

APPENDIX C
Biological Resources Technical Report

DRAFT

**Biological Technical Report
for the
Coastal Treatment Plant Export Sludge Force Main Project**

Prepared for:

South Orange County Wastewater Authority

34156 Del Obispo

Dana Point, California 92629

Contact: Brian Peck

Prepared by:

DUDEK

605 Third Street

Encinitas, California 92024

Contact: Shawn Shamlou

OCTOBER 2012

Draft Biological Technical Report for the Coastal Treatment Plant Export Sludge Force Main Project

TABLE OF CONTENTS

<u>Section</u>	<u>Page No.</u>
SUMMARY OF FINDINGS	IV
1.0 SUMMARY OF FINDINGS	1
2.0 INTRODUCTION.....	5
2.1 Project Description.....	5
3.0 PROJECT SETTING	11
3.1 Project Location	11
3.2 Climate.....	11
3.3 Soils.....	11
3.4 Terrain.....	11
3.5 Land Uses.....	12
3.5.1 On-Site Land Uses	12
3.5.2 Surrounding Land Uses.....	12
4.0 METHODS AND SURVEY LIMITATIONS	13
4.1 Literature Review.....	13
4.2 Field Reconnaissance.....	13
4.2.1 Vegetation Community and Land Cover Mapping.....	15
4.2.2 3.2.2 Flora	15
4.2.3 3.2.3 Fauna.....	15
4.2.4 Special-Status and/or Regulated Resources.....	16
4.2.5 Survey Limitations.....	19
5.0 RESULTS	21
5.1 Vegetation Communities, Land Covers and Floral Diversity.....	21
5.1.1 California Sagebrush.....	22
5.1.2 Coyote Brush Scrub	25
5.1.3 Menzies' Goldenbush Scrub	25
5.1.4 California Annual (Non-Native) Grassland	26
5.1.5 Coast Live Oak–Toyon Woodland	27
5.1.6 Southern Willow Scrub.....	27
5.1.7 Southern Cottonwood–Willow Riparian Forest.....	28
5.1.8 Arundo-Dominated Riparian	29
5.1.9 Mulefat Scrub.....	29
5.1.10 White Alder–Mulefat Scrub.....	30

Draft Biological Technical Report for the Coastal Treatment Plant Export Sludge Force Main Project

TABLE OF CONTENTS (CONTINUED)

<u>Section</u>	<u>Page No.</u>
5.1.11 Herbaceous Wetlands.....	30
5.1.12 4. Yerba Mansa Meadow	30
5.1.13 Coastal Valley and Freshwater Marsh	31
5.1.14 Open Water	31
5.1.15 Open Channel.....	32
5.1.16 Developed	32
5.1.17 Disturbed Land.....	32
5.1.18 Ruderal.....	33
5.1.19 Ornamental.....	33
5.1.20 Floral Diversity	33
5.2 Wildlife	34
5.2.1 General Wildlife.....	34
5.3 Special-Status Biological Resources.....	35
5.3.1 Special-Status Plants	35
5.3.2 Special-Status Wildlife	36
5.4 Special-Status Vegetation Communities.....	38
5.5 Wildlife Corridors and Habitat Linkages.....	39
5.6 Regional Resource Planning Context	39
5.6.1 Relationship to the Central-Coastal Subregion NCCP/HCP	39
6.0 PROJECT IMPACTS	41
6.1 Definition of Impacts	41
6.1.1 Direct Temporary Impacts	41
6.1.2 Indirect Impacts	41
6.1.3 Cumulative Impacts	42
6.2 Impacts to Vegetation Communities and Land Covers	42
6.2.1 Direct Impacts	42
6.2.2 Indirect Impacts	43
6.3 Impacts to Special-Status Plant Species	54
6.4 Impacts to Special-Status Wildlife Species	54
6.4.1 Direct Impacts.....	54
6.4.2 Indirect Impacts	56
6.5 Impacts to Jurisdictional Waters.....	58
6.5.1 Direct Impacts.....	58
6.5.2 Indirect Impacts	59

Draft Biological Technical Report for the Coastal Treatment Plant Export Sludge Force Main Project

TABLE OF CONTENTS (CONTINUED)

<u>Section</u>	<u>Page No.</u>
6.6	Impacts to Wildlife Corridors and Habitat Connectivity..... 61
6.6.1	Direct Impacts..... 61
6.6.2	Indirect Impacts 61
6.7	5Impacts to Regional Resource Planning 61
7.0	SIGNIFICANT IMPACTS63
7.1	Explanation of Findings of Significance..... 63
7.2	Vegetation Communities or Land Covers..... 64
7.2.1	Significant Impacts to Vegetation Communities or Land Covers 64
7.2.2	Impacts to Vegetation Communities or Land Covers Determined to be Less than Significant..... 65
7.3	Special-Status Plant Species 65
7.4	Special-Status Wildlife Species 65
7.4.1	Significant Impacts to Special-Status Wildlife..... 65
7.4.2	Impacts to Special-Status Wildlife Determined to be Less than Significant 66
7.5	Jurisdictional Waters..... 67
7.5.1	Significant Impacts to Jurisdictional Waters 67
7.5.2	Impacts to Jurisdictional Waters Determined to be Less than Significant 68
7.6	Wildlife Corridors and Habitat Connectivity..... 68
7.6.1	Impacts to Wildlife Corridors and Habitat Connectivity Determined to be Less than Significant..... 68
7.7	Regional Resource Planning 68
7.7.1	Impacts to Regional Resource Planning Determined to be Less than Significant 68
8.0	MITIGATION.....71
7.1	Vegetation Communities 71
7.2	Special-Status Wildlife 72
7.4	Jurisdictional Wetlands/Waters 73
7.5	Regional Resource Planning..... 74
9.0	ACKNOWLEDGEMENTS77
10.0	REFERENCES CITED.....79

Draft Biological Technical Report for the Coastal Treatment Plant Export Sludge Force Main Project

TABLE OF CONTENTS (CONTINUED)

Page No.

APPENDICES

A	Cumulative List of Plant Species	
B	Cumulative List of Wildlife Species	
C	Not Expected or Low Potential Special-status Plant Species	
D	Not Expected or Low Potential Special-status Wildlife Species	
E	Moderate or High Potential Special-Status Wildlife Species	
F	Focused California Gnatcatcher Survey	
G	Focused Least Bell's Vireo and Southwestern Willow Flycatcher Survey	
H	Focused Southern Steelhead Survey	

FIGURES

1	Regional Map.....	7
2	Vicinity Map.....	9
3	Biological Resources Map.....	23
4	Biological Resources Index Map.....	45
5A	Biological Resources Impacts.....	47
5B	Biological Resources Impacts.....	49
5C	Biological Resources Impacts.....	51

TABLES

1	Schedule of Surveys.....	14
2	Vegetation Communities and Land Cover Types in Study Area.....	21
3	Temporary Direct Impacts to Vegetation Communities.....	43
4	Impacts—Jurisdictional Waters and Wetlands.....	58

Draft Biological Technical Report for the Coastal Treatment Plant Export Sludge Force Main Project

1.0 SUMMARY OF FINDINGS

The CTP Export Sludge Force Main Project is proposed by the SOCWA. The project study area occupies approximately 394 acres of land on the grounds of the AWCWP in Orange County, California (Figures 1 and 2). The study area is defined as a 500-foot buffer on all sides of the proposed pipe alignment.

Between May 2011 and June 2012, Dudek biologists conducted vegetation mapping, special-status plant surveys, and focused surveys for the state- and federally listed endangered least Bell's vireo (*Vireo bellii pusillus*), the state- and federally listed endangered southwestern willow flycatcher (*Empidonax traillii extimus*), the federally listed threatened coastal California gnatcatcher (*Polioptila californica californica*), the U.S. Fish and Wildlife Service (USFWS) Bird of Conservation Concern (BCC) Nuttall's woodpecker (*Picoides nuttallii*), and the federally listed endangered arroyo toad (*Anaxyrus californicus*). A habitat assessment for the state Species of Special Concern (SSC) western pond turtle (*Emys marmorata*) was conducted by Brock Ortega and Robert Goodman in October, 2011. A focused survey and habitat assessment for the federally listed endangered and state SSC southern steelhead (*Oncorhynchus mykiss irideus*) was conducted by ECORP Consulting fisheries biologists in September 2012.

This report describes the biological character of the project study area in terms of vegetation, flora, wildlife, and wildlife habitats based on surveys conducted by Dudek and others in 2011 and 2012. It also includes an analysis of direct, indirect, and cumulative impacts based on the proposed project scenario in the context of CEQA and local policies; an analysis of the biological significance of the study area with respect to regional biological resource planning and conservation and federal, state, and local laws and policies; and a discussion of mitigation measures designed to reduce significant impacts to a level below significant.

The majority of the study area is within the designated Central-Coastal Subregion NCCP/HCP reserve. Infrastructure projects are an allowed use within these reserves provided they are consistent with policies regarding the siting, construction, and operation of such infrastructure. Aliso Creek is identified in the Central-Coastal Subregion NCCP/HCP as part of a linkage system from the Sycamore Hills to the San Joaquin Hills via Laguna Canyon. Riparian corridors are typically used by wildlife as movement corridors and this drainage links inland areas of Orange County with the Pacific Ocean, less than 2 miles west of the CTP. Abundant mule deer (*Odocoileus hemionus*) and coyote (*Canis latrans*) tracks were observed on sand bars, benches and margins of the main channel during focused surveys, indicating that the riparian zones supports wildlife movement through the area.

Draft Biological Technical Report for the Coastal Treatment Plant Export Sludge Force Main Project

Twenty-one vegetation communities and land covers (including disturbed forms) were mapped in the study area based on general physiognomy and species composition, including 17 native or naturalized vegetation types and 4 non-native land covers: California sagebrush scrub (including disturbed) (81.87 acres), coyote brush scrub (22.40 acres), Menzies' goldenbush scrub (7.04 acres), California annual grassland (131.27 acres), coast live oak–toyon (2.13 acres), southern willow scrub (including disturbed) (35.49 acres), southern cottonwood–willow riparian forest (54.63 acres), Arundo-dominated riparian (0.53 acre), mulefat scrub (15.49 acres), white alder–mulefat scrub (1.58 acres), herbaceous wetlands (1.12 acres), yerba mansa meadow (0.10 acre), coastal and valley freshwater marsh (1.86 acres), open water (3.66 acres), open channel (1.81 acres), developed land (16.40 acres), disturbed habitat (6.06 acres), ruderal (8.13 acres), and ornamental (2.13 acres).

No special-status plants were identified in the study area during 2011 and 2012 rare plant surveys. The coastal California gnatcatcher, least Bell's vireo, and six other special-status wildlife species were observed in the study area during the wildlife surveys: Cooper's hawk (*Accipiter cooperii*), a California Department of Fish and Game (CDFG) Watch List (WL) species; western pond turtle, a CDFG SSC; yellow-breasted chat (*Icteria virens*), a CDFG SSC; yellow warbler (*Setophaga [Dendroica] petechia*), a CDFG SSC; and white-tailed kite (*Elanus leucurus*), a CDFG Fully Protected (FP) species (Figure 3). No arroyo toads were observed during the 2012 focused survey effort. The focused survey for southern steelhead did not result in any observations or evidence of presence of southern steelhead, suitable steelhead spawning habitat, or any other native fishes within the approximately 3.6-mile study area.

Aliso Creek is a jurisdictional drainage supporting waters and wetland habitats. Waters of the United States/State of California, including wetlands, are considered sensitive and regulated by local, state, and federal agencies, and the direct impacts to these jurisdictional areas are considered significant. Any direct impacts to this drainage would require obtaining permits from the wetland resource agencies.

Direct impacts to vegetation communities, jurisdictional waters of the United States/State of California and special-status species were analyzed by impact type. All impacts are considered temporary. Temporary direct impacts to vegetation communities were quantified by overlaying the impact footprint over the boundaries of the vegetation communities mapped in the study area. Direct temporary impacts to 15.0 acres of vegetation communities would occur as a result of vegetation removal activities including 2.34 acres of California sagebrush scrub, 0.91 acre of coyote brush scrub, 0.10 acre of Menzies' goldenbush scrub, 5.01 acres of California annual grassland, 0.49 acre of southern willow scrub, 0.18 acre of southern cottonwood willow riparian forest, 0.15 acre of Arundo-dominated riparian, 1.53 acres of mulefat scrub, 0.58 acre of white

Draft Biological Technical Report for the Coastal Treatment Plant Export Sludge Force Main Project

alder–mulefat scrub, 0.01 acre of open channel, 0.28 acre of developed land, 2.13 acres of disturbed habitat, 1.27 acres of ruderal, and 0.02 acre of ornamental.

The project has the potential to impact seven special-status bird species absent mitigation: coastal California gnatcatcher, least Bell’s vireo, Cooper’s hawk, white-tailed kite, yellow-breasted chat, Nuttall’s woodpecker, and yellow warbler. The project has the potential to impact one special-status reptile species absent mitigation, the western pond turtle.

Impacts to the following jurisdictional waters of the United States, including wetlands, are considered significant but mitigable to a level which is less than significant: southern willow scrub, southern cottonwood–willow riparian forest, Arundo-dominated riparian, mulefat scrub, white alder–mulefat scrub, and open channel. Impacts to the following upland communities are considered significant but mitigable to a level that is less than significant: California sagebrush scrub, coyote brush scrub, Menzies’ goldenbush scrub, coyote brush scrub, and California annual grassland. Direct temporary impacts to special-status vegetation communities are considered a significant impact, absent mitigation.

Proposed mitigation for temporary direct impacts to special-status vegetation communities have been developed to reduce identified and potential significant impacts to a level which is less than significant pursuant to CEQA, and to comply with conditions of the Central-Coastal Subregion NCCP/HCP section 10(a)(1)(B) permit, CDFG Management Authorization and the Implementation Agreement. Mitigation for impacts to vegetation includes 1:1 restoration of like habitats at the place of impact. Impacted vegetation will be restored to pre-construction conditions through implementation of a revegetation plan. All revegetation efforts will be consistent with the management plan developed for the Central-Coastal Subregion NCCP/HCP for this particular reserve area. The revegetation plan will include a monitoring program with clearly defined success criteria and contingency measures. Proposed mitigation for potential significant impacts to special-status wildlife include biological monitoring, implementation of standard best management practices (BMPs), pre-construction avian nest surveys, and exclusionary fencing for western pond turtle. Proposed mitigation reduces potential significant impacts to a level below significant.

**Draft Biological Technical Report for the Coastal Treatment Plant
Export Sludge Force Main Project**

INTENTIONALLY LEFT BLANK

Draft Biological Technical Report for the Coastal Treatment Plant Export Sludge Force Main Project

2.0 INTRODUCTION

The CTP Export Sludge Force Main Project is proposed by the SOCWA. The project study area occupies approximately 394 acres of land on the grounds of the Aliso and Wood Canyons Wilderness Park (AWCWP) in Orange County, California (Figures 1 and 2). The study area is defined as a 500-foot buffer on all sides of the proposed pipe alignment.

This report describes the biological character of the project study area in terms of vegetation, flora, wildlife, and wildlife habitats based on surveys conducted by Dudek and others in 2011 and 2012. It also includes an analysis of direct, indirect, and cumulative impacts based on the proposed project scenario in the context of the CEQA and local policies; an analysis of the biological significance of the study area with respect to regional biological resource planning and conservation and federal, state, and local laws and policies; and a discussion of mitigation measures designed to reduce significant impacts to a level below significant.

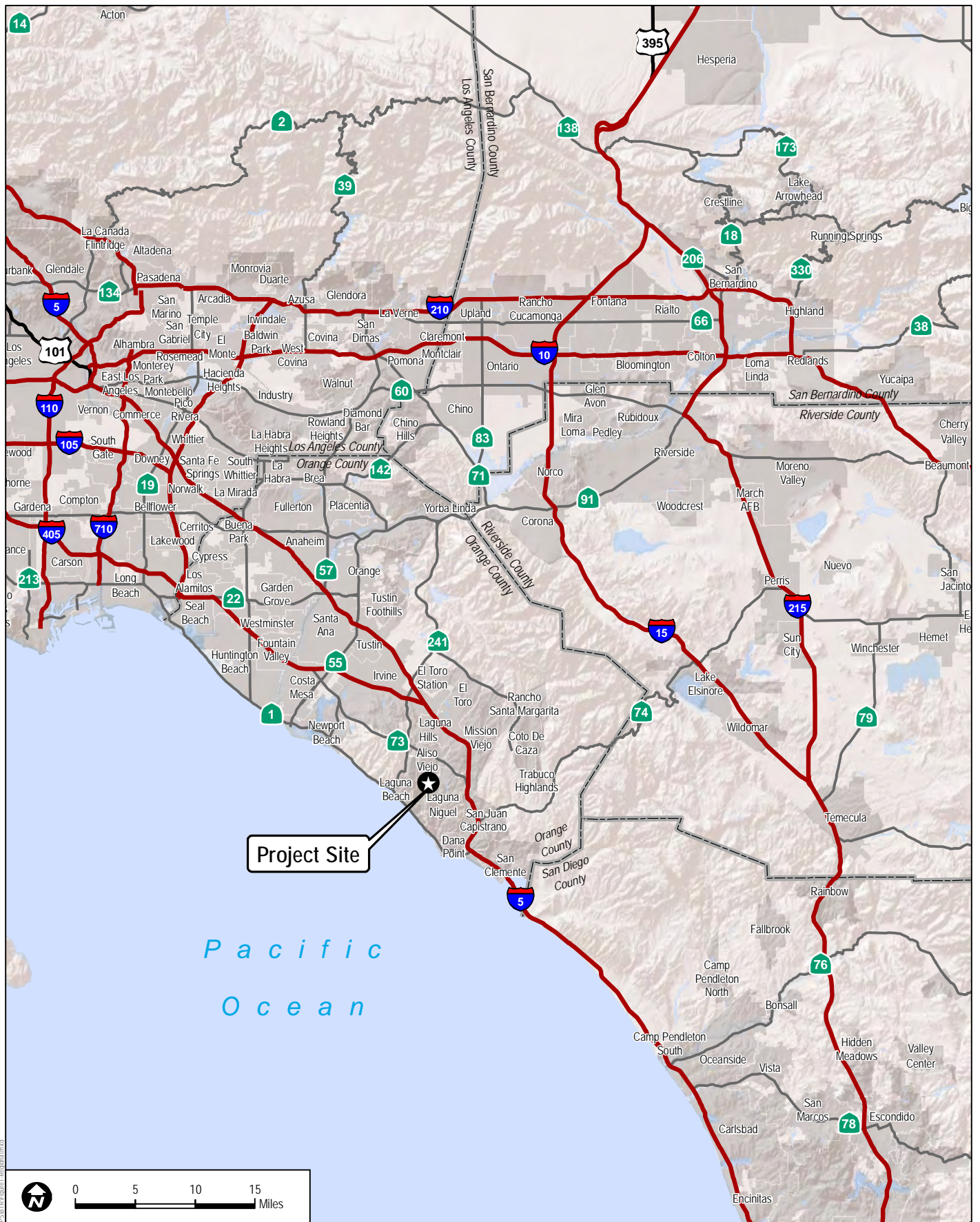
2.1 Project Description

The proposed project involves replacement of two parallel 4-inch cast iron pipes that transport primary sludge and thickened waste-activated sludge from the SOCWA's CTP to the Regional Treatment Plant (RTP) for solids processing.

The Proposed Project would replace the dual export sludge force main with a single 6-inch force main made of high density polyethylene (HDPE), which would minimize anticipated corrosion challenges. The replacement pipeline is projected to parallel the existing effluent transmission main (ETM) and Moulton Niguel Water District (MNWD) sewer alignments and is generally planned to be constructed approximately 7 feet to the east of the ETM alignment at a depth of approximately 4 feet. The pipeline would tie in with the new force main installed beneath Aliso Viejo Community Association Road (AVCA Road) in the early 2000s.

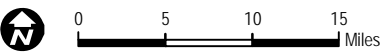
**Draft Biological Technical Report for the Coastal Treatment Plant
Export Sludge Force Main Project**

INTENTIONALLY LET BLANK



Project Site

Pacific Ocean



DUDEK

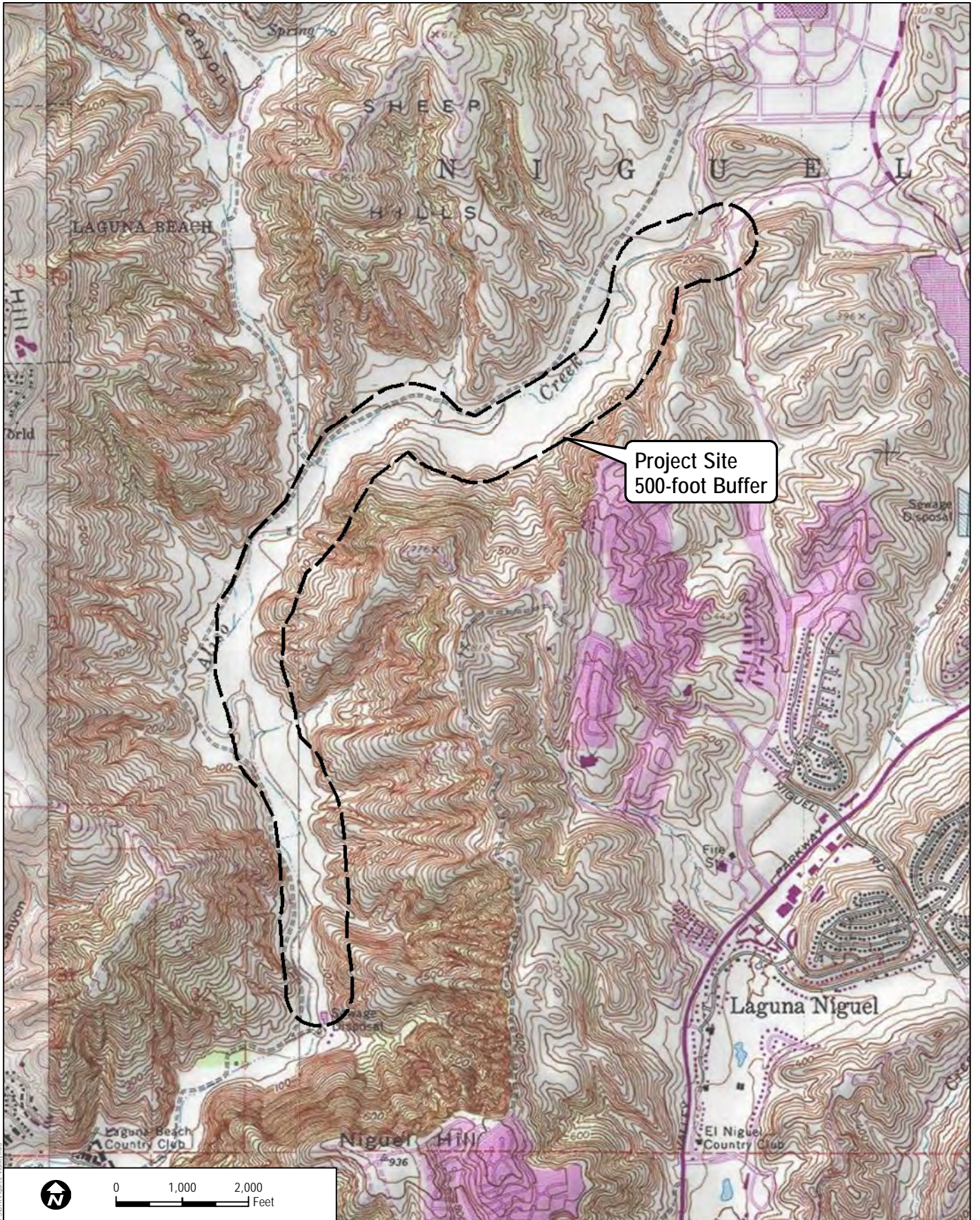
6938-02
OCTOBER 2012

FIGURE 1
Project Region

Path: Z:\Projects\693802\MAPS\COPYMAPS\BTR\Figure 1 Region.mxd

**Draft Biological Technical Report for the Coastal Treatment Plant
Export Sludge Force Main Project**

INTENTIONALLY LEFT BLANK



Project Site
500-foot Buffer

DUDEK

SOURCE: USGS 7.5-Minute Series San Juan Capistrano Quadrangle.

FIGURE 2
Project Vicinity

6938-02
OCTOBER 2012

COASTAL TREATMENT PLANT EXPORT SLUDGE FORCE MAIN PROJECT - BIOLOGICAL RESOURCES TECHNICAL REPORT

Path: Z:\Projects\6938-02\MAPS\6938-02\Figure2_Vicinity.mxd

**Draft Biological Technical Report for the Coastal Treatment Plant
Export Sludge Force Main Project**

INTENTIONALLY LEFT BLANK

Draft Biological Technical Report for the Coastal Treatment Plant Export Sludge Force Main Project

3.0 PROJECT SETTING

3.1 Project Location

The proposed project study area is located in southwestern Orange County, California, on the grounds of the AWCWP, a park owned and operated by the County of Orange (County). The proposed project extends from Alicia Parkway south to SOCWA's CTP. The study area is located on the U.S. Geological Survey (USGS) 7.5 minute map, San Juan Capistrano quadrangle, in an unsectioned portion of Range 8 West and Township 7 South. The northern terminus of the project is at latitude 33° 33' 01"N and longitude 117° 43' 02" W; the southern terminus is at latitude 33°33'01" N and longitude 117°43'02" W.

3.2 Climate

The study area is located within the Peninsular Range approximately 1 mile from the Pacific Ocean. It is in a Mediterranean climate characterized by mild, dry summers and wet winters. Average temperatures near Laguna Beach range from approximately 43°F to 78°F, and the area generally receives an average rainfall of less than 12 inches per year (Western Regional Climate Center 2012).

3.3 Soils

According to the U.S. Department of Agriculture (1978), upland soils within the study area are predominantly well-drained loams of the following series: Botella loam, 2% to 9% slopes; Botella clay loam, 9% to 15% slopes; Calleguas clay loam, 50% to 75% slopes, eroded; Corralitos loamy sand, moderately fine substratum; Sorrento loam, 0% to 2% slopes; and Sorrento loam, 2% to 9% slopes. In addition, there are clay soils in the following series: Bosanko clay, 30% to 50% slopes. Bosanko clays are known to support special-status plant species (e.g., the state- and federally listed thread-leaved brodiaea [*Brodiaea filifolia*]) in Orange County (Roberts, pers. comm. 2000). These clay soils may also be represented in the loam series as inclusions which are too small to be mapped at the series level. Also within some of the series, notably the Calleguas clay loam, there are areas of rock/sandstone outcropping. Within Aliso Creek, soils are classified as Riverwash series and consist of unconsolidated alluvium.

3.4 Terrain

The topography within the study area varies from approximately 44 feet above mean sea level (amsl) in Aliso Creek to approximately 200 feet amsl in the adjacent uplands. Aliso Creek traverses the central to western portion of the study area and is characterized by steep, erosive channel banks.

Draft Biological Technical Report for the Coastal Treatment Plant Export Sludge Force Main Project

3.5 Land Uses

3.5.1 On-Site Land Uses

The study area is located within the AWCWP, which encompasses approximately 3,900 acres of natural open space lands within southwestern Orange County. The AWCWP includes the hills, canyons, and floodplain surrounding Aliso and Wood Canyons and portions of Laguna Canyon.

3.5.2 Surrounding Land Uses

The study area is almost completely surrounded by urban development comprised of the communities of Aliso Viejo, Laguna Niguel, Laguna Hills, Laguna Woods, and Laguna Beach. The Aliso Creek Golf Course is located immediately to the south of the CTP. Residential development primarily lines the rims of the canyons along the border of the AWCWP. Other land uses bordering the park include neighborhood parks, Soka University, and an elementary school.

Draft Biological Technical Report for the Coastal Treatment Plant Export Sludge Force Main Project

4.0 METHODS AND SURVEY LIMITATIONS

4.1 Literature Review

Special-status biological resources present or potentially present in the study area were identified through a literature search, conducted in 2011 and 2012, and focused survey reports prepared for the study area. The following sources were used during the literature review process:

- California Natural Diversity Database (CNDDDB) (2010a) was queried to compile a list of potentially occurring flora and fauna tracked by the CNDDDB in the San Juan Capistrano quadrangle and surrounding seven quadrangles.
- California Native Plant Society (CNPS) Inventory of Rare, Threatened and Endangered Plants of California, 8th online edition (CNPS 2011), was searched to compile a list of potentially occurring special-status plants in the San Juan Capistrano quadrangle and surrounding seven quadrangles.
- Primary Biological Conditions Report for the Coastal Treatment Plant Export Sludge Force Main Project (Dudek 2011a)
- Focused Least Bell's Vireo and Southwestern Willow Flycatcher Survey for the Coastal Treatment Plant Export Sludge Force Main Project, South Orange County Water Authority, Orange County, California (Dudek 2011b)
- Focused California Gnatcatcher Survey for the Coastal Treatment Plant Export Sludge Force Main Project, South Orange County Water Authority, Orange County, California (Dudek 2011c).

The Central-Coastal Subregion NCCP/HCP (County of Orange 1996) also was also reviewed with respect to regional reserve planning and conservation.

4.2 Field Reconnaissance

Between May 2011 and June 2012, Dudek and other biologists conducted vegetation mapping, special-status plant surveys, and focused surveys for the state- and federally listed endangered least Bell's vireo, the state- and federally listed endangered southwestern willow flycatcher, the federally listed threatened coastal California gnatcatcher, and the federally listed endangered arroyo toad. A habitat assessment for the state SSC western pond turtle was conducted by Dudek Biologist Brock Ortega and independent Herpetologist Robert Goodman in October, 2011. A focused survey and habitat assessment for the federally listed endangered and state SSC southern steelhead was conducted by ECORP Consulting fisheries biologists in September 2012. Table 1 lists the dates, conditions, and focus for each survey.

