SUMMARY OF BURROWING OWL SURVEYS

Survey Number	Date	Time (Start/End)	Surveyor(s)	Weather Conditions		
				Temperature (°F) (Start/End)	Wind (mph) (Start/End)	Cloud Cover (%) (Start/End)
Habitat Assessment	4/1/2014	9:30 AM – 11:00 AM	Aguayo, Rudalevige	75/81	0–5/0–5	40/Clear
Burrow Survey	4/15/2014	6:00 AM – 7:30 AM	Aguayo	55/71	0–2/0–2	Clear/Clear
Crepuscular Survey 1	4/15/2014	6:00 AM – 7:30 AM	Aguayo	55/71	0–2/0–2	Clear/Clear
Crepuscular Survey 2	5/29/2014	6:00 AM – 7:30 AM	Aguayo	56/65	0–2/0–2	100
Crepuscular Survey 3	6/20/2014	6:00 AM – 7:30 AM	Aguayo	57/75	0–5/0–10	60/20
Crepuscular Survey 4	7/14/2014	6:00 AM – 7:30AM	Aguayo	61/73	0–2/0–5	50/10
°F: Fahrenheit; mph: miles per hour; %: percent						

SURVEY RESULTS

Suitable habitat and potentially suitable burrows for burrowing owl are present in the study area within areas mapped as ruderal and disturbed (Exhibit 3). Vegetation in these areas was low in stature at the time of the surveys and included scattered California ground squirrel burrows. However, no burrowing owls, occupied owl burrows, or other evidence of owl presence (i.e., cast pellets, white-wash, feathers, or prey remains) were observed during the focused surveys.

A complete list of all wildlife species observed during the surveys is provided in Attachment B of this report.

Two species tracked by the California Natural Diversity Database (CNDDB) were incidentally observed on the study area during the surveys. Several California horned lark (*Eremophila alpestris actia*), a CDFW Watch List species, were observed during the April 15, 2014, survey in the western portion of the study area. A Cooper's hawk (*Accipiter cooperii*), a CDFW Watch List species, was observed flying over the study area. Only nesting locations of these species are tracked by the CNDDB. The California horned larks were only observed during one survey and did not show signs of breeding; therefore, no CNDDB form will be submitted for this species. The Cooper's hawk observation was a flyover occurrence; therefore, no CNDDB forms will be submitted for this species.

CONCLUSIONS

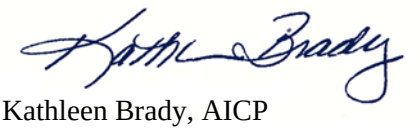
The ruderal and disturbed areas present on the study area provide habitat that could potentially support burrowing owl in the future. Per CDFW guidelines, a pre-construction survey burrowing owl survey is required within 30 days prior to any ground disturbance. Pre-construction surveys for burrowing owl can be conducted year-round.

If an active burrow is observed during pre-construction surveys in the non-breeding season (i.e., September 1–February 28), a qualified Biologist will monitor the burrow location. When the owl is away from the nest, the Biologist will install one-way doors to exclude the owl from the burrow, monitor the burrow for 48 hours, and will then hand-excavate the burrow so the burrowing owl cannot return to the burrow.

If an active burrow is observed during pre-construction surveys in the breeding season (i.e., March 1–August 31), the active burrow will be protected until nesting activity has ended to ensure compliance with Section 3503.5 of the *California Fish and Game Code*. To protect the active burrow, restrictions to construction activities will be required within a buffer area around the active burrow. The extent of the buffer will be determined by a Biologist following CDFW's 2012 guidelines. Any encroachment into the buffer area around the active burrow will only be allowed if the Biologist determines that the proposed activity will not disturb the nest occupants. Construction can proceed when the qualified Biologist has determined that fledglings have left the burrow.

BonTerra Psomas appreciates the opportunity to assist on this project. If you have any comments or questions, please call Amber Heredia at (714) 444-9199.

Sincerely,
BonTerra Psomas



Kathleen Brady, AICP
Vice President, Environmental Services

Amber O. Heredia
Senior Project Manager

Enclosures: Exhibits 1–3
Attachment A – Site Photographs
Attachment B – Wildlife Compendium

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Project Location

Exhibit 1

100-acre El Toro Parcel

N W E S

3,000 1,500 0 3,000 Feet

BonTerra PSOMAS

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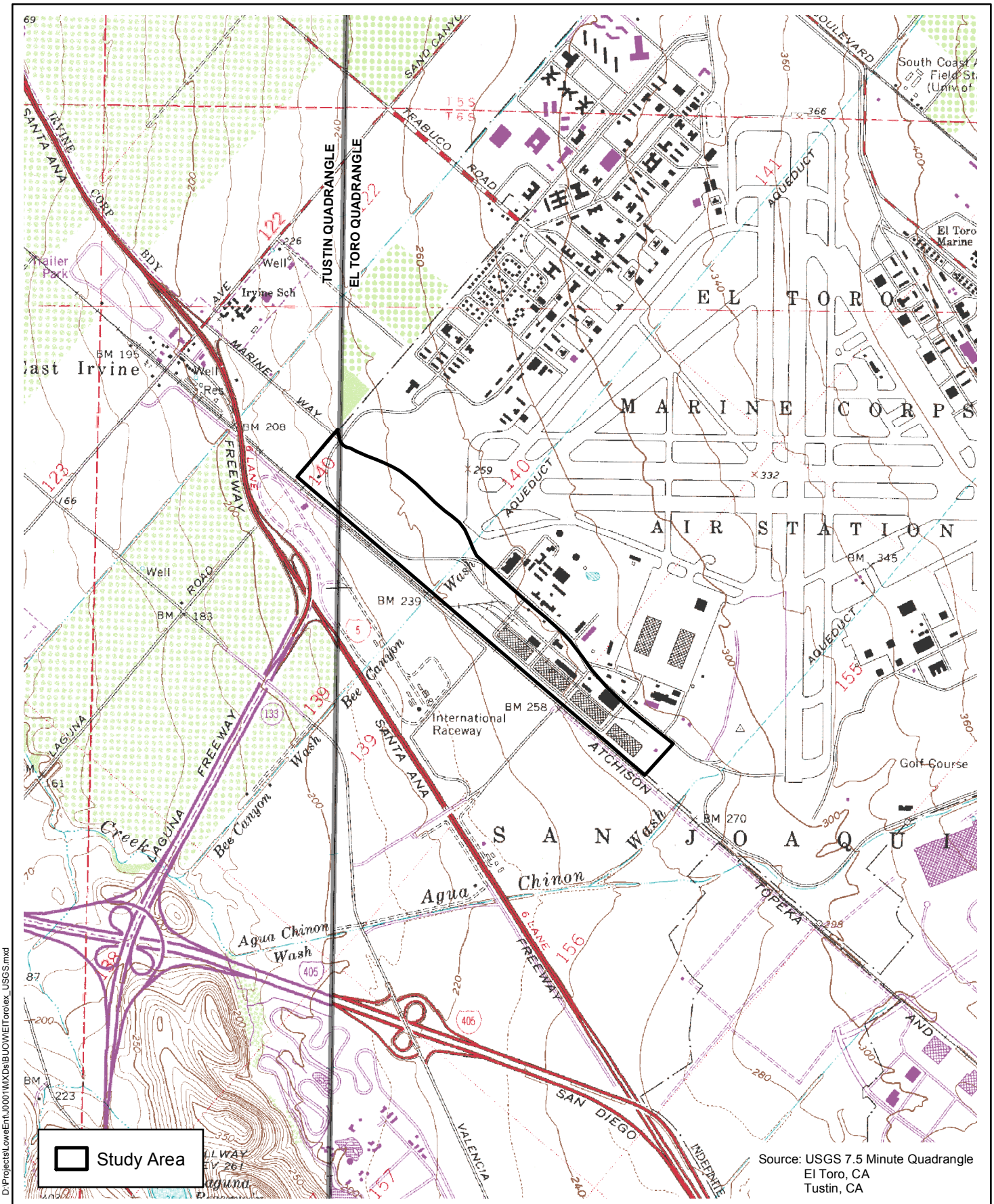

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U.S. Geological Survey 7.5-Minute Quadrangle

Exhibit 2

100-acre El Toro Parcel

N W E S

2,000 1,000 0 2,000 Feet

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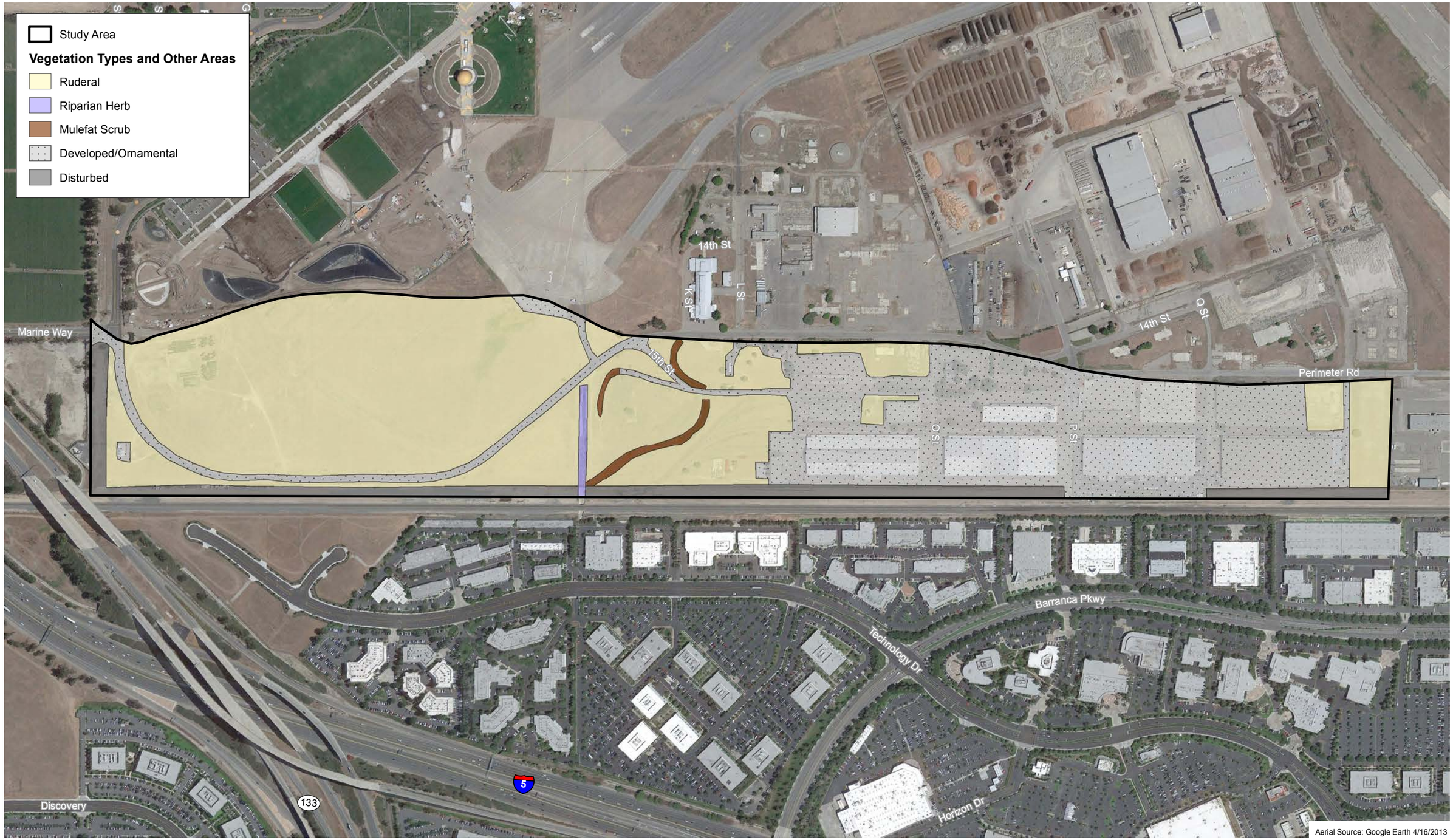

Aerial Source: Google Earth 4/16/2013

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Vegetation Types and Other Areas

Exhibit 3

100-acre El Toro Parcel

500 250 0 500 Feet

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ATTACHMENT A

SITE PHOTOGRAPHS

Representative habitat located in the western portion of the study area.

View of dirt mound containing multiple burrows located in the western portion of the study area. The burrows were occupied by California ground squirrels.

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Site Photographs

Attachment A-1

100-acre El Toro Parcel

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View of potential burrows on a slope in the middle portion of the study area. No owl sign was observed at these burrows.

View of a burrow and ruderal habitat in the western portion of the study area. This burrow was occupied by California ground squirrel.

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Site Photographs

Attachment A-2

100-acre El Toro Parcel

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ATTACHMENT B

WILDLIFE COMPENDIUM

WILDLIFE SPECIES OBSERVED DURING SURVEYS

Species	
REPTILES	
***LEPIDOSAURIA* – LIZARDS AND SNAKES**	
PHRYNOSOMATIDAE – ZEBRA-TAILED, FRINGE-TOED, SPINY, TREE, SIDE-BLOTCHED, AND HORNED LIZARDS	
Sceloporus occidentalis	western fence lizard
BIRDS	
***AVES* – BIRDS**	
CATHARTIDAE – NEW WORLD VULTURES	
Cathartes aura	turkey vulture
ACCIPITRIDAE – HAWKS, KITES, EAGLES, AND ALLIES	
Accipiter cooperii	Cooper's hawk
Buteo jamaicensis	red-tailed hawk
CHARADRIIDAE – PLOVERS	
Charadrius vociferus	killdeer
COLUMBIDAE – PIGEONS AND DOVES	
*Columba livia **	rock pigeon
Zenaida macroura	mourning dove
TYRANNIDAE – TYRANT FLYCATCHERS	
Sayornis saya	Say's phoebe
Tyrannus vociferans	Cassin's kingbird
Tyrannus verticalis	western kingbird
CORVIDAE – CROWS AND JAYS	
Corvus brachyrhynchos	American crow
ALAUDIDAE – LARKS	
Eremophila alpestris	horned lark
HIRUNDINIDAE – SWALLOWS	
Stelgidopteryx serripennis	northern rough-winged swallow
Petrochelidon pyrrhonota	cliff swallow
AEGITHALIDAE – BUSHTITS	
Psaltriparus minimus	bushtit
MIMIDAE – THRASHERS	
Mimus polyglottos	northern mockingbird
ICTERIDAE – BLACKBIRDS	
Agelaius phoeniceus	red-winged blackbird
Sturnella neglecta	western meadowlark
Icterus cucullatus	hooded oriole
FRINGILLIDAE – FINCHES	
Carpodacus mexicanus	house finch
Spinus [*Carduelis*] *psaltria*	lesser goldfinch
Spinus [*Carduelis*] *tristis*	American goldfinch
MAMMALS	
***MAMMALIA* – MAMMALS**	
LEPORIDAE – HARES AND RABBITS	
Sylvilagus audubonii	desert cottontail
SCIURIDAE – SQUIRRELS	
Spermophilus beecheyi	California ground squirrel
* introduced species	

BonTerra PSOMAS

Balancing the Natural and Built Environment

October 26, 2015

Robert Reitenour
Lowe Enterprises Real Estate Group, Inc.
8001 Irvine Center Drive, Suite 1460
Irvine, California 92618

VIA EMAIL AND MAIL
rreitenour@loweenterprises.com

Subject: Results of the Roosting Bat Survey for the El Toro, 100-Acre Parcel Development Plan Project in Orange County, California

Dear Mr. Reitenour:

At the request of Lowe Enterprises Real Estate Group, Inc., BonTerra Psomas conducted a focused roost survey and habitat assessment for bat species (Order: *Chiroptera*) on the El Toro, 100-Acre Parcel (hereinafter referred to as the "the Project site") located in Orange County, California. This Letter Report details the findings of this survey effort.

PROJECT DESCRIPTION AND LOCATION

The Project site is located on the former Marine Corps Air Station (MCAS) El Toro, east of Interstate (I) 5 and State Route (SR) 133, north of Barranca Parkway, and west of Irvine Boulevard (Exhibit 1). It is located on the U.S. Geological Survey's El Toro and Tustin 7.5-minute quadrangles at Sections 6, 7, and 8 of Township 6 South, Range 8 West (Exhibit 2). The Project proposes a mixed-used, low-impact development across the Project site.

ENVIRONMENTAL SETTING

The Project site is bordered by the intersection of Interstate 405 and SR-133 to the west; by commercial development and active railways to the south; by open space and industrial development to the east; and by agriculture and a large regional park to the north. Topography on the Project site is relatively flat with elevations ranging from approximately 220 to 280 feet above mean sea level. The following five vegetation types and other areas occur on the Project site: ruderal, riparian herb, mulefat scrub, developed/ornamental, and disturbed. The ornamental vegetation generally consists of scattered, unmaintained trees and large shrubs, including pine (*Pinus* sp.) and palm (*Washingtonia* sp.) trees. The northwestern portion of the Project site is primarily ruderal, while the central and southeastern portions contain abandoned buildings with associated landscaping; the Second Harvest Food Bank warehouse is located toward the southeastern end of the Project site.

METHODS

Habitat Assessment

The focused habitat assessment involved inspecting the entire Project site for signs of bat roosting. Signs of roosting include audible social calls; observation of individuals roosting; and presence of guano, urine staining, or insect wings. The absence of sign did not preclude potential roosting features from additional survey efforts, but rather aided in focusing survey efforts. The focused habitat assessment was also used to identify suitable roosting features on

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the Project site. Various factors contribute to suitable day-roost sites, including structural opportunities (e.g., crevices); microclimate; thermal conductivity (the roost's capacity to maintain a mostly consistent temperature throughout the day); protection from predators; and proximity to resources such as open water for drinking. Daytime surveys were conducted by BonTerra Psomas Bat Specialist Steve Norton on February 23, 2015, from 1:00 PM to 4:00 PM and on April 21, 2015, from 1:00 PM to 6:00 PM.

Emergence Surveys

The emergence surveys (also known as the exit or evening survey) involved visually monitoring and acoustically recording potential roost sites for evening emergence. The Project site was surveyed four different periods over the year: one visit between November and February (winter), one visit between May and June (late spring), one visit between mid-July and mid-August (mid-summer), and one visit between late-August and early-September (late summer/early fall). Emergence surveys were scheduled to accommodate favorable emergence conditions, which include wind speeds less than ten miles per hour, moderate day and evening temperatures, no rain, and avoidance of a full moon. Two visits were conducted during each period to sufficiently survey the entire Project site. Emergence surveys were conducted on February 25 and 26; April 21 and 22; June 23 and June 24; and August 11 and 12, 2015. The following BonTerra Psomas biologists participated in the emergence surveys: Mr. Norton, Jonathan Aguayo, Josephine Lim, Jason Mintzer, Kristina Garcia, Courtney Rose, and Nathan Moffett. The survey dates, times, and the environmental conditions during the survey are listed in Table 1.

TABLE 1
SURVEY DATES AND CONDITIONS

Survey Period	Survey Start Date	Surveying Biologists	Sunset[a]	Moon Phase (% visible)[a]	Acoustic Recording Hours	Cloud Cover/Wind Speed (mph)[b]	Daytime High/ Nightime Low (°F)[b]
Winter	2/25/2015	Steve Norton, Jonathan Aguayo, Josephine Lim	5:44 PM	Waxing (51%)	5:15 PM–8:44 PM	Partly cloudy/ 3–5	71/57
	2/26/2015	Steve Norton, Josephine Lim	5:45 PM	Waxing (62%)	5:15 PM–8:44 PM	Mostly cloudy/ 4–9	68/52
Spring	4/21/2015	Steve Norton, Josephine Lim, Jason Mintzer	7:26 PM	Waxing (12%)	6:55 PM–10:25 PM	Overcast/3–5	64/59
	4/22/2015	Steve Norton, Jonathan Aguayo, Josephine Lim	7:27 PM	Waxing (20%)	6:55 PM–10:25 PM	Mostly cloudy/3–4	64/57
Early Summer	6/23/2015	Steve Norton, Kristina Garcia, Josephine Lim	8:05 PM	Waxing (44%)	7:35 PM–11:00 PM	Clear/4–8	77/64
	6/24/2015	Steve Norton, Jonathan Aguayo, Kristina Garcia	8:05 PM	Waxing (53%)	7:35 PM–11:00 PM	Partly cloudy/ 5–8	78/64
Late Summer	8/11/2015	Steve Norton, Courtney Rose, Josephine Lim	7:41 PM	Waning (8%)	7:10 PM – 10:40 PM	Partly cloudy/ 3-5	75/64
	8/12/2015	Steve Norton, Josephine Lim, Nathan Moffett	7:41 PM	Waning (3%)	7:10 PM–10:40 PM	Partly cloudy/ 4–6	84/64

mph: miles per hour; °F: degrees Fahrenheit; waxing: increasing the illumination of the moon; waning: decreasing the illumination of the moon.

[a] USNO 2015.

[b] Weather Underground 2015.

The visual monitoring extended from approximately 30 minutes before sunset until the ambient light would no longer support visual monitoring or associated exit counts. Biologists were staged at various locations during each emergence survey to ensure each potentially suitable day-roost feature was sufficiently visible.

The acoustic recording involved deploying multiple ultrasonic acoustic recording devices at locations likely support bat foraging, drinking, or roosting activities. The acoustic recording occurred during each emergence survey, beginning 30 minutes before sunset and each recording extended for approximately 3 hours. Two types of ultrasonic recording units were used: an EchoMeter 3+ unit by Wildlife Acoustics and D500x units by Pettersson. All data were recorded in full spectrum format with varying settings appropriate to filter and minimize the noise recorded at each site (e.g., high-frequency insect calls, wind noise), which could make bat echolocation identification difficult.

All the data collected were processed and analyzed with Sonobat 3.2.1, a bat species identification software, using the "United States West Region" classifier. This version of Sonobat automatically associates bat echolocation call patterns to the likely bat species emitting the call. The software cannot definitively identify the bat species making the call; therefore, the recordings were further analyzed by qualified bat biologists to verify the accuracy of species-level identifications. The subsequent review referenced parameters in *Echolocation Call Characteristics of Western US Bats* (Humboldt State University 2011) and internal call libraries. The sonogram of each recording was visually inspected for echoes, noise, and other distortions that could lead to misidentification. All auto-generated identifications that were not diagnostic of a species or unique group of species were rejected and the erroneous results were not reported. Mr. Norton analyzed all recordings. All wildlife species observed during the surveys or that were confirmed present through recording analysis are listed in the wildlife compendium (see Attachment B).

RESULTS

Habitat Assessment

The Project site contains several features suitable for day-roosting by bats known to roost in crevices, structures, and trees. Suitable features include the mature trees and the abandoned buildings located in the central and southeastern portions of the Project site (Exhibit 3). All mature trees located on the Project site are considered suitable day-roosting habitat for tree-roosting bats. No sign of roosting was observed in any of the trees; however, absence of observable sign does not reliably indicate that tree roosts are empty. The abandoned buildings had abundant materials on their exteriors suitable for crevice- and structure-roosting bats (example photographs of suitable roosting locations are shown in Attachment A). Only one of the buildings, Building 322, contained any sign of bat roosting: limited guano deposits were observed inside the building. No sign of bat roosting was observed inside or outside any of the remaining buildings.

The survey was conducted during the fourth consecutive year of low precipitation in the region. Above-ground water on the Project site was only observed during the February surveys. Standing water was located in a small pool in a small portion of the open drainage ditch that extends along the railroad tracks on southwestern boundary of the Project site (Attachment A). Two large reflection ponds are located in the adjacent Irvine Great Park, which is immediately north of the Project site (Exhibit 3). These ponds are filled with water throughout the year and provide a significant drinking and foraging location for a large colony of Yuma bats (*Myotis yumanensis*). These ponds are not located on the Project site, but are worth noting because of the nearby perennial water source. A wooden deck that overhangs the ponds provides the day-roosting habitat for the Yuma bat present. Additional bat species are also likely to utilize the drinking, foraging, and roosting resources (i.e., trees and crevices) immediately adjacent to the ponds as a result of this perennial water source.

A pair of great horned owls (*Bubo virginianus*) were observed day-roosting near Building 321 and were observed foraging across from the Project site during multiple surveys. Great horned owls are a known predator of bats and their presence may negatively affect bat roosting or foraging suitability on the Project site.