Draft Biological Technical Report for the Coastal Treatment Plant Export Sludge Force Main Project

**Table 1
Schedule of Surveys**

Date	Hours	Focus	Personnel	Conditions
5/20/11	0630-1130	LBVI/WIFL	JDP	56–77°F; 1–3 mph winds; 95%–75% clouds
5/21/11	0600-1130	LBVI/WIFL	BAO	60–80°F; 3–5 mph winds; 100%–70% clouds
5/23/11	0815–1710	RP	KCD, BAS	59–64°F; 1–3 mph winds; 100% clouds
5/24/11	0720–1140	RP	KCD, BAS	55–71°F; 0–5 mph winds; 100%–10% clouds
5/31/11	0730-1200	LBVI/WIFL	JDP, TLW	62–75°F; 2–5 mph winds; 5% clouds
6/10/11	0700–1100	LBVI/WIFL	BAO	56–79°F; 1–3 mph winds; 100% clouds
6/10/11	0600-1115	LBVI/WIFL	JDP	59–64°F; 0–4 mph winds; 100% clouds
6/20/11	0630-1130	LBVI/WIFL	JDP	58–75°F; 2–5 mph winds; 100%–0% clouds
6/30/11	0630-1130	LBVI/WIFL	JDP	56–78°F; 0–5 mph winds; 0% clouds
6/30/11	0700-1440	RP	KCD, BAS	53–80°F; 0–5 mph winds; 0% clouds
7/10/11	0615-1115	LBVI/WIFL	JDP	66–85°F; 2–4 mph winds; 100%–10% clouds
7/10/11	0450-1017	LBVI/WIFL	DMC	65–83°F; 0–4 mph winds; 100%–60% clouds
7/19/11	0630-1100	LBVI	TLW	65–83°F; 0–2 mph winds; 100%–10% clouds
7/20/11	0625-1100	LBVI	TLW	65–85°F; 0–2 mph winds; 100%–0% clouds
7/21/11	0715-1200	CAGN	TLW, JDP	66–76°F; 2–8 mph winds; 100%–0% clouds
7/29/11	0700-1100	LBVI	TLW, JDP	66–73°F; 0–5 mph winds; 100% clouds
8/9/11	0645-1200	CAGN	TLW, JDP	62–74°F; 2–3 mph winds; 100%–75% clouds
8/12/11	1000-1300	VEG	TLW	79–87°F; 2–3 mph winds; 85%–0% clouds
8/17/11	0815-1100	CAGN	TLW, AMH, KS	66–77°F; 2–4 mph winds; 0% clouds
8/31/11	1200-1400	VEG	TLW	80–86°F; 0–3 mph winds; 0% clouds
10/14/12	NR	POTU	BAO, RHG	NR
4/16/12	1430-1715	RP	KCD, BAS	80–84°F; 1–3 mph winds; 5%–0% clouds
4/17/12	0800-1200	RP	KCD, BAS	55–88°F; 0–1 mph winds; 0% clouds
4/26/12	1600-2325	ARTO	JDP, TLW	69–48°F (air), 69–68°F (water); 2-8 and 0 mph winds; 30%–50% clouds
5/15/12	1700-2300	ARTO	JDP, TLW	65–46°F (air), 66–64°F (water); 1–4 mph winds; 0% clouds
5/29/12	1620-2230	ARTO	JDP, TLW	72–52°F (air), 68–66°F (water); 2–6 and 0 mph winds; 0% clouds
6/5/12	1500-1830 2000-2230	ARTO	JDP, TLW	72-55°F (air), 70–68°F (water); 2–6 and 0–1 mph winds; 5%–0% clouds
6/19/12	1645-2230	ARTO	JDP, TLW	70–56°F (air), 72–69°F (water); 0–3 mph winds; 0% clouds
6/26/12	1630-2400	ARTO	JDP, TLW	75–58°F (air), 72°F (water); 0–5 mph winds; 0% clouds
9/20/12	0600-1300	SS	BZ, AS	65–85°F (air); 0–2 mph winds; 0% clouds
9/25/12	0830-1100	SS	TC, AS	66–82°F (air); 0–5 mph winds; 0% clouds
9/28/12	0900-1130	SS	TC, AS	67–86°F (air); 0–3 mph winds; 0% clouds

Survey Designations

RP: Rare plant surveys
 LBVI: Focused least Bell's vireo surveys
 WIFL: Focused southwestern willow flycatcher surveys
 VEG: Vegetation communities mapping
 SS: Southern steelhead survey
 ARTO: Arroyo toad surveys

POTU: Pond turtle surveys

CAGN : Coastal California gnatcatcher surveys
 SS: Southern Steelhead Surveys

Personnel

JDP: Jeffrey D. Priest
 BAO: Brock A. Ortega
 KCD: Kathleen C. Dayton
 BAS: Britney Strittmater

TLW: Tricia L. Wotipka

DMC: Dave M. Compton
 AMH: Anita M. Hayworth
 KMS: Kevin M. Shaw
 RHG: Robert Goodman
 BZ: Brian Zitt, ECORP
 AS: Adam Schroeder, ECORP
 TC: Todd Chapman, ECORP

Draft Biological Technical Report for the Coastal Treatment Plant Export Sludge Force Main Project

4.2.1 Vegetation Community and Land Cover Mapping

Vegetation communities in the study area were mapped using the List of California Vegetation Alliances and Associations (CDFG 2010). The mapping was done in the field directly onto an aerial photographic base. The maximum scale of the map was 200-scale (1 inch = 200 feet) base. Dudek biologists collected data across a diverse set of communities and land covers on site by recording species composition and structural integrity across differentiated stands of vegetation (i.e., polygons). Holland (1986) and Gray and Bramlett (1992) were consulted as resources for constituent plant species but were not used for mapping.

Disturbed and undisturbed vegetation communities were differentiated based on field observations of species richness and composition. In the context of this analysis, for example, if an area supported a minimum of 50% cumulative cover of California sagebrush scrub species, it was mapped as California sagebrush scrub. If an area supported 20% to 50% cumulative cover of California sagebrush species, it was mapped as disturbed California sagebrush scrub. If an area supported less than 20% cumulative cover of native species, it was mapped as disturbed land, developed, or ruderal.

4.2.2 3.2.2 Flora

Focused surveys for special-status plants were conducted in May and June 2011 and in April 2012 by Dudek Biologists Kathleen C. Dayton and Britney A. Strittmater. During this survey, all plant species encountered during the field surveys were identified and recorded. Scientific and common names for plant species with a California Rare Plant Rank (CRPR; formerly CNPS List) follow the California Native Plant Society Inventory of Rare, Threatened, and Endangered Plants of California (CNPS 2012). For plant species without a CRPR, scientific names follow the Jepson Interchange List of Currently Accepted Names of Native and Naturalized Plants of California (Jepson Flora Project 2012), and common names follow the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service Plants Database (USDA 2012). A list of plant species observed in the study area during initial surveys is presented in Appendix A.

4.2.3 3.2.3 Fauna

Focused surveys for the state- and federally listed endangered least Bell's vireo, the state- and federally listed endangered southwestern willow flycatcher, the federally listed threatened California gnatcatcher, the federally listed endangered arroyo toad, and the federally listed endangered and state SSC southern steelhead were completed in the period from late May 2011 through late September 2012 (Table 1). During these surveys, all wildlife species detected during the field surveys by sight, calls, tracks, scat, or other signs were recorded. Binoculars (7×50, 10×42 power) were used to aid in the identification of observed wildlife. In addition to species

Draft Biological Technical Report for the Coastal Treatment Plant Export Sludge Force Main Project

actually detected, expected wildlife use of the study area was determined by known habitat preferences of local species and knowledge of their relative distributions in the area. Scientific and common names of animals follow Crother (2008) for reptiles and amphibians, American Ornithologists' Union (AOU) (2012) for birds, Wilson and Reeder (2005) for mammals, North American Butterfly Association (NABA) (2001) for butterflies, and Moyle (2002) for fish. A cumulative list of wildlife species observed within the study area is presented in Appendix B.

4.2.4 Special-Status and/or Regulated Resources

4.2.4.1 Special-Status Plant Species

Dudek conducted an early spring plant survey in May 2011 and April 2012 to maximize detection of special-status plants, and a summer plant survey was conducted in June 2011 to maximize detection of summer-blooming special-status plants (Table 1). Focused surveys were conducted at the appropriate phenological stage of the plant (blooming and fruiting) to detect and identify the target species. Prior to field surveys, Dudek conducted a query of the CNDDDB (CDFG 2010a) and CNPS (2011, 2012) to identify the special-status species known to occur within the study area and vicinity. The surveys emphasized determining the presence, or potential for occurrence, of species found on state, federal, and CRPR 1B and 2 lists (CNPS 2012).

Field survey methods conformed to CNPS Botanical Survey Guidelines (CNPS 2001), Protocols for Surveying and Evaluating Impacts to Special-Status Native Plant Populations and Natural Communities (CDFG 2009), and General Rare Plant Survey Guidelines (Cypher 2002). The surveys were conducted by walking meandering transects to search for special-status species. All plant species observed in the study area were noted, and plants that could not be identified in the field were collected and identified later using a microscope with taxonomic keys. As discussed in Section 4.3.1, no special-status plants were detected during the surveys.

4.2.4.2 Least Bell's Vireo and Southwestern Willow Flycatcher

Focused surveys for the federally listed endangered southwestern willow flycatcher and/or the federally listed endangered least Bell's vireo were conducted by Dudek Biologists Brock A. Ortega, Dave M. Compton, Jeffrey D. Priest, and Tricia L. Wotipka (least Bell's vireo only) from May to July 2011. Mr. Priest holds federal permit TE-840619; Mr. Ortega holds federal permit TE-813545; and Mr. Compton holds federal permit TE-101148-2 to conduct surveys for the southwestern willow flycatcher. All surveys conducted by Ms. Wotipka were focused on the detection of least Bell's vireo, for which a federal recovery permit is not required. Surveys by Mr. Priest, Mr. Ortega, and Mr. Compton were conducted concurrently for the flycatcher and vireo.

The Dudek survey effort was performed in conformance with current USFWS protocols and permit survey guidelines and requirements for the two species. For least Bell's vireo, eight site visits were

Draft Biological Technical Report for the Coastal Treatment Plant Export Sludge Force Main Project

conducted with 10-day intervals between each visit and all surveys were conducted between May 20 and July 29, which is within the April 10 to July 31 time frame specified in the protocol. For the southwestern willow flycatcher, five surveys are required per the protocol, with one visit between May 15 and May 31, one visit between June 1 and June 21, and three visits between June 22 and July 17. A total of six survey visits were conducted for the flycatcher, which surpasses the requirements of the survey protocol. Each survey during the final period was separated by at least 5 days. Because the habitat requirements for the two species overlap, most of these surveys were conducted concurrently.

4.2.4.3 Coastal California Gnatcatcher

Focused surveys for the coastal California gnatcatcher were performed by Dudek Biologists Tricia L. Wotipka, Jeffrey D. Priest, Anita M. Hayworth, PhD, and Kevin M. Shaw in July and August 2011 following a modified survey protocol. California gnatcatchers were first located using a taped recording of gnatcatcher vocalizations, when necessary. The tape was played approximately every 50 to 100 feet depending on assumed sound attenuation related to topography to induce responses from potentially present California gnatcatchers. If a California gnatcatcher was detected, tape-playback was terminated to minimize potential for harassment. Once a pair or individual was located, an attempt was made to locate the other bird of the pair and determine each bird's sex. If only one bird was located and another bird of the other sex did not appear within a reasonable amount of time, a note was made to re-find and follow this bird at a later date to determine if it is paired or unpaired.

In order avoid double counting, once an individual or pair was located, the first observer followed the original gnatcatcher pair (or individual) and the second observer (and in some cases third or fourth observers) began searching for a second pair/individual nearby that may have been occupying an adjacent territory. With synchronized watches, the different observers communicated with each other using walkie-talkies or phones, and kept a record of the time they had birds under observation. Simultaneous observations of males and females together in two nearby locations established the presence of two pairs. In many cases, individual males could be recognized by unique plumage markings. Where two males were clearly recognizable by differences in their plumage, simultaneous observations were not necessary. Once it was determined that two pairs were present in adjacent territories, polygons were drawn on an aerial map showing the approximate separation of these two pairs. In situations where determinations of one or two pairs were otherwise unclear (e.g., too much time had elapsed between observations), distinguishing characters about the male's cap plumage were used to make a determination. If there were no distinguishing characters between the males' plumage, then the particular general area in question was re-visited at the end of the initial survey pass of the entire site to further assess the number of pairs or individuals in the area. A second survey visit was conducted in all areas where individual gnatcatchers were initially observed to determine if a

Draft Biological Technical Report for the Coastal Treatment Plant Export Sludge Force Main Project

second bird was present, and where it was unclear whether there were one or more pairs in a given area.

4.2.4.4 Arroyo Toad

Focused surveys for the arroyo toad were conducted along Aliso Creek by Dudek Biologists Jeffrey D. Priest and Tricia Wotipka from April through June 2012. The surveys were performed in conformance with current USFWS protocols for arroyo toad; a federal recovery permit is not required to conduct surveys for the arroyo toad.

Six paired daytime and nighttime surveys were conducted for arroyo toad during the breeding season of April through June. Surveys were conducted on foot through all suitable habitat with the aid of 200-scale maps and binoculars. Surveyors walked along margins of water features where accessible, and on adjacent sand benches and upland areas while looking for egg masses, larvae, and adults. Nocturnal surveys were conducted between 1 hour after dusk and midnight with the aid of headlamps while looking for eye shine and listening for the call of breeding males, which is a distinctive and easily detected trill unique to the species. Surveys were not conducted under full moonlight, low air temperatures, or other adverse weather conditions.

4.2.4.5 Southern Steelhead

Southern steelhead surveys were conducted by ECORP Consulting fisheries Biologists Todd Chapman, Brian Zitt, and Adam Schroeder on September 20, 25, and 28, 2012. The survey was conducted to evaluate presence/absence of southern steelhead, potential spawning habitat, and the presence of physical barriers to upstream fish movement within the reach. Surveys were conducted on foot along the 3.6-mile reach of Aliso Creek within the study area. The reach was divided into two survey segments for ease of data collection. The surveys entailed visually searching for southern steelhead or evidence of steelhead presence, identifying potential spawning habitat (gravels), and evaluating potential physical barriers to upstream fish movement. Incidental observations of other fish species present also were recorded (Appendix B). With the exception of deep pools and areas of dense impassable vegetation, the survey was conducted primarily within the stream channel. In addition to direct visual observations, a viewing scope and underwater camera also were used to survey for steelhead and spawning substrates.

Surveys were initiated at the downstream end of the project study area adjacent to the wastewater treatment plant and continued upstream to Alicia Parkway. Pools and other stream areas that were too deep to wade (>1.6 meters) were scanned from the bank using binoculars; and areas with dense overhanging vegetation were scanned from available viewing locations where possible. The locations of potential spawning habitat were delineated using Global Position System (GPS), and photos were taken. Any areas that were considered potential barriers to fish

Draft Biological Technical Report for the Coastal Treatment Plant Export Sludge Force Main Project

movement were photographed, and measurements were taken to determine the approximate slope and height of the barrier.

4.2.4.6 Jurisdictional Wetlands/Waters

Aliso Creek, Sulphur Creek, and tributaries to these water bodies within the AWCWP have been studied extensively by both biologists and regulatory staff for many years. They are regulated by the U.S. Army Corps of Engineers (ACOE) acting under Section 404 of the Clean Water Act (CWA); the Regional Water Quality Control Board (RWQCB) acting under Section 401 of the CWA and the Porter-Cologne Act; the CDFG acting under Sections 1600–1607 of the California Fish and Game Code; and the California Coastal Commission (CCC) acting under the Coastal Zone Management Act.

Aliso Creek has been deeply incised by fluvial erosion combined with tectonic uplift and sea level changes during the Quaternary Period resulting in steep, near vertical channel banks extending over 20 feet high in some places (ACOE 2009). Given the steep topographic character of Aliso Creek and its adjacent tributaries, a formal delineation of land under the jurisdiction of the CDFG, ACOE, RWQCB, and CCC was not conducted. Wetlands were identified in the study area using the Cowardin method of wetlands classification, which defines wetland boundaries by the presence of at least one parameter (i.e., hydric soils, hydrophytic vegetation, or hydrology) (USFWS 1979). Wetlands within the Study Area were documented by visually assessing and mapping the drip line of hydrophytic vegetation and noting the presence or absence of hydrology indicators (e.g., drift lines, drainage patterns, scour etc.). Soil samples were not taken during this survey effort.

4.2.5 Survey Limitations

Weather conditions during the surveys, which were variously conducted in the months of April through September, were favorable for the identification of flora and fauna. Limitations on the general wildlife surveys are primarily due to season and daytime-only surveys, with the exception of arroyo toad nocturnal surveys. Many fall and early spring migratory birds that may use habitats in the study area would not have been observed because the protocol surveys for avian were initiated in late May after early spring migrants passed through the area and ended in late July before fall migrants would pass through the area. Surveys were conducted during the daytime to maximize visibility for the detection of plants and most animals. Birds represent the largest component of the vertebrate fauna, and because most are active in the daytime, diurnal surveys maximize the number of observations of this group. In contrast, daytime surveys usually result in few observations of mammals, reptiles, and amphibians, many of which may be more active at night. Except for the arroyo toad, nighttime surveys were not warranted because no other high sensitivity species (e.g., state- and/or federally listed) potentially occurring in the study area are nocturnal.

**Draft Biological Technical Report for the Coastal Treatment Plant
Export Sludge Force Main Project**

INTENTIONALLY LEFT BLANK

Draft Biological Technical Report for the Coastal Treatment Plant Export Sludge Force Main Project

5.0 RESULTS

5.1 Vegetation Communities, Land Covers and Floral Diversity

Twenty-one vegetation communities and land covers (including disturbed forms) were mapped in the study area based on general physiognomy and species composition, including 17 native or naturalized vegetation types and 4 non-native land covers. These vegetation communities and land cover types are described as follows, their acreages are presented in Table 2, and their spatial distributions are presented on Figure 3.

Table 2
Vegetation Communities and Land Cover Types in Study Area

Vegetation Community/Land Cover	Acreage
<i>Native Upland Communities</i>	
California Sagebrush Scrub	80.51
Disturbed California Sagebrush Scrub	1.36
Coyote Brush Scrub	22.40
Menzies' Goldenbush Scrub	7.04
California Annual Grassland	131.27
Coast Live Oak–Toyon	2.13
<i>Subtotal</i>	244.71
<i>Riparian and Wetland Communities</i>	
Southern Willow Scrub	35.10
Disturbed Southern Willow Scrub	0.39
Southern Cottonwood–Willow Riparian Forest	54.63
Arundo-Dominated Riparian	0.53
Mulefat Scrub	15.49
White Alder–Mulefat Scrub	1.58
Herbaceous Wetlands	1.12
Yerba Mansa Meadow	0.10
Coastal and Valley Freshwater Marsh	1.86
Open Water	3.66
Open Channel	1.81
<i>Subtotal</i>	116.27
<i>Non-Native Land Covers</i>	
Developed Land	16.40
Disturbed Habitat	6.06
Ruderal	8.13
Ornamental	2.13
<i>Subtotal</i>	32.72
TOTAL	393.70

Draft Biological Technical Report for the Coastal Treatment Plant Export Sludge Force Main Project

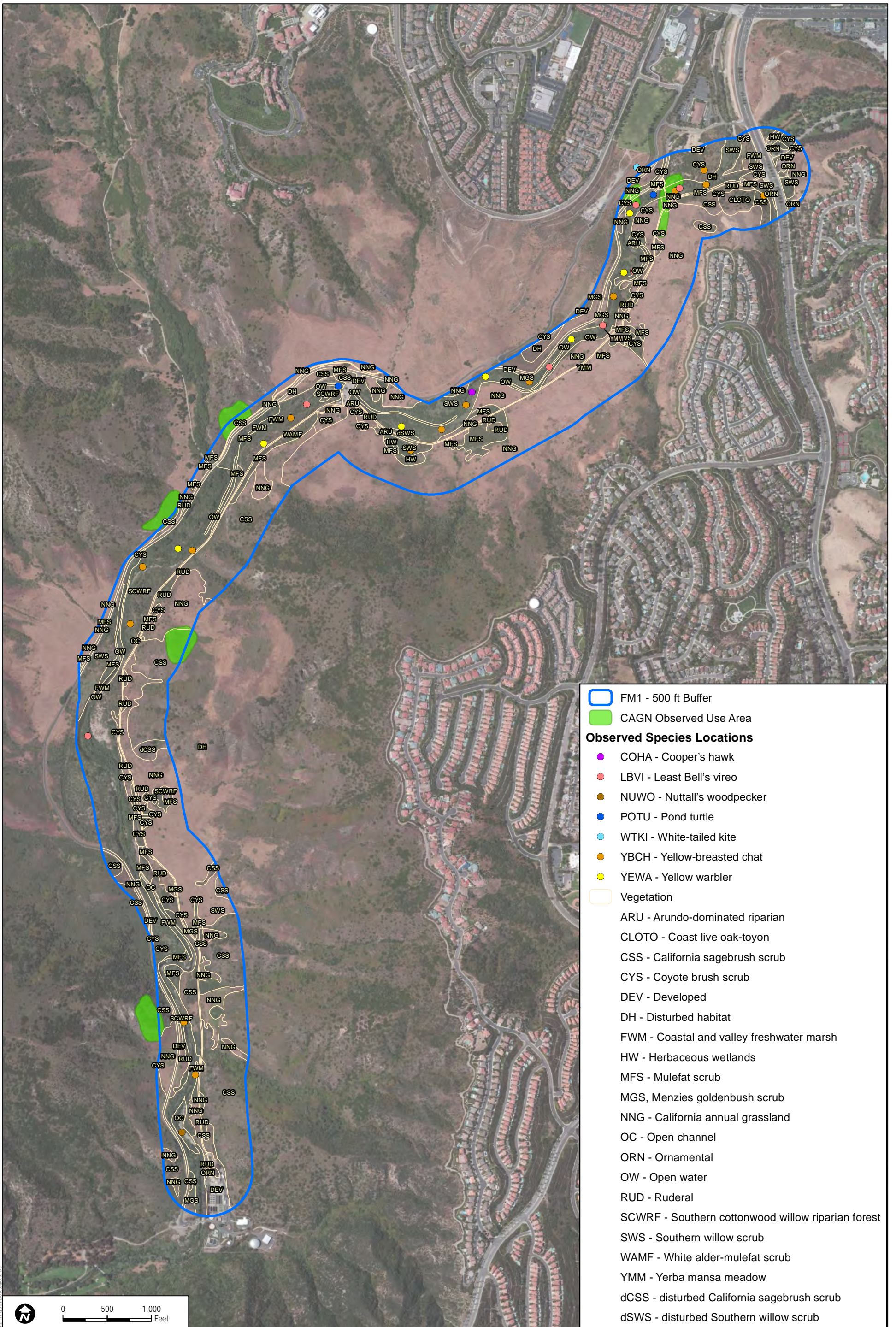
5.1.1 California Sagebrush

California sagebrush scrub is considered a coastal scrub vegetation alliance (CDFG 2003). It is a native plant community characterized by a variety of soft, low, aromatic, drought-deciduous shrubs, such as California sagebrush (*Artemisia californica*), California buckwheat (*Eriogonum fasciculatum*), California bush sunflower (*Encelia californica*), and sages (*Salvia* spp.), with scattered evergreen shrubs, including lemonadeberry (*Rhus integrifolia*), laurel sumac (*Malosma laurina*), and toyon (*Heteromeles arbutifolia*). It typically develops on steep, south-facing slopes and at times, though rarely, occurs on flooded low-gradient deposits along streams in which are scattered willows (*Salix* spp.) and mulefat (*Baccharis salicifolia*), depending on the site conditions. Soils on which this alliance occurs are described as alluvial or colluvial-derived and shallow (Sawyer and Keeler-Wolf 1995). California sagebrush scrub rarely occurs as a continuous vegetation community but rather occurs in a patchy or mosaic distribution pattern throughout its range. Shrub cover is rarely 100% (O'Leary 1990a and 1990b, Beyers and Wirtz II 1995).

Within the project area, California sagebrush scrub was mapped in areas supporting a minimum of 50% cover of native shrubs and subshrubs including California sagebrush, California encelia (*Encelia californica*), giant wild rye (*Leymus condensatus*), golden yarrow (*Eriophyllum confertiflorum*), black sage (*Salvia mellifera*), white sage (*Salvia apiana*), deerweed (*Lotus scoparius*), toyon, and hollyleaf redberry (*Rhamnus ilicifolia*). Non-native and exotic species comprised roughly 10% to 15% of the total area of this community including, but not limited to, black mustard (*Brassica nigra*), and bristly ox-tongue (*Picris echioides*). Bare ground in some cases comprised up to 20% cover.

Disturbed California sagebrush is similar in species composition to native California sagebrush but it supports anywhere from 20% to 50% cover of non-native annual grasses and other non-native species.

California sagebrush scrub has a rank of G5S5 in CDFG (2010), meaning it is globally secure and secure in the state. However, because this alliance is the obligate habitat type for the federally listed threatened California gnatcatcher, it is considered a special-status vegetation community.



INTENTIONALLY LEFT BLANK

Draft Biological Technical Report for the Coastal Treatment Plant Export Sludge Force Main Project

5.1.2 Coyote Brush Scrub

Coyote brush scrub alliance communities include coyote brush as the sole or dominant shrub in the canopy. Coyote brush scrub has a continuous or intermittent shrub canopy less than 2 meters (7 feet) in height with a variable ground layer (Sawyer and Keeler-Wolf 1995).

Species associated with the coyote brush scrub alliance typically include black sage, California buckwheat, California blackberry (*Rubus ursinus*), California coffeeberry (*Rhamnus californica*), California figwort (*Scrophularia* sp.), California sagebrush, creeping ryegrass (*Leymus triticoides*), poison oak (*Toxicodendron diversilobum*), seaside woolly sunflower (*Eriophyllum stoechadifolium*), salal (*Gaultheria shallon*), sword fern (*Polystichum munitum*), tufted hairgrass (*Deschampsia cespitosa*), yellow bush lupine (*Lupinus arboreus*), yellow sand-verbena (*Abronia latifolia*), wax myrtle (*Myrica californica*), and white sage (Sawyer and Keeler-Wolf 1995).

The coyote brush scrub alliance often occurs in stabilized dunes of coastal bars, river mouths, spits along coastline, coastal bluffs, open slopes, and terraces (Sawyer and Keeler-Wolf 1995).

Within the study area, the coyote brush scrub alliance forms an open to intermittent shrub layer. The herbaceous layer is open to intermittent and typically has established stands of non-native grasses and herbs. Trees are occasionally emergent. The on-site alliance is dominated by coyote brush and contains California sagebrush, laurel sumac, and purple sage. California buckwheat, chaparral bushmallow (*Malacothamnus fasciculatus*), saw-toothed goldenbush (*Hazardia squarrosa*), blue elderberry (*Sambucus mexicana*), and mulefat are occasionally present. The herbaceous layer includes foxtail chess (*Bromus madritensis* ssp. *madritensis*), ripgut brome (*Bromus diandrus*), black mustard, Maltese star-thistle (*Centaurea melitensis*), fennel (*Foeniculum vulgare*), purple needlegrass (*Nassella pulchra*), and giant wild rye.

Coyote brush scrub alliance has a rank of G5S5 in CDFG (2010), meaning it is globally secure and secure in the state. However, because this alliance is considered a sub-association of California sagebrush scrub, which is the obligate habitat type for the federally listed threatened California gnatcatcher, it is considered a special-status vegetation community.

5.1.3 Menzies' Goldenbush Scrub

Menzies' goldenbush scrub (Gray and Bramlett 1992) is a plant association which is dominated by coastal goldenbush (*Isocoma menziesii* var. *menziesii*). It is not a plant community identified in Holland (1986) and would typically be included in the California sage scrub community for mapping purposes. It has been separated from California sage scrub in this report because it supports nearly monotypic patches of coastal goldenbush and appears most commonly along road edges and on manufactured slopes, although there are areas where it occurs on the upper

Draft Biological Technical Report for the Coastal Treatment Plant Export Sludge Force Main Project

floodplain terraces of Aliso Creek. In these instances, it intergrades with mulefat scrub and southern willow scrub understory species such as western ragweed (*Ambrosia psilostachya*).

The *Isocoma menziesii* var. *menziesii* (Menzies goldenbush scrub) alliance has a rank of G4?S4?¹ in CDFG (2010), meaning that it is apparently secure both globally and within the state but that more data is needed to confirm. Because this alliance is considered a sub-association of California sagebrush scrub, which is the obligate habitat type for the federally listed threatened California gnatcatcher, it is considered a special-status vegetation community.

5.1.4 California Annual (Non-Native) Grassland

California annual grassland is characterized by a mixture of weedy, introduced annuals, primarily grasses. It may occur where disturbance by maintenance (mowing, scraping, discing, spraying, etc.), repetitive fire, agriculture, or other mechanical disruptions have altered soils and removed native seed sources from areas formerly supporting native vegetation. Holland (1986) states that California annual grasslands have a sparse to dense cover of annual grasses that are typically 0.2–0.5 meter (0.7–1.6 feet) tall and can be up to 1 meter (3 feet) tall. Wildflowers are often associated with California annual grasslands, especially in years with favorable precipitation (Holland 1986).

According to Holland (1986) and the List of Terrestrial Natural Communities (CDFG 2003), grasses that occur in California annual (non-native) grasslands include oats (*Avena* spp.), bromes (*Bromus* spp.), fescue (*Vulpia* spp.), and Italian ryegrass (*Lolium perenne* ssp. *multiflorum*). Forbs that occur with these grasses include California poppy (*Eschscholzia californica*), filaree (*Erodium* spp.), goldfields (*Lasthenia* spp.), phacelia (*Phacelia* spp.), gilies (*Gilia* spp.), and baby blue-eyes (*Nemophila menziesii*).

California annual (non-native) grassland also includes land that is used as pasture for grazing purposes. Grasses such as barley (*Hordeum* spp.) and wild oats (*Avena* sp.) may grow in these areas. This land has very few native species.

In his description of California annual (non-native) grassland, Holland (1986) states that this habitat type typically occurs on fine-textured clay soils. Sites are often moist or waterlogged during the winter rainy season and very dry during the summer and fall months. Adjacent areas with moister, better-drained soils often support oak woodland. According to Sawyer and Keeler-Wolf (1995), California annual (non-native) grasslands occur in uplands of all topographic orientation.

¹ A question mark (?) denotes an inexact numeric rank due to insufficient samples over the full expected range of the type, but existing information points to this rank.

Draft Biological Technical Report for the Coastal Treatment Plant Export Sludge Force Main Project

On site, the California annual (non-native) grassland alliance forms a continuous herbaceous layer. The shrub layer is sparse while trees are generally absent. The on-site alliance is dominated by non-native annual grasses and contains bromes, black mustard, fennel, and wild oats.

The California Annual (Non-Native) Grassland alliance has a rank of G4S4 in CDFG (2010), meaning that it is apparently secure both globally and within the state.

5.1.5 Coast Live Oak–Toyon Woodland

This community, although not described by Holland (1986) or Gray and Bramlett (1992), is a distinct vegetation community within the study area and as such was mapped separately. Coast live oak–toyon woodland is a community equally represented by both coast live oak (*Quercus agrifolia*) and toyon with a strong non-native grassland understory component. The coast live oaks within this community are young and range in height from about 8 to 10 feet. Within the study area, this plant association is found in only one area and is comprised of coast live oak, toyon, bromes, wild oat, blessed milkthistle (*Silybum marianum*), and other non-native forbs. The coast live oaks and toyon occur on a fairly steep slope in a patchy mosaic of ruderal vegetation and non-native grasses.

The *Quercus agrifolia* (coast live oak woodland) alliance has a rank of G5S4 in CDFG (2010), meaning it is globally secure and apparently secure in the state. At the association level, *Quercus agrifolia*–*Heteromeles arbutifolia* does not have a global or state ranking and is not considered sensitive.