Emergence Surveys

Five bat species were recorded as foraging on the Project site: western mastiff bat (*Eumops perotis californicus*), Brazilian free-tailed bat (*Tadarida brasiliensis*), big brown bat (*Eptesicus fuscus*), Yuma bat, and canyon bat (*Parastrellus hesperus*). Two additional bat species—hoary bat (*Lasiurus cinereus*) and California bat (*Myotis californicus*)—may have also been recorded, but their presence could not be confirmed with acoustic recordings. Hoary bat likely occurred on site, but only a limited number of calls were recorded and no diagnostic call signatures were present. California bat is not common in the region, but the species' calls are almost identical to Yuma bat (known to be present) and acoustic misidentification is common. California bat is not expected to occur. All the bat species recorded, or potentially recorded, during the survey are listed in Table 2.

TABLE 2
BAT SPECIES ACOUSTICALLY RECORDED DURING SURVEY

Scientific Name	Common Name	Protected Status	Day-Roosting Habitat Type	Suitable Day-Roosting Habitat in Project sites?	Potential to Day-Roost in the Project site
Eumops perotis californicus	western mastiff bat	SSC	crevice and structure roosting	Yes	Low
Tadarida brasiliensis	Brazilian free-tailed bat	–	crevice and structure roosting	Yes	Moderate
Eptesicus fuscus	big brown bat	–	crevice and structure roosting	Yes	High
Lasiurus cinereus	hoary bat	–	tree roosting	Yes	Moderate
Myotis californicus[*]	California bat	–	crevice and structure roosting	Yes	Low[*]
Myotis yumanensis	Yuma bat	–	crevice and structure roosting	Yes	High
Parastrellus hesperus	canyon bat	–	crevice roosting	Yes	Moderate

SSC: California Species of Special Concern

[*] The acoustic signature of *Myotis californicus* is almost identical to *Myotis yumanensis* and clear species identification can be difficult. The survey area is within the known range of *Myotis yumanensis,* and this species is likely to occur. The presence of *Myotis californicus* cannot be confirmed without physical identification.

Of the bat species recorded as occurring on the Project site, only one species is special status: western mastiff bat is a California Species of Special Concern. Western mastiff bat is an uncommon resident across California. The species typically emerges just after dark and forages over great distances (i.e., up to 15 miles from the roost) throughout the night. Western mastiff bat has unique roost requirements in that it requires roost exits with a vertical drop of at least ten feet above ground (frequently greater) to achieve flight speeds when emerging. This species forages over open habitat that includes dry desert washes, flood plains, chaparral, coastal sage scrub, oak woodland, open pine forest, grasslands, and agricultural areas (WBWG 2015). Marginally suitable roosting habitat for western mastiff bat occurs in the overhanging structures on Buildings 317, 318, and 360 (see Photo 2 in Attachment A).

Two Yuma bats were observed emerging from their day-roost in Building 322 on multiple survey visits. No other roost emergence was observed during the surveys; however, regular foraging by individual big brown bats were observed along the exterior portions of Building 360 and day-roosting at or near this location is likely.

Very limited bat foraging activity occurred during the survey: both visual observations and acoustic recordings confirmed this limited activity. No bat foraging was observed or recorded during the February survey visits. Two species, big brown bat and Yuma bat, were recorded during three of the four survey periods and both species generally occurred early in the evening, soon after sunset. Brazilian free-tailed bat and canyon bat were only recorded during two of the survey periods and both occurred generally later in the evening. Both western mastiff bat and hoary bat were recorded with one set of calls during only one survey period (western mastiff bat was recorded in June and hoary bat was recorded in April).[1] No bat foraging activity was observed or recorded inside any of the buildings. Areas where foraging and confirmed roosting were observed are shown in Table 3.

TABLE 3
BAT ACTIVITY LOCATIONS DURING SURVEY

General Project site Location	Bat Activity Observed	Roost Emergence Observed
Building 317	western mastiff bat	No
Building 318	None	No
Building 320	None	No
Building 321	Yuma bat	No
Building 322	Brazilian free-tailed bat, Yuma bat, canyon bat	Yes
Building 360	big brown bat	No
Building 496	Brazilian free-tailed bat, Yuma bat, canyon bat	No

The western mastiff bat foraging occurrence was limited to recordings near Building 317. Brazilian free-tailed bat foraging occurrences were recorded near Buildings 321 and 360. As mentioned earlier, big brown bat foraging occurrences were recorded near Building 360. The hoary bat foraging occurrence was near Building 496.[1] California bat was recorded at the same locations and same times as Yuma bat; Yuma bat foraging occurrences were recorded near Buildings 321, 322, and 496. Canyon bat foraging occurrences were recorded near Buildings 322 and 496.

DISCUSSION

The abandoned buildings and mature trees located on the Project site contain suitable roosting habitat for structure-roosting bat species (e.g., western mastiff bat and Yuma bat) and tree-roosting bat species (e.g., hoary bat). Destruction of an occupied day roost has potential to result in loss of the occupants. Yuma bat was confirmed to be day-roosting on the Project site; however, the two individuals observed suggest they are solitary. The species is colonial and there is a substantial colony roosting off site in the wooden deck overhanging the reflection ponds adjacent to the Project site. The loss or displacement of the solitary Yuma bats observed roosting on the Project site would have no significant effect on the local population of the species. Big brown bat was not confirmed to be day-roosting; however, the species is assumed to be roosting on the Project site, and the current occupants are likely solitary. The remaining bat

[1] Hoary bat likely occurred on site, but only a limited number of calls were recorded and no diagnostic call signatures were present.

species that occur on the Project site were first recorded on the Project site between 40 minutes (canyon bat) and two hours (hoary bat) after the sunset, suggesting roost emergence occurred off site and the Project site is located only within their foraging area[2].

All the species recorded have potential to day-roost on the Project site. Demolition or removal of roosting habitat from the Project site could result in the loss of individual bats; however, the loss would not likely affect the sustainability of any bat species' local population.

RECOMMENDATIONS

The Project site contains suitable bat day-roosting habitat and measures are recommended to minimize any potential impacts. The following are recommendations to minimize any potential impacts associated with the proposed Project.

- No trimming or removal of any mature trees on the Project site should occur during the bat maternity season (i.e., March 1 through August 31).
- One month prior to building demolition, a pre-construction survey for roosting bats should be conducted. The survey will consist of one day-survey followed by an evening emergence survey. The survey will determine if any bats are day-roosting in the buildings proposed for removal. If direct impacts to day roosting bats are anticipated, bat-exclusionary devices should be installed prior to construction or demolition activities. The bat exclusionary devices should be designed to allow for bats to exit the roost areas but not re-enter. All designs should be approved by a qualified bat specialist and installation should be monitored by a qualified Bat Specialist.

If you have any questions regarding the content of this letter, please contact Steve Norton or Amber Heredia at (714) 751-7373.

Sincerely,
BonTerra Psomas

Amber O. Heredia
Senior Project Manager

Steve Norton
Senior Project Manager

Attachments: Exhibit 1–3
A – Site Photographs
B – Wildlife Compendium

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[2] Canyon bat usually emerges before sunset and is typically the first bat species to emerge. The remaining bat species generally emerge at or within 30 minutes after sunset. Western mastiff bat was only recorded once approximately one hour after sunset. Brazilian free-tailed bat was generally first recorded an hour and a half after sunset. Hoary bat was recorded two hours after sunset.

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Project Location

Exhibit 1

El Toro, 100-acre Development Plan

N W E S

3,000 1,500 0 3,000 Feet

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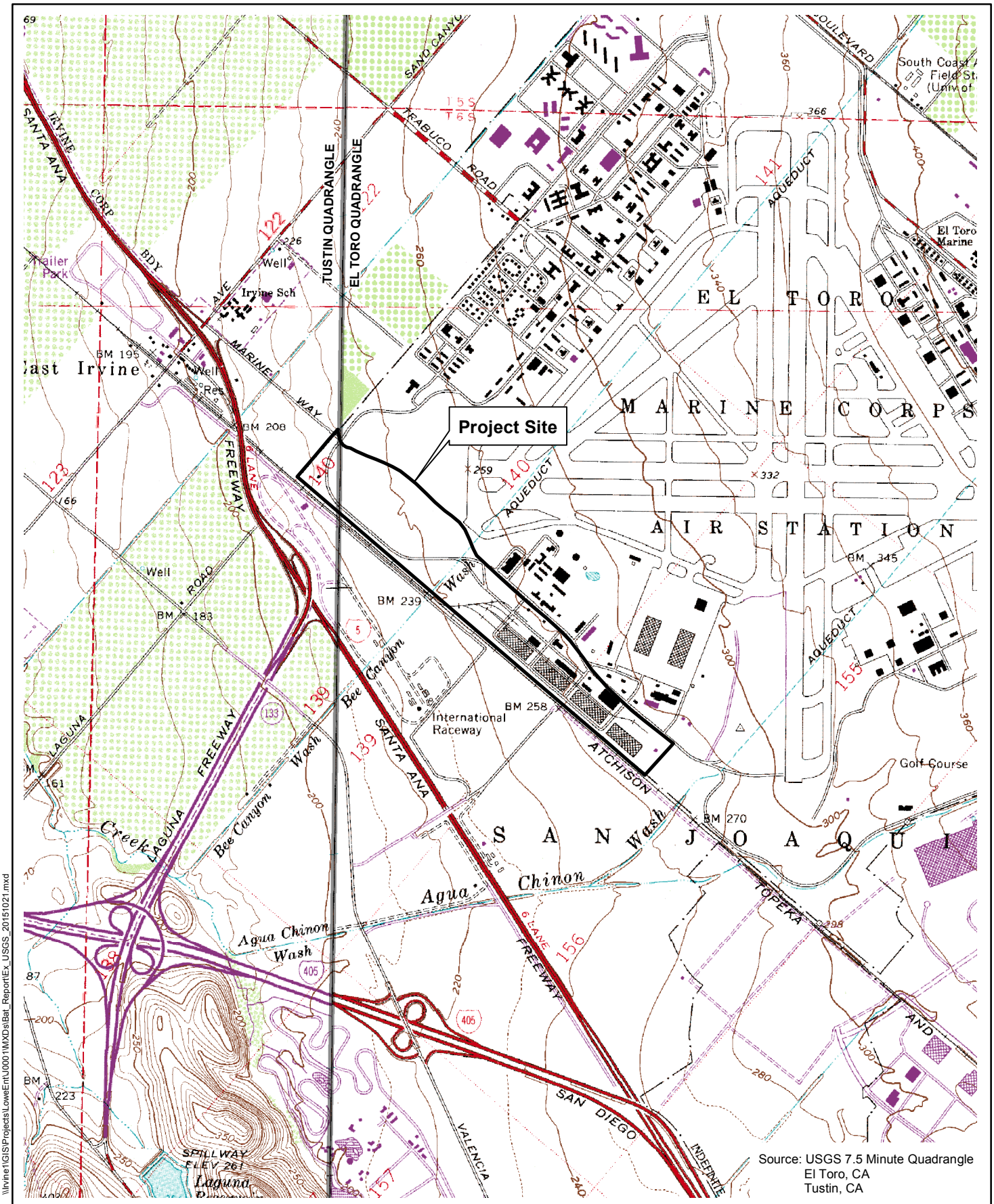

Source: USGS 7.5 Minute Quadrangle
El Toro, CA
Tustin, CA

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USGS 7.5-Minute Topgraphic Quadrangle

Exhibit 2

El Toro, 100-acre Development Plan

N W E S

2,000 1,000 0 2,000 Feet

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Suitable Roost Locations

Exhibit 3

El Toro, 100-acre Development Plan

700 350 0 700 Feet

BonTerra PSOMAS

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ATTACHMENT A

SITE PHOTOGRAPHS

Photo 1: Taken from the central portion of the study area facing east. The mature, ornamental palm trees are suitable roosting habitat for tree-roosting bat species.

Photo 2: Taken along the northeast side of Building 317 facing northwest. The wooden overhang is suitable roosting habitat for crevice- and structure-roosting bat species.

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Site Photographs

Attachment A-1

El Toro, 100-acre Development Plan

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Photo 3: Taken beneath the wooden overhang of Building 321 facing up. Each space between each board is suitable for crevice- and structure-roosting bat species.

Photo 4: Taken in February along the southwestern boundary of the study area facing southeast. The standing water in the photograph was the only water observed in the study area during any of the surveys.

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Site Photographs

Attachment A-2

El Toro, 100-acre Development Plan

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ATTACHMENT B

WILDLIFE COMPENDIUM

ATTACHMENT B
WILDLIFE COMPENDIUM

Scientific Name	Common Name	Special Status
BIRDS		
ACCIPITRIDAE - HAWK FAMILY		
Buteo jamaicensis	red-tailed hawk	
CHARADRIIDAE - PLOVER FAMILY		
Charadrius vociferus	killdeer	
COLUMBIDAE - PIGEON AND DOVE FAMILY		
*Columba livia**	rock pigeon	
STRIGIDAE - TYPICAL OWL FAMILY		
Bubo virginianus	great horned owl	
TYRANNIDAE - TYRANT FLYCATCHER FAMILY		
Sayornis nigricans	black phoebe	
CORVIDAE - JAY AND CROW FAMILY		
Corvus brachyrhynchos	American crow	
MIMIDAE - MOCKINGBIRD AND THRASHER FAMILY		
Mimus polyglottos	northern mockingbird	
STURNIDAE - STARLING FAMILY		
*Sturnus vulgaris**	European starling	
PARULIDAE - WOOD-WARBLER FAMILY		
Setophaga coronata	yellow-rumped warbler	
EMBERIZIDAE - SPARROW FAMILY		
Melozone crissalis	California towhee	
Zonotrichia leucophrys	white-crowned sparrow	
ICTERIDAE - BLACKBIRD, COWBIRD AND ORIOLE FAMILY		
Icterus cucullatus	hooded oriole	
FRINGILLIDAE - FINCH FAMILY		
Haemorhous mexicanus	house finch	
Spinus psaltria	lesser goldfinch	
MAMMALS		
DIDELPHIDAE - AMERICAN OPPOSSUM FAMILY		
Didelphia virginiana	Virginia opossum	
LEPORIDAE - HARE AND RABBIT FAMILY		
Sylvilagus audubonii	desert cottontail	
MOLOSSIDAE - MOLOSSID BAT FAMILY		
Eumops perotis californicus	western mastiff bat	SSC
Tadarida brasiliensis	Brazilian free-tailed bat	
VESPERTILIONIDAE - VESPERTILIONID BAT FAMILY		
Eptesicus fuscus	big brown bat	
Lasiurus cinereus	hoary bat	
Parastrellus hesperus	canyon bat	
Myotis yumanensis	Yuma bat	
MEPHITIDAE - SKUNK FAMILY		
Spilogale gracilis	western spotted skunk	

* = Non-native species
SSC = Species of Special Concern

Jurisdictional Delineation Report

For the El Toro, 100-Acre Parcel Development Plan in Orange County, California

Prepared for

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December 2015

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EXECUTIVE SUMMARY

The purpose of this report is to provide baseline data concerning the type and extent of jurisdictional resources for the El Toro, 100-Acre Parcel Development Plan project (hereinafter referred to as "the Project"). Jurisdictional resources considered for this report include wetlands and non-wetland "waters of the U.S." regulated by the U.S. Army Corps of Engineers (USACE); "waters of the State" regulated by the Santa Ana Regional Water Quality Control Board (RWQCB); and the bed, bank, and channel of all lakes, rivers, and/or streams (and associated riparian vegetation), as regulated by the California Department of Fish and Wildlife (CDFW).

The jurisdictional delineation work was performed by BonTerra Psomas Senior Biologists Allison Rudalevige and Jennifer Pareti on March 24, 2015. The study area for the Project is shown in the City of Irvine on the U.S. Geological Survey's (USGS') El Toro and Tustin 7.5-minute quadrangle maps.

Wetland features were identified based on the USACE's three-parameter approach in which wetlands are defined by the presence of hydrophytic vegetation, hydric soils, and presence of wetland hydrology indicators. The limits of non-wetland "waters of the U.S." were identified by the presence of an ordinary high water mark (OHWM). The limits of CDFW jurisdictional waters were identified as the top of bank or the outer drip line of riparian vegetation.

Based on the results of the jurisdictional delineation field work, it was determined that the total jurisdictional resources in the study area are as follows:

- **USACE Jurisdiction.** 0.004 acre of non-wetland "waters of the U.S.".
- **RWQCB Jurisdiction.** 0.721 acre (0.004 acre of non-wetland "waters of the U.S." and 0.717 acre of isolated waters).
- **CDFW Jurisdiction.** 1.801 acres.

1.0 INTRODUCTION

This Jurisdictional Delineation Report (report) was prepared for Lowe Enterprises Real Estate Group, Inc. to provide baseline data concerning the type and extent of resources under the jurisdiction of the U.S. Army Corps of Engineers (USACE), the California Department of Fish and Wildlife (CDFW), and the Regional Water Quality Control Board (RWQCB) for the El Toro, 100-Acre Parcel Development Plan Project (hereinafter referred to as the "Project"). This report is based on the jurisdictional delineation survey performed on March 24, 2015.

1.1 PROJECT LOCATION AND DESCRIPTION

The study area for the Project is located on the former El Toro Marine Corps Air Station east of Interstate (I) 5 and State Route (SR) 133, north of Barranca Parkway, and west of Irvine Boulevard (Exhibit 1). It is shown on the U.S. Geological Survey's (USGS') El Toro and Tustin 7.5-minute quadrangles at Sections 6, 7, and 8 of Township 6 South, Range 8 West (Exhibit 2). It is within the 154-square-mile Newport Bay Watershed (Hydrologic Unit Code 18070204). The northwestern half of the study area is primarily ruderal while the southeastern half contains abandoned buildings with surrounding landscaping; the Second Harvest Food Bank Warehouse is located at the southeast end of the study area. The study area is generally surrounded by commercial development with some open space and agricultural land to the north and east.

The Project proposes a mixed-used, low-impact development that will maximize the benefit derived from proximity to the Irvine Station. The proposed *El Toro, 100-Acre Parcel Development Plan* will be used to guide future development on the site. The anticipated uses are summarized in Table 1.

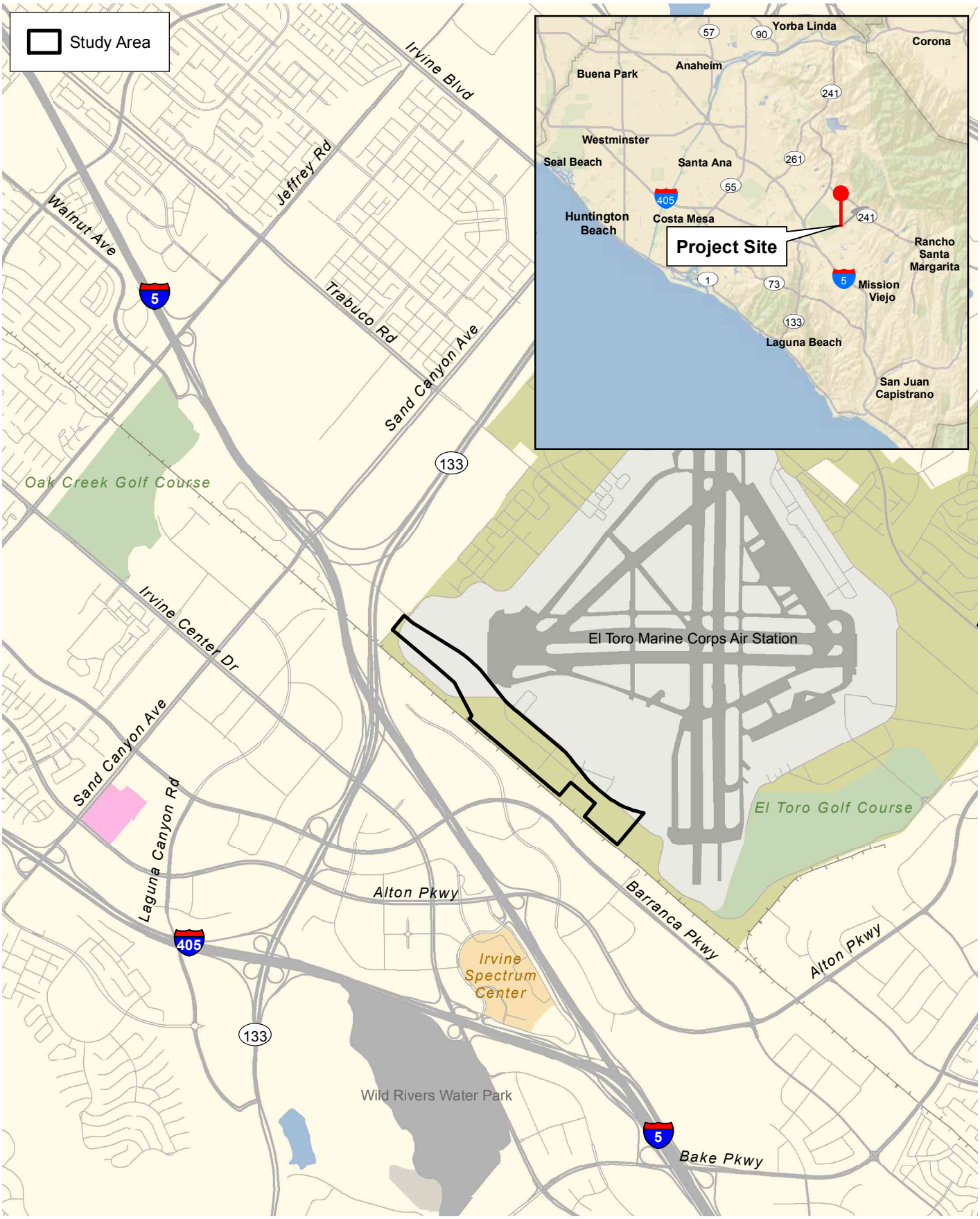
TABLE 1
EL TORO DEVELOPMENT PLAN PROPOSED USES

Land Use	Development Size
Multi-Use (Office)	1,876,000 square feet
Residential	2,103 dwelling units
Community Commercial (Retail)	220,000 square feet
Hotel	242 rooms
Source: KTGY 2015	

General infrastructure will be provided on site to support the Project, including streets; storm drain system improvements (including storm water detention and treatment systems); and utility lines for sewer, domestic water, recycled water, gas, electrical, communication, and closed circuit television services.