5.1.6 Southern Willow Scrub

Southern willow scrub is often described as a dense, broad-leaved, winter-deciduous riparian thicket dominated by several species of willow (Holland 1986). Most stands are too dense to allow much understory development (Holland 1986). Species associated with the southern willow scrub alliance include scattered emergent Fremont cottonwood (*Populus fremontii*) and western sycamore (*Platanus racemosa*) (Holland 1986).

Southern willow scrub is found along stream channels on loose, sandy, or fine gravelly alluvium deposits. This habitat is considered seral due to repeated disturbance/flooding and is therefore unable to develop into the taller southern cottonwood–willow riparian forest (Holland 1986).

Within the project area, southern willow scrub was mapped in areas supporting a minimum of 50% cover of native shrubs and subshrubs and is primarily associated with Sulphur Creek, Aliso Creek, and tributaries to Aliso Creek within the AWCWP. This habitat forms a closed to moderately open canopy with a depauperate understory supporting a poorly developed herbaceous layer intermixed

Draft Biological Technical Report for the Coastal Treatment Plant Export Sludge Force Main Project

with bare ground and leaf litter. Southern willow scrub is found along the length of Aliso Creek and is dominated by arroyo willow (*Salix lasiolepis*) and sandbar willow (*Salix exigua*), with scattered individuals of young black willow (*Salix gooddingii*) and western sycamore. This community occurs in a matrix with mulefat scrub and freshwater marsh. In some areas, Fremont's cottonwood (*Populus fremontii*) and white alder (*Alnus rhombifolia*) are present in small patches; however, it appears that some of these areas may have been planted. White alder is not known from the Aliso drainage (Roberts, pers. comm. 2000). Where present, understory species include mugwort (*Artemisia douglasiana*), cocklebur (*Xanthium* spp.), and western ragweed, as well as freshwater marsh species such as California bulrush (*Scirpus californicus*) and broadleaf cattail (*Typha latifolia*). This vegetation community type also includes areas of freshwater marsh and open channel that were too small to map as separate types.

Disturbed southern willow scrub is similar in species composition to native southern willow scrub, but it supports anywhere from 20% to 50% cover of giant reed (*Arundo donax*) and other non-native species.

Southern willow scrub does not fit into a specific alliance in CDFG (2010), but the willow species that comprise the southern willow scrub (narrowleaf willow (*Salix exigua*), Goodding's willow (*Salix gooddingii*), and arroyo willow) have alliances in CDFG. Narrowleaf willow alliance has a rank of G5S4, meaning it is globally secure and apparently secure in the state. Goodding's willow has a rank of G4S3, meaning it is apparently secure globally and is vulnerable to extirpation or extinction in the state. Arroyo willow has a rank of G4S4, meaning that it is apparently secure both globally and within the state. Because southern willow scrub is a wetland waters of the United States/State of California, it is considered a special-status vegetation community.

5.1.7 Southern Cottonwood–Willow Riparian Forest

Southern cottonwood–willow riparian forest is a tall, open, broad-leaved winter deciduous riparian forest dominated by Fremont's cottonwood and several different species of willow (Holland 1986). It occurs in frequently overflowed lands along rivers and streams.

Within the study area, southern cottonwood–willow riparian forest occurs along the lower sections of Aliso Creek within the main flow channel. Species present within this community include Fremont's cottonwood, arroyo willow, red willow, narrow-leaved willow, Goodding's black willow, western sycamore, and mulefat.

Draft Biological Technical Report for the Coastal Treatment Plant Export Sludge Force Main Project

The *Populus fremontii* (southern cottonwood–willow riparian forest) alliance has a rank of G3S3.2 in CDFG (2010), meaning it is globally vulnerable and vulnerable in the state. This alliance is considered a special-status vegetation community per CDFG (2010).

5.1.8 Arundo-Dominated Riparian

Arundo-dominated riparian is comprised of monotypic or nearly monotypic stands of giant reed, a fairly widespread, noxious weed in Southern California (Sawyer and Keeler Wolf 1995). Typically it occurs on moist soils and in streambeds and may be related directly to soil disturbance or introduction of propagules by grading or flooding. Mapped occurrences may include surrounding native trees.

In the project area, Arundo-dominated riparian occurs in dense stands within the main reach of Aliso Creek.

Although the Arundo-dominated riparian alliance is recognized by the List of California Vegetation Alliances (CDFG 2010), it is not ranked because the community is considered semi-natural non-native. However, this alliance is considered a wetland waters of the United States/State of California, and as such it is considered a special-status vegetation community.

5.1.9 Mulefat Scrub

Mulefat scrub is a relatively low (2 to 3 meters), dense, shrubby riparian scrub alliance that occurs in riparian vegetation, edges of catch basins, and in canyons. It is dominated by mulefat, and may contain a small number of arroyo willow, upland shrubs, and facultative wetland herbs. Mulefat scrub is a seral alliance that occurs mainly along major drainages and floodplains where the riparian vegetation is open or disturbed. Frequent flooding and/or scouring apparently maintain this alliance in an early successional state (Holland 1986).

Within the study area, mulefat scrub is found in a matrix with southern willow scrub, extending into dryer areas on upper floodplain terraces where it also intergrades with Menzies' goldenbush scrub.

The *Baccharis salicifolia* alliance has a rank of G5S4 in CDFG (2010), meaning it is globally secure and apparently secure in the state. However, because this community is considered a riparian community under the potential jurisdiction of the CDFG, it is considered a special-status vegetation community (CDFG 2012b).

Draft Biological Technical Report for the Coastal Treatment Plant Export Sludge Force Main Project

5.1.10 White Alder–Mulefat Scrub

White alder–mulefat scrub association, although not recognized by Gray and Bramlett (1992), is a distinct vegetation community within the study area. It occurs as a sliver of woody vegetation adjacent to the main dirt access road and at the toe of an annual grassland–coastal sage scrub slope. It appears that this area may have been planted as a potential wind break because white alder is not known from the Aliso drainage (Roberts, pers. comm. 2000). This community is supported by an understory comprised of non-native grasses and forbs including bromes, black mustard, and yellow-star thistle.

The White Alder Grove alliance has a rank of G4S4 in CDFG (2010), meaning that it is apparently secure both globally and within the state. At the association level, *Alnus rhombifolia*–*Baccharis salicifolia* does not have a ranking and is not considered sensitive. However, because this association is considered a riparian community under the potential jurisdiction of the CDFG, it is considered a special-status vegetation community.

5.1.11 Herbaceous Wetlands

This community is a seasonal wetland vegetation type that primarily supports annual species, such as western ragweed, curly dock (*Rumex crispus*), bristly ox-tongue (*Picris echioides*), questionable rush (*Juncus dubius*), and cocklebur. Within the study area, herbaceous wetlands occur along the floodplain edges of Aliso Creek in low-lying swales. Herbaceous wetlands do not include species such as cattails, bulrushes, and rushes that constitute freshwater marsh. As a seasonal community in Orange County, herbaceous wetlands may only occur during wetter than average years.

Herbaceous wetlands do not fit into a specific alliance in CDFG (2010), but one of the species that comprises this community on site (western ragweed) has an alliance in CDFG. Western ragweed meadows provisional alliance has a rank of G4S4, meaning that it is apparently secure both globally and within the state. However, because this alliance is considered a wetland waters of the United States/State of California, it is considered a special-status vegetation community.

5.1.12 4. Yerba Mansa Meadow

Yerba mansa meadow refers to one location within the project area that is dominated by an almost pure stand of yerba mansa (*Anemopsis californica*) with some less than 15% cover of salt heliotrope (*Heliotropium curassavicum*).

The *Anemopsis californica* (yerba mansa meadow) alliance has a rank of G3S2? in CDFG (2010), meaning it is globally vulnerable and imperiled in the state. Because this alliance is

Draft Biological Technical Report for the Coastal Treatment Plant Export Sludge Force Main Project

considered a wetland waters of the United States/State of California and it is an imperiled resource, it is considered a special-status vegetation community.

5.1.13 Coastal Valley and Freshwater Marsh

Coastal and valley freshwater marsh is an association of fresh-brackish water marsh dominated by perennial, emergent monocots to 4–5 meters tall, often forming completely closed canopies. Coastal and valley freshwater marshes are found in sites that are quiet (lacking significant current) and permanently flooded by fresh water (Holland 1986). Dominant species typically include tall, emergent monocots, such as southern cattail (*Typha domingensis*) and bulrush, as well as some low-lying herbaceous species, such as curly dock (*Rumex crispus*), marsh fleabane (*Pluchea odorata*), and a variety of hydrophytic grasses and herbs. Fresh-brackish water marsh communities typically occur in drainages, seeps, and other perennially moist low places where the water table is close to or at the ground surface (Holland 1986).

Within the study area, coastal and valley freshwater marsh is found in pockets within and intermixed with southern willow and mulefat scrub in the channel bottom of Aliso Creek. Species found in coastal and valley freshwater marsh within the study area include predominantly broadleaf cattail, tall flatsedge (*Cyperus eragrostis*), and chairmaker's bulrush (*Schoenoplectus americanus*).

Coastal and valley freshwater marsh does not fit into a specific alliance in CDFG (2010), but the species that comprise this community on site (broadleaf cattail and chairmaker's bulrush) have alliances in CDFG. Broadleaf cattail alliance has a rank of G5S5, meaning it is globally secure and secure in the state. Chairmaker's bulrush has a rank of G5S3, meaning it is secure globally and is vulnerable to extirpation or extinction in the state. Because this alliance is considered a wetland waters of the United States/State of California, it is considered a special-status vegetation community.

5.1.14 Open Water

Open water consists of unvegetated standing waters and is regulated by CDFG pursuant to Section 1602 of the California Fish and Game Code, the ACOE pursuant to Section 404 of the federal CWA, and the RWQCB pursuant to Section 401 of the CWA and the state Porter-Cologne Act.

Within the study area, open water refers to ponded areas within Aliso Creek that, for the most part, lack wetlands vegetation and are often fringed by cattails (*Typha* sp.).

Draft Biological Technical Report for the Coastal Treatment Plant Export Sludge Force Main Project

Open water is not a vegetation community; therefore, it is not included in the List of California Vegetation Alliances and Associations (CDFG 2010). However, it is considered a non-wetland waters of the United States/State of California and as such is considered a special-status resource.

5.1.15 Open Channel

Open channel in the study area includes both natural channel and concrete-lined, developed channel. Natural open channel is characterized by intermittent stream channels that are barren or sparsely vegetated and are regulated by CDFG pursuant to Section 1602 of the California Fish and Game Code, the ACOE pursuant to Section 404 of the federal CWA, and the RWQCB pursuant to Section 401 of the CWA and the state Porter-Cologne Act. They are not wetlands due to the lack of hydrophytic vegetation. Open channel is similar to unvegetated stream channel except that the width of the stream channel for areas mapped as open channel is greater than 10 feet. Concrete-lined, developed channels are not typically regulated by CDFG or ACOE and have very little, if any, biological value.

In the study area, natural open channel consists of dry, sparsely vegetated, sandy-bottomed channels associated with Aliso Creek. The developed open channel on site refers to an east-to-west trending, concrete-lined, unvegetated tributary to Aliso Creek in the more central portion of the study area.

Open channel is not a vegetation community; therefore, it is not included in the List of California Vegetation Alliances and Associations (CDFG 2010). However, it is considered a non-wetland waters of the United States/State of California and as such is considered a special-status resource.

5.1.16 Developed

Developed land refers to areas supporting man-made structures including homes, yards, roadways, sidewalks, and other highly modified lands supporting structures associated with dwellings or other permanent structures. Within the study area, developed land refers to existing roads, parking lots, buildings, and other permanent structures. Vegetation in these areas, if present at all, is typically associated with development landscaping.

Developed is not included in the List of California Vegetation Alliances and Associations (CDFG 2010). This community is not considered a special-status vegetation community.

5.1.17 Disturbed Land

Disturbed land includes areas that experience or have experienced high levels of human disturbance and as a result are generally lacking vegetation. Areas mapped as disturbed land may include

Draft Biological Technical Report for the Coastal Treatment Plant Export Sludge Force Main Project

unpaved roads, trails, and graded areas. Vegetation in these areas, if present at all, is usually sparse and dominated by non-native weedy herbaceous species.

Within the study area, disturbed land includes trails and bare, open areas with less than 20% vegetative cover.

Disturbed land is not included in the List of California Vegetation Alliances and Associations (CDFG 2010). This community is not considered a special-status vegetation community.

5.1.18 Ruderal

Vegetation in ruderal areas is comprised of weedy herbaceous species, such as tocalote (*Centaurea melitensis*), wild oat, black mustard, sow thistle (*Sonchus asper*), and prickly lettuce (*Lactuca serriola*). Ruderal areas are generally the result of disturbance, such as prior grading or fire. Ruderal areas occur across a wide range of elevations, topographic orientations, and soil types.

Within the study area, ruderal land is comprised of more than 20% cover of fennel, blessed milkthistle, Italian plumeless thistle (*Carduus pycnocephalus*), and maltese star-thistle. Ruderal differs from disturbed land in that it supports more than 20% cover of weedy and non-native vegetation.

Ruderal is not included in the List of California Vegetation Alliances and Associations (CDFG 2010). This community is not considered a special-status vegetation community.

5.1.19 Ornamental

Areas mapped as ornamental include planted areas where ornamental landscaping has been installed as part of a recreational park, development, or roadway landscaping.

Ornamental is not included in the List of California Vegetation Alliances and Associations (CDFG 2010). Since it is dominated by non-native ornamental plantings, ornamental land has limited value and is not considered a special-status vegetation community.

5.1.20 Floral Diversity

A total of 161 species of vascular plants were observed during the rare plant surveys and vegetation mapping effort. Of the 161 species observed, 94 (58%) are plant species native to California and 67 (42%) are non-native plant species. A list of all plant species observed in the study area during surveys is presented in Appendix A.

Draft Biological Technical Report for the Coastal Treatment Plant Export Sludge Force Main Project

5.2 Wildlife

5.2.1 General Wildlife

A total of 104 wildlife species were observed during focused surveys for special-status species, including 7 reptiles, 3 amphibians, 67 birds, 10 mammals, 12 invertebrates, 4 fish, and 1 crustacean. A full list of wildlife species observed in the study area during the surveys is provided in Appendix B.

5.2.1.1 Birds

A total of 67 bird species were observed in the study area during general and focused wildlife surveys for the coastal California gnatcatcher, least Bell's vireo, and southwestern willow flycatcher. A variety of birds were observed in the study area, including both common and special-status species. Some of the more common species observed include mourning dove (*Zenaida macroura*), mallard (*Anas platyrhynchos*), California quail (*Callipepla californica*), black phoebe (*Sayornis nigricans*), and western scrub-jay (*Aphelocoma californica*). Special-status wildlife species observed within the study area are described in Section 4.3.2.

5.2.1.2 Reptiles and Amphibians

Seven reptile and three amphibian species were detected in the study area during the focused wildlife surveys. Observed amphibians included western toad (*Anaxyrus boreas*), Baja California treefrog (*Pseudacris hypochondriaca*), and the non-native bullfrog (*Rana catesbeiana*). Observed reptiles included western pond turtle, pond slider (*Trachemys scripta*), southern alligator lizard (*Gerrhonotus multicarinatus*), western fence lizard (*Sceloporus occidentalis*), common side-blotched lizard (*Uta stansburiana*), western rattlesnake (*Crotalus oreganus*), and gophersnake (*Pituophis catenifer*).

5.2.1.3 Fish

Four non-native fish species were detected in Aliso Creek during focused southern steelhead surveys: common carp (*Cyprinus carpio*), red shiner (*Cyprinella lutrensis*), western mosquitofish (*Gambusia affinis*), and largemouth bass (*Micropterus salmoides*). No native fish species were observed. All four species were detected on both the downstream and upstream side of the Aliso Creek Wildlife Habitat Enhancement Project (ACWHEP) structure.

Draft Biological Technical Report for the Coastal Treatment Plant Export Sludge Force Main Project

5.2.1.4 Mammals

A total of 10 mammal species were observed within the study area. Species observed during the focused surveys included California ground squirrel (*Spermophilus beecheyi*), generally observed on grassy slopes and along dirt and paved roads in the study area; woodrat (*Neotoma* sp.), observed in coastal scrub areas; bobcat (*Lynx rufus*), observed on the dirt road leading down to the CTP on the east side of Aliso Creek (utility access road); and mountain lion (*Felis concolor*) scat which also was observed on the utility access road. Abundant mule deer (*Odocoileus hemionus*) and coyote (*Canis latrans*) tracks were also observed on sand bars, benches, and margins of the main channel during focused surveys.

5.2.1.5 Invertebrates

A total of 12 invertebrate species were observed during the focused wildlife surveys. Species observed are primarily common butterflies and included tiger swallowtail (*Papilio rutulus*), checkered white (*Pontia protodice*), California buckeye (*Junonia coenia*), and mourning cloak (*Nymphalis antiopa*).

5.2.1.6 Crustaceans

One non-native crustacean species was observed during focused surveys: red swamp crayfish (*Procambarus clarkia*).

5.3 Special-Status Biological Resources

Endangered, rare, or threatened species, as defined in CEQA Guideline 15380(b) (14 CCR 15000 et seq.), are referred to as “special-status species” in this report and include (1) endangered or threatened species recognized in the context of the California Endangered Species Act (CESA) and the federal Endangered Species Act (FESA); (2) plant species with a California Rare Plant Rank (CRPR) (CDFG 2012; CNPS 2012) (Lists 1 through 4); (3) California Species of Special Concern (SSC) and Watch List (WL) species, as designated by the CDFG (2011); (4) mammals and birds that are Fully Protected (FP) species, as described in Fish and Game Code, Sections 4700 and 3511; (5) Birds of Conservation Concern (BCC), as designated by the USFWS (2008); and (6) plant and wildlife species that are “covered” under the Central-Coastal Subregion NCCP/HCP (County of Orange 1996).

5.3.1 Special-Status Plants

Special-status plant surveys were conducted to determine the presence or absence of plant species that are considered endangered, rare, or threatened under CEQA Guideline 15380 (14

Draft Biological Technical Report for the Coastal Treatment Plant Export Sludge Force Main Project

CCR 15000 et seq.). No special-status plants were identified in the study area during 2011 and 2012 rare plant surveys. A list of all special-status plant species known to occur in the vicinity of the study area (the surrounding eight topographic quadrangles) and plant species covered under the Central-Coastal Subregion NCCP/HCP, with their habitat requirements, potential to occur in the study area, and survey observations, is provided in Appendix C. This appendix provides evaluations for each of these special-status species' occurrence in the study area vicinity and their potential to occur in the study area based on known range, habitat associations, preferred soil substrate, life form, elevation, and blooming period. Appendix C also includes other special-status plant species with ranges that overlap the study area but that are either not expected to occur or have a low potential to occur. Consistent with the negative findings of the plant surveys, there are no special-status plant species with a moderate or high potential to occur within the project study area. Special-status plants, therefore, are not further analyzed in this report because no direct, indirect, or cumulative impacts are expected based on the negative surveys and the evaluation that no special-status plant have moderate or high potential to occur in the study area.

5.3.2 Special-Status Wildlife

Special-status wildlife species are defined as follows:

- Have been designated as either rare, threatened, or endangered by CDFG or the USFWS and are protected under either CESA (California Fish and Game Code, Section 2050 et seq.) or FESA (16 U.S.C. 1531 et seq.); or meet the CEQA definition for endangered, rare, or threatened (14 CCR 15380(b),(d));
- Are candidate species being considered or proposed for listing under these same acts;
- Are fully protected by the California Fish and Game Code Sections 3511, 4700, 5050, or 5515;
- Are of expressed concern to resource/regulatory agencies or local jurisdictions. This includes those wildlife that are considered a state SSC; are on CDFG WL; are designated as a federal BCC; or considered a state Special Animal; or
- Are listed as Covered Species in the Central-Coastal Subregion NCCP/HCP (County of Orange 1996).

A list of all special-status wildlife species known to occur in the vicinity of the study area (the surrounding eight topographic quadrangles) and wildlife species covered under the Central-Coastal Subregion NCCP/HCP, with their habitat requirements, potential to occur in the study area, and survey observations, is provided in Appendices D and E. Appendix D includes special-status wildlife species that have low potential or are not expected to occur in the study area.

Draft Biological Technical Report for the Coastal Treatment Plant Export Sludge Force Main Project

Appendix E includes special-status wildlife species that were observed or have at least moderate to high potential to occur in the study area.

The coastal California gnatcatcher, least Bell's vireo, and seven other special-status wildlife species were observed in the study area during the focused surveys: Cooper's hawk, a CDFG WL species; Nuttall's woodpecker, a USFWS BCC; western pond turtle, a CDFG SSC; yellow-breasted chat, a CDFG SSC; yellow warbler, a CDFG SSC; and white-tailed kite, a CDFG FP species (Figure 3).

Notably, the non-native brown-headed cowbird (*Molothrus ater*) was observed in Aliso Creek. Brown-headed cowbirds can have adverse effects on native passerine populations through nest parasitism, including special-status species such as least Bell's vireo (USFWS 1998) and coastal California gnatcatcher (Patten and Campbell 1998).

5.3.2.1 Coastal California Gnatcatcher

Four pairs of California gnatcatchers and two un-capped individuals were observed in the study area by Dudek during 2011 focused surveys (Appendix F). RECON (2009) had previously observed one other gnatcatcher pair with a juvenile along the east side of the creek during 2009 focused surveys. A pair was not observed in this area during 2011 surveys performed by Dudek. A single, un-capped gnatcatcher was identified by Dudek Biologist Brock A. Ortega during focused surveys for least Bell's vireo and southwestern willow flycatcher in June 2011 and was later confirmed by Dudek Biologists Tricia L. Wotipka and Jeffrey D. Priest on August 9, 2011, during focused California gnatcatcher surveys. Another single, un-capped California gnatcatcher was observed on the east side of Aliso Creek in suitable habitat just south of the park ranger station. This individual was later confirmed to be present on the east and west side of Aliso Creek by Dudek Biologists Dr. Anita M. Hayworth, Tricia L. Wotipka, and Kevin M. Shaw during a subsequent gnatcatcher survey on August 17, 2011. The distribution of observed California gnatcatcher use areas is depicted in Figure 3.

5.3.2.2 Least Bell's Vireo and Southwestern Willow Flycatcher

Seven pairs of least Bell's vireo were observed in the main stem of Aliso Creek during the 2011 focused surveys (Appendix G). The upstream section of Aliso Creek from the ACWHEP structure to Alicia Parkway supported the highest concentration of least Bell's vireo with five documented pairs. Two pairs of least Bell's vireo were mapped in Aliso Creek from the ACWHEP structure downstream to the CTP. These two pairs, however, were only documented on one occasion (May 21) and were not detected during the remaining surveys. No southwestern willow flycatchers were observed during the 2011 focused survey effort.

Draft Biological Technical Report for the Coastal Treatment Plant Export Sludge Force Main Project

5.3.2.3 Arroyo Toad

No arroyo toads were observed during the 2012 focused survey effort.

4.3.2.4 Southern Steelhead

The focused survey for southern steelhead did not result in any observations or evidence of presence of southern steelhead, suitable steelhead spawning habitat, or any other native fishes within the approximately 3.6-mile study area. Stream habitat is dominated by pools, runs, and glides, with very little riffle habitat. Substrates throughout most of the reach consist of fines and sand with only a few isolated small pockets of coarse gravel and cobble occurring within and adjacent to the creek; however, these larger substrates were heavily embedded with fines and sand. Additionally, a dense riparian corridor occurs along much of the reach and as a result, coarse particulate organic matter (CPOM) is relatively abundant throughout the reach.

Based on the survey, spawning habitat for southern steelhead is not present within the study area. Suitable spawning habitat generally consists of riffle or riffle-like habitats with well aerated clean substrates consisting of large gravel to small cobble. Additionally, a concrete dam/road crossing with an elevated culvert is located about 1.65 miles upstream from the CTP and is a barrier to upstream migration for all fish species. The steelhead study concluded that southern steelhead presence in the study area is highly unlikely for several reasons: (1) lack of suitable spawning and juvenile rearing habitat; (2) sparse benthic macroinvertebrate community; (3) generally low flows, marginal water quality, and abundant CPOM; and (4) abundance of non-native fish species (common carp, red shiner, western mosquitofish, and largemouth bass).

5.4 Special-Status Vegetation Communities

During the 2011 vegetation mapping, 14 vegetation communities (including disturbed forms) were mapped that are considered special-status pursuant to local, state, and federal guidelines and policies: California sagebrush scrub (including disturbed form), coyote brush scrub, Menzies' goldenbush scrub, coast live oak–toyon, southern willow scrub (including disturbed form), southern cottonwood–willow riparian forest, Arundo-dominated riparian, mulefat scrub, white alder–mulefat scrub, herbaceous wetlands, yerba mansa meadow, coastal and valley freshwater marsh, open water, and open channel.

Table 2 provides the acreage of each mapped vegetation community or land cover. Figure 3, Biological Resources Map, shows the distribution of vegetation communities and land covers mapped within 500 feet of the project alignment.

Draft Biological Technical Report for the Coastal Treatment Plant Export Sludge Force Main Project

5.5 Wildlife Corridors and Habitat Linkages

Wildlife corridors are linear features that connect large patches of natural open space and provide avenues for dispersal or migration of animals, as well as dispersal of plants (e.g., via wildlife vectors). Wildlife corridors contribute to population viability in several ways: (1) they assure continual exchange of genes between populations which helps maintain genetic diversity; (2) they provide access to adjacent habitat areas representing additional territory for foraging and mating; (3) they allow for a greater carrying capacity; and (4) they provide routes for colonization of habitat lands following local population extinctions or habitat recovery from ecological catastrophes. Habitat linkages are patches of native habitat that function to join two larger patches of habitat. They serve as connections between habitat patches and help reduce the adverse effects of habitat fragmentation. Although individual animals may not move through a habitat linkage, the linkage is a potential route for gene flow and long-term dispersal. Habitat linkages may serve both as habitat and avenues of gene flow for small animals such as reptiles, amphibians, and rodents. Habitat linkages may be represented by continuous patches of habitat or by nearby habitat “islands” that function as stepping stones for dispersal and movement (especially for birds and flying insects).

Aliso Creek is identified in the Central-Coastal Subregion NCCP/HCP as part of a linkage system from the Sycamore Hills to the San Joaquin Hills via Laguna Canyon. Riparian corridors are typically used by wildlife as movement corridors and this drainage links inland areas of Orange County with the Pacific Ocean, less than 2 miles west of the CTP. Abundant mule deer and coyote prints were observed on sand bars, benches, and margins of the main channel during focused surveys, and bobcat and mountain lion were also detected in the study area, indicating that Aliso Creek is functioning as a wildlife use and movement area.

5.6 Regional Resource Planning Context

5.6.1 Relationship to the Central-Coastal Subregion NCCP/HCP

The majority of the study area is within the designated Central-Coastal Subregion NCCP/HCP reserve system. Infrastructure projects are an allowed use within these reserves provided they are consistent with policies regarding the siting, construction, and operation of such infrastructure.

Impacts to coastal sage scrub (mapped as California sagebrush scrub, coyote brush scrub, and Menzies' goldenbush scrub in the study area) or take of species covered by the Central-Coastal Subregion NCCP/HCP within designated reserve areas are authorized by the USFWS Section 10 (a)(1)(B) permit and CDFG Management Authorization (MA) as set forth in the Implementation Agreement (IA) for this document. Procedures do, however, vary for participating and non-

Draft Biological Technical Report for the Coastal Treatment Plant Export Sludge Force Main Project

participating landowners. Section 5.9 of the Central-Coastal Subregion NCCP/HCP contains policies regarding infrastructure which are intended to guide the siting, construction, and operation of permitted infrastructure. Certain public infrastructure necessary for public health and safety or economic reasons will be permitted within the subregional reserve system. Sewer lines are included on this list.

The SOCWA is not listed as a participating landowner in the Central-Coastal Subregion NCCP/HCP. However, non-participating landowners have the option of addressing unavoidable impacts/take within reserves by either providing acceptable mitigation through separate permits or authorizations under FESA/CESA or paying a mitigation fee to the NCCP nonprofit corporation. Selection of the mitigation fee option to address impacts to coastal sage scrub species will be covered under the terms of the USFWS Section 10(a)(1) (B) permit and CDFG MA granted to the local government with jurisdiction over the proposed activity. No additional approvals pursuant to FESA, CESA, and the Natural Community Conservation Planning Act (NCCP Act) will be required.

Impacts in non-reserve open space areas and existing use areas are not authorized for non-participating landowners. For existing use areas, the use of the mitigation fee option is not available to non-participating landowners unless located with a signatory local government jurisdiction and specifically authorized by the CDFG and USFWS. Any activity which would require take in such areas shall require the approval of the applicable regulatory agencies pursuant to FESA and CESA.

It should be noted that coordination is still required with Section 404 and 401 of the CWA and Sections 1600-1603 of the California Fish and Game Code regarding potential impacts to wetlands or waters of the United States.

Draft Biological Technical Report for the Coastal Treatment Plant Export Sludge Force Main Project

6.0 PROJECT IMPACTS

This section addresses the direct and indirect temporary impacts to biological resources that would result from implementation of the proposed project. The proposed project involves the replacement of approximately 16,600 feet of piping along the lower portion of the Export Sludge Handling System. Direct and indirect temporary impacts are associated with vegetation removal.

6.1 Definition of Impacts

6.1.1 Direct Temporary Impacts

Direct Temporary Impacts were quantified by overlaying the proposed impact alignment onto the biological resources map for the study area (Table 3; Figures 4, 5A, 5B, and 5C). For purposes of this assessment, all biological resources within these limits are considered to be temporarily directly affected because all direct impacts will be restored.

Additional short-term, project-related, or temporary direct impacts outside the designated construction zone, including inadvertent clearing or trampling, could result from construction activities in the absence of avoidance measures. These potential effects could damage vegetation communities and alter their ecosystem, creating gaps in vegetation that allow exotic, non-native plant species to become established, thus increasing soil compaction and leading to soil erosion.

6.1.2 Indirect Impacts

Indirect Impacts are impacts that occur outside the designated project area (e.g., downstream) or later in time, but which are reasonably foreseeable effects of a project. Indirect impacts are often difficult to identify and quantify, but it is presumed that some could occur. For this project they could result primarily from adverse “edge effects” or downstream effects. For the proposed project, it is assumed that the potential indirect impacts resulting from construction activities include dust, noise, and general human presence that may temporarily disrupt species and habitat vitality, as well construction-related soil erosion and runoff that could affect downstream resources. With respect to potential downstream impacts, all project grading will be subject to the typical restrictions and requirements that address erosion and runoff, including the federal CWA, National Pollution Discharge Elimination System (NPDES), and preparation of a Storm Water Pollution Prevention Plan (SWPPP).

6.1.2.1 Short-Term Impacts

Short-term indirect impacts are reasonably foreseeable effects caused during project implementation on remaining or adjacent biological resources outside the direct limits of work.