The following off-site improvements are required to serve the Project and would be provided as part of future development:

- The on-site storm drainage system will be connected to the existing California Department of Transportation (Caltrans) SR-133 drainage culvert at the southwestern corner of the study area. This connection will require access through the adjacent City of Irvine property and Irvine Ranch Water District (IRWD) property, and potentially the Irvine Company property immediately west of the study area.
- A connection to an existing Agua Chiñon Channel storm drain lateral drainage pipe (located near the southeast corner of the study area and along the northern property line



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Project Location

Exhibit 1

100-acre El Toro Parcel

N W E S

3,000 1,500 0 3,000

Feet

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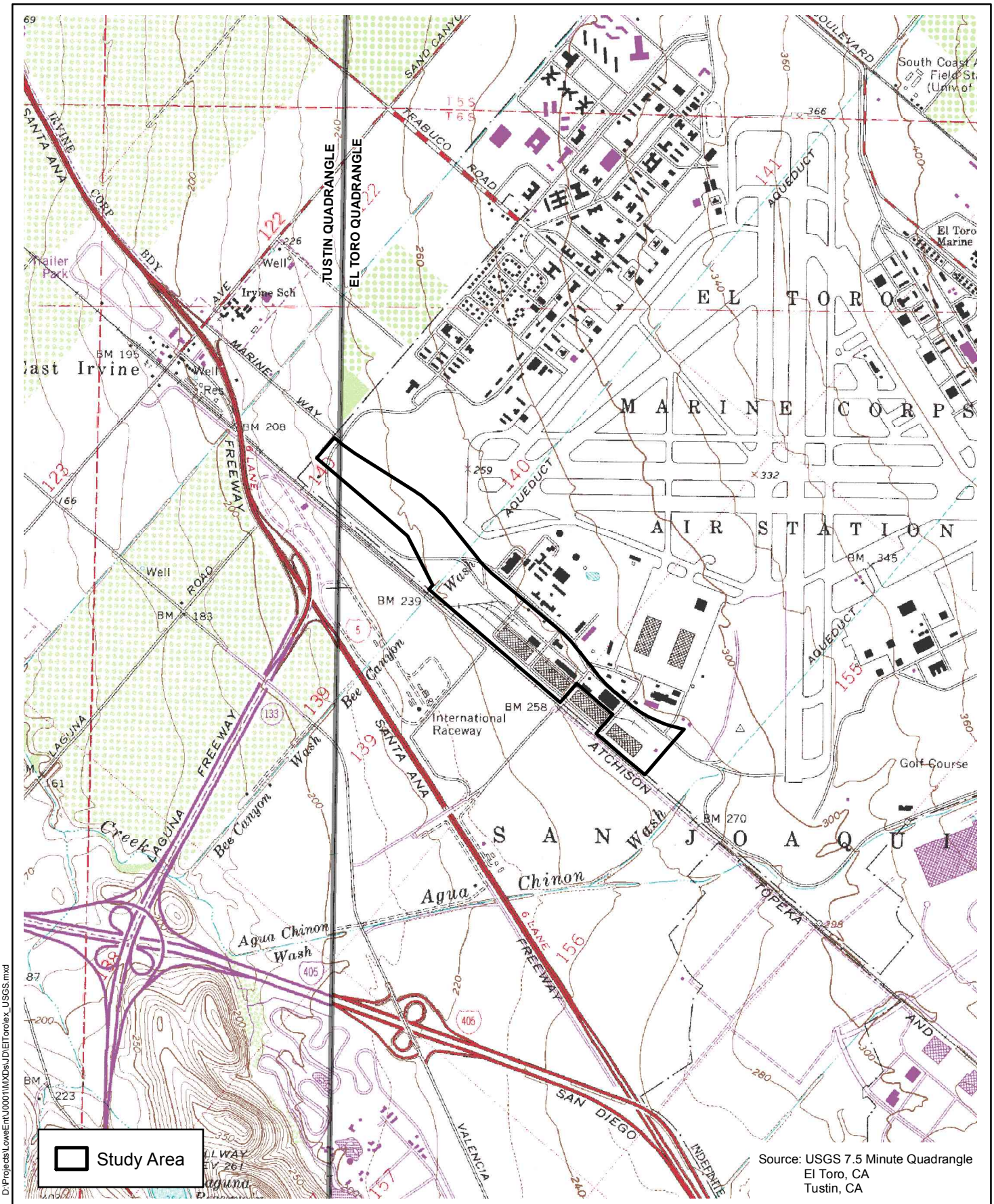

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U.S. Geological Survey 7.5-Minute Quadrangle

Exhibit 2

100-acre El Toro Parcel

N W E S

2,000 1,000 0 2,000 Feet

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of the Southern California Regional Rail Authority railroad right-of-way) will also be provided.

- Connections to utilities within the future alignment of Marine Way will also be made.
- Revisions to the Second Harvest Food Bank Warehouse site will be made to accommodate the Project.
- Construction of roadway improvements will be required to support to the Project.

1.2 REGULATORY AUTHORITY

This section summarizes the federal and State agencies' regulatory jurisdiction over activities that have a potential to impact jurisdictional resources. A detailed explanation of each agency's regulatory authority is provided in Attachment A.

1.2.1 U.S. Army Corps of Engineers

The USACE Regulatory Branch regulates activities that discharge dredged or fill materials into "waters of the U.S." under Section 404 of the Federal Clean Water Act (CWA) and Section 10 of the Rivers and Harbors Act. Their authority applies to all "waters of the U.S." where the material (1) replaces any portion of a "waters of the U.S." with dry land or (2) changes the bottom elevation of any portion of any "waters of the U.S.". Activities that result in fill or dredge of "waters of the U.S." require a permit from the USACE.

1.2.2 Regional Water Quality Control Board

The State Water Resources Control Board (SWRCB), in conjunction with the nine RWQCBs, is the primary agency responsible for protecting water quality in California through the regulation of discharges to surface waters under the CWA and the California Porter-Cologne Water Quality Control Act (Porter-Cologne Act). The SWRCB's and RWQCB's jurisdictions extend to all "waters of the State", which includes all "waters of the U.S.", including wetlands and isolated waters.

1.2.3 California Department of Fish and Wildlife

The CDFW regulates activities that may affect rivers, streams, and lakes pursuant to *California Fish and Game Code* (§§1600–1616). According to Section 1602 of the *California Fish and Game Code*, the CDFW has jurisdictional authority over any work that will (1) substantially divert or obstruct the natural flow of any river, stream, or lake; (2) substantially change or use any material from the bed, channel, or bank of any river, stream, or lake; or (3) deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake.

2.0 METHODS

Literature reviewed for the preparation of the delineation is outlined in Section 2.1, the field delineation is outlined in Section 2.2, the three-parameter approach used to identify USACE wetlands is summarized in Section 2.3, and the California Rapid Assessment Method (CRAM) is outlined in Section 2.4.

2.1 LITERATURE

Prior to conducting the delineation and during the course of preparing this report, BonTerra Psomas reviewed the following documents to identify areas that may fall under agency jurisdiction: the USGS' El Toro and Tustin 7.5-minute quadrangle maps; color aerial photography provided by Google Earth; the Web Soil Survey; the National Hydric Soils List (USDA NRCS 2014); the National Wetlands Inventory's Wetland Mapper (USFWS 2015); and the Regional Water Quality Control Plan for Santa Ana (RWQCB 1995). A description of this literature is provided below.

USGS Topographic Quadrangle. USGS quadrangle maps show geological formations and their characteristics; they describe the physical settings of an area through topographic contour lines and other major surface features. These features include lakes, streams, rivers, buildings, roadways, landmarks, and other features that may fall under the jurisdiction of one or more regulatory agencies. In addition, the USGS maps provide topographic information that is useful in determining elevations, latitude and longitude, and Universal Transverse Mercator Grid coordinates for a project site.

Topography in the study area is relatively flat, with elevations ranging from approximately 220 to 270 feet above mean sea level (msl). Bee Canyon Wash, a blueline stream, is shown on the USGS El Toro 7.5-minute quadrangle bisecting the study area.

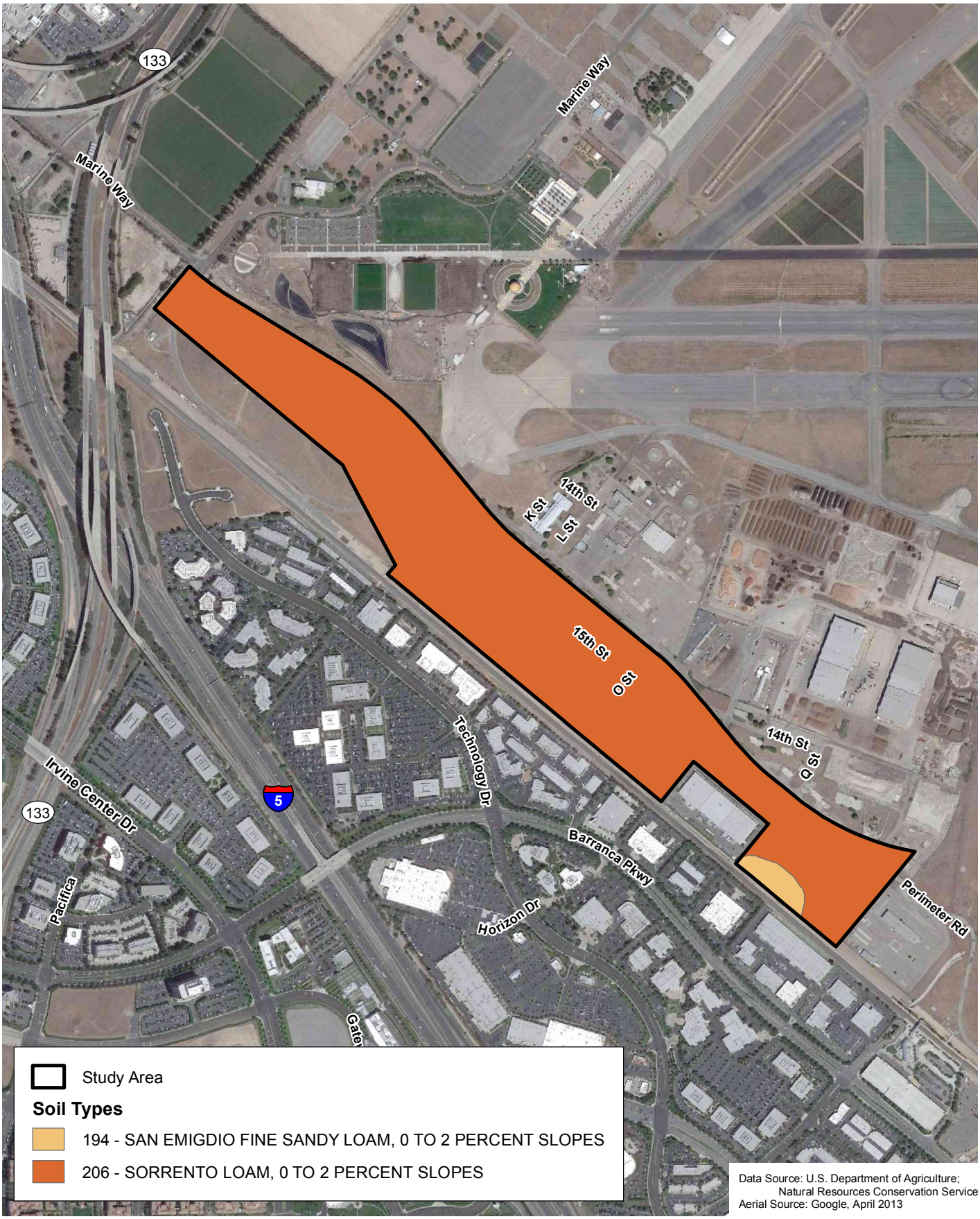
Color Aerial Photography. BonTerra Psomas reviewed an existing color aerial photograph prior to conducting the field delineation to identify the extent of any drainages and riparian vegetation occurring in the study area.

Bee Canyon Wash is visible on existing aerial imagery (Google Earth; April 23, 2014) as a channelized drainage with aboveground flow for a portion of its length in the study area. It appears to be partially concrete-lined with culverts at either end. A second (unlined and channelized) drainage feature is located to the southeast and appears to convey flow to Bee Canyon Wash.

U.S. Department of Agriculture, Natural Resources Conservation Service. The presence of hydric soils is one of the chief indicators of jurisdictional wetlands. BonTerra Psomas reviewed U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) soil data for the study area.

The following soil types have been mapped in the study area: San Emigdio fine sandy loam (0 to 1 percent slopes) and Sorrento loam (0 to 2 percent slopes) (Exhibit 3). Neither of these soils are listed as "hydric" on the National Hydric Soils List for the soil survey area in which they occur (USDA NRCS 2014). A brief description of the soil mapped in the study area is provided in Attachment B of this report.

U.S. Fish and Wildlife Service, National Wetlands Inventory: The Wetlands Mapper shows wetland resources available from the Wetlands Spatial Data Layer of the National Spatial Data Infrastructure. This resource provides the classification of known wetlands following the *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al. 1979).



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Soil Types

Exhibit 3

100-acre El Toro Parcel

N W E S

1,000 500 0 1,000 Feet

BonTerra PSOMAS

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This classification system is arranged in a hierarchy of (1) Systems that share the influence of similar hydrologic, geomorphologic, chemical, or biological factors (i.e., Marine, Estuarine, Riverine, Lacustrine, and Palustrine); (2) Subsystems (i.e., Subtidal and Intertidal; Tidal, Lower Perennial, Upper Perennial, and Intermittent; or Littoral and Limnetic); (3) Classes, which are based on substrate material and flooding regime or on vegetative life forms; (4) Subclasses; and (5) Dominance Types, which are named for the dominant plant or wildlife forms. In addition, there are modifying terms applied to Classes or Subclasses.

Resources in the study area are mapped as Riverine, Intermittent, Streambed, Seasonally Flooded, Excavated (R4SBCx) (Exhibit 4). A complete description of this mapped resource is provided in Attachment B.

Regional Water Quality Control Plans: The study area is located in RWQCB Region 8, the Santa Ana Region. The SWRCB and the RWQCB have adopted a Water Quality Control Plan (or "Basin Plan") for this region. The Basin Plan contains goals and policies, descriptions of conditions, and proposed solutions to surface and groundwater issues. The Basin Plan also establishes water quality standards for surface and groundwater resources and includes beneficial uses and levels of water quality that must be met and maintained to protect these uses. These water quality standards are implemented through various regulatory permits pursuant to the Clean Water Act (CWA), specifically Section 401 for Water Quality Certifications and Section 402 for Report of Waste Discharge permits.

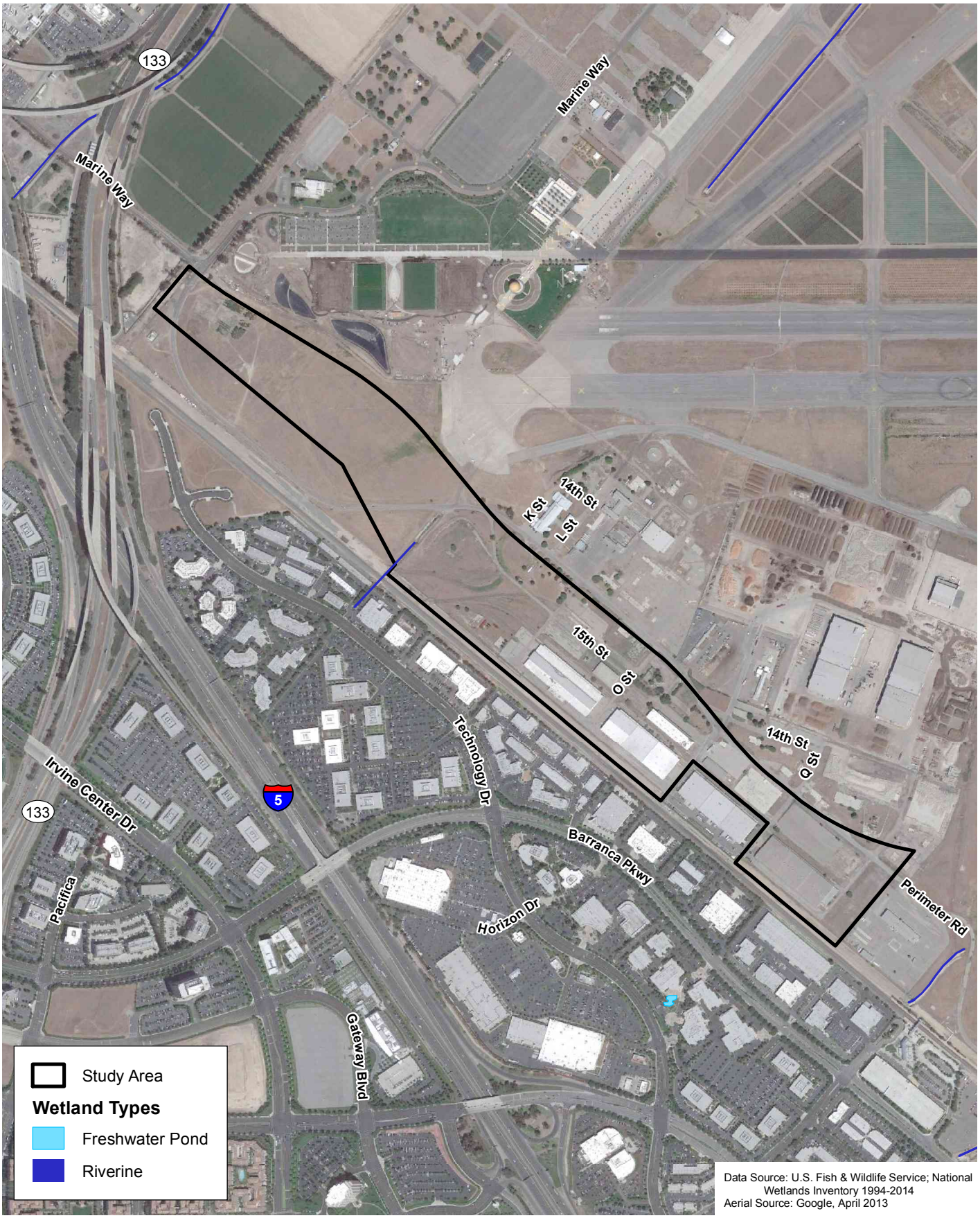
The Santa Ana Basin Plan indicates that the study area is located in the Santa Ana River Hydrologic Unit, the Lower Santa Ana River Hydrologic Area, and the East Coastal Plain Subarea (HSA). Table 4-1 of the Basin Plan indicates that numeric objectives have not been established for this HSA and that only narrative objectives would apply (RWQCB 1995).

Beneficial uses are defined in the Porter-Cologne Act as those uses of water that are necessary for tangible and intangible economic, social, and environmental benefits. The Basin Plan identifies a number of intermittent beneficial uses for Bee Canyon Wash: Groundwater Recharge (GWR) waters; Water Contact Recreation (REC1) waters; Non-Contact Water Recreation (REC2) waters; Warm Fresh Water Habitat (WARM) waters; and Wildlife Habitat (WILD) waters. The REC1 and REC2 beneficial uses are not applicable to drainages in the study area. Drainages in the study area provide little groundwater recharge, few ecosystem benefits, and insufficient wildlife habitat; therefore, the Project is not expected to interfere with GWR, WARM, or WILD beneficial uses. Descriptions of the beneficial uses applicable to waters in the study area are provided in Attachment B of this report.

2.2 JURISDICTIONAL DELINEATION

Non-wetland "waters of the U.S." are delineated based on the limits of the Ordinary High Water Mark (OHWM), which can be determined by a number of factors including erosion, the deposition of vegetation or debris, and changes in vegetation. The OHWM limits (i.e., active floodplain) occurring in the study area were further verified using methods contained in *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States*, *A Delineation Manual* (Lichvar and McColley 2008) and the *Updated Datasheet for the Identification of the Ordinary High Water Mark (OHWM) In the Arid West Region of the Western United States* (Curtis and Lichvar 2010).

In September 2008, the USACE issued the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region.* This regional supplement is designed for use with the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987). Both the 1987 Wetlands Manual and the Arid West Supplement to the manual provide technical



Data Source: U.S. Fish & Wildlife Service; National Wetlands Inventory 1994-2014
Aerial Source: Google, April 2013

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National Wetland Inventory

Exhibit 4

100-acre El Toro Parcel

N W E S

1,000 500 0 1,000 Feet

BonTerra PSOMAS

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methods and guidelines for determining the presence of "waters of the U.S." and wetland resources. A three-parameter approach is used to identify wetlands and requires evidence of wetland hydrology, hydrophytic vegetation, and hydric soils. Wetlands generally include swamps, marshes, bogs, and similar areas. In order to be considered a wetland, an area must exhibit at least minimal hydric characteristics within the three parameters. However, problem areas may periodically or permanently lack certain indicators due to seasonal or annual variability of the nature of the soils or plant species on site. Atypical wetlands lack certain indicators due to recent human activities or natural events. Guidance for determining the presence of wetlands in these situations is presented in the regional supplement.

It should be noted that the RWQCB shares USACE jurisdiction unless isolated conditions are present. If isolated waters conditions are present, the RWQCB takes jurisdiction using the USACE's definition of the OHWM and/or the three-parameter wetlands method pursuant to the 1987 Wetlands Manual. The CDFW's jurisdiction is defined as the top of the bank to the top of the bank of the stream, channel, or basin or to the outer limit of riparian vegetation located within or immediately adjacent to the river, stream, creek, pond, or lake or other impoundment.

The analysis contained in this report uses the results of a field survey conducted by BonTerra Psomas Senior Biologists Allison Rudalevige and Jennifer Pareti on March 24, 2015. Jurisdictional features were delineated using a 1 inch equals 225 feet (1″ = 225′) scale aerial photograph. The field survey included the collection of vegetation, soils, and hydrologic data from one sampling point in the study area; this information was recorded on Wetland Determination Data Forms (Attachment C).

2.2.1 Vegetation

Hydrophytic vegetation (or hydrophytes) is defined as any macrophytic plant that "grows in water or on a substrate that is at least periodically deficient in oxygen as a result of excessive water content; plants typically found in wet habitats" (Environmental Laboratory 1987). Specifically, these plant species have specialized morphological, physiological, or other adaptations for surviving in permanently saturated to periodically saturated soils where oxygen levels are very low or the soils are anaerobic. The USACE—as part of an interagency effort with the USEPA, the U.S. Fish and Wildlife Service (USFWS), and the NRCS—has approved a new National Wetland Plant List (NWPL) (Lichvar and Kartesz 2009) to replace the *National List of Plant Species that Occur in Wetlands* (Reed 1988). The NWPL went into effect on June 1, 2012, and is to be used to determine whether the hydrophytic vegetation parameter is met when conducting wetland determinations under the Clean Water Act and the Wetland Conservation Provisions of the Food Security Act. The NWPL is also intended to be used for wetland restoration, establishment, and enhancement projects. This report utilized the indicator statuses for the Arid West Supplement portion of the NWPL.

The following revisions were made to the Reed (1988) pursuant to the NWPL:

1. The USACE eliminated the "probability-of-occurrence" categories (e.g., <1 percent, 1–33 percent, 34–66 percent, 67–99 percent, and >99 percent) due to the lack of numerical data to support these ratings.
2. The USACE determined that, because the wetland plant indicator statuses have shifted from a series of numerical categories to qualitative definitions, the use of +/– suffixes is difficult to apply accurately. Adding finer-scale +/– ratings implies there are data to support their assignments, which is generally not the case. Therefore, to improve the accuracy of the overall list, the USACE decided to drop the +/– suffixes.

Lichvar and Gillrich (2011) provide updated technical definitions of wetland plant indicator status categories as part of the procedures used in updating the NWPL:

- **Obligate Wetland (OBL):** These wetland-dependent plants (herbaceous or woody) require standing water or seasonally saturated soils (14 or more consecutive days) near the surface to assure adequate growth, development, and reproduction and to maintain healthy populations. These plants are of four types:
  - *submerged:* plants that conduct virtually all of their growth and reproductive activity under water.
  - *floating:* plants that grow with leaves and most often their vegetative and reproductive organs floating on the water surface.
  - *floating-leaved:* plants that are rooted in sediment but also have leaves that float on the water surface.
  - *emergent:* herbaceous and woody plants that grow with their bases submerged and rooted in inundated sediment or seasonally saturated soil and their upper portions, including most of the vegetative and reproductive organs, growing above the water level.
- **Facultative Wetlands (FACW):** These plants depend on and predominantly occur with hydric soils, standing water, or seasonally high water tables in wet habitats for assuring optimal growth, development, and reproduction and for maintaining healthy populations. These plants often grow in geomorphic locations where water saturates soils or floods the soil surface at least seasonally.
- **Facultative (FAC):** These plants can occur in wetlands or non-wetlands. They can grow in hydric, mesic, or xeric habitats. The occurrence of these plants in different habitats represents responses to a variety of environmental variables other than just hydrology (e.g., shade tolerance, soil hydrogen potential [pH], and elevation) and they have a wide tolerance of soil moisture conditions.
- **Facultative Upland (FACU):** These plants are not wetland dependent. They can grow on hydric and seasonally saturated soils, but they develop optimal growth and healthy populations on predominantly drier or more mesic sites. Unlike FAC plants, these plants are non-wetland plants by habitat preference.
- **Obligate Upland (UPL):** These plants occupy mesic to xeric non-wetland habitats. They almost never occur in standing water or saturated soils. Typical growth forms include herbaceous, shrubs, woody vines, and trees.

The following are three procedures for determining hydrophytic vegetation: Indicator 1, “Dominance Test”, using the “50/20 Rule”; Indicator 2, “Prevalence Index”; or Indicator 3, “Morphological Adaptation”, as identified in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (USACE 2008). Hydrophytic vegetation is present if any indicator is satisfied. If none of the indicators are satisfied, then hydrophytic vegetation is absent unless (1) indicators of hydric soil and wetland hydrology are present and (2) the site meets the requirements for a problematic wetland situation.

- **Dominance Test:** Vegetative cover is estimated and is ranked according to its dominance. Dominant species are the most abundant species for each stratum of the community (i.e., tree, sapling/shrub, herb, or woody vine) that individually or collectively amount to 50 percent of the total coverage of vegetation plus any other species that, by itself, accounts for 20 percent of the total vegetation cover (also known as the “50/20 Rule”). These species are recorded on the “Wetland Determination Data Form –

Arid West Region". The wetlands indicator status of each species is also recorded on the data forms based on the NWPL (Lichvar and Kartesz 2009). If greater than 50 percent of the dominant species across all strata are OBL, FACW or FAC species, the criterion for wetland vegetation is considered to be met.

- **Prevalence Index:** The prevalence index considers all plant species in a community, not just the dominant ones. The prevalence index is the average of the wetland indicator status of all plant species in a sampling plot. Each indicator status category is given a numeric code (OBL=1, FACW=2, FAC=3, FACU=4, and UPL=5) and is weighted by the species' abundance (percent cover). Hydrophytic vegetation is present if the prevalence index is 3.0 or less.

- **Morphological Adaptation:** Morphological adaptations, such as adventitious roots (i.e., roots that take advantage of the wet conditions) and shallow root systems, must be observed on more than 50 percent of the individuals of a FACU species for the hydrophytic vegetation wetland criterion to be met.

2.2.2 Soils

The National Technical Committee for Hydric Soils (NTCHS) defines a hydric soil as a soil that is formed under conditions of saturation, flooding, or ponding that occurs long enough during the growing season to develop anaerobic conditions (or conditions of limited oxygen) at or near the soil surface and that favor the establishment of hydrophytic vegetation (USDA NRCS 2008). It should be noted that hydric soils created under artificial conditions of flooding and inundation sufficient for the establishment of hydrophytic vegetation would also meet this hydric soils indicator.

The soil conditions are verified by digging test pits along each transect to a depth of at least 20 inches (except where a restrictive layer occurs in areas containing hard pan, cobble, or solid rock). It should be noted that, at some sites, it may be necessary to make exploratory soil test pits up to 40 inches deep to more accurately document and understand the variability in soil properties and hydrologic relationships on the site. Soil test pit locations are usually dug in the drainage invert or at the edge of a drainage course in vegetated areas. Soil extracted from each soil test pit is then examined for texture and color using the standard plates within the Munsell Soil Color Chart (1994) and recorded on the Data Form. The Munsell Soil Color Chart aids in designating soils by color labels based on gradations of three simple variables: hue, value, and chroma. Any indicators of hydric soils such as the following are also recorded on the Data Form: redoximorphic features (i.e., areas where iron is reduced under anaerobic conditions and oxidized following a return to aerobic conditions); buried organic matter; organic streaking; reduced soil conditions; gleyed (i.e., soils having a characteristic bluish-gray or greenish-gray in color) or low-chroma soils; or sulfuric odor. If hydric soils are found, progressive pits are dug along the transect moving laterally away from the active channel area until hydric soil features are no longer present within the top 20 inches of the soil.

2.2.3 Hydrology

Wetlands hydrology is represented by either (1) all of the hydrological elements or characteristics of areas permanently or periodically inundated or (2) areas containing soils that are saturated for a sufficient duration of time to create hydric soils suitable for the establishment of plant species that are typically adapted to anaerobic soil conditions. The presence of wetland hydrology is evaluated at each intersect by recording the extent of observed surface flows; the depth of inundation; the depth to saturated soils; and the depth to free water in soil test pits. In instances where stream flow is divided into multiple channels with intervening sandbars, the entire area between the channels is considered within the "Active Floodplain" and within the OHWM.

Therefore, an area containing these features would meet the indicator requirements for wetland hydrology.

2.3 CALIFORNIA RAPID ASSESSMENT METHOD

The California Rapid Assessment Method (CRAM) is a wetland monitoring tool that was developed in response to a monitoring framework recommended by the USEPA (2006) to help States meet monitoring requirements stated in the CWA. Personnel from the USACE, the CDFW, and the RWQCB (among other agencies) participated in the development of CRAM, which is an accepted assessment tool by these agencies.

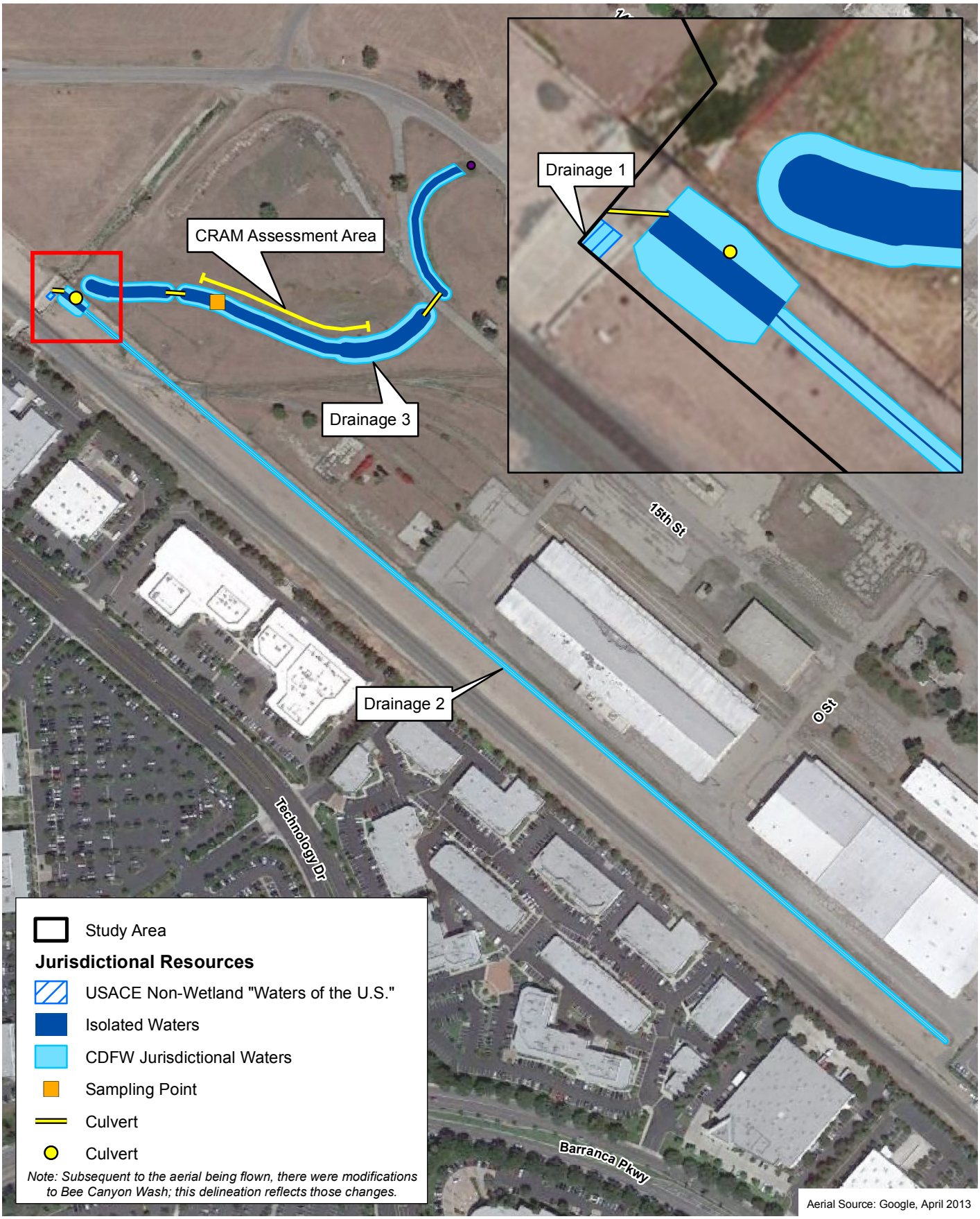
A CRAM analysis was conducted by Ms. Rudalevige and Ms. Pareti on March 24, 2015, concurrently with the delineation. Surveys were conducted in accordance with the *California Rapid Assessment Method (CRAM) for Wetlands User's Manual* (CWMW 2013). The CRAM analysis for Riverine Wetlands[1] was used to establish and score one 100-meter-long Assessment Area (AA) (Exhibit 5). The AA is the fundamental unit of evaluation for CRAM analysis. The length of the AA depends on the bankfull width of each streambed (approximately equal to the OHWM). The AA width was defined as the outer canopy of vegetation that overhung the channel, where present.

Information recorded for the AA includes: (1) percentage of the AA that was surrounded by a buffer and the condition of the buffer; (2) number of plant layers within the AA; (3) number of co-dominant species and invasive species; and (4) cross-sectional measurements to determine hydrologic connectivity to adjacent areas. Qualitative factors that were assessed include (1) degree of plant zonation; (2) vertical plant structure; (3) buffer condition; and (4) complexity of the channel's bank features. Worksheets that identified different structural patches and the degree of channel stability were also filled out for use in the assessment. Aerial photos of the site were later analyzed to determine the site's overall landscape connectivity, buffer width, and water sources.

Individual scores are obtained by "choosing the best-fit set of narrative descriptions of observable conditions ranging from the worst commonly observed (D) to the best achievable for the wetland (A)" (CWMW 2013). Each description has a fixed numerical value. This information was used to assess four primary attributes that are equally weighted: (1) Buffer and Landscape Context; (2) Hydrology; (3) Physical Structure; and (4) Biotic Structure. Table 2 provides a description of these attributes and associated metrics. The attribute score is calculated by first adding the values of the chosen narrative descriptions for the attribute's component metrics and then converting the sum into a percentage of the maximum possible score for the attribute. The overall CRAM score is the average of the final attribute scores.

CRAM scores for each of the 4 attributes range from 25 to 100. The score is a relative measurement to indicate how an individual site compares to the best achievable conditions for that wetland type in the State. It is assumed that the same scores for different wetlands of the same type represent the same overall condition and functional capacity. Therefore, these scores may be used to track the progress of restoration efforts over time; to compare impacted sites to their in-kind mitigation sites; or to compare an individual wetland to the status and trends in ambient condition of its wetland type.

[1] CRAM uses the definition of a wetland provided by the National Wetland Inventory (NWI) of the USFWS: "Wetlands are lands transitional between terrestrial and aquatic systems, where the water table is usually at or near the surface or the land is covered by shallow water. For the purposes of this classification wetlands must have one or more of the following three attributes: (1) at least periodically, the land supports predominantly hydrophytes; (2) the substrate is predominantly undrained hydric soil; and (3) the substrate is not a soil and is saturated with water or covered by shallow water at some time during the growing season of each year" (Cowardin et al. 1979).



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Jurisdictional Resources

Exhibit 5

100-acre El Toro Parcel

N W E S

300 150 0 300 Feet

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TABLE 2
DESCRIPTION OF CRAM ATTRIBUTES AND METRICS

Attribute	Metric		Description
Buffer and Landscape Context	Landscape Connectivity		Measures connectivity along the riparian corridor for wildlife movement; non-buffer land types are identified 500 meters upstream and downstream of Assessment Area.
	Buffer Condition		Combination of the three sub-metric scores described below.
	Sub-metrics	Percent of Assessment Area with Buffer	Measures percentage of Assessment Area perimeter that contains land cover types that provide a buffer.
		Average Buffer Width	Measures the average width of identified buffer land types around Assessment Area.
		Buffer Condition	Qualitatively evaluates buffer condition .
Hydrology	Water Source		Qualitatively evaluates impacts to the extent, duration, and frequency of saturated or ponded conditions .
	Hydroperiod/Channel Stability		Qualitatively evaluates channel equilibrium, degradation, or aggradation.
	Hydrologic Connectivity		Measures the entrenchment of the channel to determine the ability for water to inundate adjacent upland areas.
Physical Structure	Structural Patch Richness		Measures the diversity of physical riparian features that may potentially provide habitat for aquatic species (e.g., vegetated islands, pools, riffles).
	Topographic Complexity		Qualitatively evaluates the variety of elevations (i.e. micro-topographic heterogeneity).
Biotic Structure	Plant Community		Average of the three sub-metric scores described below.
	Sub-metrics	Number of Plant Layers	Identifies of number of plant strata.
		Number of Co-dominant Species	Identifies the number of co-dominant plant species based on visual estimation.
		Percent Invasive Species	Measures the percent of invasive plant species among the co-dominant species identified above.
	Horizontal Interspersion		Qualitatively evaluates the variety and distribution of plant associations.
	Vertical Biotic Structure		Identifies the number and distribution of plant strata.

3.0 RESULTS

For the purposes of this analysis, it is assumed that any and all portions of the study area may be impacted by future Project activities.

3.1 U.S. ARMY CORPS OF ENGINEERS DETERMINATION

3.1.1 "Waters of the U.S." Determination (Non-Wetland).

Three drainage features occur in the study area. Bee Canyon Wash (Drainage 1) occurs in the center of the southwestern edge of the study area. It is concrete-lined and extends under the railroad tracks off site, where it goes underground. A shallow, straight, artificial ditch (Drainage 2) runs along a portion of the southwestern boundary of the study area. It is unlined along most of its length, with ungrouted riprap near Bee Canyon Wash. A culvert carries flow into Bee Canyon Wash. The third drainage feature (Drainage 3) begins at a culvert under Marine Way, passes through two more pipe culverts, and ends near Bee Canyon Wash. Prior to construction, this drainage feature emptied into Bee Canyon Wash. However, at the present time, it appears to end in a graded, open area.

Bee Canyon Wash conveys flow underground to San Diego Creek. San Diego Creek flows into the Pacific Ocean (a Traditional Navigable Water [TNW]) at Newport Bay, approximately 17 river miles (9 aerial miles) from the study area. Therefore, as a tributary[2] to a TNW, the USACE can exert jurisdiction over Drainage 1. Drainage 2 carries storm water runoff from surrounding upland areas. The USACE only asserts jurisdiction over "ditches with perennial flow"; "ditches with intermittent flow that are a relocated tributary, or are excavated in a tributary, or drain wetlands"; and "ditches, regardless of flow, that are excavated in or relocate a tributary" (USACE 2015).. A review of historical aerials shows that no natural tributary was modified to create Drainage 2. Drainage 2 would not be considered under the jurisdiction of the USACE because it does not meet the above-mentioned definition of a jurisdictional ditch. At this time, Drainage 3 does not exhibit connectivity to a TNW. Therefore, it would not be considered under the jurisdiction of the USACE.

Non-wetland "waters of the U.S." are drainage features that conduct water at some point during the year, evidenced by the presence of an OHWM, but do not satisfy all three criteria to be considered a wetland. The limits of non-wetland "waters of the U.S." were defined by the presence of the OHWM. Evidence on site of OHWM for the drainages consists of the presence of a bed and bank, surface soil cracks, and a change in vegetation cover and composition. Arid West Ephemeral and Intermittent Streams OHWM Datasheets were completed for areas showing evidence of an OHWM (see Attachment D).

Based on field observations and data collected, approximately 0.004 acre of non-wetland "waters of the U.S." occur in the study area and would be impacted by the Project (Table 3; Exhibit 5).

[2] "Tributaries" are defined as waters that are characterized by the presence of physical indicators of flow—bed and banks and OHWM—and that contribute flow directly or indirectly to a TNW, interstate water, or territorial sea.

TABLE 3
SUMMARY OF JURISDICTIONAL RESOURCES IN THE STUDY AREA

Jurisdictional Resources	Project Impact (acres)
USACE Jurisdictional "waters of the U.S."	**0.004**
RWQCB Jurisdictional "waters of the State"	**0.721**
Non-isolated waters	0.004
Isolated waters	0.717
CDFW Jurisdictional Waters	**1.801**
USACE: U.S. Army Corps of Engineers; RWQCB: Regional Water Quality Control Board; CDFW: California Department of Fish and Wildlife.	

3.1.2 Wetlands Determination

As previously described in Section 2.0 of this report, an area must exhibit all three wetland parameters, as described in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (USACE 2008) and the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) in order to be considered a jurisdictional wetland. One representative sampling point was assessed for the presence of hydrophytic vegetation, hydric soils, and wetland hydrology (Attachment C).

Vegetation

The following vegetation types and other areas occur in the study area: ruderal, mulefat scrub, developed/ornamental, and disturbed. The drainages were either unvegetated (Drainage 1) or contained either mulefat scrub (Drainage 3) or UPL ruderal vegetation (Drainage 2). Sampling Point 1 was selected in an area containing mulefat scrub, as the most likely place to contain wetlands. The vegetation around Sampling Point 1 was dominated by weedy UPL and FACU species, with relatively sparse cover of FAC species. No indicators of hydrophytic vegetation were present; therefore, the hydrophytic vegetation criterion was not met.

Soils

Soils in the study area are primarily loams; Sampling Point 1 had a clay loam texture. No indicators of hydric soils were observed; therefore, the hydric soil criterion was not met.

Hydrology

The following indicators of wetland hydrology were observed: surface soil cracks and drainage patterns. Therefore, the wetland hydrology criterion was met.

Results

No portion of the study area met the three criteria for wetlands. Therefore, no USACE wetland "waters of the U.S." are present in the study area.

3.2 CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD DETERMINATION

The RWQCB jurisdictional boundaries are defined as those determined for the USACE under "waters of the U.S.". However, the RWQCB takes jurisdiction over both connected and isolated waters. Isolated features (those that do not have a direct connection to a TNW or do not meet the "significant nexus" threshold) are under the jurisdiction of the RWQCB, but not the USACE. Isolated "waters of the State" mapped in the study area (i.e., Drainages 2 and 3) exhibit an OHWM.

Approximately 0.721 acre of "waters of the State" under the jurisdiction of the RWQCB occur in the study area and would be impacted by the Project (Table 3; Exhibit 5).

3.3 CALIFORNIA DEPARTMENT OF FISH AND GAME DETERMINATION

The limits of CDFW jurisdiction include not only the bed, bank, and channel of streambed features, but also the riparian habitat supported by a river, stream, or lake. The CDFW jurisdictional limits extend to the outer drip line of riparian trees in areas containing riparian vegetation. In areas that do not contain riparian habitat, the jurisdictional limits extend to the top of the stream bank. As a result, the CDFW jurisdictional limits overlap with the jurisdictional limits of the other agencies, but usually extend beyond the OHWM that defines USACE/RWQCB jurisdictional limits.

Approximately 1.801 acres of waters under the jurisdiction of the CDFW occur in the study area and would be impacted by the Project (Table 3; Exhibit 5).

3.4 CALIFORNIA RAPID ASSESSMENT METHOD ANALYSIS

One AA was analyzed for the main drainage (Drainage 3) in the study area. A summary of the ten metrics and six sub-metrics that comprise the four equally weighted attributes is provided in Table 4 and Attachment E. The overall AA score is 35.6, with individual attribute scores ranging from 25.0 to 50. These scores are low, which means that this site compares poorly to the best achievable conditions of riparian areas in the state.

A variety of stressors, defined as anthropogenic perturbations within a wetland or its setting, may negatively impact the functional capacity of a CRAM AA. An analysis of these stressors may help account for a low AA score. It is assumed that (1) stressors can help explain CRAM scores; (2) the wetland condition declines as the number of stressors acting on the wetland increases; (3) increasing the intensity or the proximity of the stressor results in a greater decline in condition; and (4) continuous or chronic stress increases the decline in condition. Scores for buffer and landscape context were low primarily due to the drainage being culverted upstream and dissipating without connecting to a larger drainage downstream. While the drainage is surrounded by relatively undeveloped open space, it is in a largely developed landscape context. Hydrology scores were primarily affected by the artificial nature of the drainage and surrounding developed landscape. Both Physical Structure and Biotic Structure received the lowest possible scores. This is due to the lack of structural relief and vegetative diversity throughout the entire drainage.

TABLE 4
SUMMARY OF CALIFORNIA RAPID ASSESSMENT METHOD SCORES

Attribute	Metric	Score
Buffer and Landscape Context	Landscape Connectivity	3 (A)
	Buffer Condition (sub-metrics below)	
	Percentage of Assessment Area Perimeter with Buffer	12 (A)
	Average Buffer Width	6 (C)
	Buffer Condition	6 (C)
	Attribute Score	*42.2*
Hydrology	Water Source	6 (C)
	Hydroperiod/Channel Stability	6 (C)
	Hydrologic Connectivity	6 (C)
	Attribute Score	*50.0*
Physical Structure	Structural Patch Richness	3 (D)
	Topographic Complexity	3 (D)
	Attribute Score	*25.0*
Biotic Structure	Plant Community (sub-metrics below)	
	Number of Plant Layers	3 (D)
	Number of Co-dominant Species	3 (D)
	Percent of Co-dominant Species Known to be Invasive	3 (D)
	Horizontal Interspersion/Plant Zonation	3 (D)
	Vertical Biotic Structure	3 (D)
	Attribute Score	*25.0*
	Overall AA Score	**35.6**

Note: Scores are shown as the letter grade given to each metric with the corresponding numeric score in parentheses.

4.0 CONCLUSION OF REGULATORY APPROVAL PROCESS

4.1 REGULATORY PERMIT REQUIREMENTS

The following summarizes the various permits, agreements, and certifications that are expected to be required prior to initiation of Project activities that involve impacts to areas under the jurisdiction of the USACE, the RWQCB, and the CDFW.

- USACE Section 404 Permit
- RWQCB Section 401 Water Quality Certification
- CDFW Section 1602 Streambed Alteration Agreement

It should be noted that all regulatory permit applications can be processed concurrently. The USACE permit would be issued subject to the receipt of the RWQCB's Section 401 Water Quality Certification.

4.2 U.S. ARMY CORPS OF ENGINEERS

Regulatory authorization in the form of a Nationwide Permit (NWP) is provided for certain categories of activities (e.g., repair, rehabilitation, or replacement of a structure or fill which was previously authorized; utility line placement; bank stabilization). The current set of NWPs became effective on March 19, 2012, and will expire in on March 18, 2017. NWPs authorize only those activities with minimal adverse effects on the aquatic environment and are valid only if the conditions applicable to the permits are met or waivers to these conditions are provided in writing from the USACE. Please note that waivers may require consultation with affected federal and State agencies, a lengthy process with no mandated processing time frames. If the NWP conditions cannot be met, an Individual Permit (IP) will be required. "Waters of the U.S." temporarily filled, flooded, excavated, or drained but restored to pre-construction contours and elevations after construction are not included in the measurement of loss of "waters of the U.S.". The appropriate permit authorization will be based on the amount of impacts to "waters of the U.S.", as determined by the USACE.

The Project would likely fall under NWP 29 (Residential Developments). The description of NWP 29 is included as Attachment F. For residential subdivisions, the aggregate total of loss of "waters of the U.S." cannot exceed ½ acre or 300 linear feet of stream bed.

4.3 REGIONAL WATER QUALITY CONTROL BOARD

As noted above, issuance of the USACE Section 404 permit would be contingent upon the approval of a Section 401 Water Quality Certification from the Santa Ana RWQCB. Also, the RWQCB requires certification of the project's California Environmental Quality Act (CEQA) documentation before it will approve the Section 401 Water Quality Certification or Report of Waste Discharge (ROWD). The RWQCB, as a responsible agency, will use the project's CEQA document to satisfy its own CEQA-compliance requirements.

4.4 CALIFORNIA DEPARTMENT OF FISH AND GAME

Impacts resulting from Project implementation will require a Section 1602 Lake or Streambed Alteration Agreement (LSAA). The LSAA must address the initial construction and long-term operation and maintenance of any structures (such as a culvert or a desilting basin) within any river, stream, or lake that may require periodic maintenance if these are included in the project design.

4.5 RECOMMENDATIONS

Based on the conclusions of this Jurisdictional Delineation Report, the following recommendations are identified:

1. A pre-application meeting should be scheduled with USACE, CDFW, and RWQCB staff to discuss site conditions; biological and jurisdictional resources; the Project; impacts to these resources resulting from the Project; proposed minimization measures and the mitigation program to offset these impacts; and the regulatory permit process, including the decision to prepare and submit an Approved Jurisdictional Determination or a Preliminary Jurisdictional Determination. The USACE is expected to approve a Preliminary Jurisdictional Determination as the appropriate jurisdictional determination given the extent of Project impacts and the length of Project construction.
2. The following should be prepared and processed: a USACE Section 404 Permit; an RWQCB Section 401 Water Quality Certification; a CDFW Section 1602 Streambed Alteration Agreement; and the appropriate jurisdictional determination form approved by the USACE.
3. The Project Applicant should consider mitigating jurisdictional impacts resulting from Project implementation on site through the preparation of a Habitat Mitigation Monitoring Plan (HMMP). The preparation of an HMMP early in the process can help to accelerate and shorten the regulatory permitting process. Mitigation ratios for impacts to USACE jurisdictional resources would be based on the USACE's Standard Operating Procedure for Determination of Mitigation Ratios (USACE 2012).

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ATTACHMENT A

SUMMARY OF REGULATORY AUTHORITY

REGULATORY AUTHORITY

This attachment summarizes the regulatory authority of the U.S. Army Corps of Engineers (USACE), the Regional Water Quality Control Board (RWQCB), and the California Department of Fish and Wildlife (CDFW) over activities that have a potential to impact jurisdictional resources.