Draft Biological Technical Report for the Coastal Treatment Plant Export Sludge Force Main Project

Short-term indirect impacts may affect areas within the defined project study area but outside the proposed impact limits, including non-impacted areas, and areas outside the study area, such as downstream effects. In most cases, indirect effects are not quantified, but in some cases quantification might be included, such as using a noise contour to quantify indirect impacts to nesting birds. These indirect impacts may include dust and noise which could temporarily disrupt habitat and species vitality, or cause maintenance-related runoff.

6.1.2.2 Long-Term Impacts

Long-term indirect impacts are reasonably foreseeable effects caused by project implementation on remaining or adjacent biological resources outside the direct limits of work. Indirect impacts may affect areas within the defined project study area but outside the proposed impact limits, including non-impacted areas and areas outside the project area, such as downstream effects. Long-term or chronic effects related to this project area are primarily related to long-term maintenance activities.

6.1.3 Cumulative Impacts

Cumulative impacts refer to the combined environmental effects of the proposed project and other relevant projects. In some cases, the impact from a single project may not be significant, but when combined with other projects, the cumulative impact may be significant. This report does not include analysis of cumulative impacts; this analysis is being prepared separately for direct inclusion in the CEQA document being prepared for the project.

6.2 Impacts to Vegetation Communities and Land Covers

6.2.1 Direct Impacts

6.2.1.1 Permanent Impacts

There are no permanent impacts associated with the proposed project.

6.2.1.2 Temporary Impacts

Temporary direct impacts to vegetation communities were quantified by overlaying the impact footprint over the boundaries of the vegetation communities mapped in the study area. Direct temporary impacts to vegetation communities and non-natural land covers totaling 15 acres would occur as a result of vegetation removal activities, as shown in Table 3.

Draft Biological Technical Report for the Coastal Treatment Plant Export Sludge Force Main Project

Table 3
Temporary Direct Impacts to Vegetation Communities

Vegetation Community/Land Cover	Temporary Impacts (Acres)
<i>Natural Uplands</i>	
California Sagebrush Scrub	2.34
Coyote Brush Scrub	0.91
Menzies' Goldenbush Scrub	0.10
California Annual Grassland	5.01
<i>Subtotal</i>	8.36
<i>Riparian and Wetland Communities</i>	
Southern Willow Scrub	0.49
Southern Cottonwood–Willow Riparian Forest	0.18
Arundo-Dominated Riparian	0.15
Mulefat Scrub	1.53
White Alder–Mulefat Scrub	0.58
Open Channel	0.01
<i>Subtotal</i>	2.94
<i>Non-Natural Land Covers</i>	
Developed Land	0.28
Disturbed Habitat	2.13
Ruderal	1.27
Ornamental	0.02
<i>Subtotal</i>	3.70
TOTAL	15.00

In addition, clearing or trampling of vegetation outside the proposed impact limits could occur in the absence of avoidance and mitigation measures. These potential effects could damage vegetation communities and alter their ecosystem, creating gaps in vegetation that allow exotic, non-native plant species to become established, thus increasing soil compaction and leading to soil erosion.

6.2.2 Indirect Impacts

6.2.2.1 Short-Term Impacts

Potential short-term or temporary indirect impacts to special-status vegetation communities in the study area would primarily result from vegetation removal activities and include impacts related to or resulting from the generation of fugitive dust; changes in hydrology resulting from vegetation removal within the channel, including sedimentation and erosion; increased human

Draft Biological Technical Report for the Coastal Treatment Plant Export Sludge Force Main Project

activity resulting in potential trampling of vegetation outside the designated work zone; and the introduction of chemical pollutants. Potential short-term indirect impacts that could affect all the special-status vegetation communities that occur in the study area are described in detail as follows.

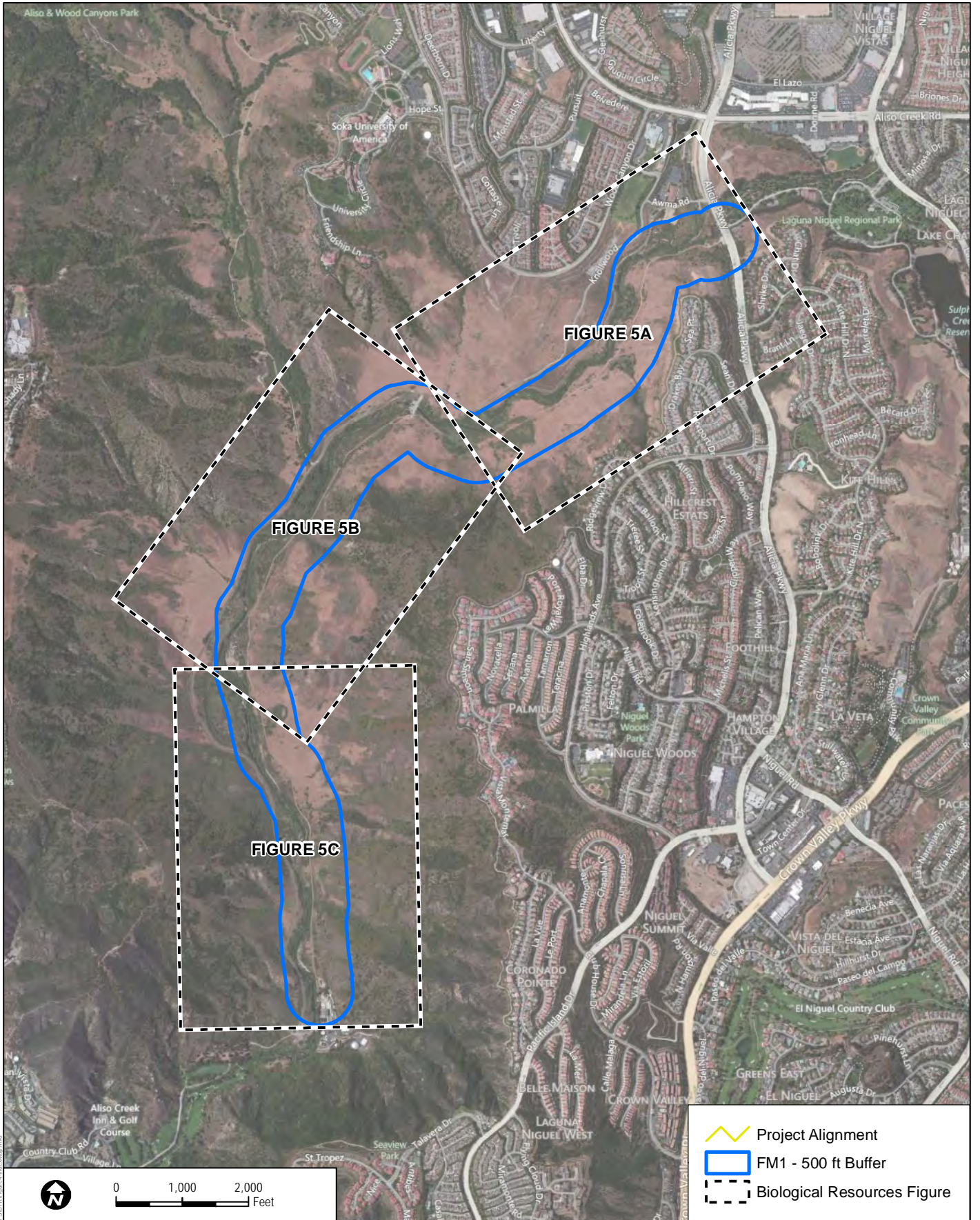
Generation of Fugitive Dust. Excessive dust can decrease the vigor and productivity of vegetation through effects on light, penetration, photosynthesis, respiration, transpiration, increased penetration of phytotoxic gaseous pollutants, and increased incidence of pests and diseases.

Changes in Hydrology. Removal of vegetation within the channel could result in hydrologic and water-quality-related impacts adjacent to and downstream of the construction area. Hydrologic alterations include changes in flow rates and patterns in streams and rivers and dewatering, which may affect adjacent and downstream aquatic, wetland, and riparian vegetation communities. Water-quality impacts include chemical-compound pollution (fuel, oil, lubricants, paints, release agents, and other construction materials), erosion, increased turbidity, and excessive sedimentation. The direct removal of native vegetation can increase runoff from roads and other paved surfaces, resulting in increased erosion and transport of surface matter into vegetation communities. Altered erosion, increased surface flows, and underground seepage can allow for the establishment of non-native plants. Changed hydrologic conditions can also alter seed bank characteristics and modify habitat for ground-dwelling fauna that may disperse seed.

Increased Human Activity. The proposed project includes removal of vegetation. Increased human activity could result in the potential for trampling of vegetation outside of the impact footprint, as well as soil compaction, and could affect the viability of plant communities. Trampling can alter the ecosystem, creating gaps in vegetation and allowing exotic, non-native plant species to become established, leading to soil erosion. Trampling may also affect the rate of rainfall interception and evapotranspiration, soil moisture, water penetration pathways, surface flows, and erosion.

Chemical Pollutants. Erosion and chemical pollution (releases of fuel, oil, lubricants, paints, release agents, and other project-related materials) may affect special-status vegetation communities. The use of chemical pollutants can decrease the number of plant pollinators, increase the existence of non-native plants, and cause damage to and destruction of native plants.

All special-status vegetation communities in the study area could be impacted by potential temporary indirect impacts such as those previously listed.



Path: Z:\Projects\0811\MAPDOC\CP\BTR\Figures\BIOLOGICAL.mxd
 6/20/12 10:58 AM

DUDEK

SOURCE: Bing 2012

6938-02

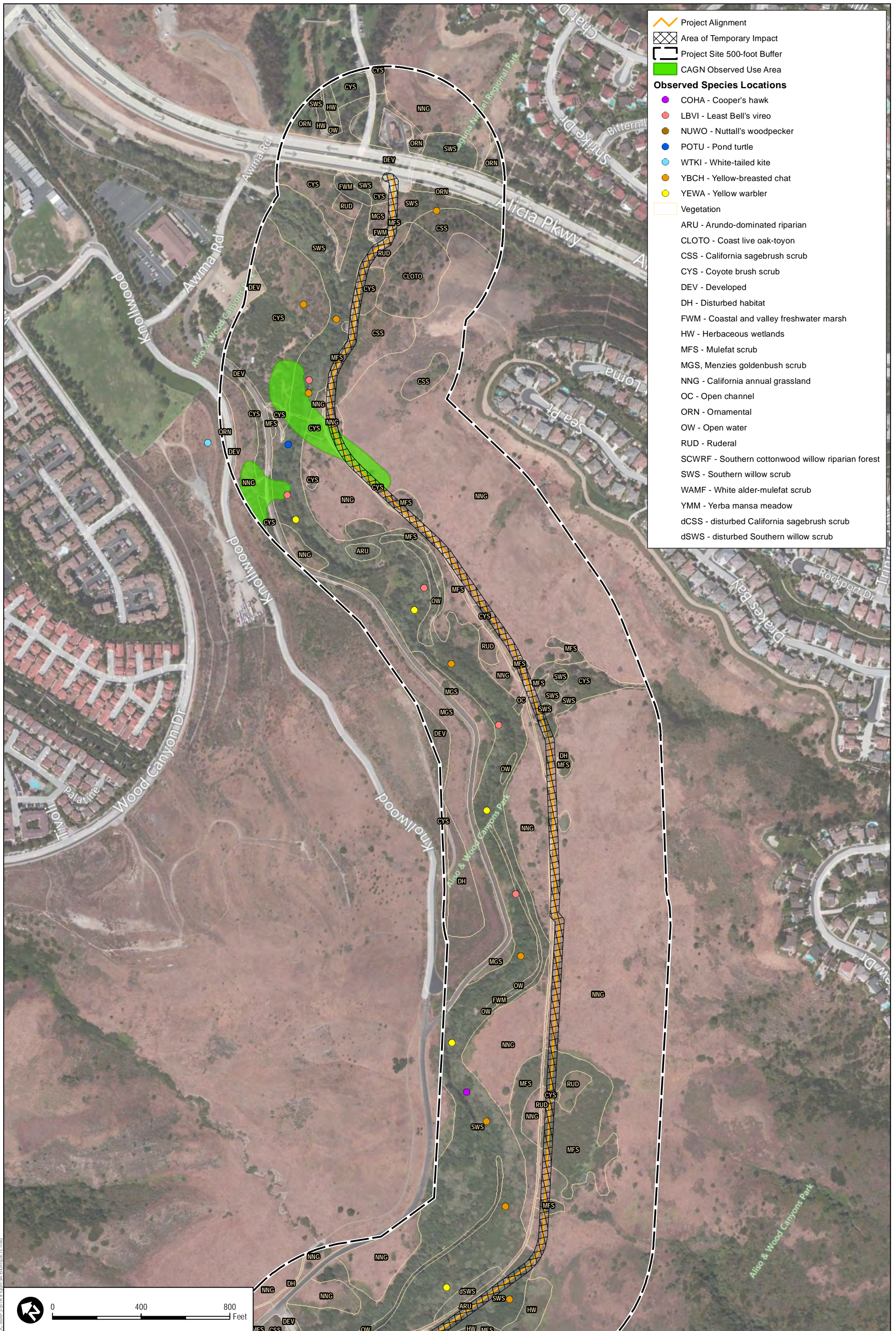
OCTOBER 2012

COASTAL TREATMENT PLANT EXPORT SLUDGE FORCE MAIN PROJECT - BIOLOGICAL RESOURCES TECHNICAL REPORT

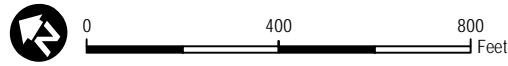
FIGURE 4
Biological Resources Index Map

**Draft Biological Technical Report for the Coastal Treatment Plant
Export Sludge Force Main Project**

INTENTIONALLY LEFT BLANK

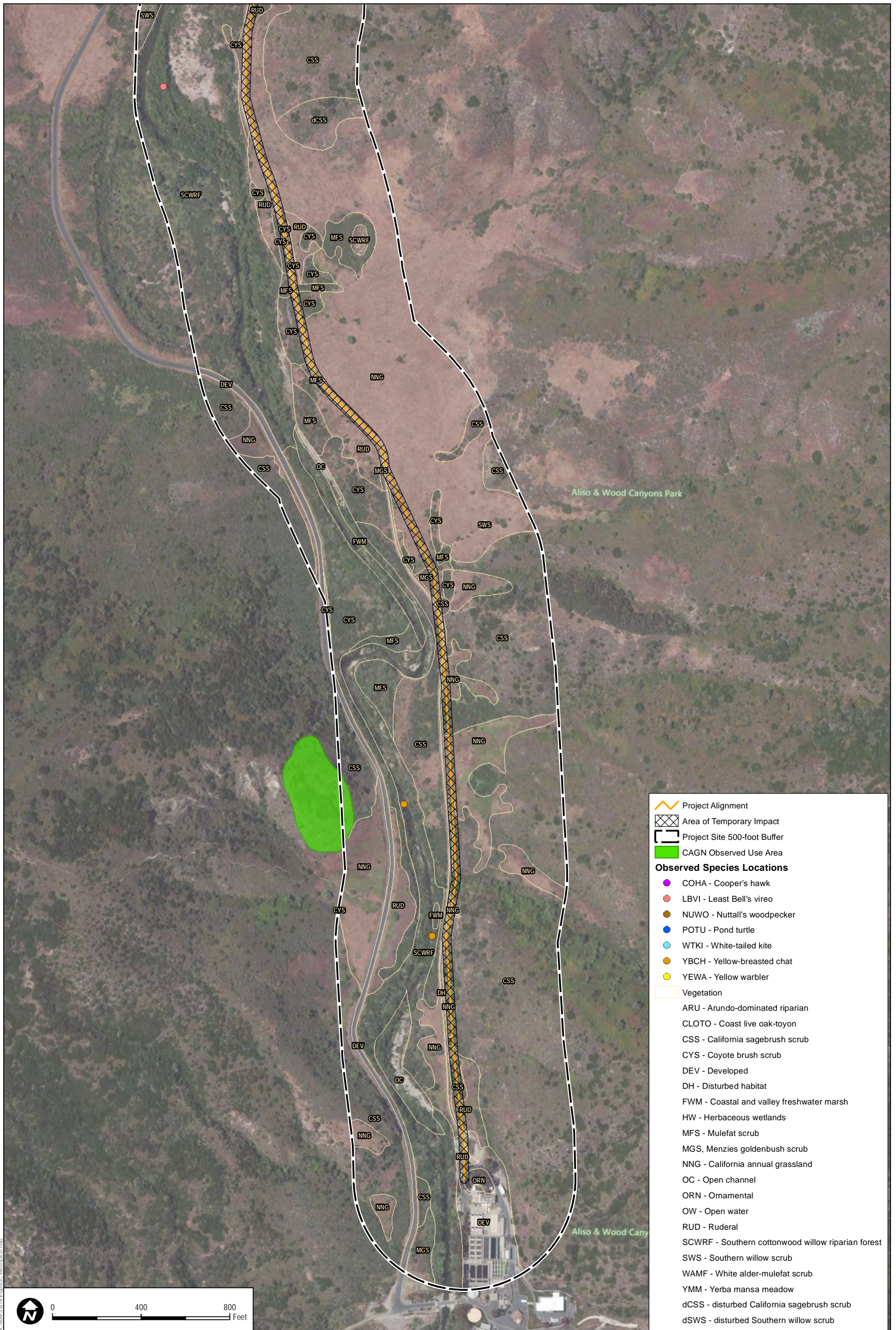


- Project Alignment
 - Area of Temporary Impact
 - Project Site 500-foot Buffer
 - CAGN Observed Use Area
- Observed Species Locations**
- COHA - Cooper's hawk
 - LBVI - Least Bell's vireo
 - NUWO - Nuttall's woodpecker
 - POTU - Pond turtle
 - WTKI - White-tailed kite
 - YBCH - Yellow-breasted chat
 - YEWA - Yellow warbler
- Vegetation**
- ARU - Arundo-dominated riparian
 - CLOTO - Coast live oak-toyon
 - CSS - California sagebrush scrub
 - CYS - Coyote brush scrub
 - DEV - Developed
 - DH - Disturbed habitat
 - FWM - Coastal and valley freshwater marsh
 - HW - Herbaceous wetlands
 - MFS - Mulefat scrub
 - MGS - Menzies goldenbush scrub
 - NNG - California annual grassland
 - OC - Open channel
 - ORN - Ornamental
 - OW - Open water
 - RUD - Ruderal
 - SCWRF - Southern cottonwood willow riparian forest
 - SWS - Southern willow scrub
 - WAMF - White alder-mulefat scrub
 - YMM - Yerba mansa meadow
 - dCSS - disturbed California sagebrush scrub
 - dSWS - disturbed Southern willow scrub



INTENTIONALLY LEFT BLANK

INTENTIONALLY LEFT BLANK



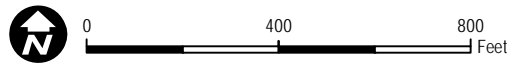
Project Alignment
 Project Site 500-foot Buffer
 CAGN Observed Use Area

Observed Species Locations

- COHA - Cooper's hawk
- LBVI - Least Bell's vireo
- NUWO - Nuttall's woodpecker
- POTU - Pond turtle
- WTKI - White-tailed kite
- YBCH - Yellow-breasted chat
- YEWA - Yellow warbler

Vegetation

- ARU - Arundo-dominated riparian
- CLOTO - Coast live oak-toyon
- CSS - California sagebrush scrub
- CYS - Coyote brush scrub
- DEV - Developed
- DH - Disturbed habitat
- FWM - Coastal and valley freshwater marsh
- HW - Herbaceous wetlands
- MFS - Mulefat scrub
- MGS, Menzies goldenbush scrub
- NNG - California annual grassland
- OC - Open channel
- ORN - Ornamental
- OW - Open water
- RUD - Ruderal
- SCWRF - Southern cottonwood willow riparian forest
- SWS - Southern willow scrub
- WAMF - White alder-mulefat scrub
- YMM - Yerba mansa meadow
- dCSS - disturbed California sagebrush scrub
- dSWS - disturbed Southern willow scrub



INTENTIONALLY LEFT BLANK

Draft Biological Technical Report for the Coastal Treatment Plant Export Sludge Force Main Project

6.2.2.2 Long-Term Impacts

Long-term or permanent indirect impacts could result from project implementation on remaining or adjacent special-status vegetation communities outside the direct limits of work, primarily from long-term maintenance operations such as inspections or potential repairs. Permanent indirect impacts that could affect special-status vegetation communities include chemical pollutants, altered hydrology, non-native invasive species, and alteration of the natural fire regime. Each of these potential indirect impacts is discussed as follows.

Chemical Pollutants. The effects of chemical pollutants on special-status vegetation communities are described in Section 5.2.2.1. During vegetation removal, weed control treatments shall include all legally permitted chemical, manual, and mechanical methods applied with the authorization of the Orange County agriculture commissioner. Additionally, the potential chemical pollutants will be contained within the project limits.

Altered Hydrology. Vegetation removal likely will result in hydrologic alterations which can affect special-status vegetation communities within the study area or downstream. Altered hydrology can allow for the establishment of non-native plants.

Non-Native, Invasive Plant and Animal Species. Invasive plant species that thrive in edge habitats are a well-documented problem in Southern California and throughout the United States. The removal of vegetation could also fragment native plant populations, which may increase the likelihood of invasion by exotic plants in those areas. Bossard et al. (2000) list several adverse effects of non-native species in natural open areas, including but not limited to the fact that exotic plants compete for light, water, and nutrients, and can create a thatch that blocks sunlight from reaching smaller native plants. Exotic plant species may alter habitats and displace native species over time, leading to extirpation of native plant species and unique vegetation communities. The introduction of non-native, invasive animal species could negatively affect native species that may be pollinators of or seed dispersal agents for plants within special-status vegetation communities.

Alteration of the Natural Fire Regime. The proposed project could potentially increase the risk of fire through the removal of native wetland vegetation and potential for establishment of non-native plant species. Shorter-than-natural fire return intervals can preclude recovery of the native vegetation between fires, weaken the ecological system, allow for invasion of exotic species, and in some cases, result in permanent transition of the vegetation to non-native communities, such as annual grassland and weedy communities (Malanson and O'Leary 1982; Keeley 1987; O'Leary et al. 1992).

Draft Biological Technical Report for the Coastal Treatment Plant Export Sludge Force Main Project

All special-status vegetation communities in the study area could be impacted by potential long-term or permanent indirect impacts such as those previously listed.

6.3 Impacts to Special-Status Plant Species

No special-status plants were detected in the study area during 2011 and 2012 focused rare plant surveys. There are no special-status plant species with a moderate or high potential to occur within the project study area. Appendix C includes the special-status plant species that are either not expected to occur or have a low potential to occur; these species are not further analyzed in this report because no direct, indirect, or cumulative impacts are expected.

6.4 Impacts to Special-Status Wildlife Species

6.4.1 Direct Impacts

6.4.1.1 *Permanent Impacts*

There are no permanent impacts associated with the proposed project.

6.4.1.2 *Temporary Impacts*

Appendix E describes the special-status wildlife species that have been observed or have high or moderate potential to occur on site. Temporary direct impacts to special-status wildlife species were quantified by comparing the project limits with suitable habitat for these wildlife species. The significance determinations for these potential impacts are presented in Section 6.0.

Special-Status Bird Species

Four pairs and two un-capped individual California gnatcatchers were detected during focused surveys conducted by Dudek in 2011. One additional California gnatcatcher pair with one juvenile was observed by RECON (2009) in 2009, but was not observed during 2011 focused surveys. Observed California gnatcatcher use areas are depicted on Figures 3, 5A, 5B, and 5C. Seven least Bell's vireo pairs were mapped in southern willow scrub-dominated vegetation along the Aliso Creek channel within the study area during the 2011 focused surveys. Cooper's hawk, white-tailed kite, yellow-breasted chat, and yellow warbler also were observed and likely nest in the study area (Figures 5A, 5B, and 5C).

Additional special-status bird species that have moderate potential to nest, forage, and/or winter in the study area include northern harrier (*Circus cyaneus*) and southwestern willow flycatcher (although focused surveys were negative).

Draft Biological Technical Report for the Coastal Treatment Plant Export Sludge Force Main Project

As described in the Temporary Impacts to Vegetation Communities (Section 5.2.1.2), there are temporary direct impacts to suitable habitat for these species. However, vegetation removal will occur outside of the nesting season to the maximum extent feasible in order to avoid and minimize potential direct impacts to nesting birds.

Special-Status Amphibians and Reptiles

No special-status amphibians were detected during 2012 focused surveys for arroyo toad. One special-status reptile was detected: western pond turtle (Figures 5A and 5B). As described in the Temporary Impacts to Vegetation Communities (Section 5.2.1.2), there are temporary direct impacts to suitable habitat for this species. Female pond turtles nest in Southern California between the months of March and June in coastal regions. Most reproductive females leave the stream and move into upland habitat in search of a nesting area. They may spend 1 to 5 days (or more) in the upland habitat before oviposition (laying eggs) occurs. A majority of pond turtle nests are on south-facing slopes, but nest sites in Southern California may include west- and/or east-facing slopes. After oviposition, detecting nests is very difficult, and if a nest is accidentally excavated during construction, mortality is likely. Pond turtle eggs hatch between 100 to 130 days after being laid. Sometimes the neonates (baby pond turtles) leave the nest and move to the water or to upland refugia, or they remain in the nest until the following spring. Due to their vulnerability, excluding nesting turtles from the study area is a high priority in order to protect the adults, nests, eggs, and neonates.

Additionally, the following special-status reptile species have moderate or high potential to occur in the study area: orange-throated whiptail (*Aspidoscelis hyperythra*), coastal western whiptail (*Aspidoscelis tigris stejnegeri*), rosy boa (*Charina trivirgata*), red diamond rattlesnake (*Crotalus ruber*), coast (San Diego) horned lizard (*Phrynosoma coronatum blainvillei* population), Coronado island skink (*Plestiodon skiltonianus interparietalis*), coast patch-nosed snake (*Salvadora hexalepis virgulata*), and two-striped garter snake (*Thamnophis hammondi*).

These species can occur in a variety of the habitats found in the study area. Based on the limited linear nature of impacts within the riparian zone, implementation of standard BMPs, and biological monitoring associated with the alignment during construction, direct impacts to individuals of these species are likely to be small in number.

Special-Status Mammals

No special-status mammals were detected during focused surveys. Special-status rodents with moderate potential to occur within the study area include: Dulzura (California) pocket mouse (*Chaetodipus californicus femoralis*), northwestern San Diego pocket mouse (*Chaetodipus fallax*

Draft Biological Technical Report for the Coastal Treatment Plant Export Sludge Force Main Project

fallax), and San Diego desert woodrat (*Neotoma lepida intermedia*) (sign of woodrats was found, but could not be identified to species level). Special-status bat species with moderate potential to forage over the study area include: pallid bat (*Antrozous pallidus*), Mexican long-tongued bat (*Choeronycteris mexicana*), western mastiff bat (*Eumops perotis californicus*), western red bat (*Lasiurus blossevillii*), pocketed free-tailed bat (*Nyctinomops femorosaccus*), and big free-tailed bat (*Nyctinomops macrotis*). Western red bat may also roost in the southern cottonwood–willow riparian forest during the fall and winter months.

Bats would continue foraging over the study area at night during construction and would not be directly impacted. However, there is a potential for disruption of winter roosting sites for western red bat.

Short-term, construction-related, or temporary direct impacts to special-status wildlife species would primarily result from vegetation removal activities. Clearing or trampling of vegetation communities outside the proposed impact limits could occur in the absence of avoidance and mitigation measures. These potential effects could reduce suitable habitat for wildlife species and alter their ecosystem, thus creating gaps in vegetation that allow exotic, non-native plant species to become established.

6.4.2 Indirect Impacts

6.4.2.1 Short-Term Impacts

Short-term or temporary indirect impacts to special-status wildlife species would primarily result from vegetation removal activities. Potential temporary indirect impacts could occur as a result of generation of fugitive dust, noise, chemical pollutants, increased human activity, and non-native animal species.

Generation of Fugitive Dust. Dust can impact vegetation surrounding the study area, resulting in changes in the community structure and function. These changes could result in impacts to suitable habitat for special-status wildlife species.

Noise. Project-related noise could occur from equipment used during vegetation clearing. Noise impacts can have a variety of indirect impacts on wildlife species, including increased stress, weakened immune systems, altered foraging behavior, displacement due to startle, degraded communication with conspecifics (e.g., masking), damaged hearing from extremely loud noises, and increased vulnerability to predators (Lovich and Ennen 2011; Brattstrom and Bondello 1983, cited in Lovich and Ennen 2011). These impacts could affect breeding activities by California gnatcatchers, least Bell's vireo, and other special-status avian species if construction occurred during the breeding season.

Draft Biological Technical Report for the Coastal Treatment Plant Export Sludge Force Main Project

Chemical Pollutants. Accidental spills of hazardous chemicals could contaminate surface waters and indirectly impact wildlife species through poisoning or altering suitable habitat.

Increased Human Activity. Project activities can deter wildlife from using habitat areas near the proposed project footprint. Nesting raptors in particular may be sensitive to human activity in close proximity to nest sites. Nesting by Cooper's hawk and white-tailed kite therefore could be affected by increased human activity if construction occurred during the nesting season.

Non-Native Animal Species. Trash from project-related activities could attract invasive urban-related predators such as common ravens (*Corvus corax*) and common raccoons (*Procyon lotor*) that could impact the wildlife species in the study area.

All special-status wildlife species on site could be impacted by potential temporary indirect impacts such as those previously listed.

6.4.2.2 Long-Term Impacts

Potential long-term or permanent indirect impacts to special-status wildlife species include generation of non-native, invasive plant and animal species; alteration of the natural fire regime; and altered hydrology.

Non-Native, Invasive Plant and Animal Species. Invasive plant species that thrive in edge habitats are a well-documented problem in Southern California and throughout the United States. Removal of vegetation could also fragment native plant populations, which may increase the likelihood of invasion by exotic plants due to the increased interface between natural habitats and developed areas. Bossard et al. (2000) list several adverse effects of non-native species in natural open areas, including but not limited to the fact that exotic plants compete for light, water, and nutrients, and can create a thatch that blocks sunlight from reaching smaller native plants. Exotic plant species may alter habitats and displace native species over time, leading to extirpation of native plant species and subsequently suitable habitat for special-status wildlife species. In addition, trash can attract invasive predators such as ravens and raccoons that could impact the wildlife species in the study area.

Alteration of the Natural Fire Regime. The proposed project could potentially increase the risk of fire through the removal of native wetland vegetation and potential for establishment of non-native plant species. Shorter-than-natural fire return intervals can preclude recovery of the native vegetation between fires, weaken the ecological system, allow for invasion of exotic species, and in some cases, result in permanent transition of the vegetation to non-native communities, such as annual grassland and weedy communities (Malanson and O'Leary 1982; Keeley 1987;

Draft Biological Technical Report for the Coastal Treatment Plant Export Sludge Force Main Project

O’Leary et al. 1992). Alterations of plant communities could affect wildlife that relies on those habitat types.