U.S. Army Corps of Engineers

The USACE Regulatory Branch regulates activities that discharge dredged or fill materials into "waters of the U.S." under Section 404 of the Federal Clean Water Act (CWA) and Section 10 of the Rivers and Harbors Act. This permitting authority applies to all "waters of the U.S." where the material (1) replaces any portion of "waters of the U.S." with dry land or (2) changes the bottom elevation of any portion of any "waters of the U.S.". These fill materials would include sand, rock, clay, construction debris, wood chips, and materials used to create any structure or infrastructure in these waters.

Waters of the United States

"Waters of the U.S." can be divided into three categories: territorial seas, tidal waters, or non-tidal waters. The term "waters of the U.S." is defined by the *Code of Federal Regulations* [1] (CFR) and includes:

1. All waters that have, are, or may be used in interstate or foreign commerce (including sightseeing or hunting), including all waters subject to the ebb and flow of the tide (i.e., Traditional Navigable Waters [TNWs]).
2. All interstate waters including interstate wetlands.
3. All other waters such as intrastate lakes, rivers, or streams (including intermittent streams), mudflats, sand flats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds where the use, degradation, or destruction of which could affect interstate or foreign commerce.
4. All impoundments of waters otherwise defined as "waters of the U.S." under the definition.
5. All tributaries of waters identified above.
6. The territorial seas.
7. All wetlands adjacent to waters (other than waters that are themselves wetlands) identified above.

The U.S. Supreme Court has issued three decisions that provide context and guidance in determining the appropriate scope of "waters of the U.S.". In *United States v. Riverside Bayview Homes*, the Court upheld the inclusion of adjacent wetlands in the regulatory definition of "waters of the U.S.". In *Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers* (SWANCC), the Court held that the use of "isolated" non-navigable intrastate ponds by migratory birds was not, by itself, sufficient basis for the exercise of federal regulatory authority under the CWA. In *Rapanos v. United States* (Rapanos) [2], a majority of the U.S. Supreme Court overturned two Sixth Circuit Court of Appeals decisions, finding that certain wetlands constituted "waters of the U.S." under the CWA. In his plurality opinion, Justice Scalia argued that "waters of the U.S." should not include channels through which water flows intermittently or ephemerally or channels that periodically provide drainage for rainfall. He also stated that a wetland may not be considered

[1] Specifically, Title 33, Navigation and Navigable Waters; Part 328, Definition of waters of the United States; §328.3, Definitions.

[2] Consolidated cases: *Rapanos v. United States* and *Carabell v. United States* refer to the U.S. Supreme Court's decision concerning USACE jurisdiction over "waters of the U.S." under the CWA.

"adjacent to" remote "waters of the U.S." based on a mere hydrologic connection. Justice Kennedy authored a separate concurring opinion concluding that wetlands are "waters of the U.S." if they, either alone or in combination with similarly situated lands in the region, significantly affect the chemical, physical, and biological integrity of other covered waters more readily understood as "navigable". Lacking a majority opinion, regulatory jurisdiction under the CWA exists over a water body if either the plurality's or Justice Kennedy's "significant nexus" standard is satisfied.

In 2015, the USACE and the U.S. Environmental Protection Agency (USEPA) published a final rule clarifying the scope of "waters of the U.S." protected under the CWA in light of the statue, science, the Supreme Court decisions, and the agencies' experience and technical expertise.[3] They define "waters of the U.S." to include eight categories of jurisdictional waters. The first four types of waters are considered jurisdictional by rule in all cases: (1) TNWs; (2) interstate waters, (3) territorial seas, and (4) impoundments of jurisdictional waters. The next two types of waters are jurisdictional by rule, as defined, because the science confirms that they have a significant nexus to TNWs, interstate waters, or territorial seas: (5) tributaries and (6) adjacent waters. The final two types of jurisdictional waters require a case-specific analysis to determine if they have a significant nexus to TNWs, interstate waters, or territorial seas: (7) five subcategories of waters considered to be "similarly situated"—Prairie potholes, Carolina and Delmarva bays, pocosins, western vernal pools in California, and Texas coastal prairie wetlands—that must be analyzed "in combination" when making a significant nexus analysis and (8) waters within the 100-year floodplain of a TNW, interstate water, or territorial sea and waters within 4,000 feet from the high tide line or the OHWM or a TNW, interstate water, territorial sea, impoundment, or covered tributary.

The USACE and the USEPA will apply the significant nexus standard defined as follows:

1. Waters are "waters of the U.S." if they, either alone or in combination with similarly situated waters in the region, significantly affect the chemical, physical, or biological integrity of TNWs, interstate waters, or the territorial seas.
    - Waters are considered "similarly situated" where they function alike and are sufficiently close to function together in affecting the nearest TNW, interstate water, or territorial sea.
    - The "region" is considered to be the single point of entry watershed, i.e., the drainage basin within whose boundaries all precipitation ultimately flows to the nearest single TNW, interstate water, or territorial sea.
    - The functions of a water that affect the chemical, physical, or biological integrity of a TNW, interstate water, or territorial seas must be "significant" and more than "speculative or insubstantial". To determine whether there is a significant nexus, the following functions should be considered: sediment trapping; nutrient recycling; pollutant trapping, transformation, filtering, and transport; retention and attenuation of floodwaters; runoff storage; contribution of flow; export of organic matter; export of food resources; and provision of life-cycle dependent aquatic habitat for species.

[3] U.S. Army Corps of Engineers and Environmental Protection Agency (USACE and USEPA). 2015 (June 29). Clean Water Rule: Definition of "Waters of the United States". *Federal Register* 80(124): 37054–37127. Washington, D.C.: USACE, Department of Defense and USEPA.

The USACE and the USEPA have determined that the following waters are not jurisdictional:

1. Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of the CWA.

2. Prior converted cropland.

3. Ditches with ephemeral flow that are not a relocated tributary or excavated in a tributary; ditches with intermittent flow that are not a relocated tributary, excavated in a tributary, or drain wetlands; and ditches that do not flow, either directly or through another water, into a TNW; interstate water, including interstate wetland; or territorial sea.

4. Artificially irrigated areas that would revert to dry land should water application cease; artificial, constructed lakes and ponds created in dry land; artificial reflecting pools or swimming pools created in dry land; small ornamental waters created in dry land; water-filled depressions created in dry land incidental to mining or construction activity; erosional features, non-wetland swales, and lawfully constructed grassed waterways; and puddles.

5. Groundwater, including groundwater drained through subsurface drainage systems.

6. Stormwater control features constructed to convey, treat, or store stormwater that are created in dry land.

7. Wastewater recycling structures constructed in dry land, detention and retention basins build for wastewater recycling, groundwater recharge basins, percolation ponds build for wastewater recycling, and water distributary structures build for wastewater recycling.

Ordinary High Water Mark

The landward limit of tidal “waters of the U.S.” is the high-tide line. In non-tidal waters where adjacent wetlands are absent, the lateral limits of USACE jurisdiction extend to the ordinary high water mark (OHWM).[4] The OHWM is defined as “that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of the soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas”.[5] When wetlands are present, the lateral limits of USACE jurisdiction extend beyond the OHWM to the limits of the adjacent wetlands.[6]

Wetlands

A wetland is a subset of jurisdictional waters and is defined by the USACE and the USEPA as “those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances, do support a prevalence of vegetation typically adapted for life in saturated soil conditions”.[7] Wetlands generally include swamps, marshes, bogs, and areas containing similar features.

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4 U.S. Army Corps of Engineers (USACE). 2005 (December 7). Regulatory Guidance Letter. Ordinary High Water Mark Identification. Washington, D.C.: USACE.
5 33 CFR §328.3(e)
6 USACE 2005
7 33 CFR §328.3(b)

The definition and methods for identifying wetland resources can be found in the USACE's *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region*,[8] a supplement to the USACE's *Corps of Engineers Wetlands Delineation Manual*.[9] Both the 1987 Wetlands Manual and the Arid West Supplement to the manual provide technical methods and guidelines for determining the presence of wetland "waters of the U.S.". Pursuant to these manuals, a three-parameter approach is used to identify wetlands and requires evidence of wetland hydrology, hydrophytic vegetation, and hydric soils. In order to be considered a wetland, an area must exhibit one or more indicators of all three of these parameters. However, problem areas may periodically or permanently lack certain indicators for reasons such as seasonal or annual variability of rainfall, vegetation, and other factors. Atypical wetlands lack certain indicators due to recent human activities or natural events. Guidance for determining the presence of wetlands in these situations is presented in the regional supplement.

Section 404 Permit

Regulatory authorization in the form of a Nationwide Permit (NWP) is provided for certain categories of activities (e.g., repair, rehabilitation, or replacement of a structure or fill which was previously authorized; utility line placement; bank stabilization). The current set of NWPs became effective on March 19, 2012, and will expire in on March 18, 2017. NWPs authorize only those activities with minimal adverse effects on the aquatic environment and are valid only if the conditions applicable to the permits are met or waivers to these conditions are provided in writing from the USACE. Please note that waivers may require consultation with affected federal and State agencies, a lengthy process with no mandated processing time frames. If the NWP conditions cannot be met, an Individual Permit (IP) will be required. "Waters of the U.S." temporarily filled, flooded, excavated, or drained but restored to pre-construction contours and elevations after construction are not included in the measurement of loss of "waters of the U.S.". The appropriate permit authorization will be based on the amount of impacts to "waters of the U.S.", as determined by the USACE.

<u>Jurisdictional Determinations</u>

Pursuant to USACE Regulatory Guidance Letter (RGL) 08-02 (dated June 26, 2008), the USACE can issue two types of jurisdictional determinations to implement Section 404 of the CWA: Approved Jurisdictional Determinations and Preliminary Jurisdictional Determinations.[10] An Approved Jurisdictional Determination is an official USACE determination that jurisdictional "waters of the U.S.", "Navigable Waters of the U.S.", or both are either present or absent on a site. An Approved Jurisdictional Determination also identifies the precise limits of jurisdictional waters on a project site.

The USACE will provide an Approved Jurisdictional Determination when (1) an applicant requests an official jurisdictional determination; (2) an applicant contests jurisdiction over a particular water body or wetland; or (3) when the USACE determines that jurisdiction does not exist over a particular water body or wetland. The Approved Jurisdictional Determination then becomes the USACE's official determination that can then be relied upon over a five-year period to request regulatory authorization as part of the permit application.

In addition, an Applicant may decline to request an Approved Jurisdictional Determination and instead obtain a USACE IP or General Permit Authorization based on a Preliminary Jurisdictional

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8 USACE. 2008. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)*. (J.S. Wakeley, R.W. Lichvar, and C.V. Noble, Eds.). Vicksburg, MS: U.S. Army Engineer Research and Development Center.

9 Environmental Laboratory. 1987. Cor*ps of Engineers Wetlands Delineation Manual (Technical Report Y-87-1)*. Vicksburg, MS: U.S. Army Engineer Waterways Experiment Station.

10 USACE. 2008 (June 26). Regulatory Guidance Letter. Jurisdictional Determinations. Washington, D.C.: USACE.

Determination or, in certain circumstances (e.g., authorizations by non-reporting nationwide general permits), with no Jurisdictional Determination.

Preliminary Jurisdictional Determinations are non-binding, advisory in nature, and may not be appealed. They indicate that there may be "waters of the U.S." on a project site. An applicant may elect to use a Preliminary Jurisdictional Determination to voluntarily waive or set aside questions regarding CWA jurisdiction over a site, usually in the interest of allowing the applicant to move ahead expeditiously with the permitting process. The USACE will determine what form of Jurisdictional Determination is appropriate for a particular project site.

On January 31, 2007, the USACE published a memorandum clarifying the Interim Guidance for amendments to the National Historic Preservation Act and the Advisory Council on Historic Preservation (ACHP) implementing regulations.[11] The Interim Guidance applies to all Department of the Army requests for authorization/verification, including Individual Permits (standard permits and letters of permission) and all Regional General Permits (RGPs) and NWPs. The State or Tribal Historic Preservation Officer (SHPO/THPO) has 30 days to respond to a determination that a proposed activity, that otherwise qualifies for an NWP or RGP, has no effect or no adverse effect on a historic property. If the SHPO/THPO does not respond within 30 days of notification, the Los Angeles District may proceed with verification. If the SHPO/THPO disagrees with the District's determination, the District may work with the SHPO/THPO to resolve the disagreement or request an opinion from the ACHP. The USACE will submit the Draft Jurisdictional Delineation Report to the SHPO/THPO for review prior to initiating the actual regulatory process.

The USACE Regulatory Branch Offices will coordinate with the USEPA Regional Office and USACE Headquarters (HQ), as outlined in its January 28, 2008, memorandum entitled the "Process for Coordinating Jurisdictional Delineations Conducted Pursuant to Section 404 of the Clean Water Act in Light of the *Rapanos* and *SWANCC* Supreme Court Decisions".[12] The guidance provided in this memorandum is quoted as follows:

1. Effective immediately, unless and until paragraph 5(b) of the June 5, 2007, Rapanos guidance coordination memorandum is modified by a joint memorandum from Army and EPA, we will follow these procedures:

    a. For jurisdictional determinations involving significant nexus determinations, USACE districts will send copies of draft jurisdictional delineations via e-mail to appropriate EPA regional offices. The EPA regional office will have 15 calendar days to decide whether to take the draft jurisdictional delineation as a special case under the January 19, 1989, "Memorandum of Agreement Between the Department of the Army and the USEPA Concerning the Determination of the Section 404 Program and the Application of the Exceptions under Section 404(f) of the Clean Water Act." If the EPA regional office does not respond to the district within 15 days, the district will finalize the jurisdictional determination.

    b. For jurisdictional determinations involving isolated waters determinations, the agencies will continue to follow the procedure in paragraph 5(b) of June 5, 2007, coordination memorandum, until a new coordination memorandum is signed by USACE and EPA. (In accordance with paragraph 6 of the June 5, 2007, coordination memorandum, this is a 21-

[11] USACE. 2007(January 31). Memorandum: Interim Guidance for Amendments to the National Historic Preservation Act and the Advisory Council on Historic Preservation (ACHP) Implementing Regulations. Washington, D.C.: USACE.

[12] USACE. 2008 (January 28). *Memorandum for Commander, Major Subordinate Commands and District Commands. Process for Coordinating Jurisdictional Delineations Conducted Pursuant to Section 404 of the Clean Water Act in Light of the Rapanos and SWANCC Supreme Court Decisions.* Washington, D.C.: USACE.

day timeline that can only be changed through a joint memorandum between agencies).

2. Approved JDs are not required for non-reporting NWPs, unless the project proponent specifically requests an approved JD. For proposed activities that may qualify for authorization under a State Programmatic General Permit (SPGP) or RGP, an approved JD is not required unless requested by the project proponent.
3. The USACE will continue to work with EPA to resolve the JDs involving significant nexus and isolated waters determinations that are currently in the elevation process.
4. USACE districts will continue posting completed Approved JD Forms on their web pages.

Please note that, if the USACE determines that the drainages are jurisdictional and would be impacted by project implementation, the Applicant will be required to obtain a CWA Section 401 Water Quality Certification from the RWQCB before the USACE will issue the Section 404 permit. That is, the USACE may issue a "Denial Without Prejudice" as part of the issuance of the Section 404 permit that makes the permit valid once the Section 401 Water Quality Certification is issued. If the USACE determines that the impacted drainage is not jurisdictional, the Applicant will be required to obtain RWQCB authorization under the provisions of a Report of Waste Discharge (ROWD).

Regional Water Quality Control Board

The RWQCB is the primary agency responsible for protecting water quality in California through the regulation of discharges to surface waters under the CWA and the California Porter-Cologne Water Quality Control Act (Porter-Cologne Act). The RWQCB's jurisdiction extends to all "waters of the State" and to all "waters of the U.S.", including wetlands (isolated and non-isolated).

Section 401 of the CWA provides the RWQCB with the authority to regulate, through a Water Quality Certification, any proposed, federally permitted activity that may affect water quality. Among such activities are discharges of dredged or fill material permitted by the USACE pursuant to Section 404 of the CWA. Section 401 requires the RWQCB to provide certification that there is reasonable assurance that an activity which may result in the discharge to navigable waters will not violate water quality standards. Water Quality Certification must be based on a finding that the proposed discharge will comply with water quality standards, which contain numeric and narrative objectives that can be found in each of the nine RWQCBs' Basin Plans.

The Porter-Cologne Act provides the State with very broad authority to regulate "waters of the State" (which are defined as any surface water or groundwater, including saline waters). The Porter-Cologne Act has become an important tool in the post-SWANCC (Solid Waste Agency of Northern Cook Counties vs. Unites States Corps of Engineers) and Rapanos era with respect to the State's authority over isolated waters. Generally, any person proposing to discharge waste into a water body that could affect its water quality must file an ROWD when there is no federal nexus, such as under Section 404(b)(1) of the CWA. Although "waste" is partially defined as any waste substance associated with human habitation, the RWQCB interprets this to include fill discharge into water bodies.

Section 401 Water Quality Certification

Issuance of the USACE Section 404 permit would be contingent upon the approval of a Section 401 Water Quality Certification from the RWQCB. Also, the RWQCB requires certification of the

project's CEQA documentation before it will approve the Section 401 Water Quality Certification or ROWD. The RWQCB, as a responsible agency, will use the project's CEQA document to satisfy its own CEQA-compliance requirements.

Upon acceptance of a complete permit application, the RWQCB has between 60 days and 1 year to make a decision regarding the permit request. That is, USACE regulations indicate that the RWQCB has 60 days from the date of receipt of a completed application that requests water quality certification to make a decision.[13] The USACE District Engineer may specify a longer time (up to one year) or shorter time based on his/her determination of a reasonable processing time.[14] If the RWQCB determines that more than 60 days are needed to process the request, it has the option of requesting additional time from the USACE. Also, the RWQCB has the option of issuing a "Denial Without Prejudice", which does not mean that the request is denied, but that it requires more information in order to make a decision. This effectively stops the processing clock until this information is provided.

The RWQCB is required under *California Code of Regulations* (CCR) to have a "minimum 21 day public comment period" before any action can be taken on the Section 401 application.[15] This period closes when the RWQCB acts on the application. Since projects often change or are revised during the Section 401 permit process, the comment period can remain open. The public comment period starts as soon as an application has been received. Generally, the RWQCB Section 401, USACE Section 404, and CDFW Section 1602 permit applications are submitted at the same time. However, the RWQCB Section 401 Water Quality Certification may take longer to process.

The RWQCB requires the Applicant to address urban storm water runoff during and after construction in the form of Best Management Practices (BMPs). These BMPs are intended to address the treatment of pollutants carried by storm water runoff and are required in all complete applications. The notification/application for a CWA Section 401 Water Quality Certification must also address compliance with the Basin Plan. Please note that the application would also require the payment of an application fee which would be based on project impacts. The fee schedule calculator is available at http://www.waterboards.ca.gov/santaana/water_issues/programs/401_certification/index.shtml.

California Department of Fish and Wildlife

The CDFW has jurisdictional authority over wetland resources associated with rivers, streams, and lakes pursuant to *California Fish and Game Code*.[16] Activities of State and local agencies as well as public utilities that are project proponents are regulated by the CDFW under Section 1602 of the *California Fish and Game Code.* This section regulates any work that will (1) substantially divert or obstruct the natural flow of any river, stream, or lake; (2) substantially change or use any material from the bed, channel, or bank of any river, stream, or lake; or (3) deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake.

Because the CDFW includes streamside habitats under its jurisdiction that, under the federal definition, may not qualify as wetlands on a particular project site, its jurisdiction may be broader than that of the USACE. Riparian forests in California often lie outside the plain of ordinary high water regulated under Section 404 of the CWA, and often do not have all three parameters (wetland hydrology, hydrophytic vegetation, and hydric soils) sufficiently present to be regulated

[13] 33 CFR §325.2(b)(1)(ii)
[14] Ibid.
[15] 23 CCR §3858(a)
[16] See §§1600–1616.

as a wetland. However, riparian forests are frequently within CDFW regulatory jurisdiction under Section 1602 of the *California Fish and Game Code.*

The CDFW jurisdictional limits are not as clearly defined by regulation as those of the USACE. While they closely resemble the limits described by USACE regulations, they include riparian habitat supported by a river, stream, or lake regardless of the presence or absence of hydric and saturated soils conditions. In general, the CDFW takes jurisdiction from the top of a stream bank or to the outer limits of the adjacent riparian vegetation (outer drip line), whichever is greater. Notification is generally required for any project that will take place within or in the vicinity of a river, stream, lake, or their tributaries. This includes rivers or streams that flow at least periodically or permanently through a bed or channel with banks that support fish and other aquatic plant and/or wildlife species. It also includes watercourses that have a surface or subsurface flow that support or have supported riparian vegetation.

Section 1602 Notification of Lake or Streambed Alteration

The CDFW enters into a Lake or Streambed Alteration Agreement (LSAA) with a project proponent in order to ensure no net loss of wetland values and acreages. The notification process involves the completion of the applications that will serve as the basis for the CDFW's issuance of a Section 1602 LSAA. Section 1602 of the *California Fish and Game Code* applies to all perennial, intermittent, and ephemeral rivers, streams, and lakes in the State. The LSAA must address the initial construction and long-term operation and maintenance of any structures (such as a culvert or a desilting basin) within any river, stream, or lake that may require periodic maintenance if these are included in the project design.

Prior to construction, a notification (LSAA application) must be submitted to the CDFW that describes any proposed streambed alteration contemplated by the Project. In addition to the formal application materials, a copy of the appropriate environmental document (e.g., Mitigated Negative Declaration) should be included in the submittal, consistent with California Environmental Quality Act (CEQA) requirements. Please note that the application would also require the payment of an application fee; the fee schedule is available at https://www.wildlife.ca.gov/Conservation/LSA/Forms.

The CDFW will prepare a draft LSAA, which will include standard measures to protect sensitive plant and wildlife resources during project construction and during ongoing operation and maintenance of any project element that occurs within a CDFW jurisdictional area.

If an LSAA is required, the CDFW may want to conduct an on-site inspection. The CDFW then prepares a draft Agreement, which will include measures to protect fish and wildlife resources that will be directly or indirectly impacted by project construction. The draft agreement will be transmitted to the Applicant within 60 calendar days of the CDFW's determination that the notification is complete. It should be noted that the 60-day timeframe may not apply to long-range agreements.

The Applicant has 30 calendar days to notify the CDFW concerning the acceptability of the proposed terms, conditions, and measures. If the Applicant agrees with these terms, conditions, and measures, the agreement must be signed and returned to the CDFW. The agreement becomes final once the CDFW executes it and an LSAA is issued. Please note that all application fees must be paid and the final certified CEQA documentation must be provided prior to the CDFW's execution of the agreement.

If the CDFW does not respond in writing concerning the completeness of the Notification within 30 days of its submittal, the Notification automatically becomes complete. If the CDFW does not submit a draft LSAA to the Applicant within 60 days of the determination of a completed

Notification package, the CDFW will issue a letter that either (1) identifies the final date to transmit a draft LSAA or (2) indicates that an LSAA was not required. The CDFW will also indicate that it was unable to meet this mandated compliance date and that, by law, the Applicant is authorized to complete the project without an LSAA as long as the applicant constructs the project as proposed and complies with all avoidance, minimization, and mitigation measures described in the submitted Notification package. Please note that if the project requires revisions to the design or project construction, the CDFW may require submittal of a new notification/application with an additional 90-day permit process.

ATTACHMENT B

LITERATURE REVIEW DETAILS

This attachment provides detailed results of the literature review.

SOIL SERIES

The description identified below was obtained from the U.S. Department of Agriculture, Natural Resources Conservation Service.[1]

San Emigdio

The San Emigdio series is a coarse-loamy, mixed, superactive, calcareous, thermic Typic Xerofluvent. It consists of very deep, well drained soils that formed in dominantly sedimentary alluvium. San Emigdio soils are on fans and floodplains and have slopes of 0 to 15 percent. The mean annual precipitation is about 15 inches and the mean annual air temperature is about 62 degrees Fahrenheit (°F).

Range in Characteristics:

The mean annual soil temperature at a depth of 20 inches is 60 to 65 °F and the soil temperature usually is not below 47 °F at any time. Soil between the depths of about 8 and 15 inches is dry all of the time from April or May until late October to early December and is moist in some or all parts the rest of the year. The soil is coarse sandy loam, sandy loam, fine sandy loam, silt loam, or loam to a depth of 40 inches or more. Rock fragments, mostly fine pebbles, range to 15 percent, the amount tends to be greater in the lower part of the profile. The 10 to 40 inch control section averages less than 18 percent clay. There is weak to strong stratification and the organic matter decreases irregularly with depth.

The A horizon has dry color of 10YR 5/3, 5/4, 6/2, 6/3 or 6/4; 2.5Y 6/2 or 7/2. Moist colors are 10YR 3/3, 3/4, 4/3, 4/4; 2.5Y 4/2, 3/2. The organic matter is 0.5 to 1.5 percent. It is mildly to moderately alkaline.

The C horizon has dry color of 10YR 6/3, 6/4, 6/6 or 7/6; 2.5Y 6/2, 7/2, 7/3, 7/4; moist colors are 10YR 4/3, 4/4, 4/6, 5/3, 5/4 or 5/6. When moist values are 3, dry values are 6 or more. Lime is disseminated throughout and many pedons have small amounts of fine segregated lime.

Drainage and Permeability:

San Emigdio soils are well drained; have negligible to low runoff; and have moderately rapid permeability.

Sorrento Series

The Sorrento series is a fine-loamy, mixed, superactive, thermic Calcic Haploxeroll. It consists of very deep, well drained soils that formed in alluvium mostly from sedimentary rocks. Sorrento soils are on alluvial fans and stabilized floodplains and have slopes of 0 to 15 percent. The mean annual precipitation is about 16 inches and the mean annual temperature is about 61 °F.

Range in Characteristics:

The mean annual soil temperature is 59 to 63 °F and the soil temperature is rarely if ever below 47 °F. The soil between depths of about 5 and 15 inches usually is dry all of the time from late

[1] U.S. Department of Agriculture, Natural Resources Conservation Service (USDA NRCS). 2015 (Accessed June 8). Official Soil Series Descriptions [Information for Soils Mapped in the Study Area]. Lincoln, NE: USDA NRCS. http://www.nrcs.usda.gov/wps/portal/nrcs/site/soils/home/.

April or May until November or early December and usually is moist in some or all parts the rest of the year. The 10 to 40 inch control section is loam, fine sandy loam, clay loam, sandy clay loam, or silty clay loam with 18 to 35 percent clay and more than 15 percent fine sand or coarser. Few pedons have as much as 15 percent rock fragments. The upper part of the profile is slightly acidic to moderately alkaline, and is noncalcareous to a depth of 20 to 40 inches. Effervescence is weak to violent in disseminated lime and secondary powder or mycelial lime is present.

The A horizon has 10YR or 2.5Y hue. It has weak to strong granular or subangular blocky structure. This horizon has 2 to 4 percent organic matter in the upper part which decreases regularly to less than 1 percent at depths of 12 to 20 inches.

The B and C horizons are 10YR 5/2, 5/3, 6/2, 6/4, 7/2, 7/4; 2.5Y 5/2, 5/3, 6/2, 6/4, 7/2; and 5Y 6/3. It is somewhat stratified, particularly in the lower part of some pedons but contrasting texture is not present above a depth of 40 inches.

Drainage and Permeability:

Sorrento soils are well drained, have negligible to medium runoff, and have moderate to moderately slow permeability depending upon dominant texture and amount of stratification in the lower part of the profile.

NATIONAL WETLANDS INVENTORY

Resources in the study area are mapped as R4SBCx. The description for this code is as follows:

- ***R: System RIVERINE.*** The Riverine System includes all wetlands and deepwater habitats contained in natural or artificial channels periodically or continuously containing flowing water or which forms a connecting link between the two bodies of standing water. Upland islands or Palustrine wetlands may occur in the channel, but they are not part of the Riverine System.
    - ***4: Subsystem INTERMITTENT.*** This Subsystem includes channels that contain flowing water only part of the year, but may contain isolated pools when the flow stops.
        - ***SB: Class STREAMBED.*** Includes all wetlands contained within the Intermittent Subsystem of the Riverine System and all channels of the Estuarine System or of the Tidal Subsystem of the Riverine System that are completely dewatered at low tide.
            - ***C: Water Regime Modifier SEASONALLY FLOODED.*** Surface water is present for extended periods especially early in the growing season, but is absent by the end of the growing season in most years. The water table after flooding ceases is variable, extending from saturated to the surface to a water table well below the ground surface.
                - ***x:*** **Special Modifier EXCAVATED.** These wetlands lie within a basin or channel that have been dug, gouged, blasted or suctioned through artificial means by man.

BASIN PLAN BENEFICIAL USES

The *Water Quality Control Plan: Santa Ana River Basin (8)* (Basin Plan) identifies a number of beneficial uses, some or all of which may apply to a specific hydrologic subarea (HSA), including:

Municipal and Domestic Water Supply (MUN) waters; Agricultural Supply (AGR) waters; Industrial Service Supply waters (IND); Industrial Process Supply (PROC) waters; Groundwater Recharge (GWR) waters; Navigation (NAV) waters; Hydropower Generation (POW) waters; Water Contact Recreation (REC1) waters; Non-Contact Water Recreation (REC2) waters; Commercial and Sport Fishing (COMM) waters; Warm Fresh Water Habitat (WARM) waters; Limited Warm Water Habitat (LWARM) waters; Cold Fresh Water Habitat (COLD) waters; Preservation of Biological Habitats of Special Significance (BIOL) waters; Wildlife Habitat (WILD) waters; Rare, Threatened or Endangered Species (RARE) waters; Spawning, Reproduction and Development (SPWN) waters; and Estuarine Habitat (EST) waters. Beneficial uses associated with Bee Canyon Wash are described in detail below; beneficial uses not described below do not apply.

- GWR waters are used for natural or artificial recharge of groundwater for purposes that may include, but are not limited to, future extraction, maintaining water quality, or halting saltwater intrusion into freshwater aquifers.

- REC1 waters are used for recreational activities involving body contact with water where ingestion of water is reasonably possible. These uses may include, but are not limited to, swimming, wading, water-skiing, skin and SCUBA diving, surfing, whitewater activities, fishing and use of natural hot springs. Please note that while this beneficial use designation is assigned to surface waterbodies in this region, it should not be construed as encouraging recreational activities.

- REC2 waters are used for recreational activities involving proximity to water, but not normally involving body contact with water where ingestion of water would be reasonably possible. These uses may include, but are not limited to, picnicking; sunbathing; hiking; beachcombing; camping; boating; tidepool and marine life study; hunting; sightseeing; and aesthetic enjoyment in conjunction with the above activities. Please note that while this beneficial use designation is assigned to surface water bodies in this region, it should not be construed as encouraging recreational activities.

- WARM waters support warm water ecosystems that may include, but are not limited to, preservation and enhancement of aquatic habitats, vegetation, fish, and wildlife (including invertebrates).

- WILD waters support wildlife habitats that may include, but are not limited to, the preservation and enhancement of vegetation and prey species used by waterfowl and other wildlife.

ATTACHMENT C

WETLAND DETERMINATION DATA FORMS

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Lowe Ent T001 City/County: O.C. Sampling Date: 3/24/15

Applicant/Owner: State: CA Sampling Point: 1

Investigator(s): R. Rudaleice, J. Pasti Section, Township, Range:

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

Subregion (LRR): CA Lat: GPS 010 Long: Datum:

Soil Map Unit Name: NWI classification:

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

Are Vegetation X, Soil X, or Hydrology X 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 X	No ___	

Remarks:
Region experiencing 4th year of drought. End of drainage has been graded to make basin.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 5')			
1. Baccharis salic	3	N	FAC
2.			
3.			
4.			
5.			
	3 = Total Cover		
Herb Stratum (Plot size: 5')			
1. Bromus madritensis	1	n	UPL
2. Hirschfeldia incana	40	y	UPL
3. Centaurea melitensis	30	y	UPL
4. Melilotus indicus	15	n	FACU
5. Vulpia myuros	3	n	FACU
6. Crassula tonnata	10	n	FAC
7.			
8.			
	99 = Total Cover		
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 1 % 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 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	0	x 2 = 0
FAC species	13	x 3 = 39
FACU species	18	x 4 = 72
UPL species	71	x 5 = 355
Column Totals:	102 (A)	466 (B)

Prevalence Index = B/A = 4.57

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

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

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes ___ No X

Remarks:

SOIL

Sampling Point: 1

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	10YR 3/2	100					Clay loam	

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

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

Remarks: Ribbon = 1.2 inch, only slightly gritty

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes _____ No 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:

Remarks:

ATTACHMENT D

ORDINARY HIGH WATER MARK DATASHEETS

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: 100-acre El Toro Site **Project Number:** [illegible] **Stream:** 1 **Investigator(s):** A Rudolence, J Pauli	**Date:** 3/24/15 **Town:** **Photo begin file#:**	**Time:** **State:** **Photo end file#:**
Y ☒ / N ☐ Do normal circumstances exist on the site? Y ☐ / N ☒ Is the site significantly disturbed?	**Location Details:** **Projection:** **Datum:** **Coordinates:**	

Potential anthropogenic influences on the channel system:

Grading at end, paved roads + culverts

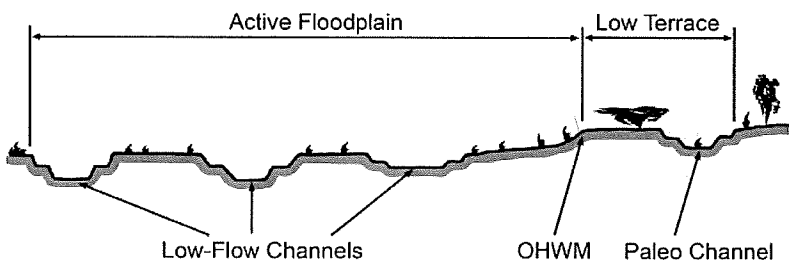
Brief site description:

Artificial channel on El Toro MCB

Checklist of resources (if available):

- ☐ Aerial photography
  Dates:
- ☒ Topographic maps
- ☐ Geologic maps
- ☒ Vegetation maps
- ☒ Soils maps
- ☐ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☐ Global positioning system (GPS)
- ☐ Other studies
- ☐ Stream gage data
  Gage number:
  Period of record:
  - ☐ History of recent effective discharges
  - ☐ Results of flood frequency analysis
  - ☐ Most recent shift-adjusted rating
  - ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

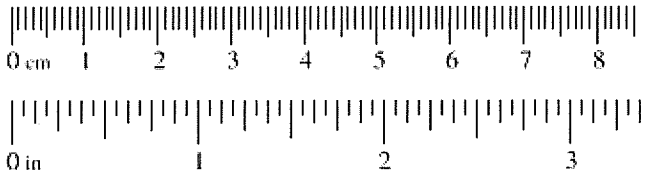


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☐ Mapping on aerial photograph
   - ☐ Digitized on computer
   - ☒ GPS
   - ☐ Other:

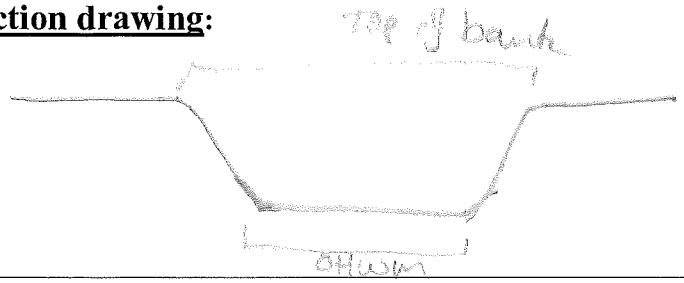
Wentworth Size Classes

Inches (in)		Millimeters (mm)	Wentworth size class	
	10.08	256	Boulder	Gravel
	2.56	64	Cobble	
	0.157	4	Pebble	
	0.079	2.00	Granule	
	0.039	1.00	Very coarse sand	Sand
	0.020	0.50	Coarse sand	
1/2	0.0098	0.25	Medium sand	
1/4	0.005	0.125	Fine sand	
1/8	0.0025	0.0625	Very fine sand	
1/16	0.0012	0.031	Coarse silt	Silt
1/32	0.00061	0.0156	Medium silt	
1/64	0.00031	0.0078	Fine silt	
1/128	0.00015	0.0039	Very fine silt	
			Clay	Mud



Project ID: LowerBnt-J001 **Cross section ID:** 1 **Date:** 3/24/15 **Time:**

Cross section drawing:



OHWM

GPS point: _____

Indicators:

- ☐ Change in average sediment texture
- ☒ Change in vegetation species
- ☒ Change in vegetation cover
- ☐ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

Floodplain unit: ☒ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: silt to clay

Total veg cover: 99 % Tree: 0 % Shrub: 1 % Herb: 99 %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☒ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☒ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☒ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☒ Other: change in vegetation
- ☐ Other: _____
- ☐ Other: _____

Comments:

Project ID: Lower Eat Jordl **Cross section ID:** 1 **Date:** 3/24/15 **Time:**

Floodplain unit: ☐ Low-Flow Channel ☒ Active Floodplain ☐ Low Terrace

GPS point: _____ N/A

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____ % Shrub: _____ % Herb: _____ %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☒ Low Terrace

GPS point: _____ N/A

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____ % Shrub: _____ % Herb: _____ %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

ATTACHMENT E

CALIFORNIA RAPID ASSESSMENT METHOD DATASHEETS

Basic Information Sheet: Riverine Wetlands

Assessment Area Name: Drainage 3	
Project Name: 100-acre El Toro Parcel	
Assessment Area ID #: D3	
Project ID #: 3LOW000100	**Date:** 3/24/15
Assessment Team Members for This AA:	
Allison Rudalevige, Jennifer Parcell	
Average Bankfull Width: 7.3m	
Approximate Length of AA (10 times bankfull width, min 100 m, max 200 m): 100m	
Upstream Point Latitude: 33°39'58.9"N	**Longitude:** -117°44'38.71"W
Downstream Point Latitude: 33°39'59.99"	**Longitude:** -117°44'42.36"W
Wetland Sub-type:	
(Confined) Non-confined	
AA Category:	
Restoration Mitigation Impacted Ambient Reference Training	
Other:	
Did the river/stream have flowing water at the time of the assessment? yes (no)	
What is the apparent hydrologic flow regime of the reach you are assessing?	
The hydrologic flow regime of a stream describes the frequency with which the channel conducts water. *Perennial* streams conduct water all year long, whereas *ephemeral* streams conduct water only during and immediately following precipitation events. *Intermittent* streams are dry for part of the year, but conduct water for periods longer than ephemeral streams, as a function of watershed size and water source.	
perennial intermittent (ephemeral)	

Photo Identification Numbers and Description:

	Photo ID No.	Description	Latitude	Longitude	Datum
1		Upstream			
2		Middle Left			
3		Middle Right			
4		Downstream			
5					
6					
7					
8					
9					
10					

Site Location Description:

Channelized (unlined) drainage on former El Toro Marine Corps Air Station

Comments:

Scoring Sheet: Riverine Wetlands

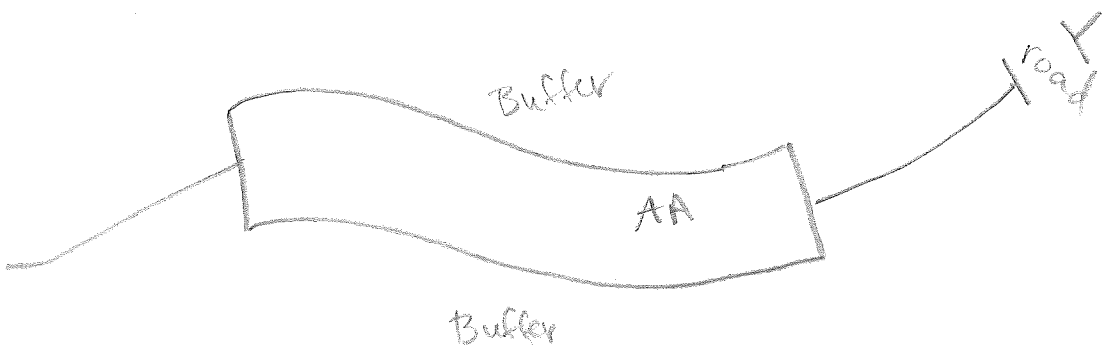
AA Name:				Date:	
Attribute 1: Buffer and Landscape Context (pp. 11-19)				**Comments**	
Stream Corridor Continuity (D)		Alpha. D	Numeric 3	Drainage goes underground u.s. & ends d.s.	
Buffer:					
Buffer submetric A: Percent of AA with Buffer	Alpha. A	Numeric 12			
Buffer submetric B: Average Buffer Width	C	6			
Buffer submetric C: Buffer Condition	C	6			
Raw Attribute Score = D+[C x (A x B)½]½			10.1	**Final Attribute Score = (Raw Score/24) x 100**	42.2
Attribute 2: Hydrology (pp. 20-26)					
Water Source		Alpha. C	Numeric 6		
Channel Stability		C	6		
Hydrologic Connectivity		C	6		
Raw Attribute Score = sum of numeric scores			18	**Final Attribute Score = (Raw Score/36) x 100**	50.0
Attribute 3: Physical Structure (pp. 27-33)					
Structural Patch Richness		Alpha. D	Numeric 3		
Topographic Complexity		D	3		
Raw Attribute Score = sum of numeric scores			6	**Final Attribute Score = (Raw Score/24) x 100**	25.0
Attribute 4: Biotic Structure (pp. 34-41)					
Plant Community Composition (based on sub-metrics A-C)					
Plant Community submetric A: Number of plant layers	Alpha. D	Numeric 3			
Plant Community submetric B: Number of Co-dominant species	D	3			
Plant Community submetric C: Percent Invasion	D	3			
Plant Community Composition Metric *(numeric average of submetrics A-C)*			3		
Horizontal Interspersion		D	3		
Vertical Biotic Structure		D	3		
Raw Attribute Score = sum of numeric scores			9	**Final Attribute Score = (Raw Score/36) x 100**	35.6
Overall AA Score (average of four final Attribute Scores)					

Worksheet for Stream Corridor Continuity Metric for Riverine Wetlands

Lengths of Non-buffer Segments For Distance of 500 m Upstream of AA		Lengths of Non-buffer Segments For Distance of 500 m Downstream of AA	
Segment No.	Length (m)	Segment No.	Length (m)
1	324	1	427
2		2	
3		3	
4		4	
5		5	
Upstream Total Length	324	Downstream Total Length	427

Percent of AA with Buffer Worksheet

In the space provided below make a quick sketch of the AA, or perform the assessment directly on the aerial imagery; indicate where buffer is present, estimate the percentage of the AA perimeter providing buffer functions, and record the estimate amount in the space provided.



Percent of AA with Buffer: 100 %

Worksheet for calculating average buffer width of AA

Line	Buffer Width (m)
A	54
B	108
C	82
D	104
E	167
F	169
G	162
H	151
Average Buffer Width ***Round to the nearest integer***	119.6

Worksheet for Assessing Channel Stability for Riverine Wetlands

Condition	Field Indicators (check all existing conditions)
Indicators of Channel Equilibrium	☐ The channel (or multiple channels in braided systems) has a well-defined bankfull contour that clearly demarcates an obvious active floodplain in the cross-sectional profile of the channel throughout most of the AA. ☐ Perennial riparian vegetation is abundant and well established along the bankfull contour, but not below it. ☐ There is leaf litter, thatch, or wrack in most pools (if pools are present). ☐ The channel contains embedded woody debris of the size and amount consistent with what is naturally available in the riparian area. ☒ There is little or no active undercutting or burial of riparian vegetation. ☐ If mid-channel bars and/or point bars are present, they are not densely vegetated with perennial vegetation. ☐ Channel bars consist of well-sorted bed material (smaller grain size on the top and downstream end of the bar, larger grain size along the margins and upstream end of the bar). ☐ There are channel pools, the spacing between pools tends to be regular and the bed is not planar throughout the AA ☐ The larger bed material supports abundant mosses or periphyton.
Indicators of Active Degradation	☐ The channel is characterized by deeply undercut banks with exposed living roots of trees or shrubs. ☐ There are abundant bank slides or slumps. ☐ The lower banks are uniformly scoured and not vegetated. ☐ Riparian vegetation is declining in stature or vigor, or many riparian trees and shrubs along the banks are leaning or falling into the channel. ☐ An obvious historical floodplain has recently been abandoned, as indicated by the age structure of its riparian vegetation. ☐ The channel bed appears scoured to bedrock or dense clay. ☐ Recently active flow pathways appear to have coalesced into one channel (i.e. a previously braided system is no longer braided). ☐ The channel has one or more knickpoints indicating headward erosion of the bed.
Indicators of Active Aggradation	☐ There is an active floodplain with fresh splays of coarse sediment (sand and larger that is not vegetated) deposited in the current or previous year. ☐ There are partially buried living tree trunks or shrubs along the banks. ☒ The bed is planar (flat or uniform gradient) overall; it lacks well-defined channel pools, or they are uncommon and irregularly spaced. ☐ There are partially buried, or sediment-choked, culverts. ☒ Perennial terrestrial or riparian vegetation is encroaching into the channel or onto channel bars below the bankfull contour. ☐ There are avulsion channels on the floodplain or adjacent valley floor.
Overall	**Equilibrium** **Degradation** **Aggradation**

Riverine Wetland Entrenchment Ratio Calculation Worksheet

The following 5 steps should be conducted for each of 3 cross-sections located in the AA at the approximate midpoints along straight riffles or glides, away from deep pools or meander bends. An attempt should be made to place them at the top, middle, and bottom of the AA.

Steps	Replicate Cross-sections →	TOP	MID	BOT
1 Estimate bankfull width.	This is a critical step requiring familiarity with field indicators of the bankfull contour. Estimate or measure the distance between the right and left bankfull contours.	10.4	8	7.3
2: Estimate max. bankfull depth.	Imagine a level line between the right and left bankfull contours; estimate or measure the height of the line above the thalweg (the deepest part of the channel).			
3: Estimate flood prone depth.	Double the estimate of maximum bankfull depth from Step 2.			
4: Estimate flood prone width.	Imagine a level line having a height equal to the flood prone depth from Step 3; note where the line intercepts the right and left banks; estimate or measure the length of this line.	~12	10	~9
5: Calculate entrenchment ratio.	Divide the flood prone width (Step 4) by the bankfull width (Step 1).	1.2	1.3	1.2
6: Calculate average entrenchment ratio.	Calculate the average results for Step 5 for all 3 replicate cross-sections. Enter the average result here and use it in Table 13a or 13b.			1.23

Structural Patch Type Worksheet for Riverine wetlands

Circle each type of patch that is observed in the AA and enter the total number of observed patches in Table below. In the case of riverine wetlands, their status as confined or non-confined must first be determined (see page 6) to determine with patches are expected in the system (indicated by a "1" in the table below). Any feature onsite should only be counted once as a patch type. If a feature appears to meet the definition of more than one patch type (i.e. swale and secondary channel) the practitioner should choose which patch type best illustrates the feature. Not all features at a site will be patch types.

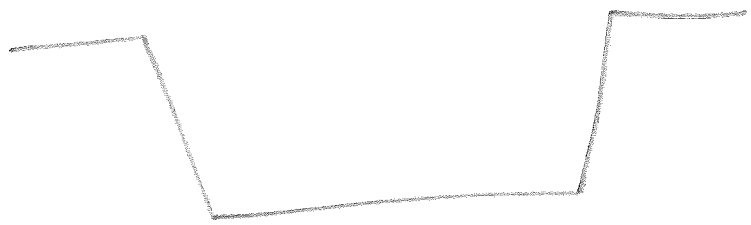
**Please refer to the CRAM Photo Dictionary at www.cramwetlands.org for photos of each of the following patch types.*

STRUCTURAL PATCH TYPE (circle for presence)	**Riverine (Non-confined)**	**Riverine (Confined)**
Minimum Patch Size	**3 m^2**	**3 m^2**
Abundant wrackline or organic debris in channel, on floodplain	**1**	**1**
Bank slumps or undercut banks in channels or along shoreline	**1**	**1**
Cobbles and/or Boulders	**1**	**1**
Debris jams	**1**	**1**
Filamentous macroalgae or algal mats	**1**	**1**
Large woody debris	**1**	**1**
Pannes or pools on floodplain	**1**	**N/A**
Plant hummocks and/or sediment mounds	**1**	**1**
Point bars and in-channel bars	**1**	**1**
Pools or depressions in channels (wet or dry channels)	**1**	**1**
Riffles or rapids (wet or dry channels)	**1**	**1**
Secondary channels on floodplains or along shorelines	**1**	**N/A**
Standing snags (at least 3 m tall)	**1**	**1**
Submerged vegetation	**1**	**N/A**
Swales on floodplain or along shoreline	**1**	**N/A**
Variegated, convoluted, or crenulated foreshore (instead of broadly arcuate or mostly straight)	**1**	**1**
Vegetated islands (mostly above high-water)	**1**	**N/A**
Total Possible	**17**	**12**
No. Observed Patch Types (enter here and use in Table 14 below)		0

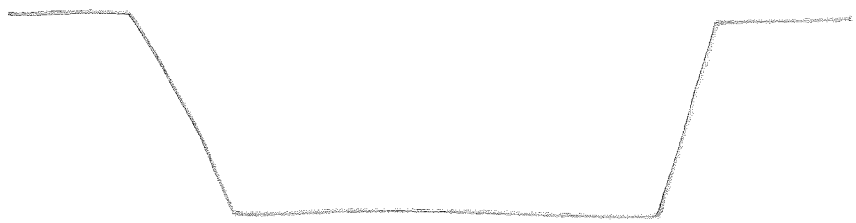
Worksheet for AA Topographic Complexity

At three locations along the AA, make a sketch of the profile of the stream from the AA boundary down to its deepest area then back out to the other AA boundary. Try to capture the benches and the intervening micro-topographic relief. To maintain consistency, make drawings at each of the stream hydrologic connectivity measurements, always facing downstream. Include the water level, an arrow at the bankfull contour, and label the benches. Based on these sketches and the profiles in Figure 10, choose a description in Table 16 that best describes the overall topographic complexity of the AA.