Altered Hydrology. The removal of vegetation can alter the hydrology, and these hydrologic alterations may affect special-status wildlife species. Altered hydrology can allow for the establishment of non-native plants and invasion by Argentine ants (*Linepithema humile*), which can compete with native ant species that could be seed dispersers or plant pollinators. Changes in plant composition could affect the native vegetation communities and wildlife habitat.

The significance determinations for these potential impacts are presented in Section 6.0.

6.5 Impacts to Jurisdictional Waters

6.5.1 Direct Impacts

6.5.1.1 Permanent Impacts

There are no permanent impacts associated with the proposed project.

6.5.1.2 Temporary Impacts

Temporary direct impacts to jurisdictional waters were quantified by comparing the impact footprint with the jurisdictional boundaries mapped in the study area. Direct impacts to jurisdictional waters would occur as a result of vegetation removal activities. Table 4 shows the acreage of temporary direct impacts to jurisdictional waters in the study area (Figures 5A, 5B, and 5C).

Table 4
Impacts—Jurisdictional Waters and Wetlands

Vegetation Community/Land Cover	Impacts (Acres)
<i>Riparian and Wetland Communities</i>	
Southern Willow Scrub	0.49
Southern Cottonwood–Willow Riparian Forest	0.18
Arundo-Dominated Riparian	0.15
Mulefat Scrub	1.53
White Alder–Mulefat Scrub	0.58
Open Channel	0.01
TOTAL	2.94

Draft Biological Technical Report for the Coastal Treatment Plant Export Sludge Force Main Project

In addition, short-term, project-related, or temporary direct impacts to jurisdictional waters would primarily result from vegetation removal activities. Clearing or trampling of vegetation within jurisdictional areas outside the proposed impact limits could occur in the absence of avoidance and mitigation measures. These potential effects could damage resources within these areas and alter their ecosystem, creating gaps in vegetation that allow exotic, non-native plant species to become established, thus increasing soil compaction and leading to soil erosion.

6.5.2 Indirect Impacts

6.5.2.1 Short-Term Impacts

Potential short-term or temporary indirect impacts to wetlands/jurisdictional waters in the study area would primarily result from vegetation removal activities and include impacts related to or resulting from the generation of fugitive dust; changes in hydrology resulting from vegetation removal, including sedimentation and erosion; and the introduction of chemical pollutants (including herbicides). Potential short-term indirect impacts that could affect all the wetlands/jurisdictional waters that occur on the study area are described in detail as follows.

Generation of Fugitive Dust. Excessive dust can decrease the vigor and productivity of vegetation through effects on light, penetration, photosynthesis, respiration, transpiration, increased penetration of phytotoxic gaseous pollutants, and increased incidence of pests and diseases.

Changes in Hydrology. Removal of vegetation within the channel could result in hydrologic and water-quality-related impacts adjacent to and downstream of the construction area. Hydrologic alterations include changes in flow rates and patterns in streams and rivers and dewatering, which may affect adjacent and downstream aquatic, wetland, and riparian vegetation communities. Water-quality impacts include chemical-compound pollution (fuel, oil, lubricants, paints, release agents, and other construction materials), erosion, increased turbidity, and excessive sedimentation. The direct removal of native vegetation can increase runoff from roads and other paved surfaces, resulting in increased erosion and transport of surface matter into vegetation communities. Altered erosion, increased surface flows, and underground seepage can allow for the establishment of non-native plants. Changed hydrologic conditions can also alter seed bank characteristics and modify habitat for ground-dwelling fauna that may disperse seed.

Chemical Pollutants. Erosion and chemical pollution (releases of fuel, oil, lubricants, paints, release agents, and other construction materials) may affect wetlands/jurisdictional waters. The use of chemical pollutants can decrease the number of plant pollinators, increase the existence of non-native plants, and cause damage to and destruction of native plants.

Draft Biological Technical Report for the Coastal Treatment Plant Export Sludge Force Main Project

All wetlands/jurisdictional waters on site could be impacted by potential temporary indirect impacts such as those previously listed.

6.5.2.2 Long-Term Impacts

Long-term indirect impacts to jurisdictional waters could result from project implementation. Permanent indirect impacts that could affect wetlands/jurisdictional waters include chemical pollutants, altered hydrology, non-native invasive species, and alteration of the natural fire regime. Each of these potential indirect impacts is discussed as follows.

Chemical Pollutants. The effects of chemical pollutants on special-status vegetation communities are described in Section 5.2.2.1. During vegetation removal, weed control treatments shall include all legally permitted chemical, manual, and mechanical methods applied with the authorization of the Orange County agriculture commissioner. Additionally, the potential chemical pollutants will be contained within the project limits.

Altered Hydrology. Vegetation removal will likely result in hydrologic alterations which can affect special-status vegetation communities within the study area or downstream. Altered hydrology can allow for the establishment of non-native plants.

Non-Native, Invasive Plant and Animal Species. Invasive plant species that thrive in edge habitats are a well-documented problem in Southern California and throughout the United States. The removal of vegetation could also fragment native plant populations, which may increase the likelihood of invasion by exotic plants in those areas. Bossard et al. (2000) list several adverse effects of non-native species in natural open areas, including but not limited to the fact that exotic plants compete for light, water, and nutrients and can create a thatch that blocks sunlight from reaching smaller native plants. Exotic plant species may alter habitats and displace native species over time, leading to extirpation of native plant species and unique vegetation communities. The introduction of non-native, invasive animal species could negatively affect native species that may be pollinators of or seed dispersal agents for plants within special-status vegetation communities.

Alteration of the Natural Fire Regime. The proposed project could potentially increase the risk of fire through the removal of native wetland vegetation and potential for establishment of non-native plant species. Shorter-than-natural fire return intervals can preclude recovery of the native vegetation between fires, weaken the ecological system, allow for invasion of exotic species, and in some cases, result in permanent transition of the vegetation to non-native communities, such as annual grassland and weedy communities (Malanson and O'Leary 1982; Keeley 1987; O'Leary et al. 1992).

Draft Biological Technical Report for the Coastal Treatment Plant Export Sludge Force Main Project

All jurisdictional waters in the study area could be impacted by potential long-term or permanent indirect impacts such as those previously listed.

6.6 Impacts to Wildlife Corridors and Habitat Connectivity

6.6.1 Direct Impacts

Aliso Creek is identified in the Central-Coastal Subregion NCCP/HCP as part of a linkage system from the Sycamore Hills to the San Joaquin Hills via Laguna Canyon. Riparian corridors are typically used by wildlife as movement corridors, and this drainage links inland areas of Orange County with the Pacific Ocean, less than 2 miles west of the CTP. As described in Section 4.5, several medium- and large-sized mammals were detected in the study area, including coyote, bobcat, mule deer, and mountain lion. Temporary loss of habitat in the construction zone may somewhat reduce use and movement by these species due to loss of cover and refuge habitat until the habitat is restored after construction, especially for species that rely on cover, such as bobcat and mountain lion. However, this temporary impact will be minor because only 2.94 acres of the 116.27 acres will be temporarily removed, leaving more than 97% of the habitat intact.

6.6.2 Indirect Impacts

Temporary indirect impacts on wildlife movement could occur from increased human activity. Project activities would take place during the daytime and would not affect wildlife species such as mammals that are most active in evenings and nighttime. Given that 97% of riparian/wetland habitat will remain intact, adequate daytime refuge habitat will be available. Wildlife species such as birds, rabbits, and lizards are active in the daytime; however, because impacts are small, narrow, linear, and temporary, Aliso Creek will continue to function as a habitat linkage and wildlife movement corridor for these species.

6.7 Impacts to Regional Resource Planning

The California legislature enacted the NCCP Act in 1991, recognizing the need for broad-based planning to provide effective protection and conservation of the state's wildlife while continuing to allow appropriate development and growth. Under this approach, the focus changed from the preservation of individual species to the conservation of natural communities (and their constituent species). In accordance with this act, the Central-Coastal Subregion NCCP/HCP allocated an approximately 208,000-acre planning area that includes the central portion of Orange County, including lands from the coastline inland to Riverside County. The Central-Coastal Subregion NCCP/HCP was completed in 1996 (County of Orange 1996).

Draft Biological Technical Report for the Coastal Treatment Plant Export Sludge Force Main Project

The project study area is located in the coastal subarea of the Central-Coastal Subregion NCCP/HCP and the AWCWP is one of Orange County's existing public open space areas which contributes to the subregional habitat reserve. Aliso Creek is one of the dominant physiographic features in the coastal subarea and was specifically identified as an important element for reserve design, and special linkages and management areas. The majority of the study area is within designated reserve, with the portions at the eastern end being classified as "existing use" and "non-reserve open space."

Although the SOCWA is not listed as a participating landowner in the Central-Coastal Subregion NCCP/HCP, as an infrastructure project in the reserve, the proposed project is a covered activity and in conformance with the Central-Coastal Subregion NCCP/HCP. The project will have minor temporary direct and indirect impacts on the reserve, as described for specific biological resources in the preceding sections, but will not have a long-term adverse impact on the reserve.

Draft Biological Technical Report for the Coastal Treatment Plant Export Sludge Force Main Project

7.0 SIGNIFICANT IMPACTS

7.1 Explanation of Findings of Significance

Impacts to special-status vegetation communities, special-status plants, special-status wildlife species, jurisdictional waters, wildlife corridors and habitat connectivity, and regional resource planning must be quantified and analyzed to determine whether such impacts are significant under CEQA. CEQA Guidelines Section 15064(b) states that an ironclad definition of “significant” effect is not possible because the significance of an activity may vary with the setting. Appendix G of the CEQA Guidelines, however, does provide “examples of consequences which may be deemed to be a significant effect on the environment” (CEQA Guidelines Section 15064(e)). These effects include substantial effects on rare or endangered species of animal or plant or the habitat of the species. Guidelines Section 15065(a) is also helpful in defining whether a project may have “a significant effect on the environment.” Under that section, a proposed project may have a significant effect on the environment if the project has the potential to: (1) substantially degrade the quality of the environment, (2) substantially reduce the habitat of a fish or wildlife species, (3) cause a fish or wildlife population to drop below self-sustaining levels, (4) threaten to eliminate a plant or animal community, (5) reduce the number or restrict the range of a rare or endangered plant or animal, or (6) eliminate important examples of a major period of California history or prehistory.

The following are the significance thresholds for biological resources provided in the CEQA Appendix G environmental checklist, which states that a project could potentially have a significant effect if it:

- Has a substantial adverse effect, either directly or through habitat modifications, on any species identified as being a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFG or USFWS
- Has a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by CDFG or USFWS
- Has a substantial adverse effect on federally protected wetlands as defined by Section 404 of the CWA (including but not limited to marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means
- Interferes substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impedes the use of native wildlife nursery sites

Draft Biological Technical Report for the Coastal Treatment Plant Export Sludge Force Main Project

- Conflicts with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance
- Conflicts with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan.

The evaluation of whether or not an impact to a particular biological resource is significant must consider both the resource itself and the role of that resource in a regional context. Substantial impacts are those that contribute to, or result in, permanent loss of an important resource, such as a population of a rare plant or animal. Impacts may be important locally because they result in an adverse alteration of existing site conditions, but considered not significant because they do not contribute substantially to the permanent loss of that resource regionally. The severity of an impact is the primary determinant of whether or not that impact can be mitigated to a level below significant.

The following significance determinations were made based on the impacts from the proposed project.

7.2 Vegetation Communities or Land Covers

7.2.1 Significant Impacts to Vegetation Communities or Land Covers

Temporary direct impacts to vegetation communities are presented in Table 3.

Temporary direct impacts to the following special-status riparian/wetland vegetation communities, are considered significant but mitigable to a level which is less than significant: southern willow scrub, southern cottonwood–willow riparian forest, Arundo-dominated riparian, mulefat scrub, white alder–mulefat scrub, and open channel.

Impacts to the following sensitive-status upland communities are considered significant but mitigable to a level that is less than significant: California sagebrush scrub, coyote brush scrub, Menzies' goldenbush scrub, and coyote brush scrub.

Direct temporary impacts to the special-status vegetation communities listed above are considered a significant impact, absent mitigation (Impact BIO-1).

Any direct or indirect temporary impacts to the special-status vegetation communities listed above as a result of direct disturbance or indirect impacts (e.g., fugitive dust; hydrologic alterations, sedimentation and erosion, and chemical pollutants) outside of the impact area would be significant, absent mitigation (Impact BIO-2).

Draft Biological Technical Report for the Coastal Treatment Plant Export Sludge Force Main Project

7.2.2 Impacts to Vegetation Communities or Land Covers Determined to be Less than Significant

Potential direct and indirect temporary impacts to vegetation communities or non-natural land covers that are not considered special-status as a result of disturbance outside of the impact area would not be a significant impact. These include California annual grassland, developed, disturbed habitat, ruderal, and ornamental.

7.3 Special-Status Plant Species

No special-status plants were detected in the study area nor do any special-status plant species have high or moderate potential to occur. Therefore, direct and indirect impacts to special-status plants would not occur.

7.4 Special-Status Wildlife Species

7.4.1 Significant Impacts to Special-Status Wildlife

Special-Status Birds

Temporary direct and indirect impacts may occur to sensitive riparian and coastal sage scrub birds observed or with moderate or high potential to occur in the study area (see Appendix E). California gnatcatchers were observed in the study area during focused surveys, as shown in Figures 5A, 5B, and 5C. Construction activities conducted during the California gnatcatcher's breeding season (generally mid-February through August) could disrupt breeding activity, both through direct temporary impacts to habitat and indirect effects related to construction such as noise. ~~This~~ These direct and indirect impacts would be considered significant, absent mitigation. Nesting least Bell's vireos were observed in Aliso Creek during focused surveys, as shown in Figures 5A, 5B, and 5C. Construction activities conducted during the breeding season of this species (generally April through August) could also disrupt breeding activity through direct temporary impacts to habitat and indirect impacts. Other special-status birds that may nest in the Study Area include Cooper's hawk, white-tailed kite, northern harrier, Nuttall's woodpecker, yellow-breasted chat, yellow warbler, and southwestern willow flycatcher. Construction during their nesting seasons also could both directly and indirectly disrupt breeding activity. These temporary direct and indirect impacts to nesting special-status birds would be considered significant absent mitigation (BIO-3).

Because of California gnatcatcher, least Bell's vireo and other special-status birds' presence in the study area, avoidance and minimization measures were incorporated into the project to ensure that temporary direct and indirect impacts to these species are minimized and/or avoided to the extent feasible and practicable, as described in more detail in Section 7.0.

Draft Biological Technical Report for the Coastal Treatment Plant Export Sludge Force Main Project

Special-Status Reptiles

Western pond turtle was observed at two locations within Aliso Creek (Figures 5A and 5B). Construction activities could result in direct impacts to individual pond turtles, including direct mortality and injury. Construction activities could also interfere with movement by reproductive females and neonates moving between wetland and upland nest sites, temporarily disrupting breeding activity and potential recruitment of new individuals. Impacts to western pond turtle would be considered significant absent mitigation (BIO-4).

7.4.2 Impacts to Special-Status Wildlife Determined to be Less than Significant

Wildlife Habitat

Temporary direct impacts to habitat will occur for several special-status wildlife species observed in the study area or with moderate to high potential to occur in the study area (see Appendix E). For species primarily using upland habitats, however, temporary loss of habitat will have minimal effects. Of 244.71 acres of upland habitats in the study area, only 8.36 acres (3.4%) would be temporarily impacted. Similarly, for species using riparian/wetland communities, only 2.94 acres (2.5%) of 116.27 acres would be temporarily impacted. Because the vast majority of wildlife habitat in the study area would not be impacted and additional adjacent habitat is available in the project vicinity, temporary direct impacts to special-status wildlife habitat are not considered significant.

Potential temporary indirect impacts to wildlife habitat include fugitive dust; changes in hydrology resulting from vegetation removal within the channel, including sedimentation and erosion; increased human activity; and the introduction of chemical pollutants (including herbicides). However, based on the temporary and minimally invasive nature of the project activities, these impacts are considered minimal and would not be a significant impact.

Special-Status Amphibians and Reptiles

Several special-status reptile species have at least moderate potential to occur in the study area, including orange-throated whiptail, coastal western whiptail, rosy boa, red diamond rattlesnake, coast (San Diego) horned lizard, Coronado island skink, coast patch-nosed snake, and two-striped garter snake (Appendix E). No special-status amphibians are expected to occur in the study area. Construction activities have the potential to directly impact a small number of individuals of these species, including mortality and injury of individuals in burrows or other refugia that are too sluggish to escape impacts. However, because the vast majority of suitable upland and riparian habitats in the study area and adjacent vicinity would not be affected by the project, direct impacts to a few individuals of these species would have small impacts on the

Draft Biological Technical Report for the Coastal Treatment Plant Export Sludge Force Main Project

local populations. In addition, biological monitoring will be conducted during all ground-disturbing and vegetation-clearing activities, which will help avoid and minimize impacts to individuals. Therefore, impacts to special-status reptiles are considered minimal and would not be a significant impact.

Special-Status Mammals

The following terrestrial mammals have moderate potential to occur within the study area: Dulzura (California) pocket mouse, northwestern San Diego pocket mouse, and San Diego desert woodrat. Construction activities have the potential to directly impact a small number of individuals of these species, including mortality and injury of individuals in burrows or woodrat middens. Also, any individuals that are flushed from burrows or middens by construction activities would be highly vulnerable to stress and predation. However, because the vast majority of suitable habitats for mammals in the study area and adjacent vicinity would not be affected by the project, direct impacts to a few individuals of these species would have small impacts on the local populations. Several bats also may forage in the study area at night (see Appendix E), but would be unaffected by the project. However, wintering (i.e., non-breeding) western red bats may roost in the study area in southern cottonwood–willow riparian forest and could be affected by construction. However, only 0.18 acre of the 54.63 acres of southern cottonwood–willow riparian forest would be temporarily impacted; the chance of a western red bat roost being directly impacted is exceedingly low, and the vast majority of suitable tree habitat would remain if a roost was disturbed. Western red bat individuals would be expected to relocate to other suitable habitat. In addition, biological monitoring will be conducted during all ground-disturbing and vegetation-clearing activities, which will help avoid and minimize impacts to individuals. Therefore, impacts to special-status mammals are considered minimal and would not be a significant impact.

7.5 Jurisdictional Waters

7.5.1 Significant Impacts to Jurisdictional Waters

The proposed project will result in direct temporary impacts to several jurisdictional wetlands as summarized in Table 4 in Section 5.5.1.2. Jurisdictional wetlands are regulated by the ACOE, RWQCB, CDFG, and/or CCC. There are temporary impacts to the following jurisdictional waters or wetlands: southern willow scrub, southern cottonwood–willow riparian forest, Arundo-dominated riparian, mulefat scrub, white–alder mulefat scrub, and open channel.

Direct temporary impacts to jurisdictional waters or wetlands are considered a significant impact, absent mitigation (Impact BIO-5).

Draft Biological Technical Report for the Coastal Treatment Plant Export Sludge Force Main Project

Potential direct temporary impacts to all jurisdictional waters or wetlands on site as a result of disturbance outside of the impact area would be significant, absent mitigation (Impact BIO-6).

7.5.2 Impacts to Jurisdictional Waters Determined to be Less than Significant

Potential indirect impacts to jurisdictional waters include fugitive dust; changes in hydrology resulting from vegetation removal within the channel, including sedimentation and erosion; increased human activity; and the introduction of chemical pollutants (including herbicides). However, based on the temporary and minimally invasive nature of the project activities, these impacts are considered minimal and would not be a significant impact.

7.6 Wildlife Corridors and Habitat Connectivity

7.6.1 Impacts to Wildlife Corridors and Habitat Connectivity Determined to be Less than Significant

Due to the temporary nature of the project and because more than 97% of riparian and wetland habitat would be undisturbed, no substantial impacts to wildlife movement and habitat connectivity along Aliso Creek are anticipated. There are no significant impacts to wildlife corridors and habitat connectivity.

7.7 Regional Resource Planning

7.7.1 Impacts to Regional Resource Planning Determined to be Less than Significant

Because construction impacts will be temporary and the area will be restored to pre-construction conditions, there are no significant impacts to regional resource planning and conservation efforts. As previously stated, the majority of the study area is within the designated Central-Coastal Subregion NCCP/HCP reserve. Infrastructure projects are an allowed use within these reserves provided they are consistent with policies regarding the siting, construction, and operation of such infrastructure.

Impacts to coastal sage scrub or take of species covered by the Central-Coastal Subregion NCCP/HCP within designated reserve areas are authorized by the USFWS Section 10 (a)(1)(B) permit and CDFG MA as set forth in the IA. Procedures do, however, vary for participating and non-participating landowners. Section 5.9 of the Central-Coastal Subregion NCCP/HCP contains policies regarding infrastructure which are intended to guide the siting, construction, and operation of permitted infrastructure. Certain public infrastructure necessary for public health and safety or economic reasons will be permitted within the subregional reserve system. Sewer lines are included on this list.

Draft Biological Technical Report for the Coastal Treatment Plant Export Sludge Force Main Project

The SOCWA is not listed as a participating landowner in the Central-Coastal Subregion NCCP/HCP; however, non-participating landowners have the option of addressing unavoidable impacts/take within reserves by either providing acceptable mitigation through separate permits or authorizations under the FESA/CESA or paying a mitigation fee to the NCCP nonprofit corporation. Selection of the mitigation fee option to address impacts to coastal sage scrub species will be covered under the terms of the USFWS Section 10(a)(1) (B) permit and CDFG MA granted to the local government with jurisdiction over the proposed activity. No additional approvals pursuant to FESA, CESA, and the NCCP Act will be required.

Impacts in non-reserve open space areas and existing use areas are not authorized for non-participating landowners. For existing use areas, the use of the mitigation fee option is not available to non-participating landowners unless located with a signatory local government jurisdiction and specifically authorized by the CDFG and USFWS. Any activity which would require take in such areas shall require the approval of the applicable regulatory agencies pursuant to FESA and CESA.

It should be noted that coordination is still required with Section 404 and 401 of the CWA and Sections 1600–1603 of the California Fish and Game Code regarding potential impacts to wetlands or waters of the United States.

**Draft Biological Technical Report for the Coastal Treatment Plant
Export Sludge Force Main Project**

INTENTIONALLY LEFT BLANK

Draft Biological Technical Report for the Coastal Treatment Plant Export Sludge Force Main Project

8.0 MITIGATION

7.1 Vegetation Communities

This section describes the mitigation measures (MMs) required for impacts to special-status vegetation communities. These MMs will reduce identified and potential significant impacts to a level which is less than significant pursuant to CEQA, and to comply with conditions of the Central-Coastal Subregion NCCP/HCP Section 10(a)(1)(B) permit, CDFG Management Authorization (MA), and the Implementation Agreement (IA).

Impact BIO-1: (Impacts to special-status vegetation communities.) There will be direct temporary impacts to approximately 11.3 acres of special-status vegetation communities as a result of the proposed project.

MM BIO-1.1: Mitigation for temporary impacts to these communities will be through on-site restoration at a 1:1 ratio to restore impacted special-status vegetation communities to pre-construction conditions. A revegetation plan will be developed, and all revegetation efforts will be consistent with the management plan developed for the Central-Coastal Subregion NCCP/HCP for this particular reserve area. The revegetation plan shall include a monitoring program, clearly defined success criteria, and contingency measures.

Impact BIO-2: (Impacts to special-status vegetation communities outside of the impact area.)

MM BIO-2.1: To prevent inadvertent disturbance to special-status vegetation communities outside the limits of work, vegetation removal shall be monitored by a biologist and standard best management practices (BMPs) will be implemented. A biologist shall be contracted to perform biological monitoring during all clearing activities.

The following duties shall be carried out by the biological monitor:

1. Review and/or designate the vegetation removal area in the field with the contractor in accordance with the final plan
2. Be present during initial vegetation clearing, grubbing, and grading
3. Record any advertent impacts to vegetation communities outside the designated construction zone in daily monitoring reports.

Draft Biological Technical Report for the Coastal Treatment Plant Export Sludge Force Main Project

7.2 Special-Status Wildlife

This section describes the mitigation measures (MMs) required for impacts to special-status wildlife. These MMs will reduce identified and potential significant impacts to a level which is less than significant pursuant to CEQA, and to comply with conditions of the Central-Coastal Subregion NCCP/HCP Section 10(a)(1)(B) permit, California Department of Fish and Game (CDFG) Management Authorization (MA), and the Implementation Agreement (IA).

Impact BIO-3: Project construction could result in both direct and indirect impacts to nesting special-status birds, causing injury, or mortality and other adverse effects such as increased stress and nest abandonment. For special-status bird species known or with potential to nest in the study area (see Appendix E), direct impacts could include the loss of nests, eggs, and fledglings if vegetation clearing and ground-disturbing activities occur during the nesting season (generally between February 15 and August 31). Indirect impacts such as noise could disrupt breeding activity and potentially result in effects such as nest abandonment, reduced foraging, and increased stress, potentially resulting in reduced reproductive success.

MM BIO-3.1: To prevent inadvertent direct and indirect impacts to special-status birds, the following avoidance measures will be implemented:

1. Pre-construction nest surveys will be conducted within 1 week prior to vegetation clearing if construction occurs during the nesting season of species known or with potential to nest in the study area. Locations of nesting birds will be mapped and appropriate no-work buffers will be established including 500-foot buffers for listed species such as California gnatcatcher and least Bell's vireo, 500 feet for special-status raptors, and 50-foot buffers for non-listed passerine species.
2. Discuss procedures for minimizing harm to or harassment of wildlife encountered during construction with the contractor and other key construction personnel prior to clearing, grubbing, or grading.
3. Flush special-status species (i.e., avian or other mobile species) from occupied habitat areas during the non-breeding season immediately prior to brush-clearing and earth-moving activities.

Impact BIO-4: Project construction could result in direct impacts to western pond turtle, causing injury or mortality and potentially disrupting movement between aquatic and upland nest sites by reproductive females and neonates.

MM BIO-4.1: To prevent inadvertent impacts to western pond turtle, pre-construction surveys and exclusionary fencing will be implemented. Starting in mid-March prior to

Draft Biological Technical Report for the Coastal Treatment Plant Export Sludge Force Main Project

scheduled construction, a qualified turtle biologist, specializing in pond turtle “nesting” behavior, shall survey the project footprint and adjacent areas within the study area in order to assess the areas for possible nesting sites and to map the limits of those potential habitats. Potential nesting areas will be excluded with fencing material that is regularly monitored for integrity (i.e., no damage, breeches or gaps). This will be accomplished through one of two alternative methods:

- A. Exclude the entire Aliso Creek riparian zone from the pipeline modification study area. This will consist of a single line of exclusion fencing (i.e., several segments of silt fence attached to one another), uninterrupted from the upstream portion of the study area to the downstream portion and deflected back from the creek a sufficient distance to prevent end-runs. This will prevent turtles from moving into the project zone. The fence shall be maintained with no breaks and/or openings throughout the project duration. The fence will be placed before the nesting season begins (i.e., before March 1), even if the pipeline construction does not begin until summer and/or fall. The fencing material will be at least 24 inches tall, with 6 inches keyed into the soil (buried) and 18 inches above ground.

-OR-

- B. Exclude only those areas deemed by the turtle biologist as possible nesting areas. This will include completely surrounding those areas with an exclusion fence. The size of the exclusion areas will depend on available nesting habitat (could be small and/or large, and could be many). The exclusion fence(s) will be maintained at all times with no breaks and installed as directed above.

MM BIO-4.2: A biological monitor with turtle experience shall be on site during all construction activities. The monitor will periodically survey the modification zone and exclusion fence to make sure that there are no openings and that no turtles have entered the study area. If a turtle is observed, it will be captured, processed, its reproductive status determined (palpating for eggs), and either relocated back to Aliso Creek out of harm’s way or redirected to an area that is unencumbered by silt fencing. The monitor will ensure that female turtles attempting to return to same area to nest later that day or over the next few days are relocated out of harm’s way.

7.4 Jurisdictional Wetlands/Waters

This section describes the mitigation measure (MM) required to reduce impacts to jurisdictional wetlands and waters to a level which is less than significant pursuant to CEQA, and to comply with conditions of the Central-Coastal Subregion NCCP/HCP Section 10(a)(1)(B) permit, California Department of Fish and Game (CDFG) Management Authorization (MA), and the Implementation Agreement (IA). Additional or more specific mitigation requirements may be

Draft Biological Technical Report for the Coastal Treatment Plant Export Sludge Force Main Project

required to obtain the required Clean Water Act (CWA) Section 401 Water Quality Certification from the Regional Water Quality Control Board (RWQCB), to obtain a Section 404 Nationwide Permit from U.S. Army Corps of Engineers (ACOE), and to obtain a California Fish and Game Code Section 1602 Streambed Alteration Agreement (SAA) from the CDFG.

Impact BIO-5: (Impacts to jurisdictional wetlands and waters.) Temporary impacts to 2.94 acres of wetland habitats will be mitigated as described under MM BIO-1.1 above. In addition, the following MM is required.

MM BIO-5.1: To comply with the state and federal regulations for impacts to “waters of the United States and state,” the following agency permits are required, or verification that they are not required shall be obtained.

The following permit and agreement shall be obtained:

- A CWA, Section 401/404 permit issued by the California RWQCB and the ACOE for all project-related disturbances of waters of the United States and/or associated wetlands.
- A Section 1602 SAA issued by the CDFG for all project-related disturbances of any streambed.

Impact BIO-6: (Impacts to jurisdictional wetlands and/or waters outside of impact area.) This impact will be mitigated through MM BIO-2.1 described above.

7.5 Regional Resource Planning

Although significant impacts to regional resource planning would not occur, infrastructure policies in the Central-Coastal Subregion NCCP/HCP require compliance during all appropriate phases of the project design and implementation, and thus are described in this section. Those policies relevant to the proposed project are provided in Chapter 5, Section 9, of the Central-Coastal Subregion NCCP/HCP and include the following, many of which are consistent with the avoidance, minimization, and mitigation measures identified previously in this section:

A. Siting of Infrastructure

- To the extent feasible, siting of new infrastructure within the reserve system should minimize impacts to coastal sage scrub, other habitats, and target species.

Draft Biological Technical Report for the Coastal Treatment Plant Export Sludge Force Main Project

C. Operations and Maintenance

- Attempts will be made, as feasible, to undertake activities that impact vegetation supporting identified species outside of the breeding/nesting season (March 15 to June 15 as defined in the Central-Coastal Subregion NCCP/HCP).
- Existing biological resources in the area to be disturbed will be documented using existing or new surveys and submitted to the reserve owner/manager.
- A revegetation plan shall be prepared, implemented, and monitored by the agency proposing the action. The results of the monitoring will be submitted to the reserve owner/manager.

G. Specific Policies

Each infrastructure project proponent will coordinate the siting of new infrastructure with the reserve owner/manager to document compliance with Central-Coastal Subregion NCCP/HCP policies in a timely manner.