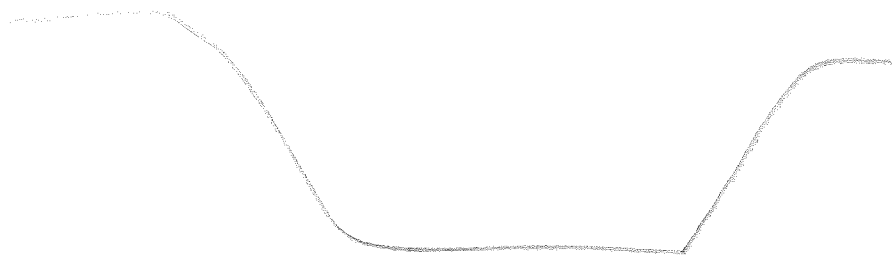
Profile 1



Profile 2



Profile 3



Plant Community Metric Worksheet: Co-dominant species richness for Riverine wetlands
(A dominant species represents ≥10% *relative* cover)

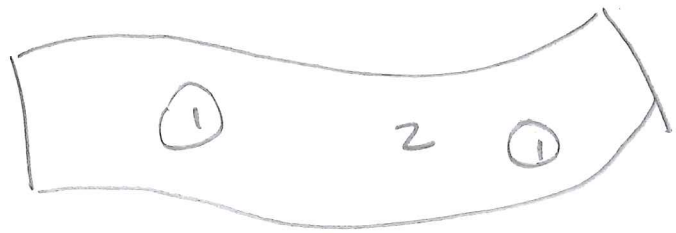
Special Note:

** Combine the counts of co-dominant species from all layers to identify the total species count. Each plant species is only counted once when calculating the Number of Co-dominant Species and Percent Invasion submetric scores, regardless of the numbers of layers in which it occurs.*

Floating or Canopy-forming (non-confined only)	Invasive?	Short (<0.5 m)	Invasive?
Medium (0.5-1.5 m)	**Invasive?**	**Tall (1.5-3.0 m)**	**Invasive?**
Hirschfeldia incana	y		
Centaurea melitensis	y		
Melilotus indicus	y		
Crassula connata	y		
Very Tall (>3.0 m)	**Invasive?**	**Total number of co-dominant species for all layers combined (enter here and use in Table 18)**	4
		Percent Invasion *Round to the nearest integer* (enter here and use in Table 18)	100%

Horizontal Interspersion Worksheet.

Use the spaces below to make a quick sketch of the AA in plan view, outlining the major plant zones (this should take no longer than 10 minutes). Assign the zones names and record them on the right. Based on the sketch, choose a single profile from Figure 12 that best represents the AA overall.



Assigned zones:

1) Mulefat

2) herbaceous weeds

3)

4)

5)

6)

Worksheet for Wetland disturbances and conversions

Has a major disturbance occurred at this wetland?	Yes	No		
If yes, was it a flood, fire, landslide, or other?	flood	fire	landslide	other
If yes, then how severe is the disturbance?	likely to affect site next 5 or more years	likely to affect site next 3-5 years	likely to affect site next 1-2 years	
Has this wetland been converted from another type? If yes, then what was the previous type?	depressional	vernal pool	vernal pool system	
	non-confined riverine	confined riverine	seasonal estuarine	
	perennial saline estuarine	perennial non-saline estuarine	wet meadow	
	lacustrine	seep or spring	playa	

Stressor Checklist Worksheet

HYDROLOGY ATTRIBUTE (WITHIN 50 M OF AA)	Present	Significant negative effect on AA
Point Source (PS) discharges (POTW, other non-stormwater discharge)		
Non-point Source (Non-PS) discharges (urban runoff, farm drainage)	X	
Flow diversions or unnatural inflows		
Dams (reservoirs, detention basins, recharge basins)		
Flow obstructions (culverts, paved stream crossings)	X	
Weir/drop structure, tide gates		
Dredged inlet/channel		
Engineered channel (riprap, armored channel bank, bed)		
Dike/levees		
Groundwater extraction		
Ditches (borrow, agricultural drainage, mosquito control, etc.)		
Actively managed hydrology		
Comments		

PHYSICAL STRUCTURE ATTRIBUTE (WITHIN 50 M OF AA)	Present	Significant negative effect on AA
Filling or dumping of sediment or soils **(N/A for restoration areas)**		
Grading/ compaction **(N/A for restoration areas)**	X	X
Plowing/Discing **(N/A for restoration areas)**		
Resource extraction (sediment, gravel, oil and/or gas)		
Vegetation management	X	
Excessive sediment or organic debris from watershed		
Excessive runoff from watershed		
Nutrient impaired (PS or Non-PS pollution)		
Heavy metal impaired (PS or Non-PS pollution)		
Pesticides or trace organics impaired (PS or Non-PS pollution)		
Bacteria and pathogens impaired (PS or Non-PS pollution)		
Trash or refuse		
Comments		
Downstream end has been modified to eliminate		
Connection to Bee Canyon Wash.		

BIOTIC STRUCTURE ATTRIBUTE (WITHIN 50 M OF AA)	Present	Significant negative effect on AA
Mowing, grazing, excessive herbivory (within AA)	X	
Excessive human visitation		
Predation and habitat destruction by non-native vertebrates (e.g., *Virginia opossum* and domestic predators, such as feral pets)		
Tree cutting/sapling removal		
Removal of woody debris		
Treatment of non-native and nuisance plant species	unk	
Pesticide application or vector control	unk	
Biological resource extraction or stocking (fisheries, aquaculture)		
Excessive organic debris in matrix (for vernal pools)		
Lack of vegetation management to conserve natural resources	unk	
Lack of treatment of invasive plants adjacent to AA or buffer	unk	
Comments		

BUFFER AND LANDSCAPE CONTEXT ATTRIBUTE (WITHIN 500 M OF AA)	Present	Significant negative effect on AA
Urban residential		
Industrial/commercial	X	
Military training/Air traffic	formerly	
Dams (or other major flow regulation or disruption)		
Dryland farming		
Intensive row-crop agriculture		
Orchards/nurseries		
Commercial feedlots		
Dairies		
Ranching (enclosed livestock grazing or horse paddock or feedlot)		
Transportation corridor	X	
Rangeland (livestock rangeland also managed for native vegetation)		
Sports fields and urban parklands (golf courses, soccer fields, etc.)		
Passive recreation (bird-watching, hiking, etc.)		
Active recreation (off-road vehicles, mountain biking, hunting, fishing)		
Physical resource extraction (rock, sediment, oil/gas)		
Biological resource extraction (aquaculture, commercial fisheries)		
Comments		

ATTACHMENT F

NATIONWIDE PERMIT SUMMARY

The following is a summary of Nationwide Permit 29 (Residential Developments).

NWP 29. Residential Developments. Discharges of dredged or fill material into non-tidal "waters of the U.S." for the construction or expansion of a single residence, a multiple unit residential development, or a residential subdivision. This NWP authorizes the construction of building foundations and building pads and attendant features that are necessary for the use of the residence or residential development. Attendant features may include but are not limited to roads, parking lots, garages, yards, utility lines, storm water management facilities, septic fields, and recreation facilities such as playgrounds, playing fields, and golf courses (provided the golf course is an integral part of the residential development).

The discharge must not cause the loss of greater than 1/2-acre of non-tidal "waters of the U.S.", including the loss of no more than 300 linear feet of stream bed, unless for intermittent and ephemeral stream beds the district engineer waives the 300 linear foot limit by making a written determination concluding that the discharge will result in minimal adverse effects. This NWP does not authorize discharges into non-tidal wetlands adjacent to tidal waters.

Subdivisions: For residential subdivisions, the aggregate total loss of "waters of the U.S." authorized by this NWP cannot exceed 1/2-acre. This includes any loss of "waters of the U.S." associated with development of individual subdivision lots.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity. (See general condition 31.) (Sections 10 and 404)

General Condition 31. Pre-Construction Notification. (a) Timing: Where required by the terms of the NWP, the prospective permittee must notify the district engineer by submitting a pre-construction notification (PCN) as early as possible. The district engineer must determine if the PCN is complete within 30 calendar days of the date of receipt and, if the PCN is determined to be incomplete, notify the prospective permittee within that 30 day period to request the additional information necessary to make the PCN complete. The request must specify the information needed to make the PCN complete. As a general rule, district engineers will request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the district engineer will notify the prospective permittee that the PCN is still incomplete and the PCN review process will not commence until all of the requested information has been received by the district engineer. The prospective permittee shall not begin the activity until either:

1. He or she is notified in writing by the district engineer that the activity may proceed under the NWP with any special conditions imposed by the district or division engineer; or

2. 45 calendar days have passed from the district engineer's receipt of the complete PCN and the prospective permittee has not received written notice from the district or division engineer. However, if the permittee was required to notify the Corps pursuant to general condition 18 that listed species or critical habitat might be affected or in the vicinity of the project, or to notify the Corps pursuant to general condition 20 that the activity may have the potential to cause effects to historic properties, the permittee cannot begin the activity until receiving written notification from the Corps that there is "no effect" on listed species or "no potential to cause effects" on historic properties, or that any consultation required under Section 7 of the Endangered Species Act (see 33 CFR 330.4(f)) and/or Section 106 of the National Historic Preservation (see 33 CFR 330.4(g)) has been completed. Also, work cannot begin under NWPs 21, 49, or 50 until the permittee has received written approval from the Corps. If the proposed activity requires a written waiver to exceed specified limits of an NWP, the permittee may not begin the activity until the district engineer issues the waiver. If the district or division engineer notifies the permittee in

writing that an individual permit is required within 45 calendar days of receipt of a complete PCN, the permittee cannot begin the activity until an individual permit has been obtained. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

(b) Contents of Pre-Construction Notification: The PCN must be in writing and include the following information:

1. Name, address and telephone numbers of the prospective permittee;

2. Location of the Project;

3. A description of the Project; the Project's purpose; direct and indirect adverse environmental effects the project would cause, including the anticipated amount of loss of water of the United States expected to result from the NWP activity, in acres, linear feet, or other appropriate unit of measure; any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the Project or any related activity. The description should be sufficiently detailed to allow the district engineer to determine that the adverse effects of the project will be minimal and to determine the need for compensatory mitigation. Sketches should be provided when necessary to show that the activity complies with the terms of the NWP. (Sketches usually clarify the project and when provided results in a quicker decision. Sketches should contain sufficient detail to provide an illustrative description of the proposed activity (e.g., a conceptual plan), but do not need to be detailed engineering plans);

4. The PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial, intermittent, and ephemeral streams, on the project site. Wetland delineations must be prepared in accordance with the current method required by the Corps. The permittee may ask the Corps to delineate the special aquatic sites and other waters on the project site, but there may be a delay if the Corps does the delineation, especially if the project site is large or contains many waters of the United States. Furthermore, the 45 day period will not start until the delineation has been submitted to or completed by the Corps, as appropriate;

5. If the proposed activity will result in the loss of greater than 1/10-acre of wetlands and a PCN is required, the prospective permittee must submit a statement describing how the mitigation requirement will be satisfied, or explaining why the adverse effects are minimal and why compensatory mitigation should not be required. As an alternative, the prospective permittee may submit a conceptual or detailed mitigation plan.

6. If any listed species or designated critical habitat might be affected or is in the vicinity of the project, or if the project is located in designated critical habitat, for non-Federal applicants the PCN must include the name(s) of those endangered or threatened species that might be affected by the proposed work or utilize the designated critical habitat that may be affected by the proposed work. Federal applicants must provide documentation demonstrating compliance with the Endangered Species Act; and

7. For an activity that may affect a historic property listed on, determined to be eligible for listing on, or potentially eligible for listing on, the National Register of Historic Places, for non-Federal applicants the PCN must state which historic property may be affected by the proposed work or include a vicinity map indicating the location of the historic property. Federal applicants must provide documentation demonstrating compliance with Section 106 of the National Historic Preservation Act.

(c) Form of Pre-Construction Notification: The standard individual permit application form (Form ENG 4345) may be used, but the completed application form must clearly indicate that it is a PCN and must include all of the information required in paragraphs (b)(1) through (7) of this general condition. A letter containing the required information may also be used.

(d) Agency Coordination:

1. The district engineer will consider any comments from Federal and state agencies concerning the proposed activity's compliance with the terms and conditions of the NWPs and the need for mitigation to reduce the project's adverse environmental effects to a minimal level.

2. For all NWP activities that require pre-construction notification and result in the loss of greater than 1/2-acre of waters of the United States, for NWP 21, 29, 39, 40, 42, 43, 44, 50, 51, and 52 activities that require pre-construction notification and will result in the loss of greater than 300 linear feet of intermittent and ephemeral stream bed, and for all NWP 48 activities that require pre-construction notification, the district engineer will immediately provide (e.g., via e-mail, facsimile transmission, overnight mail, or other expeditious manner) a copy of the complete PCN to the appropriate Federal or state offices (U.S. FWS, state natural resource or water quality agency, EPA, State Historic Preservation Officer (SHPO) or Tribal Historic Preservation Office (THPO), and, if appropriate, the NMFS). With the exception of NWP 37, these agencies will have 10 calendar days from the date the material is transmitted to telephone or fax the district engineer notice that they intend to provide substantive, site-specific comments. The comments must explain why the agency believes the adverse effects will be more than minimal. If so contacted by an agency, the district engineer will wait an additional 15 calendar days before making a decision on the pre-construction notification. The district engineer will fully consider agency comments received within the specified time frame concerning the proposed activity's compliance with the terms and conditions of the NWPs, including the need for mitigation to ensure the net adverse environmental effects to the aquatic environment of the proposed activity are minimal. The district engineer will provide no response to the resource agency, except as provided below. The district engineer will indicate in the administrative record associated with each pre-construction notification that the resource agencies' concerns were considered. For NWP 37, the emergency watershed protection and rehabilitation activity may proceed immediately in cases where there is an unacceptable hazard to life or a significant loss of property or economic hardship will occur. The district engineer will consider any comments received to decide whether the NWP 37 authorization should be modified, suspended, or revoked in accordance with the procedures at 33 CFR 330.5.

3. In cases of where the prospective permittee is not a Federal agency, the district engineer will provide a response to NMFS within 30 calendar days of receipt of any Essential Fish Habitat conservation recommendations, as required by Section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act.

4. Applicants are encouraged to provide the Corps with either electronic files or multiple copies of pre-construction notifications to expedite agency coordination.

the Project site. Various factors contribute to suitable day-roost sites, including structural opportunities (e.g., crevices); microclimate; thermal conductivity (the roost's capacity to maintain a mostly consistent temperature throughout the day); protection from predators; and proximity to resources such as open water for drinking. Daytime surveys were conducted by BonTerra Psomas Bat Specialist Steve Norton on February 23, 2015, from 1:00 PM to 4:00 PM and on April 21, 2015, from 1:00 PM to 6:00 PM.

Emergence Surveys

The emergence surveys (also known as the exit or evening survey) involved visually monitoring and acoustically recording potential roost sites for evening emergence. The Project site was surveyed four different periods over the year: one visit between November and February (winter), one visit between May and June (late spring), one visit between mid-July and mid-August (mid-summer), and one visit between late-August and early-September (late summer/early fall). Emergence surveys were scheduled to accommodate favorable emergence conditions, which include wind speeds less than ten miles per hour, moderate day and evening temperatures, no rain, and avoidance of a full moon. Two visits were conducted during each period to sufficiently survey the entire Project site. Emergence surveys were conducted on February 25 and 26; April 21 and 22; June 23 and June 24; and August 11 and 12, 2015. The following BonTerra Psomas biologists participated in the emergence surveys: Mr. Norton, Jonathan Aguayo, Josephine Lim, Jason Mintzer, Kristina Garcia, Courtney Rose, and Nathan Moffett. The survey dates, times, and the environmental conditions during the survey are listed in Table 1.

TABLE 1
SURVEY DATES AND CONDITIONS

Survey Period	Survey Start Date	Surveying Biologists	Sunset[a]	Moon Phase (% visible)[a]	Acoustic Recording Hours	Cloud Cover/Wind Speed (mph)[b]	Daytime High/ Nightime Low (°F)[b]
Winter	2/25/2015	Steve Norton, Jonathan Aguayo, Josephine Lim	5:44 PM	Waxing (51%)	5:15 PM–8:44 PM	Partly cloudy/ 3–5	71/57
	2/26/2015	Steve Norton, Josephine Lim	5:45 PM	Waxing (62%)	5:15 PM–8:44 PM	Mostly cloudy/ 4–9	68/52
Spring	4/21/2015	Steve Norton, Josephine Lim, Jason Mintzer	7:26 PM	Waxing (12%)	6:55 PM–10:25 PM	Overcast/3–5	64/59
	4/22/2015	Steve Norton, Jonathan Aguayo, Josephine Lim	7:27 PM	Waxing (20%)	6:55 PM–10:25 PM	Mostly cloudy/3–4	64/57
Early Summer	6/23/2015	Steve Norton, Kristina Garcia, Josephine Lim	8:05 PM	Waxing (44%)	7:35 PM–11:00 PM	Clear/4–8	77/64
	6/24/2015	Steve Norton, Jonathan Aguayo, Kristina Garcia	8:05 PM	Waxing (53%)	7:35 PM–11:00 PM	Partly cloudy/ 5–8	78/64
Late Summer	8/11/2015	Steve Norton, Courtney Rose, Josephine Lim	7:41 PM	Waning (8%)	7:10 PM – 10:40 PM	Partly cloudy/ 3-5	75/64
	8/12/2015	Steve Norton, Josephine Lim, Nathan Moffett	7:41 PM	Waning (3%)	7:10 PM–10:40 PM	Partly cloudy/ 4–6	84/64

mph: miles per hour; °F: degrees Fahrenheit; waxing: increasing the illumination of the moon; waning: decreasing the illumination of the moon.

[a] USNO 2015.

[b] Weather Underground 2015.

The visual monitoring extended from approximately 30 minutes before sunset until the ambient light would no longer support visual monitoring or associated exit counts. Biologists were staged at various locations during each emergence survey to ensure each potentially suitable day-roost feature was sufficiently visible.

The acoustic recording involved deploying multiple ultrasonic acoustic recording devices at locations likely support bat foraging, drinking, or roosting activities. The acoustic recording occurred during each emergence survey, beginning 30 minutes before sunset and each recording extended for approximately 3 hours. Two types of ultrasonic recording units were used: an EchoMeter 3+ unit by Wildlife Acoustics and D500x units by Pettersson. All data were recorded in full spectrum format with varying settings appropriate to filter and minimize the noise recorded at each site (e.g., high-frequency insect calls, wind noise), which could make bat echolocation identification difficult.

All the data collected were processed and analyzed with Sonobat 3.2.1, a bat species identification software, using the "United States West Region" classifier. This version of Sonobat automatically associates bat echolocation call patterns to the likely bat species emitting the call. The software cannot definitively identify the bat species making the call; therefore, the recordings were further analyzed by qualified bat biologists to verify the accuracy of species-level identifications. The subsequent review referenced parameters in *Echolocation Call Characteristics of Western US Bats* (Humboldt State University 2011) and internal call libraries. The sonogram of each recording was visually inspected for echoes, noise, and other distortions that could lead to misidentification. All auto-generated identifications that were not diagnostic of a species or unique group of species were rejected and the erroneous results were not reported. Mr. Norton analyzed all recordings. All wildlife species observed during the surveys or that were confirmed present through recording analysis are listed in the wildlife compendium (see Attachment B).

RESULTS

Habitat Assessment

The Project site contains several features suitable for day-roosting by bats known to roost in crevices, structures, and trees. Suitable features include the mature trees and the abandoned buildings located in the central and southeastern portions of the Project site (Exhibit 3). All mature trees located on the Project site are considered suitable day-roosting habitat for tree-roosting bats. No sign of roosting was observed in any of the trees; however, absence of observable sign does not reliably indicate that tree roosts are empty. The abandoned buildings had abundant materials on their exteriors suitable for crevice- and structure-roosting bats (example photographs of suitable roosting locations are shown in Attachment A). Only one of the buildings, Building 322, contained any sign of bat roosting: limited guano deposits were observed inside the building. No sign of bat roosting was observed inside or outside any of the remaining buildings.

The survey was conducted during the fourth consecutive year of low precipitation in the region. Above-ground water on the Project site was only observed during the February surveys. Standing water was located in a small pool in a small portion of the open drainage ditch that extends along the railroad tracks on southwestern boundary of the Project site (Attachment A). Two large reflection ponds are located in the adjacent Irvine Great Park, which is immediately north of the Project site (Exhibit 3). These ponds are filled with water throughout the year and provide a significant drinking and foraging location for a large colony of Yuma bats (*Myotis yumanensis*). These ponds are not located on the Project site, but are worth noting because of the nearby perennial water source. A wooden deck that overhangs the ponds provides the day-roosting habitat for the Yuma bat present. Additional bat species are also likely to utilize the drinking, foraging, and roosting resources (i.e., trees and crevices) immediately adjacent to the ponds as a result of this perennial water source.

A pair of great horned owls (*Bubo virginianus*) were observed day-roosting near Building 321 and were observed foraging across from the Project site during multiple surveys. Great horned owls are a known predator of bats and their presence may negatively affect bat roosting or foraging suitability on the Project site.

Emergence Surveys

Five bat species were recorded as foraging on the Project site: western mastiff bat (*Eumops perotis californicus*), Brazilian free-tailed bat (*Tadarida brasiliensis*), big brown bat (*Eptesicus fuscus*), Yuma bat, and canyon bat (*Parastrellus hesperus*). Two additional bat species—hoary bat (*Lasiurus cinereus*) and California bat (*Myotis californicus*)—may have also been recorded, but their presence could not be confirmed with acoustic recordings. Hoary bat likely occurred on site, but only a limited number of calls were recorded and no diagnostic call signatures were present. California bat is not common in the region, but the species' calls are almost identical to Yuma bat (known to be present) and acoustic misidentification is common. California bat is not expected to occur. All the bat species recorded, or potentially recorded, during the survey are listed in Table 2.

TABLE 2
BAT SPECIES ACOUSTICALLY RECORDED DURING SURVEY

Scientific Name	Common Name	Protected Status	Day-Roosting Habitat Type	Suitable Day-Roosting Habitat in Project sites?	Potential to Day-Roost in the Project site
Eumops perotis californicus	western mastiff bat	SSC	crevice and structure roosting	Yes	Low
Tadarida brasiliensis	Brazilian free-tailed bat	–	crevice and structure roosting	Yes	Moderate
Eptesicus fuscus	big brown bat	–	crevice and structure roosting	Yes	High
Lasiurus cinereus	hoary bat	–	tree roosting	Yes	Moderate
Myotis californicus[*]	California bat	–	crevice and structure roosting	Yes	Low[*]
Myotis yumanensis	Yuma bat	–	crevice and structure roosting	Yes	High
Parastrellus hesperus	canyon bat	–	crevice roosting	Yes	Moderate

SSC: California Species of Special Concern

[*] The acoustic signature of *Myotis californicus* is almost identical to *Myotis yumanensis* and clear species identification can be difficult. The survey area is within the known range of *Myotis yumanensis,* and this species is likely to occur. The presence of *Myotis californicus* cannot be confirmed without physical identification.