- To the extent feasible, infrastructure will be located and designed to minimize impacts to sensitive resources within the reserve. The physical and engineering requirements of the proposed infrastructure shall be considered during the siting procedure.
- The project proponent shall hire a qualified biologist to document the resources and vegetation in the area to be disturbed by the proposed facility. The biological findings shall provide the basis for revegetation and monitoring plans. The biologist used may be in the employ of the reserve owner/manager, the nonprofit reserve managing entity, the proposing agency, or an independent consultant acceptable to the reserve owner/manager.
- Improvement plans, including those for access roads, will be distributed to the reserve owner/manager as part of the coordination process concurrent with submittal to the approving jurisdiction. Said plans shall include revegetation of any temporarily disturbed areas in accordance with reserve standards. Provision shall be made for monitoring the revegetated areas for 5 years following completion of revegetation.

**Draft Biological Technical Report for the Coastal Treatment Plant
Export Sludge Force Main Project**

INTENTIONALLY LEFT BLANK

Draft Biological Technical Report for the Coastal Treatment Plant Export Sludge Force Main Project

9.0 ACKNOWLEDGEMENTS

This report was prepared by Dudek Biologist Jeff Priest with review by Dudek Senior Biologists Philip Behrends, PhD and Sherri Miller. Graphics were provided by GIS analyst Tyler Friesen; Amy Seals provided technical editing, and Sheila Sapalicio provided word processing.

**Draft Biological Technical Report for the Coastal Treatment Plant
Export Sludge Force Main Project**

INTENTIONALLY LEFT BLANK

Draft Biological Technical Report for the Coastal Treatment Plant Export Sludge Force Main Project

10.0 REFERENCES CITED

- 14 CCR 15000–15387 and Appendix A–L. Guidelines for Implementation of the California Environmental Quality Act, as amended.
- 16 U.S.C. 1531–1544. Endangered Species Act of 1973, as amended.
- ACOE (U.S. Army Corps of Engineers). 2009. *Aliso Creek Mainstem Ecosystem Restoration Baseline Environmental Conditions and Future Without Project Conditions Report*. Los Angeles District. Los Angeles, California: ACOE.
- AOU (American Ornithologists' Union). 2012. "Check-List of North American Birds: List of the 2,055 Bird Species Known From the A.O.U. Check-List Area." AOU, Check-list of North American Birds, Brows the List. Accessed 2012.
<http://www.aou.org/checklist/north/full.php>.
- Beyers, J.L., and W.O. Wirtz. 1995. "Vegetative Characteristics of Coastal Sage Scrub Sites Used by California Gnatcatchers: Implications for Management in a Fire-Prone Ecosystem." Proceedings of the Fire Effects on Rare and Endangered Species and Habitats Conference, November 13–16, 1995.
- Bossard, C.C., J.M. Randall, and M.C. Hoshovsky. 2000. *Invasive Plants of California's Wildlands*. Berkeley, California: University of California Press.
- California Fish and Game Code, Section 2050–2115.5. California Endangered Species Act.
- California Fish and Game Code, Section 3500–3516. Division 4: Birds and Mammals, Part 2: Birds, Chapter 1: General Provisions.
- California Fish and Game Code, Section 4700. Division 4: Birds and Mammals; Part 3: Mammals; Chapter 8: Fully Protected Mammals.
- California Fish and Game Code, Section 5050. Division 5: Protected Reptiles and Amphibians; Chapter 2: Fully Protected Reptiles and Amphibians.
- California Fish and Game Code, Section 5500–5522. Division 6: Fish; Chapter 1: Miscellaneous.
- CDFG (California Department of Fish and Game). 2003. "Vegetation Classification and Mapping Program; List of California Terrestrial Natural Communities Recognized by the California Natural Diversity Database." CDFG, Biogeographic Data Branch, Vegetation

Draft Biological Technical Report for the Coastal Treatment Plant Export Sludge Force Main Project

- Classification and Mapping Program. September 2003.
http://www.dfg.ca.gov/biogeodata/vegcamp/natural_communities.asp.
- CDFG. 2007. "Vegetation Classification and Mapping Program; List of California Vegetation Alliances." CDFG, Biogeographic Data Branch, Vegetation Classification and Mapping Program.
- CDFG. 2009. "Protocols for Surveying and Evaluating Impacts to Special-Status Native Plant Populations and Natural Communities." November 24, 2009. Accessed June 18, 2012.
http://www.dfg.ca.gov/wildlife/nongame/survey_monitor.html.
- CDFG. 2010. "Vegetation Classification and Mapping Program; List of Vegetation Alliances and Associations." CDFG, Biogeographic Data Branch, Vegetation Classification and Mapping Program. September 2010. Accessed April 2012.
<https://nrmsecure.dfg.ca.gov/FileHandler.ashx?DocumentID=24718>.
- CDFG. 2012a. "State and Federally Listed Endangered, Threatened, and Rare Plants of California." California Natural Diversity Database. CDFG, Biogeographic Data Branch. October 2012. Accessed October 1, 2012. http://www.dfg.ca.gov/biogeodata/cnddb/plants_and_animals.asp.
- CDFG. 2012b. "Vegetation Classification and Mapping Program; Natural Communities – Background Information." CDFG, Biogeographic Data Branch, Vegetation Classification and Mapping Program. September 2010. Accessed September 2012.
http://www.dfg.ca.gov/biogeodata/vegcamp/natural_comm_background.asp.
- CNPS (California Native Plant Society). 2001 (revised 2004). Vegetation Rapid Assessment Protocol. CNPS Vegetation Committee. Accessed at
http://www.cnps.org/cnps/vegetation/pdf/protocol-rapid_assess.pdf
- CNPS. 2001. "Botanical survey Guidelines of the California Native Plant Society." December 9, 1983. Revised June 2, 2001.
- CNPS. 2011. *Inventory of Rare and Endangered Plants*. Online ed. Version 8-01a. Sacramento, California: CNPS. March 15, 2012. Accessed March 2011.
<http://www.cnps.org/inventory>.
- CNPS. 2012. *Inventory of Rare and Endangered Plants*. Online ed. Version 8-01a. Sacramento, California: CNPS. Accessed October 16, 2012.
<http://www.rareplants.cnps.org/simple.html>.

Draft Biological Technical Report for the Coastal Treatment Plant Export Sludge Force Main Project

- County of Orange. 1996. *Natural Community Conservation Plan/Habitat Conservation Plan, County of Orange, Central & Coastal Subregion. Parts I & II, III, IV: Implementing Agreement, and V: Map Section (Figures 1 through 73)*. December 7, 1996.
- Crother, B.I. 2008. *Scientific and Standard English Names of Amphibians and Reptiles of North America North of Mexico, with Comments Regarding Confidence in our Understanding*. 6th ed. Herpetological Circular no. 37. Society for the Study of Amphibians and Reptiles.
- Cypher, E.A. 2002. *General Rare Plant Survey Guidelines*. Revised July 2002.
- Dudek. 2011a. *Primary Biological Conditions Report for the Coastal Treatment Plant Export Sludge Force Main Project*. Prepared for the South Orange County Water Authority. Orange County, California: Dudek. December 2011.
- Dudek. 2011b. *Focused Least Bell's Vireo and Southwestern Willow Flycatcher Survey for the Coastal Treatment Plant Export Sludge Force Main Project*. Prepared for the South Orange County Water Authority. Orange County, California: Dudek. December 2011.
- Dudek. 2011c. *Focused California Gnatcatcher Survey for the Coastal Treatment Plant Export Sludge Force Main Project*. Prepared for the South Orange County Water Authority. Orange County, California: Dudek December 2011.
- Gray, J. and D. Bramlet. 1992. *Habitat Classification System; Natural Resources Geographic Information System (GIS) Project*. Prepared for County of Orange Environmental Management Agency. May.
- Grossman, D.H., D. Faber-Langendoen, A.S. Weakley, M. Anderson, P. Bourgeron, R. Crawford, K. Goodin, S. Landaal, K. Metzler, K.D. Patterson, M. Pyne, M. Reid, and L. Sneddon. 1998. *International Classification of Ecological Communities: Terrestrial Vegetation of the United States*. Vol. I, *The National Vegetation Classification System: Development, Status, and Applications*. Arlington, Virginia: The Nature Conservancy.
- Holland, R.F. 1986. *Preliminary Descriptions of the Terrestrial Natural Communities of California*. Nongame-Heritage Program, California Department of Fish and Game. October 1986.
- Jepson Flora Project. 2012. *Jepson eFlora*. Version 1.0. Berkeley, California: University of California. Accessed October May 2, 2012. http://ucjeps.berkeley.edu/cgi-bin/get_JM_name_data.pl.

Draft Biological Technical Report for the Coastal Treatment Plant Export Sludge Force Main Project

- Keeley, J.E. 1987. "Role of Fire in Seed Germination of Woody Taxa in California Chaparral." *Ecology* 68(2): 434–443.
- Lovich, J.E., and J.R. Ennen. 2011. "Wildlife Conservation and Solar Energy Development in the Desert Southwest, United States." *BioScience* 61(12): 982–992.
- Malanson, G.P., and J.F. O'Leary. 1982. "Post-fire Regeneration Strategies of Californian Coastal Sage Shrubs." *Oecologia* 53: 355–358.
- Moyle, P.B. 2002. *Inland Fishes of California*. Berkeley, California: University of California Press.
- NABA (North American Butterfly Association). 2001. *North American Butterfly Association (NABA) Checklist & English Names of North American Butterflies*. 2nd ed. Morristown, New Jersey: NABA. Accessed May 2012. <http://www.naba.org/pubs/enames2.html>
- O'Leary, J.F. 1990a. "Post-fire Diversity Patterns in Two Subassociations of California Coastal Sage Scrub." *Journal of Vegetation Science* 1: 173–180.
- O'Leary, J.F. 1990b. "California Coastal Sage Scrub: General Characteristics and Considerations for Biological Conservation." In *Endangered Plant Communities of Southern California*, edited by A. Schoenherr. Southern California Botanists, Special Publications no. 3.
- O'Leary, J. F., D. Murphy, and P. Brussard. 1992. *The Coastal Sage Scrub Community Conservation Planning Region: An NCCP Special Report*. Natural Community Conservation Planning/Coastal Sage Scrub Spec. Rep. no. 2.
- Patten, M.A., and K.F. Campbell. 1998. "Has Brood Parasitism Selected for Earlier Nesting in the California Gnatcatcher." *Western Birds* 29: 290–298.
- RECON. 2009. *Results for the 2009 Coastal California Gnatcatcher Focused Survey for the Aliso Creek Ecosystem Restoration Study*. Orange County, California. November 19.
- Roberts, F.R. 2000. Personal communication with Julie Vanderwier. September 22.
- Sawyer, J.O., and T. Keeler-Wolf. 1995. *A Manual of California Vegetation*. Sacramento, California: California Native Plant Society.
- USDA (United States Department of Agriculture). 1978. *Soil Survey of Orange County and Western Riverside County, California*. Soil Conservation Service and Forest Service, in cooperation

Draft Biological Technical Report for the Coastal Treatment Plant Export Sludge Force Main Project

with the University of California, Agricultural Experiment Station. September 1978.
Accessed August 16, 2010. http://soils.usda.gov/survey/online_surveys/california.

USDA. 2012. "California." State PLANTS Checklist. Natural Resources Conservation Service.
Accessed May 2, 2012. http://plants.usda.gov/dl_state.html.

USFWS (U.S. Fish and Wildlife Service). 1979. *Classification of Wetlands and Deepwater Habitats of the United States*. Prepared by L.M. Cowardin, V. Carter, F.C. Golet, and E.T. LaRoe. USFWS Report No. FWS/OBS/-79/31. Washington, D.C.: USFWS.

USFWS. 1997. "Coastal California Gnatcatcher (*Polioptila californica californica*) Presence/Absence Survey Protocol." Carlsbad, California: USFWS. July 28, 1997.

USFWS. 1998. *Draft Recovery Plan for the Least Bell's Vireo (Vireo bellii pusillus)*. Portland, Oregon: USFWS, Region 1. http://ecos.fws.gov/docs/recovery_plan/980506.pdf.

Western Regional Climate Center. 2012. "Recent Climate in the West." Western Regional Climate Center. Accessed August 2012. <http://www.wrcc.dri.edu/index.html>.

Wilson, D.E., and D.M. Reeder, eds. 2005. *Mammal Species of the World: A Taxonomic and Geographic Reference*. 3rd ed. Baltimore, Maryland: Johns Hopkins University Press.

**Draft Biological Technical Report for the Coastal Treatment Plant
Export Sludge Force Main Project**

INTENTIONALLY LEFT BLANK

APPENDIX A
Cumulative List of Plant Species

APPENDIX A

Cumulative List of Plant Species

VASCULAR SPECIES

DICOTS

ADOXACEAE – MUSKROOT FAMILY

Sambucus nigra – black elderberry

AMARANTHACEAE – AMARANTH FAMILY

Amaranthus blitoides – mat amaranth

ANACARDIACEAE – SUMAC OR CASHEW FAMILY

Rhus integrifolia – lemonade sumac

* *Schinus molle* – Peruvian peppertree

* *Schinus terebinthifolius* – Brazilian peppertree

Toxicodendron diversilobum – Pacific poison oak

APIACEAE – CARROT FAMILY

* *Conium maculatum* – poison hemlock

Daucus pusillus – American wild carrot

* *Foeniculum vulgare* – sweet fennel

APOCYNACEAE – DOGBANE FAMILY

Asclepias californica – California milkweed

Asclepias fascicularis – Mexican whorled milkweed

ASTERACEAE – SUNFLOWER FAMILY

Ambrosia acanthicarpa – flatspine bur ragweed

Ambrosia psilostachya – Cuman ragweed

* *Anthemis cotula* – stinking chamomile

Artemisia californica – coastal sagebrush

Artemisia douglasiana – Douglas' sagewort

Artemisia dracunculus – tarragon

Baccharis pilularis – coyotebrush

Baccharis salicifolia – mulefat

* *Carduus pycnocephalus* – Italian plumeless thistle

* *Centaurea melitensis* – Maltese star-thistle

* *Cirsium vulgare* – bull thistle

Conyza canadensis – Canadian horseweed

* *Cynara cardunculus* – cardoon

Eriophyllum confertiflorum – golden yarrow

APPENDIX A (Continued)

- * *Glebionis coronaria* – crowndaisy
- Gnaphalium californicum* – ladies' tobacco
- * *Gnaphalium luteoalbum* – Jersey cudweed
- Hazardia squarrosa* – sawtooth goldenbush
- * *Helminthotheca echioides* – bristly oxtongue
- Heterotheca grandiflora* – telegraphweed
- * *Hypochaeris glabra* – smooth cat's ear
- Isocoma menziesii* – Menzies' goldenbush
- * *Lactuca serriola* – prickly lettuce
- Matricaria matricarioides* – disc mayweed
- Pseudognaphalium canescens* – Wright's cudweed
- * *Pulicaria paludosa* – Spanish false fleabane
- * *Silybum marianum* – blessed milkthistle
- * *Sonchus asper* – spiny sowthistle
- * *Sonchus oleraceus* – common sowthistle
- Stephanomeria virgata* – rod wirelettuce
- * *Tragopogon porrifolius* – salsify
- Xanthium spinosum* – spiny cocklebur
- Xanthium strumarium* – rough cocklebur

BETULACEAE – BIRCH FAMILY

Alnus rhombifolia – white alder

BORAGINACEAE – BORAGE FAMILY

Amsinckia menziesii – Menzies' fiddleneck
Heliotropium curassavicum – salt heliotrope
Phacelia cicutaria – caterpillar phacelia

BRASSICACEAE – MUSTARD FAMILY

- * *Brassica nigra* – black mustard
- * *Capsella bursa-pastoris* – shepherd's purse
- Descurainia pinnata* – paradise tansymustard
- Lepidium* sp. - pepperweed
- * *Raphanus sativus* – cultivated radish

CACTACEAE – CACTUS FAMILY

Cylindropuntia prolifera – coastal cholla
Opuntia littoralis – coastal pricklypear

APPENDIX A (Continued)

CARYOPHYLLACEAE – PINK FAMILY

- * *Silene gallica* – common catchfly
- * *Spergularia bocconi* – Boccone’s sandspurry
- * *Stellaria media* – common chickweed

CHENOPODIACEAE – GOOSEFOOT FAMILY

- Atriplex lentiformis* – big saltbush
- * *Atriplex semibaccata* – Australian saltbush
- * *Atriplex suberecta* – peregrine saltbush
- Chenopodium californicum* – California goosefoot
- * *Chenopodium murale* – nettleleaf goosefoot
- Salicornia* sp. – pickleweed
- * *Salsola tragus* – prickly Russian thistle

CLEOMACEAE – CLEOME FAMILY

Isomeris arborea – bladderpod spiderflower

CONVOLVULACEAE – MORNING-GLORY FAMILY

- * *Convolvulus arvensis* – field bindweed
- Cuscuta californica* var. *californica* – chaparral dodder

CRASSULACEAE – STONECROP FAMILY

Dudleya lanceolata – lanceleaf liveforever
Dudleya pulverulenta – chalk dudleya

CUCURBITACEAE – GOURD FAMILY

Cucurbita foetidissima – Missouri gourd
Marah macrocarpus – Cucamonga manroot

DATISCAEAE – DATISCA FAMILY

Datisca glomerata – Durango root

EUPHORBIACEAE – SPURGE FAMILY

- Croton californicus* – California croton
- Croton setigerus* – dove weed
- * *Euphorbia peplus* – petty spurge
- * *Ricinus communis* – castorbean

FABACEAE – LEGUME FAMILY

Acmispon americanus – American bird’s-foot trefoil
Acmispon parviflorus – desert deervetch

APPENDIX A (Continued)

Lupinus bicolor – miniature lupine

Lupinus truncatus – collared annual lupine

- * *Medicago polymorpha* – burclover
- * *Melilotus albus* – yellow sweetclover
- * *Melilotus indicus* – annual yellow sweetclover
- * *Trifolium hirtum* – rose clover
- * *Vicia villosa* – winter vetch

FAGACEAE – OAK FAMILY

Quercus agrifolia – California live oak

FRANKENIACEAE – FRANKENIA FAMILY

Frankenia salina – alkali seaheath

GERANIACEAE – GERANIUM FAMILY

- * *Erodium cicutarium* – redstem stork's bill
- * *Erodium moschatum* – musky stork's bill
- * *Geranium dissectum* – cutleaf geranium

GROSSULARIACEAE – GOOSEBERRY FAMILY

Ribes speciosum – fuchsiaflower gooseberry

LAMIACEAE – MINT FAMILY

- * *Marrubium vulgare* – horehound
- Salvia apiana* – white sage
- Salvia mellifera* – black sage
- Stachys ajugoides* – bugle hedgenettle

MALVACEAE – MALLOW FAMILY

- Malacothamnus fasciculatus* – chaparral bushmallow
- * *Malva parviflora* – cheeseweed mallow
- Sidalcea malviflora* – dwarf checkerbloom

MYRSINACEAE – MYRSINE FAMILY

- * *Anagallis arvensis* – scarlet pimpernel

MYRTACEAE – MYRTLE FAMILY

- * *Eucalyptus camaldulensis* – river redgum
- * *Melaleuca viminalis* – weeping bottlebrush

APPENDIX A (Continued)

PAPAVERACEAE – POPPY FAMILY

Eschscholzia californica – California poppy

PHRYMACEAE – LOPSEED FAMILY

Mimulus aurantiacus var. *puniceus* – red bush monkeyflower

PLATANACEAE – PLANE TREE, SYCAMORE FAMILY

Platanus racemosa – California sycamore

PLANTAGINACEAE – PLANTAIN FAMILY

- * *Plantago lanceolata* – narrowleaf plantain
- * *Veronica anagallis-aquatica* – water speedwell

POLYGONACEAE – BUCKWHEAT FAMILY

- Eriogonum fasciculatum* – Eastern Mojave buckwheat
- * *Polygonum aviculare* – prostrate knotweed
- * *Rumex conglomeratus* – clustered dock
- * *Rumex crispus* – curly dock

RANUNCULACEAE – BUTTERCUP FAMILY

Clematis ligusticifolia – western white clematis

RHAMNACEAE – BUCKTHORN FAMILY

Rhamnus ilicifolia – hollyleaf redberry

ROSACEAE – ROSE FAMILY

Heteromeles arbutifolia – toyon
Rubus ursinus – California blackberry

RUBIACEAE – MADDER FAMILY

Galium angustifolium – narrowleaf bedstraw
Galium aparine – stickywilly

SALICACEAE – WILLOW FAMILY

Populus fremontii – Fremont cottonwood
Salix exigua – narrowleaf willow
Salix gooddingii – Goodding's willow
Salix laevigata – red willow
Salix lasiolepis – arroyo willow

APPENDIX A (Continued)

SAURURACEAE – LIZARD’S-TAIL FAMILY

Anemopsis californica – yerba mansa

SCROPHULARIACEAE – FIGWORT FAMILY

Castilleja exserta – exserted Indian paintbrush

Scrophularia californica – California figwort

SOLANACEAE – NIGHTSHADE FAMILY

Datura wrightii – sacred thorn-apple

* *Nicotiana glauca* – tree tobacco

Solanum douglasii – greenspot nightshade

* *Solanum nigrum* – black nightshade

URTICACEAE – NETTLE FAMILY

Urtica dioica – stinging nettle

* *Urtica urens* – dwarf nettle

VERBENACEAE – VERVAIN FAMILY

Verbena lasiostachys – western vervain

MONOCOTS

ARECACEAE – PALM FAMILY

* *Washingtonia robusta* – Washington fan palm

CYPERACEAE – SEDGE FAMILY

Carex sp. – sedge

Cyperus eragrostis – tall flatsedge

Schoenoplectus americanus – chairmaker’s bulrush

IRIDACEAE – IRIS FAMILY

Sisyrinchium bellum – western blue-eyed grass

JUNCACEAE – RUSH FAMILY

Juncus dubius – questionable rush

POACEAE – GRASS FAMILY

Agrostis semiverticillata – beardless rabbitsfoot grass

* *Arundo donax* – giant reed

* *Avena fatua* – wild oat

* *Bromus diandrus* – ripgut brome

APPENDIX A (Continued)

- * *Bromus hordeaceus* – soft brome
- * *Bromus madritensis* – compact brome
- * *Digitaria sanguinalis* – hairy crabgrass
- Distichlis spicata* – saltgrass
- * *Gastridium ventricosum* – nit grass
- Hordeum brachyantherum* – meadow barley
- * *Hordeum murinum* – mouse barley
- * *Lamarckia aurea* – goldentop grass
- Leymus condensatus* – giant wildrye
- Leymus triticoides* – beardless wildrye
- * *Lolium multiflorum* – Italian ryegrass
- Melica imperfecta* – smallflower melicgrass
- Nassella pulchra* – purple needlegrass
- * *Polypogon monspeliensis* – annual rabbitsfoot grass
- * *Schismus barbatus* – common Mediterranean grass
- * *Vulpia myuros* – rat-tail fescue

THEMIDACEAE – BRODIAEA FAMILY

- Bloomeria crocea* – common goldenstar
- Dichelostemma capitatum* – bluedicks

TYPHACEAE – CATTAIL FAMILY

- Typha latifolia* – broadleaf cattail

- * Signifies introduced (non-native) species

APPENDIX A (Continued)

INTENTIONALLY LEFT BLANK

APPENDIX B
Cumulative List of Wildlife Species

APPENDIX B Cumulative List of Wildlife Species

WILDLIFE SPECIES – VERTEBRATES

REPTILES

ANGUIDAE – ALLIGATOR LIZARDS

Gerrhonotus multicarinatus – southern alligator lizard

COLUBRIDAE - COLUBRID SNAKES

Pituophis catenifer – gophersnake

EMYDIDAE – BOX AND WATER TURTLE

Actinemys marmorata pallida – western pond turtle

* *Trachemys scripta* – Pond slider

IGUANIDAE – IGUANID LIZARDS

Sceloporus occidentalis – western fence lizard

Uta stansburiana – side-blotched lizard

VIPERIDAE – VIPERS

Crotalus oreganus – western rattlesnake

AMPHIBIANS

BUFONIDAE – TRUE TOADS

Anaxyrus boreas – western toad

HYLIDAE – TREEFROGS

Pseudacris hypochondriaca – Baja California treefrog

RANIDAE – TRUE FROGS

* *Rana catesbeiana* – bullfrog

BIRDS

ACCIPITRIDAE – HAWKS

Accipiter cooperii – Cooper's hawk

Buteo lineatus – red-shouldered hawk

Buteo jamaicensis – red-tailed hawk

Elanus leucurus – white-tailed kite

APPENDIX B (Continued)

AEGITHALIDAE – BUSHTITS

Psaltriparus minimus – bushtit

APODIDAE – SWIFTS

Aeronautes saxatalis – white-throated swift

ARDEIDAE – HERONS

Ardea alba – great egret

Ardea herodias – great blue heron

Egretta thula – snowy egret

ANATIDAE – WATERFOWL

Anas platyrhynchos – mallard

CAPRIMULGIDAE – GOATSUCKERS

Chordeiles acutipennis – lesser nighthawk

CARDINALIDAE – CARDINALS AND GROSBEAKS

Passerina caerulea – blue grosbeak

Pheucticus melanocephalus – black-headed grosbeak

CATHARTIDAE – NEW WORLD VULTURES

Cathartes aura – turkey vulture

CHARADRIIDAE – PLOVERS

Charadrius vociferus – killdeer

COLUMBIDAE – PIGEONS AND DOVES

* *Columba livia* – rock dove

Zenaida macroura – mourning dove

CORVIDAE – JAYS AND CROWS

Aphelocoma californica – western scrub-jay

Corvus brachyrhynchos – American crow

Corvus corax – common raven

CUCULIDAE – CUCKOOS AND ROADRUNNERS

Geococcyx californianus – greater roadrunner

APPENDIX B (Continued)

EMBERIZIDAE – BUNTINGS AND SPARROWS

- Melospiza melodia* – song sparrow
- Pipilo crissalis* – California towhee
- Pipilo maculatus* – spotted towhee

FALCONIDAE – FALCONS

- Falco sparverius* – American kestrel

FRINGILLIDAE – FINCHES

- Carpodacus mexicanus* – house finch
- Carduelis psaltria* – lesser goldfinch
- Carduelis tristis* – American goldfinch

HIRUNDINIDAE – SWALLOWS

- Hirundo rustica* – barn swallow
- Petrochelidon pyrrhonota* – cliff swallow
- Stelgidopteryx serripennis* – northern rough-winged swallow

ICTERIDAE – BLACKBIRDS AND ORIOLES

- Icterus cucullatus* – hooded oriole
- Molothrus ater* – brown-headed cowbird

LARIDAE – GULLS AND TERNS

- Larus* sp. – gull

MIMIDAE – THRASHERS

- Mimus polyglottos* – northern mockingbird
- Toxostoma redivivum* – California thrasher

PARULIDAE – WOOD WARBLERS

- Dendroica petechia* – yellow warbler
- Geothlypis trichas* – common yellowthroat
- Icteria virens* – yellow-breasted chat
- Wilsonia pusilla* – Wilson's warbler

PHASIANIDAE – PHEASANTS AND QUAILS

- Callipepla californica* – California quail

APPENDIX B (Continued)

PICIDAE – WOODPECKERS

Picoides nuttallii – Nuttall’s woodpecker

Picoides scalaris – ladder-backed woodpecker

Picoides pubescens – downy woodpecker

PTILOGONATIDAE – SILKY-FLYCATCHERS

Phainopepla nitens – phainopepla

RALLIDAE—RAILS, GALLINULES, and COOTS

Fulica Americana – American coot

REGULIDAE – KINGLETS

Regulus calendula – ruby-crowned kinglet

STRIGIDAE—TYPICAL OWLS

Bubo virginianus – great horned owl

SYLVIIDAE – GNATCATCHERS

Polioptila californica – California gnatcatcher

TIMALIIDAE – LAUGHINGTHRUSH AND WRENTIT

Chamaea fasciata – wrentit

TROCHILIDAE – HUMMINGBIRDS

Archilochus alexandri – black-chinned hummingbird

Calypte anna – Anna’s hummingbird

Calypte costae – Costa’s hummingbird

Selasphorus rufus – rufous hummingbird

Selasphorus sasi – Allen’s hummingbird

TROGLODYTIDAE – WRENS

Thryomanes bewickii – Bewick’s wren

Troglodytes aedon – house wren

TURDIDAE – THRUSHES AND BABBLERS

Sialia mexicana – western bluebird

Turdus migratorius—American robin

TYRANNIDAE – TYRANT FLYCATCHERS

Empidonax difficilis – Pacific-slope flycatcher

Myiarchus cinerascens – ash-throated flycatcher

Sayornis nigricans – black phoebe

APPENDIX B (Continued)

Sayornis saya – Say’s phoebe

Tyrannus vociferans – Cassin’s kingbird

Tyrannus verticalis – western kingbird

TYTONIDAE—BARN OWLS

Tyto alba – Barn owl

VIREONIDAE – VIREOS

Vireo bellii pusillus – least Bell’s vireo

MAMMALS

CANIDAE – WOLVES AND FOXES

Canis latrans – coyote

CERVIDAE – DEERS

Odocoileus hemionus – mule deer

FELIDAE – CATS

Felis concolor – mountain lion (scat)

GEOMYIDAE – POCKET GOPHERS

Thomomys bottae – Botta’s pocket gopher

LEPORIDAE – HARES AND RABBITS

Sylvilagus bachmani – brush rabbit

MURIDAE – RATS AND MICE

Neotoma sp. – woodrat (midden)

MUSTELIDAE – WEASELS, SKUNKS, AND OTTERS

Mustela sp. – weasel (scat)

PROCYONIDAE – RACCOONS AND RELATIVES

Procyon lotor – common raccoon

Lynx rufus – bobcat

SCIURIDAE – SQUIRRELS

Spermophilus beecheyi – California ground squirrel

APPENDIX B (Continued)

BUTTERFLIES AND MOTHS

NYMPHALIDAE – BRUSH-FOOTED BUTTERFLIES

- Coenonympha californica californica* – California ringlet
- Danaus plexippus* – monarch
- Junonia coenia* – buckeye
- Limenitis lorquini* – Lorquin’s admiral
- Nymphalis antiopa* – mourning cloak

PAPILIONIDAE – SWALLOWTAILS

- Papilio eurymedon* – pale swallowtail
- Papilio rutulus* – tiger swallowtail
- Papilio zelicaon lucas* – anise swallowtail

PIERIDAE – WHITES AND SULFURS

- Anthocharis sara sara* – Pacific Sara orangetip
- Colias eurydice* – California dogface
- Pieris rapae rapae* – cabbage butterfly
- Pontia protodice* – checkered white

FISH

CYPRINIDAE – CYPRINIDS

- * *Cyprinus carpio* – common carp
- * *Cyprinella lutrensis* – red shiner

POECILIIDAE – FRESHWATER FISH

- * *Gambusia affinis* – western mosquitofish

CENTRARCHIDAE - SUNFISHES

- * *Micropterus salmoides* – largemouth bass

CRUSTACEANS

CAMBARIDAE - FRESHWATER CRAYFISH

- * *Procambarus clarkia* – red swamp crayfish

- * signifies introduced (non-native) species

APPENDIX C
*Not Expected or Low Potential
Special-status Plant Species*

APPENDIX C

Not Expected or Low Potential Special-status Plant Species

Scientific Name	Common Name	Status: Federal/State/ NCCP ¹	CRPR List	Primary Habitat Associations/Life Form/Blooming Period/Elevation	Status on site or Potential to Occur
<i>Aphanisma blitoides</i>	Aphanisma	None/None/None	1B.2	Coastal bluff scrub, coastal sage scrub, sandy soils/annual herb/March–June/1–305 meters	Not expected to occur. Limited suitable habitat present, not observed during focused surveys.
<i>Asplenium vespertinum</i>	Western spleenwort	None/None/None	4.2	Chaparral, cismontane woodland, coastal scrub (rocky)/perennial rhizomatous herb/February–June/180–1,000 meters	Not expected to occur. Outside of known elevation range; not observed during focused surveys.
<i>Atriplex coulteri</i>	Coulter's saltbush	None/None/None	1B.2	Coastal bluff scrub, coastal dunes, coastal sage scrub, Valley and foothill grassland, alkaline or clay soils/perennial herb/March–October/3–460 meters	Not expected to occur. Limited suitable habitat present, not observed during focused surveys.
<i>Atriplex pacifica</i>	South Coast saltscale	None/None/None	1B.2	Coastal bluff scrub, coastal sage scrub, playas/annual herb/March–October/0–140 meters	Not expected to occur. Limited suitable habitat present, not observed during focused surveys.
<i>Atriplex parishii</i>	Parish's brittlescale	None/None/None	1B.1	Chenopod scrub, playas, vernal pools/annual herb/June–October/25–1,900 meters	Not expected to occur. No suitable habitat; not observed during focused surveys.
<i>Atriplex serenana</i> var. <i>davidsonii</i>	Davidson's saltscale	None/None/None	1B.2	Coastal bluff scrub, coastal sage scrub, alkaline soils/annual herb/April–October/10–200 meters	Not expected to occur. Limited suitable habitat present, not observed during focused surveys.
<i>Brodiaea filifolia</i>	Thread-leaved brodiaea	FT/SE/None	1B.1	Coastal sage scrub, cismontane woodland, Valley and foothill grassland, vernal pools, clays/perennial herb/March–June/25–860 meters	Not expected to occur. Limited suitable habitat present, not observed during focused surveys.
<i>Calochortus catalinae</i>	Catalina mariposa lily	None/None/Covered	4.2	Chaparral, cismontane woodland, coastal scrub, valley and foothill grassland/bulbiferous herb/February–May/15–700 meters	Low potential to occur. Limited suitable habitat present, not observed during focused surveys.

APPENDIX C (Continued)

Scientific Name	Common Name	Status: Federal/State/ NCCP ¹	CRPR List	Primary Habitat Associations/Life Form/Blooming Period/Elevation	Status on site or Potential to Occur
<i>Calochortus plummerae</i>	Plummer's mariposa lily	None/None/None	1B.2	Chaparral, cismontane woodland, coastal sage scrub, lower montane conifer forest, Valley and foothill grassland, granitic soils/perennial herb/May–July/100–1,700 meters	Not expected to occur. Limited suitable habitat present, outside elevation range and not observed during focused surveys.
<i>Calochortus weedii</i> var. <i>intermedius</i>	Intermediate mariposa lily	None/None/Conditionally Covered	1B.2	Chaparral, coastal sage scrub, Valley and foothill grassland, rocky areas/perennial herb/May–July/180–855 meters	Not expected to occur. Limited suitable habitat present, outside of elevation range and not observed during focused surveys.
<i>Camissonia lewisii</i>	Lewis's evening primrose	None/None/None	3	Coastal bluff scrub, cismontane woodland, coastal dunes, coastal scrub, valley and foothill grassland; sandy or clay annual herb/March–June/0–300 meters	Not expected to occur. Limited suitable habitat present, not observed during focused surveys.
<i>Centromadia</i> [<i>Hemizonia</i>] <i>parryi</i> spp. <i>australis</i>	Southern tarplant	None/None/None	1B.1	Valley and-foothill grassland (vernally mesic), estuary margins, vernal pools/annual herb/May–November/0–425 meters	Not expected to occur. Limited suitable habitat present, not observed during focused surveys.
<i>Chaenactis glabriuscula</i> var. <i>orcuttiana</i>	Orcutt's pincushion	None/None/None	1B.1	Coastal bluff scrub, coastal dunes/annual herb/January –August/3–100 meters	Not expected to occur. No suitable habitat.
<i>Chorizanthe polygonoides</i> var. <i>longispina</i>	Long-spined spineflower	None/None/None	1B.2	Chaparral, coastal scrub, meadows and seeps, valley and foothill grassland, vernal pools (clay)/annual herb/April–June/30–1,530 meters	Low potential to occur. Limited suitable habitat present, not observed during focused surveys.
<i>Cistanthe maritima</i>	Seaside cistanthe	None/None/None	4.2	Coastal bluff, coastal scrub, valley and foothill grassland (sandy)/annual herb/February–August/5–300 meters	Not expected to occur. Limited suitable habitat present, not observed during focused surveys.
<i>Clinopodium chandleri</i>	San Miguel savory	None/None/None	1B.2	Chaparral, cismontane woodland, coastal sage scrub, riparian woodland, Valley and foothill grassland/perennial herb/March–May/120–1,075 meters	Low potential to occur. Suitable habitat present, but not observed during focused surveys.

APPENDIX C (Continued)

Scientific Name	Common Name	Status: Federal/State/ NCCP ¹	CRPR List	Primary Habitat Associations/Life Form/Blooming Period/Elevation	Status on site or Potential to Occur
<i>Comarostaphylis diversifolia</i> ssp. <i>diversifolia</i>	Summer holly	None /None/None	1B.2	Chaparral/shrub/April–June/30–550 meters	Not expected to occur. No suitable habitat; not observed during focused surveys.
<i>Deinandra paniculata</i>	Paniculate tarplant	None /None/None	4.2	Coastal sage scrub, valley and foothill grassland; usually vernal mesic/annual herb/April–November/25–940 meters	Low potential to occur. Limited suitable habitat present, not observed during focused surveys.
<i>Dichondra occidentalis</i>	Western dichondra	None/None/None	4.2	Chaparral, cismontane woodland, coastal scrub, valley and foothill grassland/perennial rhizomatous herb/January–July/50–500 meters	Low potential to occur. Limited suitable habitat present, not observed during focused surveys.
<i>Dodecahema leptoceras</i>	Slender-horned spineflower	FE/SE/None	1B.1	Chaparral, coastal sage scrub (alluvial fan)/annual herb/April–June/200–760 meters	Not expected to occur. No suitable habitat; not observed during focused surveys.
<i>Dudleya blochmaniae</i> ssp. <i>blochmaniae</i>	Blochman's dudleya	None/None/Covered	1B.1	Coastal bluff scrub, chaparral, coastal scrub, valley and foothill grassland (rocky, clay serpentinite)/perennial herb/April–June/5–450 meters	Low potential to occur. Limited suitable habitat present, not observed during focused surveys.
<i>Dudleya cymosa</i> ssp. <i>ovatifolia</i>	Santa Monica dudleya	FT/None/Covered	1B.2	Chaparral, coastal sage scrub, volcanic substrates/perennial herb/March–June/150–1,675 meters	Not expected to occur. No suitable soil substrate. Not observed during focused surveys.
<i>Dudleya multicaulis</i>	Many-stemmed dudleya	None/None/None	1B.2	Coastal bluff scrub, coastal sage scrub, Valley and foothill grassland, rocky, often clay or serpentinite soil/perennial herb/April–July/15–790 meters	Low potential to occur. Limited suitable habitat present, not observed during focused surveys.
<i>Dudleya stolonifera</i>	Laguna Beach dudleya	FT/ST/Covered	1B.1	Chaparral, cismontane woodland, coastal sage scrub, Valley and foothill grassland, rocky areas/perennial herb/May–June/10–60 meters	Low potential to occur. Limited suitable habitat present, not observed during focused surveys.

APPENDIX C (Continued)

Scientific Name	Common Name	Status: Federal/State/ NCCP ¹	CRPR List	Primary Habitat Associations/Life Form/Blooming Period/Elevation	Status on site or Potential to Occur
<i>Dudleya viscida</i>	Sticky dudleya	None/None/None	1B.2	Coastal bluff scrub, chaparral, coastal sage scrub, rocky areas/perennial herb/May-June/10-550 meters	Low potential to occur. Limited suitable habitat present, not observed during focused surveys.
<i>Eryngium pendletonense</i>	Pendleton button-celery	None/None/None	1.B1	Coastal bluff scrub, valley and foothill grassland, vernal pools (clay vernally mesic)/Perennial herb/April-June/15-110 meters	Low potential to occur. Limited suitable habitat present, not observed during focused surveys.
<i>Euphorbia misera</i>	Cliff spurge	None/None/None	2.2	Coastal bluff scrub, coastal scrub; rocky/shrub/December-April/10-500 meters	Not expected to occur. No suitable habitat present, not observed during focused surveys.
<i>Harpagonella palmeri</i>	Palmer's grapplinghook	None/None/Covered	4.2	Chaparral, coastal scrub, valley and foothill grassland (clay)/annual herb/March-May/20-955 meters	Low potential to occur. Limited suitable habitat present, not observed during focused surveys.
<i>Helianthus nuttallii</i> ssp. <i>parishii</i>	Los Angeles sunflower	None/None/None	1A	Marshes and swamps (coastal salt and freshwater)/rhizomatous herb/August-October/10-1,675 meters	Low potential to occur. Limited suitable habitat present, not observed during focused surveys.
<i>Hesperocyparis forbesii</i>	Tecate cypress	None/None/Covered	1B.1	Closed-cone conifer forest, chaparral/tree/NA/255-1,500 meters	Not expected to occur. No suitable habitat; outside known elevation range not observed during focused surveys.
<i>Hordeum intercedens</i>	Vernal barley	None/None/None	3.2	Valley and foothill grassland (saline flats and depressions), vernal pools/annual herb/March-June/5-1,000 meters	Not expected to occur. Limited suitable habitat present, not observed during focused surveys.
<i>Horkelia cuneata</i> ssp. <i>puberula</i>	Mesa horkelia	None/None/None	1B.1	Chaparral, cismontane woodland, coastal scrub; sandy or gravelly/perennial herb/February-September/70-810 meters	Low potential to occur. Limited suitable habitat present, not observed during focused surveys.

APPENDIX C (Continued)

Scientific Name	Common Name	Status: Federal/State/ NCCP ¹	CRPR List	Primary Habitat Associations/Life Form/Blooming Period/Elevation	Status on site or Potential to Occur
<i>Imperata brevifolia</i>	California satintail	None/None/None	2.1	Chaparral, coastal scrub, mohavean desert scrub, meadows and seeps, riparian scrub(mesic, alkali)/rhizomatous herb/September-May/0- 1,215 meters	Low potential to occur. Suitable habitat present, not observed during focused surveys.
<i>Isocoma menziesii</i> var. <i>decumbens</i>	Decumbent goldenbush	None/None/None	1B.2	Coastal sage scrub (sandy, often disturbed areas)/shrub/April- November/10-135 meters	Low potential to occur. Limited suitable habitat present, not observed during focused surveys.
<i>Lasthenia glabrata</i> ssp. <i>coulteri</i>	Coulter's goldfields	None/None/None	1B.1	Saltwater marsh and swamps, playas, vernal pools/annual herb/February-June/1- 1,220 meters	Not expected to occur. No suitable habitat; not observed during focused surveys.
<i>Lepechinia cardiophylla</i>	Heart-leaved pitcher sage	None/None/Covered	1B.2	Closed-cone conifer forest, chaparral, cismontane woodland/shrub/April- July/520-1,370 meters	Not expected to occur. Outside of known elevation range; not observed during focused surveys.
<i>Lepidium virginicum</i> var. <i>robinsonii</i>	Robinson's pepper-grass	None/None/None	1B.2	Chaparral, coastal scrub/annual herb/January-July/1-885 meters	Low potential to occur. Limited suitable habitat present, not observed during focused surveys.
<i>Lycium brevipes</i> var. <i>hassei</i>	Santa Catalina Island desert- thorn	None/None/None	1B.1	Coastal bluff scrub, coastal scrub/deciduous shrub/June/10-300 meters	Low potential to occur. Limited suitable habitat present, not observed during focused surveys.
<i>Lyceum californicum</i>	California box- thorn	None/None/None	4.2	Coastal bluff scrub, coastal scrub/perennial shrub/December- August/5-150 meters	Low potential to occur. Limited suitable habitat present, not observed during focused surveys.
<i>Malacothrix saxatilis</i> var. <i>saxatilis</i>	Cliff malacothrix	None/None/None	4.2	Coastal bluff scrub, coastal scrub/perennial rhizomatous herb/March- September/3-200 meters	Low potential to occur. Limited suitable habitat present, not observed during focused surveys.
<i>Mimulus clevelandii</i>	Cleveland's bush monkeyflower	None/None/None	4.2	Chaparral, cismontane woodland, lower montane coniferous forest (gabbroic, disturbed, openings rocky)/April- June/450-2,000 meters	Not expected to occur. No suitable habitat; outside known elevation range not observed during focused surveys.
<i>Mimulus diffusus</i>	Palomar monkeyflower	None/None/None	4.3	Chaparral, lower montane coniferous forest (sandy or gravelly)/annual herb/April-June/1,220- 1,830 meters	Not expected to occur. No suitable habitat; outside known elevation range not observed during focused surveys.

APPENDIX C (Continued)

Scientific Name	Common Name	Status: Federal/State/ NCCP ¹	CRPR List	Primary Habitat Associations/Life Form/Blooming Period/Elevation	Status on site or Potential to Occur
<i>Monardella hypoleuca</i> ssp. <i>lanata</i>	Felt-leaved monardella	None/None/None	1B.2	Chaparral, cismontane woodland/perennial herb/May–July/300–1,190 meters	Not expected to occur. No suitable habitat; outside known elevation range not observed during focused surveys.
<i>Monardella macrantha</i> ssp. <i>hallii</i>	Hall's monardella	None/None/None	1B.3	Broad-leaved upland forest, chaparral, cismontane woodland, lower montane conifer forest, Valley and foothill grassland/perennial herb/June–August/730–2,195 meters	Not expected to occur. No suitable habitat; outside known elevation range not observed during focused surveys.
<i>Myosurus minimus</i> ssp. <i>apus</i>	little mouse-tail	None/None/None	3.1	Valley and foothill grassland, vernal pools (alkaline)/annual herb/March–June/20–640 meters	Not expected to occur. Limited suitable habitat present, not observed during focused surveys.
<i>Nama stenocarpum</i>	mud nama	None/None/None	2.2	Marsh and swamps, lake margins and riverbanks/annual-perennial herb/January–July/5–500 meters	Not expected to occur. No suitable habitat; not observed during focused surveys.
<i>Navarretia prostrata</i>	prostrate vernal pool navarretia	None/None/None	1B.1	Coastal scrub, meadows and seeps, valley and foothill grassland, vernal pools (mesic, alkaline)/annual herb/April–June/15–1,210 meters	Low potential to occur. Limited suitable habitat present, not observed during focused surveys.
<i>Nolina cismontana</i>	chaparral nolina	None/None/None	1B.2	Chaparral, coastal scrub(sandstone or gabbro)/evergreen shrub/May–June/140–1,275 meters	Not expected to occur. Outside of known elevation range; not observed during focused surveys.
<i>Pentachaeta aurea</i> ssp. <i>allenii</i>	Allen's pentachaeta	None/None/None	1B.1	Coastal scrub, valley and foothill grassland (openings)/annual herb/March–June/75–520 meters	Not expected to occur. Outside of known elevation range; not observed during focused surveys.
<i>Phacelia suaveolens</i> ssp. <i>keckii</i>	Santiago Peak phacelia	None/None/None	1B.3	Closed-cone conifer forest, chaparral/annual herb/May–June/610–1,600 meters	Not expected to occur. No suitable habitat; outside known elevation range not observed during focused surveys.

APPENDIX C (Continued)

Scientific Name	Common Name	Status: Federal/State/ NCCP ¹	CRPR List	Primary Habitat Associations/Life Form/Blooming Period/Elevation	Status on site or Potential to Occur
<i>Phacelia ramosissima</i> var. <i>australitoralis</i>	south coast branching phacelia	None/None/None	3.2	Chaparral, coastal dunes, coastal scrub, marshes and swamps (coastal salt, sandy rocky)/perennial herb/March–August/5–300 meters	Low potential to occur. Limited suitable habitat present, not observed during focused surveys.
<i>Piperia leptopetala</i>	Narrow-petaled rein orchid	None/None/None	4.3	Cismontane woodland, lower and upper montane coniferous forest/perennial herb/May–June/380–2,225 meters	Not expected to occur. No suitable habitat; outside known elevation range not observed during focused surveys.
<i>Pseudognaphalium leucocephalum</i>	white rabbit-tobacco	None/None/None	2.2	Chaparral, cismontane woodland, coastal scrub(sandy gravelly)/perennial herb/July–December/0–2,100 meters	Low potential to occur. Limited suitable habitat present, not observed during focused surveys.
<i>Quercus dumosa</i>	Nuttall's scrub oak	None/None/Covered	1B.1	Chaparral, coastal sage scrub, sandy and clay loam soils/ shrub/ February–March/15–400 meters	Low potential to occur. Suitable habitat present, but not observed during focused surveys.
<i>Romneya coulteri</i>	Coulter's matilija poppy	None/None/Covered	4.2	Chaparral, coastal sage scrub, often in burned areas/perennial herb/May–July/20–1,200 meters	Low potential to occur. Limited suitable habitat present, not observed during focused surveys.
<i>Senecio aphanactis</i>	chaparral ragwort	None/None/None	2.2	Chaparral, cismontane woodland, coastal scrub (alkaline)/annual herb/January–April/15–800 meters	Low potential to occur. Limited suitable habitat present, not observed during focused surveys.
<i>Sidalcea neomexicana</i>	Salt spring checkerbloom	None /None/None	2.2	Chaparral, coastal sage scrub, lower montane conifer forest, Mojavean Desert scrub, playas, alkaline-mesic areas/perennial herb/ March–June/15–1,530 meters	Low potential to occur. Limited suitable habitat present, not observed during focused surveys.
<i>Suaeda esteroa</i>	estuary seablite	None/None/None	1B.2	Marshes and swamps (coastal salt)/perennial herb/May–Oct/0–5 meters	Not expected to occur. Outside of known elevation range; not observed during focused surveys.
<i>Suaeda taxifolia</i>	Woolly seablite	None/None/None	4.2	Coastal bluff scrub, coastal dunes, marshes and swamps/perennial evergreen shrub/January–December/0–50 meters	Not expected to occur. No suitable habitat present, not observed during focused surveys.

APPENDIX C (Continued)

Scientific Name	Common Name	Status: Federal/State/ NCCP ¹	CRPR List	Primary Habitat Associations/Life Form/Blooming Period/Elevation	Status on site or Potential to Occur
<i>Symphytotrichum defoliatum</i>	San Bernardino aster	None/None/None	1B.2	Cismontane woodland, coastal scrub, lower coniferous forest, meadows, marshes and swamps, vernal moist grasslands; near ditches, streams, and springs/rhizomatous herb/July– November/2–2,040 meters	Low potential to occur. Suitable habitat present, not observed during focused surveys.
<i>Tetracoccus dioicus</i>	Parry's tetracoccus	None/None/None	1B.2	Chaparral, coastal sage scrub/shrub/April–May/165–1,000 meters	Not expected to occur. Outside of known elevation range; not observed during focused surveys.
<i>Verbesina dissita</i>	Big-leaved crownbeard	FT/ST/None	1B.1	Maritime chaparral, coastal sage scrub/perennial herb/April–July/45–205 meters	Low potential to occur. Limited suitable habitat present, not observed during focused surveys.

¹ Status:

FE: Federally listed as Endangered.

FT: Federally listed as Threatened.

SE: State-listed as Endangered.

ST: State-listed as Threatened.

SR: State-listed as Rare.

CRPR: California Rare Plant Rank

1A (formerly List 1A): Plants Presumed Extinct in California

1B (formerly List 1B): Plants Rare, Threatened, or Endangered in California and Elsewhere

2 (formerly List 2): Plants Rare, Threatened, or Endangered in California, But More Common Elsewhere

3 (formerly List 3): Plants About Which We Need More Information—A Review List

4 (formerly List 4): Plants of Limited Distribution—A Watch List

- 0.1: Seriously threatened in California (over 80% of occurrences threatened/high degree and immediacy of threat)
- 0.2: Fairly threatened in California (20%–80% occurrences threatened/moderate degree and immediacy of threat)
- 0.3: Not very threatened in California (<20% of occurrences threatened/low degree and immediacy of threat or no current threats known).

APPENDIX D

*Not Expected or Low Potential Special-status
Wildlife Species*

APPENDIX D
Not Expected or Low Potential Special-status Wildlife Species

Scientific Name	Common Name	Status Federal/ State/NCCP/HCP ¹	Primary Habitat Associations	Status On-site or Potential To Occur
<i>Amphibians</i>				
<i>Anaxyrus californicus</i>	Arroyo toad	FE/SSC/Covered	Stream channels for breeding (typically 3rd order); adjacent stream terraces and uplands for foraging and wintering.	Low potential to occur. 2012 and 2001 focused surveys were negative. Very marginal breeding features present. Deeply incised channel, often with vertical banks subject to high storm flows and poor water quality. Nearest critical habitat is located 5 miles away in Trabuco Canyon; nearest point location is 5.5 miles away in San Juan Creek on the eastern side of Interstate 5.
<i>Spea hammondi</i> [listed as <i>Scaphiopus hammondi</i> in NCCP/HCP]	Western spadefoot	None/SSC/Covered	Most common in grasslands, coastal sage scrub near rain pools or vernal pools; riparian habitat	Low potential to occur. Suitable habitat present; however, species not observed during surveys.
<i>Taricha torosa</i>	Coast range newt	None/SSC/None	Coastal drainages; lives in terrestrial habitats and will migrate over 1 km to ponds, reservoirs, and slow-moving streams	Low potential to occur. Suitable habitat present; however, species not observed during surveys.
<i>Reptiles</i>				
<i>Lampropeltis zonata</i> (<i>pulchra</i>)	California mountain kingsnake (San Diego population)	None/SSC/None	Valley-foothill hardwood, hardwood-conifer, chaparral, coniferous forest, wet meadow	Low potential to occur. Limited suitable habitat present.
<i>Birds</i>				
<i>Agelaius tricolor</i>	Tricolored blackbird	BCC, WL/BCC/SSC/None	Nests near fresh water, emergent wetland with cattails or tules; forages in grasslands, woodland, agriculture	Low potential to occur. Suitable habitat present; would have been observed if present.
<i>Aimophila ruficeps canescens</i>	Southern California rufous-crowned sparrow	None/WL/Covered	Grass-covered hillsides, coastal sage scrub, chaparral with boulders and outcrops	Low potential to occur. Suitable habitat present; would have been observed during

APPENDIX D (Continued)

Scientific Name	Common Name	Status Federal/ State/NCCP/HCP ¹	Primary Habitat Associations	Status On-site or Potential To Occur
				focused surveys for California gnatcatcher if present.
<i>Ammodramus savannarum</i>	Grasshopper sparrow	None/SSC/None	Open grassland and prairie, especially native grassland with a mix of grasses and forbs	Low potential to occur. Suitable habitat present; would have been observed if present during avian surveys because call highly detectable.
<i>Aquila chrysaetos</i> (nesting and nonbreeding/wintering)	Golden eagle	BCC/WL, FP/Covered	Open country, especially hilly and mountainous regions; grassland, coastal sage scrub, chaparral, oak savannas, open coniferous forest	Low potential to occur. Lack of suitable foraging and breeding habitat, although may very occasionally forage in area. Nearest breeding sites are in the Santa Ana Mountains east of the study area.
<i>Asio otus</i>	Long-eared owl	None/SSC/None	Riparian, live oak thickets, other dense stands of trees, edges of coniferous forest	Suitable habitat present; low potential to occur; would have been observed if present. This species now very uncommon in urbanized settings in Southern California.
<i>Athene cucularia</i> (burrow sites)	Burrowing owl	BCC/SSC/None	Grassland, lowland scrub, agriculture, coastal dunes and other artificial open areas	Low potential to occur. Limited suitable habitat present, no suitable burrows observed during surveys. This species unknown to breed in this area of Orange County, but may rarely occur as a winter visitor.
<i>Buteo regalis</i> (nonbreeding/wintering)	Ferruginous hawk	BCC/WL/None	Open, dry country, grasslands, open fields, agriculture	Low potential to occur as a migrant or winter visitor.
<i>Campylorhynchus brunneicapillus sandiegensis</i>	San Diego cactus wren	BCC/SSC/Covered	Southern cactus scrub, maritime succulent scrub, cactus thickets in coastal sage scrub	Not expected to occur. No suitable cactus scrub habitat in study area; would have been detected if present.

APPENDIX D (Continued)

Scientific Name	Common Name	Status Federal/ State/NCCP/HCP ¹	Primary Habitat Associations	Status On-site or Potential To Occur
<i>Eremophila alpestris actia</i>	California horned lark	None/WL/Covered	Open habitats, grassland, rangeland, shortgrass prairie, montane meadows, coastal plains, fallow grain fields	Low potential to occur. Limited suitable habitat, not observed during surveys.
<i>Laterallus jamaicensis coturniculus</i>	California black rail	BCC, WL/BCC/ST, FP/None	Saline, brackish, and fresh emergent wetlands	Not expected to occur. No suitable habitat on site.
<i>Passerculus sandwichensis beldingi</i>	Belding's savannah sparrow	None/SE/None	Saltmarsh, pickleweed	Not expected to occur. No suitable habitat on site.
<i>Rallus longirostris levipes</i>	Light-footed clapper rail	FE/SE, FP/None	Coastal saltmarsh	Not expected to occur. No suitable habitat on site.
<i>Sternula antillarum browni</i>	California least tern	FE/SE, FP/None	Nests along the coast from San Francisco Bay south to northern Baja California	Not expected to occur. No suitable habitat on site.
<i>Mammals</i>				
<i>Dipodomys stephensi</i>	Stephens' kangaroo rat	FE/ST/None	Open habitat, grassland, sparse coastal sage scrub, sandy loam and loamy soils with low clay content; gentle slopes (<30%)	Not expected to occur. Study area located well west of known range; nearest populations are on MCB Camp Pendleton.
<i>Perognathus longimembris pacificus</i>	Pacific pocket mouse	FE/SSC/Covered	Grassland, coastal sage scrub with sandy soils; along immediate coast	Not expected to occur. Outside of known population range. Only extent populations known from Orange County are at Dana Point Headlands and San Mateo North site south of San Clemente.
<i>Sorex ornatus salicornicus</i>	Southern California saltmarsh shrew	None/SSC/None	Salt marsh, salt grass, dense willow, bulrush	Not expected to occur. No suitable habitat on site.
<i>Taxidea taxus</i>	American badger	None/SSC/None	Dry, open treeless areas, grasslands, coastal sage scrub	Not expected to occur; believed to be extirpated from highly urbanized areas in Southern California.

APPENDIX D (Continued)

Scientific Name	Common Name	Status Federal/ State/NCCP/HCP ¹	Primary Habitat Associations	Status On-site or Potential To Occur
<i>Fish</i>				
<i>Eucyclogobius newberryi</i>	Tidewater goby	FE/SSC/None	Low-salinity waters in coastal wetlands in brackish or freshwater in bays, sounds, and lagoons and creeks	Not expected to occur. No suitable habitat present on site. Not observed during 2012 focused steelhead surveys.
<i>Gila orcutti</i>	Arroyo chub	None/SSC/None	Warm, fluctuating streams with slow-moving or backwater sections of warm to cool streams at depths > 40 centimeters; substrates of sand or mud	Not expected to occur. No suitable habitat present on site. Not observed during 2012 focused steelhead surveys.
<i>Oncorhynchus mykiss irideus</i>	Southern steelhead - southern California DPS	FE/SSC/None	Fresh water, coastal lagoons, streams with sufficient winter flow and sand berms at mouths of streams that can be breached	Not expected to occur. 2012 focused surveys were negative. Focused survey confirmed that spawning habitat is not present and that the ACWHEP structure is a barrier to upstream migration for all fish species.
<i>Rhinichthys osculus</i> ssp. 3	Santa Ana speckled dace	None/SSC/None	Permanent streams with cool, flowing rocky-bottomed washes, shallow cobble and gravel riffles	Not expected to occur. No suitable habitat present on site. Not observed during 2012 focused steelhead surveys.
<i>Invertebrates</i>				
<i>Branchinecta sandiegonensis</i>	San Diego fairy shrimp	FE/None/Covered	Small, shallow vernal pools, occasionally ditches and road ruts	Not expected to occur. No suitable habitat on site.
<i>Coelus globosus</i>	Globose dune beetle	None/None/None	Coastal dunes	Not expected to occur. No suitable habitat on site.
<i>Danaus plexippus</i> (wintering sites)	Monarch butterfly	None/None/None	Overwinters in eucalyptus groves	Individuals observed on site and suitable roosting habitat present. However, low potential to overwinter on site in large populations. Large wintering colonies are very conspicuous and well documented in

APPENDIX D (Continued)

Scientific Name	Common Name	Status Federal/ State/NCCP/HCP ¹	Primary Habitat Associations	Status On-site or Potential To Occur
				California. A wintering colony on site has not been reported.
<i>Streptocephalus woottoni</i>	Riverside fairy shrimp	FE/None/Covered	Deep, long-lived vernal pools, vernal pool-like seasonal ponds, stock ponds; warm water pools that have low to moderate dissolved solids	Not expected to occur. No suitable habitat on site.
<i>Tryonia imitator</i>	Mimic tryonia (=California brackishwater snail)	None/None/None	Inhabits brackish water of coastal lagoons, estuaries and salt marshes, from Sonoma County south to San Diego County.	Not expected to occur. No suitable habitat present on site.

¹ This table includes all Central-Coastal Subregion NCCP/HCP Covered Species and species reported in the eight topographic quadrangles surrounding and including the Study Area (El Toro, Tustin, Laguna Beach, Santiago Peak, San Juan Capistrano, Canada Gobernadora, Dana Point, and San Clemente).