Of the bat species recorded as occurring on the Project site, only one species is special status: western mastiff bat is a California Species of Special Concern. Western mastiff bat is an uncommon resident across California. The species typically emerges just after dark and forages over great distances (i.e., up to 15 miles from the roost) throughout the night. Western mastiff bat has unique roost requirements in that it requires roost exits with a vertical drop of at least ten feet above ground (frequently greater) to achieve flight speeds when emerging. This species forages over open habitat that includes dry desert washes, flood plains, chaparral, coastal sage scrub, oak woodland, open pine forest, grasslands, and agricultural areas (WBWG 2015). Marginally suitable roosting habitat for western mastiff bat occurs in the overhanging structures on Buildings 317, 318, and 360 (see Photo 2 in Attachment A).

Two Yuma bats were observed emerging from their day-roost in Building 322 on multiple survey visits. No other roost emergence was observed during the surveys; however, regular foraging by individual big brown bats were observed along the exterior portions of Building 360 and day-roosting at or near this location is likely.

Very limited bat foraging activity occurred during the survey: both visual observations and acoustic recordings confirmed this limited activity. No bat foraging was observed or recorded during the February survey visits. Two species, big brown bat and Yuma bat, were recorded during three of the four survey periods and both species generally occurred early in the evening, soon after sunset. Brazilian free-tailed bat and canyon bat were only recorded during two of the survey periods and both occurred generally later in the evening. Both western mastiff bat and hoary bat were recorded with one set of calls during only one survey period (western mastiff bat was recorded in June and hoary bat was recorded in April).[1] No bat foraging activity was observed or recorded inside any of the buildings. Areas where foraging and confirmed roosting were observed are shown in Table 3.

TABLE 3
BAT ACTIVITY LOCATIONS DURING SURVEY

General Project site Location	Bat Activity Observed	Roost Emergence Observed
Building 317	western mastiff bat	No
Building 318	None	No
Building 320	None	No
Building 321	Yuma bat	No
Building 322	Brazilian free-tailed bat, Yuma bat, canyon bat	Yes
Building 360	big brown bat	No
Building 496	Brazilian free-tailed bat, Yuma bat, canyon bat	No

The western mastiff bat foraging occurrence was limited to recordings near Building 317. Brazilian free-tailed bat foraging occurrences were recorded near Buildings 321 and 360. As mentioned earlier, big brown bat foraging occurrences were recorded near Building 360. The hoary bat foraging occurrence was near Building 496.[1] California bat was recorded at the same locations and same times as Yuma bat; Yuma bat foraging occurrences were recorded near Buildings 321, 322, and 496. Canyon bat foraging occurrences were recorded near Buildings 322 and 496.

DISCUSSION

The abandoned buildings and mature trees located on the Project site contain suitable roosting habitat for structure-roosting bat species (e.g., western mastiff bat and Yuma bat) and tree-roosting bat species (e.g., hoary bat). Destruction of an occupied day roost has potential to result in loss of the occupants. Yuma bat was confirmed to be day-roosting on the Project site; however, the two individuals observed suggest they are solitary. The species is colonial and there is a substantial colony roosting off site in the wooden deck overhanging the reflection ponds adjacent to the Project site. The loss or displacement of the solitary Yuma bats observed roosting on the Project site would have no significant effect on the local population of the species. Big brown bat was not confirmed to be day-roosting; however, the species is assumed to be roosting on the Project site, and the current occupants are likely solitary. The remaining bat

[1] Hoary bat likely occurred on site, but only a limited number of calls were recorded and no diagnostic call signatures were present.

species that occur on the Project site were first recorded on the Project site between 40 minutes (canyon bat) and two hours (hoary bat) after the sunset, suggesting roost emergence occurred off site and the Project site is located only within their foraging area[2].

All the species recorded have potential to day-roost on the Project site. Demolition or removal of roosting habitat from the Project site could result in the loss of individual bats; however, the loss would not likely affect the sustainability of any bat species' local population.

RECOMMENDATIONS

The Project site contains suitable bat day-roosting habitat and measures are recommended to minimize any potential impacts. The following are recommendations to minimize any potential impacts associated with the proposed Project.

- No trimming or removal of any mature trees on the Project site should occur during the bat maternity season (i.e., March 1 through August 31).
- One month prior to building demolition, a pre-construction survey for roosting bats should be conducted. The survey will consist of one day-survey followed by an evening emergence survey. The survey will determine if any bats are day-roosting in the buildings proposed for removal. If direct impacts to day roosting bats are anticipated, bat-exclusionary devices should be installed prior to construction or demolition activities. The bat exclusionary devices should be designed to allow for bats to exit the roost areas but not re-enter. All designs should be approved by a qualified bat specialist and installation should be monitored by a qualified Bat Specialist.

If you have any questions regarding the content of this letter, please contact Steve Norton or Amber Heredia at (714) 751-7373.

Sincerely,
BonTerra Psomas

Amber O. Heredia
Senior Project Manager

Steve Norton
Senior Project Manager

Attachments: Exhibit 1–3
A – Site Photographs
B – Wildlife Compendium

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[2] Canyon bat usually emerges before sunset and is typically the first bat species to emerge. The remaining bat species generally emerge at or within 30 minutes after sunset. Western mastiff bat was only recorded once approximately one hour after sunset. Brazilian free-tailed bat was generally first recorded an hour and a half after sunset. Hoary bat was recorded two hours after sunset.

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Project Location

Exhibit 1

El Toro, 100-acre Development Plan

N W E S

3,000 1,500 0 3,000 Feet

BonTerra PSOMAS

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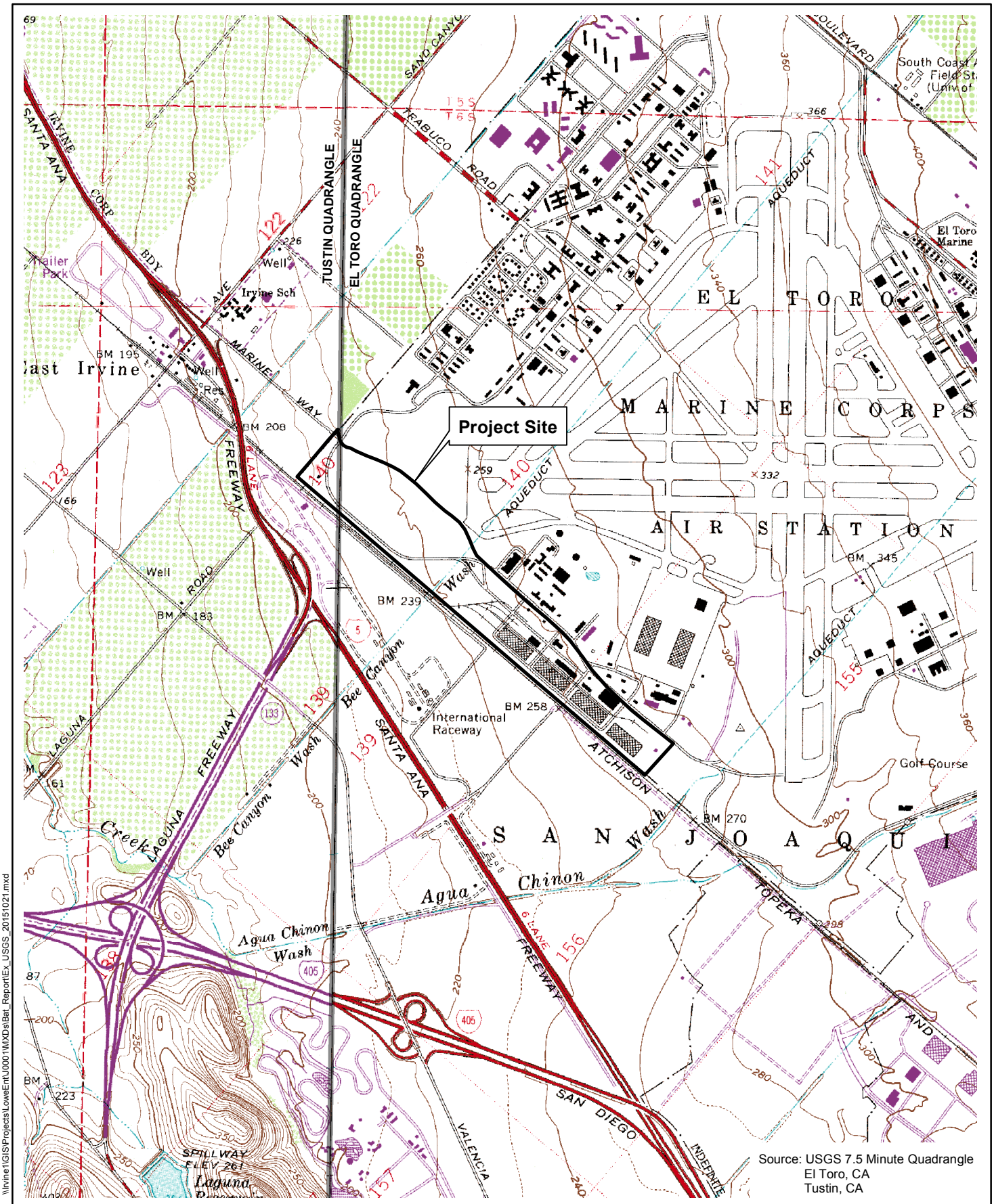

Source: USGS 7.5 Minute Quadrangle
El Toro, CA
Tustin, CA

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USGS 7.5-Minute Topgraphic Quadrangle

Exhibit 2

El Toro, 100-acre Development Plan

N W E S

2,000 1,000 0 2,000 Feet

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Suitable Roost Locations

Exhibit 3

El Toro, 100-acre Development Plan

700 350 0 700 Feet

BonTerra PSOMAS

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ATTACHMENT A

SITE PHOTOGRAPHS

Photo 1: Taken from the central portion of the study area facing east. The mature, ornamental palm trees are suitable roosting habitat for tree-roosting bat species.

Photo 2: Taken along the northeast side of Building 317 facing northwest. The wooden overhang is suitable roosting habitat for crevice- and structure-roosting bat species.

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Site Photographs

Attachment A-1

El Toro, 100-acre Development Plan

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Photo 3: Taken beneath the wooden overhang of Building 321 facing up. Each space between each board is suitable for crevice- and structure-roosting bat species.

Photo 4: Taken in February along the southwestern boundary of the study area facing southeast. The standing water in the photograph was the only water observed in the study area during any of the surveys.

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Site Photographs

Attachment A-2

El Toro, 100-acre Development Plan

BonTerra PSOMAS

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ATTACHMENT B

WILDLIFE COMPENDIUM

ATTACHMENT B
WILDLIFE COMPENDIUM

Scientific Name	Common Name	Special Status
BIRDS		
ACCIPITRIDAE - HAWK FAMILY		
Buteo jamaicensis	red-tailed hawk	
CHARADRIIDAE - PLOVER FAMILY		
Charadrius vociferus	killdeer	
COLUMBIDAE - PIGEON AND DOVE FAMILY		
*Columba livia**	rock pigeon	
STRIGIDAE - TYPICAL OWL FAMILY		
Bubo virginianus	great horned owl	
TYRANNIDAE - TYRANT FLYCATCHER FAMILY		
Sayornis nigricans	black phoebe	
CORVIDAE - JAY AND CROW FAMILY		
Corvus brachyrhynchos	American crow	
MIMIDAE - MOCKINGBIRD AND THRASHER FAMILY		
Mimus polyglottos	northern mockingbird	
STURNIDAE - STARLING FAMILY		
*Sturnus vulgaris**	European starling	
PARULIDAE - WOOD-WARBLER FAMILY		
Setophaga coronata	yellow-rumped warbler	
EMBERIZIDAE - SPARROW FAMILY		
Melozone crissalis	California towhee	
Zonotrichia leucophrys	white-crowned sparrow	
ICTERIDAE - BLACKBIRD, COWBIRD AND ORIOLE FAMILY		
Icterus cucullatus	hooded oriole	
FRINGILLIDAE - FINCH FAMILY		
Haemorhous mexicanus	house finch	
Spinus psaltria	lesser goldfinch	
MAMMALS		
DIDELPHIDAE - AMERICAN OPPOSSUM FAMILY		
Didelphia virginiana	Virginia opossum	
LEPORIDAE - HARE AND RABBIT FAMILY		
Sylvilagus audubonii	desert cottontail	
MOLOSSIDAE - MOLOSSID BAT FAMILY		
Eumops perotis californicus	western mastiff bat	SSC
Tadarida brasiliensis	Brazilian free-tailed bat	
VESPERTILIONIDAE - VESPERTILIONID BAT FAMILY		
Eptesicus fuscus	big brown bat	
Lasiurus cinereus	hoary bat	
Parastrellus hesperus	canyon bat	
Myotis yumanensis	Yuma bat	
MEPHITIDAE - SKUNK FAMILY		
Spilogale gracilis	western spotted skunk	

* = Non-native species
SSC = Species of Special Concern

Overview of the western portion of the study area.

Representative developed/ornamental area in the eastern portion of the study area.

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Site Photographs

Appendix D-5a

El Toro, 100-acre Development Plan Program EIR

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Drainage feature in the center of the study area.

Drainage feature located along the southern boundary of the study area.

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Site Photographs

Appendix D-5b

El Toro, 100-acre Development Plan Program EIR

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PLANTS OBSERVED IN THE STUDY AREA

Species	
GYMNOSPERMS	
CUPRESSACEAE – CYPRESS FAMILY	
Juniperus sp.*	juniper
PINACEAE – PINE FAMILY	
Pinus sp.*	pine
***ANGIOSPERMAE* – FLOWERING PLANTS**	
EUDICOTS	
ADOXACEAE – MUSKROOT FAMILY	
Sambucus nigra ssp. *caerulea* [*S. mexicana*]	blue elderberry
AIZOACEAE – FIG-MARIGOLD FAMILY	
*Carpobrotus edulis**	freeway iceplant
AMARANTHACEAE – AMARANTH FAMILY	
*Amaranthus albus**	tumbleweed
ANACARDIACEAE – SUMAC FAMILY	
*Schinus molle**	Peruvian pepper tree
APIACEAE – CARROT FAMILY	
*Apium graveolens**	common celery
*Foeniculum vulgare**	sweet fennel
APOCYNACEAE – DOGBANE FAMILY	
*Nerium oleander**	common oleander
*Trachelospermum jasminoides**	star jasmine
ASTERACEAE – SUNFLOWER FAMILY	
Ambrosia acanthicarpa	annual bur-sage
Ambrosia psilostachya	western ragweed
Artemisia californica	California sagebrush
Baccharis pilularis ssp. *consanguinea* [*B. pilularis*]	coyote brush
Baccharis salicifolia ssp. *salicifolia*	mule fat
Carduus pycnocephalus ssp. *pycnocephalus**	Italian thistle
*Centaurea melitensis**	tocalote, Malta star-thistle
*Cynara cardunculus**	cardoon, globe artichoke
Ericameria sp.	goldenbush
Erigeron bonariensis [*Conyza b.*]*	flax-leaved horseweed
Erigeron canadensis [*Conyza c.*]	common horseweed
*Gazania linearis**	gazania
Glebionis coronaria [*Chrysanthemum coronarium*]*	garland daisy
*Hedypnois cretica**	Crete weed
Helminthotheca echioides [*Picris e.*]*	bristly ox-tongue
Heterotheca grandiflora	telegraph weed
*Hypochaeris glabra**	smooth cat's-ear
Isocoma menziesii	coastal goldenbush

PLANTS OBSERVED IN THE STUDY AREA

Species	
*Lactuca serriola**	prickly lettuce
Pseudognaphalium californicum [*Gnaphalium c.*]	California everlasting
Pseudognaphalium luteoalbum [*Gnaphalium l.*]*	weedy cudweed
*Pulicaria paludosa**	Spanish sunflower
Sonchus asper ssp. *asper**	prickly sow thistle
*Sonchus oleraceus**	common sow thistle
Xanthium strumarium	cocklebur
BIGNONIACEAE – BIGNONIA FAMILY	
*Jacaranda mimosifolia**	jacaranda
BORAGINACEAE – BORAGE FAMILY	
Amsinckia intermedia	common fiddleneck
BRASSICACEAE – MUSTARD FAMILY	
*Brassica nigra**	black mustard
*Capsella bursa-pastoris**	shepherd's purse
*Hirschfeldia incana**	shortpod mustard
Lepidium nitidum	peppergrass, shining peppergrass
*Raphanus sativus**	radish
*Sisymbrium irio**	London rocket
CARYOPHYLLACEAE – PINK FAMILY	
*Spergularia bocconei**	Boccone's sand-spurrey
CHENOPODIACEAE – GOOSEFOOT FAMILY	
*Atriplex semibaccata**	Australian saltbush
*Chenopodium album**	lamb's quarters
*Chenopodium murale**	nettle-leaved goosefoot
*Salsola tragus**	Russian thistle
CONVOLVULACEAE – MORNING-GLORY FAMILY	
*Convolvulus arvensis**	bindweed
CUCURBITACEAE – GOURD FAMILY	
Cucurbita foetidissima	coyote melon, calabazilla
EUPHORBIACEAE – SPURGE FAMILY	
Chamaesyce maculata [*Euphorbia m.*]*	spotted spurge
*Ricinus communis**	castor bean
FABACEAE – LEGUME FAMILY	
Acacia sp.*	acacia
Acmispon americanus [*Lotus purshianus*]	American lotus
*Medicago lupulina**	black medick
*Medicago polymorpha**	California burclover
*Melilotus indicus**	sourclover
FAGACEAE – OAK/BEECH FAMILY	
Quercus agrifolia	coast live oak

PLANTS OBSERVED IN THE STUDY AREA

Species	
GERANIACEAE – GERANIUM FAMILY	
*Erodium botrys**	long-beaked filaree
*Erodium cicutarium**	red-stemmed filaree
HAEMODORACEAE – BLOODWORT FAMILY	
*Anigozanthos sp.**	kangaroo paw
LAMIACEAE – MINT FAMILY	
*Rosmarinus officinalis**	rosemary
MALVACEAE – MALLOW FAMILY	
Hibiscus sp.*	hibiscus
Malacothamnus fasciculatus	chaparral bushmallow
*Malva nicaeensis**	bull mallow
*Malva parviflora**	cheeseweed
MYRSINACEAE – MYRSINE FAMILY	
*Anagallis arvensis**	scarlet pimpernel
MYRTACEAE – MYRTLE FAMILY	
Eucalyptus sp.*	gum
*Bougainvillea sp.**	bougainvillea
OLEACEAE – OLIVE FAMILY	
Fraxinus sp.*	ash
*Olea europaea**	olive
PAPAVERACEAE – POPPY FAMILY	
Eschscholzia californica	California poppy
PLANTAGINACEAE – PLANTAIN FAMILY	
Plantago erecta	dwarf plantain, California plantain
*Plantago lanceolata**	English plantain
*Veronica anagallis-aquatica**	water speedwell
POLYGONACEAE – BUCKWHEAT FAMILY	
Eriogonum fasciculatum	California buckwheat
Persicaria lapathifolia [*Polygonum lapathifolium*]	willow weed
Polygonum aviculare ssp. *depressum* [*Polygonum arenastrum*]*	common knotweed
*Rumex crispus**	curly dock
*Rumex pulcher**	fiddle dock
PORTULACACEAE – PURSLANE FAMILY	
*Portulaca oleracea**	common purslane
ROSACEAE – ROSE FAMILY	
Prunus sp.*	flowering plum
SALICACEAE – WILLOW FAMILY	
Salix gooddingii	Goodding's black willow
Salix lasiolepis	arroyo willow

PLANTS OBSERVED IN THE STUDY AREA

Species	
SAPINDACEAE – SOAP BERRY FAMILY	
*Cupaniopsis anacardioides**	carrotwood
*Koelreuteria paniculata**	golenrain tree
SOLANACEAE – NIGHTSHADE FAMILY	
Datura wrightii	jimson weed
*Nicotiana glauca**	tree tobacco
Solanum americanum	white nightshade
Solanum douglasii	Douglas' nightshade
ULMACEAE – ELM FAMILY	
*Ulmus parvifolia**	Chinese elm
VERBENACEAE – VERVAIN FAMILY	
Lantana sp.*	lantana
ZYGOPHYLLACEAE – CALTROP FAMILY	
*Tribulus terrestris**	puncture vine
***MONOCOTYLEDONES* – MONOCOTS**	
AGAVACEAE – CENTURY PLANT FAMILY	
Yucca sp.*	ornamental yucca
ARECACEAE – PALM FAMILY	
*Phoenix canariensis**	Canary Island palm
*Washingtonia robusta**	Mexican fan palm
CYPERACEAE – SEDGE FAMILY	
Cyperus eragrostis	tall umbrella-sedge
POACEAE – GRASS FAMILY	
*Avena barbata**	slender wild oat
*Bromus diandrus**	ripgut grass
*Bromus hordeaceus**	soft chess
Bromus madritensis ssp. *rubens**	red brome
*Cynodon dactylon**	Bermuda grass
Festuca perennis [*Lolium perenne, L. multiflorum*]*	perennial ryegrass
Hordeum murinum var. *leporinum**	hare barley
*Lamarckia aurea**	goldentop
*Pennisetum setaceum**	crimson fountain grass
*Polypogon monspeliensis**	annual beard grass
TYPHACEAE – CATTAIL FAMILY	
Typha latifolia	broad-leaved cattail
* non-native to the region it was found	

WILDLIFE OBSERVED IN THE STUDY AREA

Species	
AMPHIBIANS	
***AMPHIBIA* – AMPHIBIANS**	
HYLIDAE – TREEFROGS	
Pseudacris hypochondriaca	Baja California treefrog
REPTILES	
***LEPIDOSAURIA* – LIZARDS AND SNAKES**	
PHRYNOSOMATIDAE – ZEBRA-TAILED, FRINGE-TOED, SPINY, TREE, SIDE-BLOTCHED, AND HORNED LIZARDS	
Sceloporus occidentalis	western fence lizard
Uta stansburiana	common side-blotched lizard
BIRDS	
***AVES* – BIRDS**	
CATHARTIDAE – NEW WORLD VULTURES	
Cathartes aura	turkey vulture
ACCIPITRIDAE – HAWKS, KITES, EAGLES, AND ALLIES	
Accipiter cooperii	Cooper's hawk
Buteo jamaicensis	red-tailed hawk
CHARADRIIDAE – PLOVERS	
Charadrius vociferus	killdeer
COLUMBIDAE – PIGEONS AND DOVES	
*Columba livia**	rock pigeon
Zenaida macroura	mourning dove
TYRANNIDAE – TYRANT FLYCATCHERS	
Sayornis saya	Say's phoebe
Tyrannus vociferans	Cassin's kingbird
Tyrannus verticalis	western kingbird
CORVIDAE – CROWS AND JAYS	
Corvus brachyrhynchos	American crow
ALAUDIDAE – LARKS	
Eremophila alpestris	horned lark
HIRUNDINIDAE – SWALLOWS	
Stelgidopteryx serripennis	northern rough-winged swallow
Petrochelidon pyrrhonota	cliff swallow
AEGITHALIDAE – BUSHTITS	
Psaltriparus minimus	bushtit
MIMIDAE – THRASHERS	
Mimus polyglottos	northern mockingbird
ICTERIDAE – BLACKBIRDS	
Agelaius phoeniceus	red-winged blackbird
Sturnella neglecta	western meadowlark
Icterus cucullatus	hooded oriole
FRINGILLIDAE – FINCHES	

WILDLIFE OBSERVED IN THE STUDY AREA

Species	
Carpodacus mexicanus	house finch
Spinus psaltria	lesser goldfinch
Spinus tristis	American goldfinch
MAMMALS	
***MAMMALIA* – MAMMALS**	
SCIURIDAE – SQUIRRELS	
Spermophilus beecheyi	California ground squirrel
LEPORIDAE – HARES AND RABBITS	
Sylvilagus audubonii	desert cottontail
MOLOSSIDAE – FREE-TAILED BATS	
Eumops perotis californicus	western bonneted bat
Tadarida brasiliensis	Brazilian free-tailed bat
VESPERTILIONIDAE – VESPER BATS	
Eptesicus fuscus	big brown bat
*Lasiurus cinereus***	hoary bat
Parastrellus Hesperus	canyon bat
Myotis yumanensis	Yuma myotis
* non-native species ** tentative identification	