Federal Designations:

BCC U.S. Fish and Wildlife Service Birds of Conservation Concern
 (FD) Federally delisted; monitored for 5 years
 FE Federally listed Endangered
 FT Federally listed as Threatened
 WLBC United States Watch List of Birds of Conservation Concern

State Designations:

FP California Department of Fish and Game Protected and Fully Protected Species
 SE State-listed as Endangered
 ST State-listed as Threatened
 SSC California Department of Fish and Game Species of Special Concern
 WL California Department of Fish and Game Watch List Species

NCCP Designations:

Covered—Covered Species under Central-Coastal Subregion NCCP/HCP

APPENDIX D (Continued)

INTENTIONALLY LEFT BLANK

APPENDIX E
*Moderate or High Potential
Special-Status Wildlife Species*

Appendix E

Moderate or High Potential Special-Status Wildlife Species

Scientific Name	Common Name	Status Federal/ State/NCCP/HCP ¹	Primary Habitat Associations	Status On-site or Potential to Occur
<i>Reptiles</i>				
<i>Aspidoscelis hyperythra</i> [listed as <i>Cnemidophorus hyperythrus</i> in NCCP/HCP]	Orange-throated whiptail	None/SSC/Covered	Coastal sage scrub, chaparral, grassland, juniper and oak woodland	Moderate potential to occur. Suitable habitat present.
<i>Aspidoscelis tigris stejnegeri</i> [listed as <i>Cnemidophorus tigris multiscutatus</i> in NCCP/HCP]	Coastal western whiptail	None/None/Covered	Coastal sage scrub, chaparral	Moderate potential to occur. Suitable habitat present.
<i>Charina trivirgata</i>	Rosy boa	None/None/Covered	Rocky chaparral, coastal sage scrub, oak woodlands, desert and semi-desert scrub	Moderate potential to occur. Suitable habitat present.
<i>Crotalus ruber</i>	Red-diamond rattlesnake	None/SSC/Covered	Variety of shrub habitats where there is heavy brush, large rocks, or boulders	Moderate potential to occur. Suitable habitat present.
<i>Emys marmorata</i>	Western pond turtle	None/SSC/None	Slow-moving permanent or intermittent streams, ponds, small lakes, reservoirs with emergent basking sites; adjacent uplands used during winter	Observed during 2012 surveys in a large pond within Aliso Creek in the northern portion of the project site.
<i>Phrynosoma coronatum</i> (blainvillei population)	Coast horned lizard (listed as San Diego horned lizard in NCCP/HCP)	None/SSC/Covered	Coastal sage scrub, annual grassland, chaparral, oak and riparian woodland, coniferous forest	Moderate potential to occur. Suitable habitat present.
<i>Plestiodon skiltonianus interparietalis</i>	Coronado Island skink	None/SSC/None	Grassland, riparian and oak woodland; found in litter, rotting logs, under flat stones	Moderate potential to occur. Suitable habitat present.
<i>Salvadora hexalepis virgultea</i>	Coast patch-nosed snake	None/SSC/None	Chaparral, washes, sandy flats, rocky areas	Moderate potential to occur. Suitable habitat present.
<i>Thamnophis hammondi</i>	Two-striped garter snake	None/SSC/None	Marshes, meadows, sloughs, ponds, slow-moving water courses	High potential to occur. Suitable habitat present; high potential to occur due to pools and creek on site.

APPENDIX E (Continued)

Scientific Name	Common Name	Status Federal/ State/NCCP/HCP ¹	Primary Habitat Associations	Status On-site or Potential to Occur
<i>Birds</i>				
<i>Accipiter cooperii</i> (nesting)	Cooper's hawk	None/WL/None	Riparian and oak woodlands, montane canyons	Observed during 2012 surveys.
<i>Circus cyaneus</i> (nesting)	Northern harrier	None/SSC/Covered	Open wetlands (nesting), pasture, old fields, dry uplands, grasslands, rangelands, coastal sage scrub	Moderate potential to forage over the study area, not observed during surveys.
<i>Setophaga [Dendroica] petechia brewsteri</i> (nesting)	Yellow warbler	None/CSC /None	Nests in lowland and foothill riparian woodlands dominated by cottonwoods, alders and willows; winters in a variety of habitats	Detected during 2011 and 2012 focused surveys.
<i>Elanus leucurus</i> (nesting)	White-tailed kite	None/FP/Covered	Open grasslands, savanna-like habitats, agriculture, wetlands, oak woodlands, riparian	Pair observed during 2012 surveys.
<i>Empidonax traillii eximius</i> (nesting)	Southwestern willow flycatcher	FE, WL/BCC/SE/Covered	Riparian woodlands along streams and rivers with mature, dense stands of willows or alders; may nest in thickets dominated by tamarisk	Moderate potential to occur. Suitable habitat present, but 2011 focused surveys were negative.
<i>Icteria virens</i> (nesting)	Yellow-breasted chat	None/SSC/None	Dense, relatively wide riparian woodlands and thickets of willows, vine tangles and dense brush.	Observed during 2011 and 2012 surveys.
<i>Poliioptila californica californica</i>	Coastal California gnatcatcher	FT, BCC, WL/BCC/SSC/Covered	Coastal sage scrub, coastal sage scrub-chaparral mix, coastal sage scrub-grassland ecotone, riparian in late summer	Four pairs identified during 2011 focused surveys.
<i>Vireo bellii pusillus</i> (nesting)	Least Bell's vireo	FE, BCC, WL/BCC/SE/Covered	Nests in southern willow scrub with dense cover within 1–2 meters of the ground; habitat includes willows, cottonwoods, baccharis, wild blackberry or mesquite on desert areas	Seven pairs identified during 2011 focused surveys.

APPENDIX E (Continued)

Scientific Name	Common Name	Status Federal/ State/NCCP/HCP ¹	Primary Habitat Associations	Status On-site or Potential to Occur
<i>Mammals</i>				
<i>Antrozous pallidus</i>	Pallid bat	None/SSC/None	Rocky outcrops, cliffs, and crevices with access to open habitats for foraging	Moderate potential to forage in vicinity. No roosting habitat on site.
<i>Chaetodipus californicus femoralis</i>	Dulzura (California) pocket mouse	None/SSC/None	Coastal sage scrub, chaparral, riparian-scrub ecotone; more mesic areas	Moderate potential to occur. Suitable habitat present.
<i>Chaetodipus fallax fallax</i>	Northwestern San Diego pocket mouse	None/SSC/None	Coastal sage scrub, grassland, sage scrub-grassland ecotones, sparse chaparral; rocky substrates, loams and sandy loams	Moderate potential to occur. Suitable habitat present.
<i>Choeronycteris mexicana</i>	Mexican long-tongued bat	None/SSC/None	Desert and montane riparian, desert succulent scrub, desert scrub, and pinyon-juniper woodland. Roosts in caves, mines, and buildings.	Moderate potential to forage in vicinity. No roosting habitat on site.
<i>Eumops perotis californicus</i>	Western mastiff bat	None/SSC/None	Roosts in small colonies in cracks and small holes, seeming to prefer man-made structures	Moderate potential to forage in vicinity. No roosting habitat on site.
<i>Lasiurus blossevillii</i>	Western red bat	None/SSC/None	Forest, woodland, riparian, mesquite bosque and orchards, including fig, apricot, peach, pear, almond, walnut, and orange; roosts in tree canopy	Moderate potential to forage in vicinity. No roosting habitat on site.
<i>Myotis yumanensis</i>	Yuma myotis	None/None/None	Riparian, arid scrublands and deserts, and forests associated with water (streams, rivers, tinajas); roosts in bridges, buildings, cliff crevices, caves, mines, and trees	Moderate potential to forage in vicinity. No roosting habitat on site.
<i>Neotoma lepida intermedia</i>	San Diego desert woodrat	None/SSC/Covered	Coastal sage scrub, chaparral, pinyon-juniper woodland with rock outcrops, cactus thickets, dense undergrowth	Moderate potential to occur, woodrat sp. middens on site. Suitable habitat present
<i>Nyctinomops femorosaccus</i>	Pocketed free-tailed bat	None/SSC/None	Rocky desert areas with high cliffs or rock outcrops	Moderate potential to forage in vicinity. No roosting habitat on site.

APPENDIX E (Continued)

Scientific Name	Common Name	Status Federal/ State/NCCP/HCP ¹	Primary Habitat Associations	Status On-site or Potential to Occur
<i>Nyctinomops macrotis</i>	Big free-tailed bat	None/SSC/None	Rugged, rocky canyons	Moderate potential to forage in vicinity. No roosting habitat on site.

¹ This table includes all Central-Coastal Subregion NCCP/HCP Covered Species and species reported in the eight topographic quadrangles surrounding and including the Study Area (El Toro, Tustin, Laguna Beach, Santiago Peak, San Juan Capistrano, Canada Gobernadora, Dana Point, and San Clemente).

Federal Designations:

BCC U.S. Fish and Wildlife Service Birds of Conservation Concern
 (FD) Federally delisted; monitored for 5 years
 FE Federally listed Endangered
 FT Federally listed as Threatened
 WLBC U.S. Watch List of Birds of Conservation Concern

State Designations:

FP California Department of Fish and Game Protected and Fully Protected Species
 SE State-listed as Endangered
 ST State-listed as Threatened
 SSC California Department of Fish and Game Species of Special Concern
 WL California Department of Fish and Game Watch List Species

NCCP Designations:

Covered – Covered Species under Central-Coastal Subregion NCCP/HCP

APPENDIX F
Focused California Gnatcatcher Survey

December 27, 2011

6938-02

U.S. Fish and Wildlife Service
Attn: Recovery Permit Coordinator
6010 Hidden Valley Road
Carlsbad, California 92011

Subject: Focused California Gnatcatcher Survey for the Coastal Treatment Plant Export Sludge Force Main Project, South Orange County Water Authority, Orange County, California

Dear Recovery Permit Coordinator:

This report documents the results of three modified-protocol surveys for the coastal California gnatcatcher (*Polioptila californica californica*; gnatcatcher; CAGN) that were conducted by Dudek for the Coastal Treatment Plant Export Sludge Force Main Project. The modified survey protocol used in this study was previously developed by Dudek with the U.S. Fish and Wildlife Service (USFWS) and has been used in the past for the Chevron West Coyote Hills and Montebello Hills projects when fairly precise gnatcatcher use areas need to be identified. Dudek senior biologist Brock Ortega coordinated with USFWS biologist Christine Medak in email exchanges during April and May 2011 regarding use of this protocol for this project. Methods also were described in the 10-day pre-survey notification letter which is attached to this report as Appendix A.

The survey was conducted in July and August, 2011, on approximately 112 acres of suitable habitat within the context of an approximately 387-acre project study area. The study area is located on the grounds of the Aliso and Wood Canyons Wilderness Park. The surveys were conducted in all areas of suitable habitat, including California sagebrush scrub, disturbed California sagebrush scrub, coyote brush scrub, and Menzies goldenbush scrub within 500 feet of the proposed force main alignment.

The coastal California gnatcatcher is a federally-listed threatened species and a California Department of Fish and Game species of Special of Special Concern. It is closely associated with coastal sage scrub habitat and typically occurs below elevations of 950 feet above mean sea level (AMSL) and on slopes less than 40%, but gnatcatchers have been observed at elevations greater than 2,000 feet AMSL. The species is threatened primarily by loss, degradation, and fragmentation of coastal sage scrub habitat and is also thought to be impacted by brown-headed cowbird (*Molothrus ater*) nest parasitism.

LOCATION AND EXISTING CONDITIONS

The proposed project is located in south Orange County, California, on the grounds of the Aliso and Wood Canyons Wilderness Park which is owned and operated by the County of Orange (County). The proposed project extends from Alicia Parkway south to the South Orange County Wastewater Authority's (SOCWA) Coastal Treatment Plant. The project area is located on the U.S. Geological Survey (USGS) 7.5 minute map, San Juan Capistrano quadrangle, in an unsectioned portion of Range 8 West and Township 7 South (Figures 1 and 2). The northern terminus of the project is at latitude 33° 33' 01"N and longitude 117° 43' 02" W; the southern terminus is at latitude 33° 33' 01"N and longitude 117° 43' 02" W.

The topography within the study area varies from approximately 44 feet AMSL in Aliso Creek to approximately 200 ASML in the adjacent uplands. Aliso Creek traverses the central to western portion of the site and is characterized by steep, erosive channel banks.

According to the U.S. Department of Agriculture (USDA; 1978), upland soils within the project area are predominantly well-drained loams of the following series: Botella loam, 2 to 9% slopes; Botella clay loam, 9 to 15% slopes; Calleguas clay loam, 50% to 75% slopes, eroded; Corralitos loamy sand, moderately fine substratum; Sorrento loam, 0% to 2% slopes; and Sorrento loam, 2 to 9% slopes. In addition, there are clay soils in the following series: Bosanko clay, 30% to 50% slopes. Bosanko clays are known to support sensitive plant species (e.g., thread-leaved brodiaea) in Orange County (Roberts, pers. comm. 2000). These clay soils may also be represented in the loam series as inclusions which are too small to be mapped at the series level. Also within some of the series, notably the Calleguas clay loam, there are areas of rock/sandstone outcropping. Within Aliso Creek, soils are classified as Riverwash series and consist of unconsolidated alluvium.

The proposed project involves the replacement of two parallel 4-inch cast iron pipes that transport primary sludge and thickened waste-activated sludge from SOCWA's Coastal Treatment Plant to the Regional Treatment Plant for solids processing.

VEGETATION COMMUNITIES

Twenty-one vegetation communities or land covers were identified on site (Figure 3). These communities include native upland communities (California sagebrush scrub, disturbed California sagebrush scrub, coyote brush scrub, Menzies goldenbush scrub, California annual grassland, and coast live oak-toyon); riparian and wetlands communities (southern willow scrub, disturbed southern willow scrub, southern cottonwood willow riparian forest, arundo-dominated riparian, mulefat scrub, white alder-mulefat scrub, herbaceous wetlands, yerba mansa meadow,

coastal and valley freshwater marsh, open water and open channel); and non-native uplands (developed land, disturbed habitat, ruderal and ornamental).

Vegetation acreages are presented in Table 1, their spatial distributions are shown on Figure 3, and habitats suitable for gnatcatcher are described following the table.

Table 1
Habitat and Land Cover Acreages in Study Area

Vegetation Community/Land Cover	Acreage
Native Uplands	
California Sagebrush Scrub	83.15
Disturbed California Sagebrush Scrub	2.14
Coyote Brush Scrub	20.12
Menzies Goldenbush Scrub	6.73
California Annual Grassland	133.80
Coast Live Oak-Toyon	2.13
<i>Subtotal</i>	248.07
Riparian and Wetland Communities	
Southern Willow Scrub	34.03
Disturbed Southern Willow Scrub	0.39
Southern Cottonwood Willow Riparian Forest	50.13
Arundo-Dominated Riparian	0.53
Mulefat Scrub	14.87
White Alder-Mulefat Scrub	1.58
Herbaceous Wetlands	1.00
Yerba Mansa Meadow	0.10
Coastal and Valley Freshwater Marsh	1.58
Open Water	3.63
Open Channel	1.55
<i>Subtotal</i>	109.39
Non-Native Land Covers	
Developed Land	13.41
Disturbed Habitat	5.92
Ruderal	8.13
Ornamental	2.02
Subtotal	29.48
TOTAL	386.94

California Sagebrush Scrub (Including Disturbed Forms)

California sagebrush scrub is considered a coastal scrub vegetation alliance (CDFG 2003). It is a native plant community characterized by a variety of soft, low, aromatic, drought-deciduous shrubs, such as California sagebrush (*Artemisia californica*), California buckwheat (*Eriogonum fasciculatum*), California bush sunflower (*Encelia californica*), and sages (*Salvia* spp.), with scattered evergreen shrubs, including lemonadeberry (*Rhus integrifolia*), laurel sumac (*Malosma laurina*), and toyon (*Heteromeles arbutifolia*). It typically develops on steep, south-facing slopes and at times, though rarely, occurs on flooded low-gradient deposits along streams in which are scattered willows and mulefat, depending on the site conditions. Soils on which this alliance occurs are described as alluvial or colluvial-derived and shallow (Sawyer and Keeler-Wolf 1995). California sagebrush scrub rarely occurs as a continuous vegetation community but rather occurs in a patchy or mosaic distribution pattern throughout its range (USFWS 1997). Shrub cover is rarely 100% (O’Leary 1990a and 1990b; Beyers and Wirtz II 1995).

Within the study area, California sagebrush scrub was mapped in areas supporting a minimum of 50% cover of native shrubs and subshrubs including California sagebrush, California encelia, giant wild rye (*Leymus condensatus*), golden yarrow, black sage (*Salvia mellifera*), white sage (*Salvia apiana*), deerweed (*Lotus scoparius*), toyon, and hollyleaf redberry (*Rhamnus ilicifolia*). Non-native and exotic species comprised roughly 10–15% of the total area of this community including, but not limited to, black mustard, and bristly ox-tongue (*Picris echioides*). Bare ground in some cases comprised up to 20% cover. Disturbed forms of California sagebrush scrub was mapped in areas with a lower than 50% cover of native shrubs and a 15–50% cover of non-native and exotic species.

Coyote Brush Scrub

Coyote brush scrub alliance communities include coyote brush as the sole or dominant shrub in the canopy. Coyote brush scrub has a continuous or intermittent shrub canopy less than 2 meters (7 feet) in height with a variable ground layer (Sawyer and Keeler-Wolf 1995).

Species associated with the coyote brush scrub alliance typically include black sage (*Salvia mellifera*), California buckwheat, California blackberry (*Rubus ursinus*), California coffeeberry (*Rhamnus californica*), California figwort (*Scrophularia* sp.), California sagebrush, creeping ryegrass (*Leymus triticoides*), poison oak (*Toxicodendron diversilobum*), seaside woolly sunflower (*Eriophyllum stoechadifolium*), salal (*Gaultheria shallon*), sword fern (*Polystichum munitum*), tufted hairgrass (*Deschampsia cespitosa*), yellow bush lupine (*Lupinus arboreus*),

yellow sand-verbena (*Abronia latifolia*), wax myrtle (*Myrica californica*), and white sage (Sawyer and Keeler-Wolf 1995).

The coyote brush scrub alliance often occurs in stabilized dunes of coastal bars, river mouths, spits along coastline, coastal bluffs, open slopes, and terraces (Sawyer and Keeler-Wolf 1995). Within the study area, the coyote brush scrub alliance forms an open to intermittent shrub layer. The herbaceous layer is open to intermittent and typically has established stands of non-native grasses and herbs. Trees are occasionally emergent. The on-site alliance is dominated by coyote brush and contains California sagebrush, laurel sumac, and purple sage. California buckwheat, chaparral bushmallow, saw-toothed goldenbush, blue elderberry, and mulefat (*Baccharis salicifolia*) are occasionally present. The herbaceous layer includes foxtail chess, rigput brome, black mustard, Maltese star-thistle, fennel, purple needlegrass (*Nassella pulchra*), black mustard, and giant wild rye.

Menzies Goldenbush Scrub

Menzies goldenbush scrub (Gray and Bramlett 1992) is a plant association which is dominated by coastal goldenbush (*Isocoma menziesii* var. *menziesii*). It is not a plant community identified in Holland (1986) and would typically be included in the California sage scrub community for mapping purposes. It has been separated from California sage scrub in this report because it supports nearly monotypic patches of coastal goldenbush and appears most commonly along road edges and on manufactured slopes, although there are areas where it occurs on the upper floodplain terraces of Aliso Creek. In these instances, it intergrades with mulefat scrub and southern willow scrub understory species such as western ragweed.

METHODS

Focused surveys for the California gnatcatcher (*Polioptila californica californica*; gnatcatcher) were performed by Dudek biologists Tricia L. Wotipka (independent investigator under permit #TE840619-3), Jeffrey D. Priest (permit #TE840619-03), Anita M. Hayworth, PhD (permit #781084), and Kevin M. Shaw in July and August 2011 following a modified survey protocol (Table 2). Dudek senior biologist Brock Ortega coordinated with USFWS biologist Christine Medak in email exchanges during April and May 2011 regarding use of this modified protocol for this project. Methods also were described in the 10-day pre-survey notification letter which is attached to this report as Appendix A.

Table 2
Survey Details and Conditions

Date	Time	Personnel	Survey Conditions (temp., skies, wind)
7/21/11	0715-1200	TLW, JDP	66–76°F ; 2–8 mph winds; 100–0% clouds
8/9/11	0645-1200	TLW, JDP	62–74°F ; 2–3 mph winds; 100–75% clouds
8/17/11	0815-1100	TLW, KMS, AMH	66–77°F ; 2–4 mph winds; 0% clouds

Personnel

JDP: Jeffrey D. Priest
TLW: Tricia L. Wotipka
AMH: Anita M. Hayworth
KMS: Kevin M. Shaw

California gnatcatcher was first located by permitted biologists using a taped recording of gnatcatcher vocalizations, when necessary. The tape of recorded California gnatcatcher vocalizations was played approximately every 50–100 feet depending on assumed sound attenuation due to topography to induce responses from potentially present California gnatcatchers. If a California gnatcatcher was detected, tape-playback was terminated to minimize potential for harassment. Once a pair or individual was located, an attempt was made to locate the other bird of the pair and determine each bird’s sex. If only one bird was located and another bird of the opposite sex did not appear within a reasonable amount of time, a note was made to re-find and follow this bird at a later date to determine if it is paired or unpaired.

Once a bird or pair was located, the first person followed the gnatcatcher pair (or individual), the second (and in some cases third observer) observer began searching for a second pair/individual nearby that may have been occupying an adjacent territory. The two observers synchronized their watches, communicated with each other using walkie-talkies or phones, and kept a record of the time he or she had birds under observation. Simultaneous observation of males and females together in two nearby locations established the presence of two pairs. In many cases, individual males can be recognized by unique plumage markings. Where two males were clearly recognizable by differences in their plumage, then simultaneous observations may not be necessary. Once it was determined that two pairs are present in adjacent territories, polygons were drawn on an aerial map showing the approximate separation of these two pairs. In situations where determination of one versus two pairs were otherwise unclear (e.g., too much elapsed time between observations), distinguishing characters about the male’s cap plumage may be used to make a determination. If there are no distinguishing characters between the males’ plumage, then the particular general area in question was re-visited at the end of the initial survey pass of the entire site to further assess California gnatcatcher population in the area. A second survey visit was conducted in all areas where individual gnatcatchers were initially

observed to determine if a second bird was present, and where it is unclear if there were one or more pairs in a given area.

Recording the times that gnatcatchers were under observation, especially the beginning and end times, was essential for this population assessment. During all survey visits, each observer recorded the time he or she had birds under observation. Simultaneous observation of males and females together in two nearby locations established the presence of two pairs. Walkie-talkies or phones were used to communicate between observers and help determine if the same gnatcatchers are flying back and forth to areas where observers were located.

A 200-scale (1"=200') digital ortho quarter quad map of the site overlaid with the project buffer zone, vegetation polygons, and topography was used to map any California gnatcatchers detected. Binoculars (8×32, and 10×50) were used to aid in detecting and identifying bird species. Weather conditions, time of day, and season were appropriate for the detection of California gnatcatcher. All mapped locations of this species were digitized by Dudek using ArcGIS.

RESULTS

Four pairs of California gnatcatchers and two un-capped individuals were observed in the study area by Dudek during 2011 focused surveys (Figure 3). RECON had observed one additional gnatcatcher pair with a juvenile along the east side of the creek during 2009 focused surveys. This pair was not observed during 2011 surveys performed by Dudek. A single, un-capped gnatcatcher, was identified by Dudek biologist Brock A. Ortega during focused surveys for least Bell's vireo and southwestern willow flycatcher in June 2011 and was later confirmed by Dudek biologists Tricia L. Wotipka and Jeffrey D. Priest on August 9, 2011, during focused California gnatcatcher surveys. Another single, un-capped California gnatcatcher was observed on the east side of Aliso Creek in suitable habitat just south of the park ranger station. This individual was later confirmed to be present on the east and west side of Aliso Creek by Dudek biologists Dr. Anita M. Hayworth, Tricia L. Wotipka, and Kevin M. Shaw during a subsequent gnatcatcher survey on August 17, 2011.

Dudek observed three pairs of California gnatcatcher (CAGN #1, #3 and #5) on the east side of Aliso Creek; RECON observed one additional pair during their 2009 focused survey effort (not shown on map because it is located away from the project's 500-foot buffer zone).

A total of 94 wildlife species were observed during this and other focused surveys for special-status species conducted by Dudek for the project in 2011. Species observed include 2

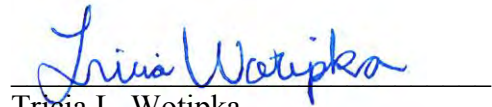
Recovery Permit Coordinator

*Subject: Focused Coastal California Gnatcatcher Survey for the Coastal Treatment Plant
Export Sludge Force Main Project, Orange County, California*

amphibians, 5 reptiles, 1 fish, 64 birds, 10 mammals, and 12 invertebrates. A full list of wildlife species observed in the study area during the surveys is provided in Appendix B.

I certify that the information in this survey report and attached exhibits fully and accurately represent my work.

Sincerely,



Tricia L. Wotipka
Project Manager / Wetlands Specialist

*Att: Figures 1-3
Appendix A: 10-day Pre-Survey Notification Letter
Appendix B: Cumulative List of Wildlife Species Observed or Detected at the Project Site*

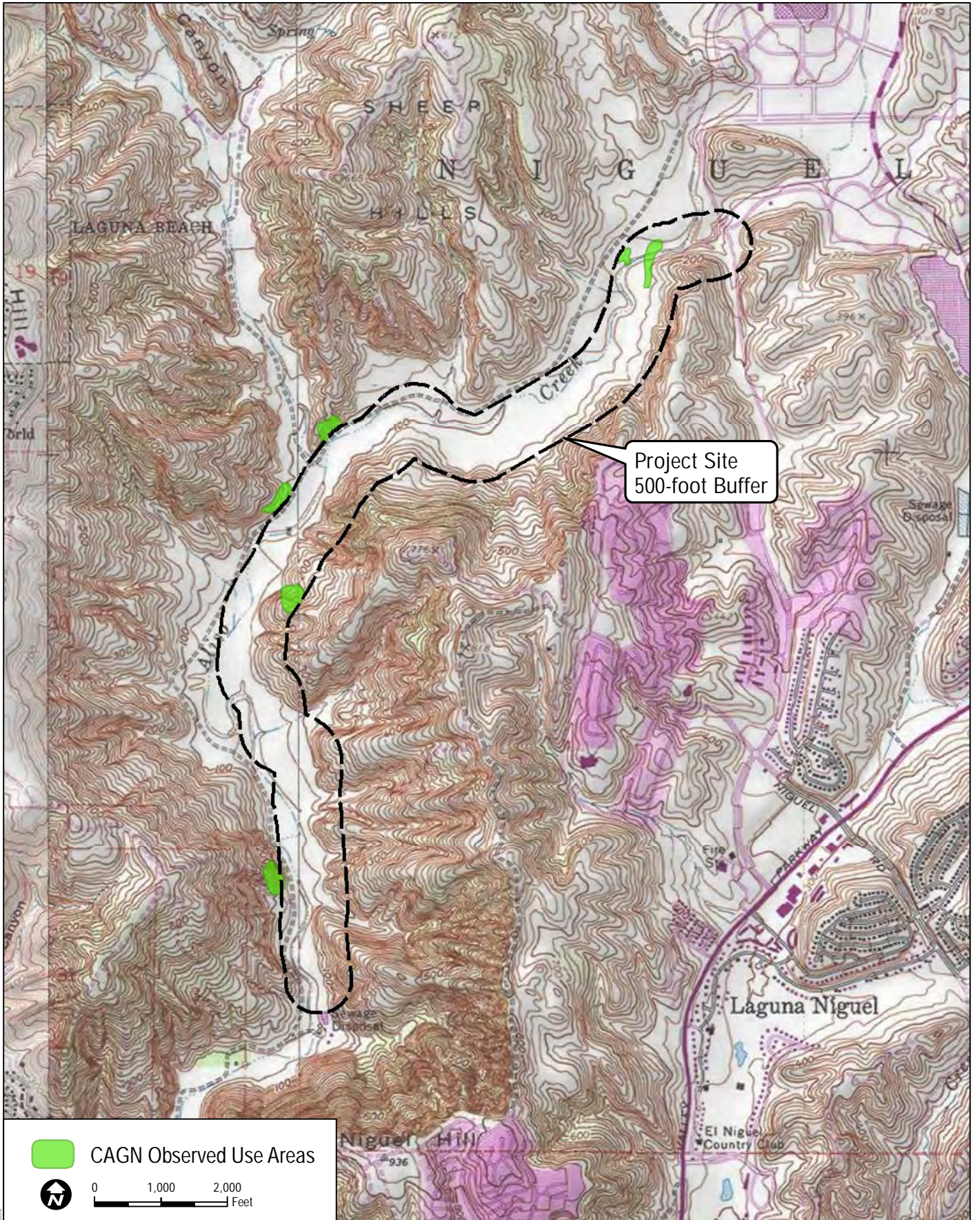
cc: Brian Peck, South Orange County Wastewater Authority

Recovery Permit Coordinator

*Subject: Focused Coastal California Gnatcatcher Survey for the Coastal Treatment Plant
Export Sludge Force Main Project, Orange County, California*


REFERENCES

- Beyers, J.L., Wirtz WO. 1995. Vegetative Characteristics of Coastal Sage Scrub Sites Used by California Gnatcatchers: Implications for Management in a Fire-Prone Ecosystem. Proceedings-Fire Effects on Rare and Endangered Species and Habitats Conference, November 13-16, 1995.
- California Department of Fish and Game (CDFG). 2003. List of California Terrestrial Natural Communities Recognized by the California Natural Diversity Database (CNDDDB). Wildlife and Habitat Data Analysis Branch, Vegetation Classification and Mapping Program. September 2003 edition.
- CDFG. 2007. *List of California Vegetation Alliances*.
- Gray, J. and D. Bramlet. 1992. *Habitat Classification System; Natural Resources Geographic Information System (GIS) Project*. Prepared for County of Orange Environmental Management Agency. May.
- Holland, R. F. 1986. *Preliminary descriptions of the terrestrial natural communities of California*. Nongame-Heritage Program, California Department of Fish and Game.
- O'Leary, J.F. 1990a. Post-fire diversity patterns in two subassociations of California coastal sage scrub. *Journal of Vegetation Science* 1: 173-180.
- O'Leary, J.F. 1990b. California Coastal Sage Scrub: General Characteristics and Considerations for Biological Conservation. Pages 24-41 in *Endangered Plant Communities of Southern California*, Alan Schoenherr, ed. Southern California Botanists, Special Publications No. 3.
- Roberts, F.R. 2000. Consulting Botanist. Personal communication with Julie Vanderwier. September 22.
- Sawyer, J.O., and T. Keeler-Wolf. 1995. *A Manual of California Vegetation*. Sacramento, California: California Native Plant Society.
- USDA (United States Department of Agriculture), Soil Conservation Service and Forest Service. 1978. Soil Survey of Orange County and Western Riverside County, California. September.
- USFWS (U.S. Fish and Wildlife Service). 1997. USFWS, Coastal California Gnatcatcher (*Poliophtila californica californica*) Survey Guidelines. February. Carlsbad, California.



Project Site
500-foot Buffer

 CAGN Observed Use Areas

 0 1,000 2,000 Feet

DUDEK

SOURCE: USGS 7.5-Minute Series San Juan Capistrano Quadrangle.

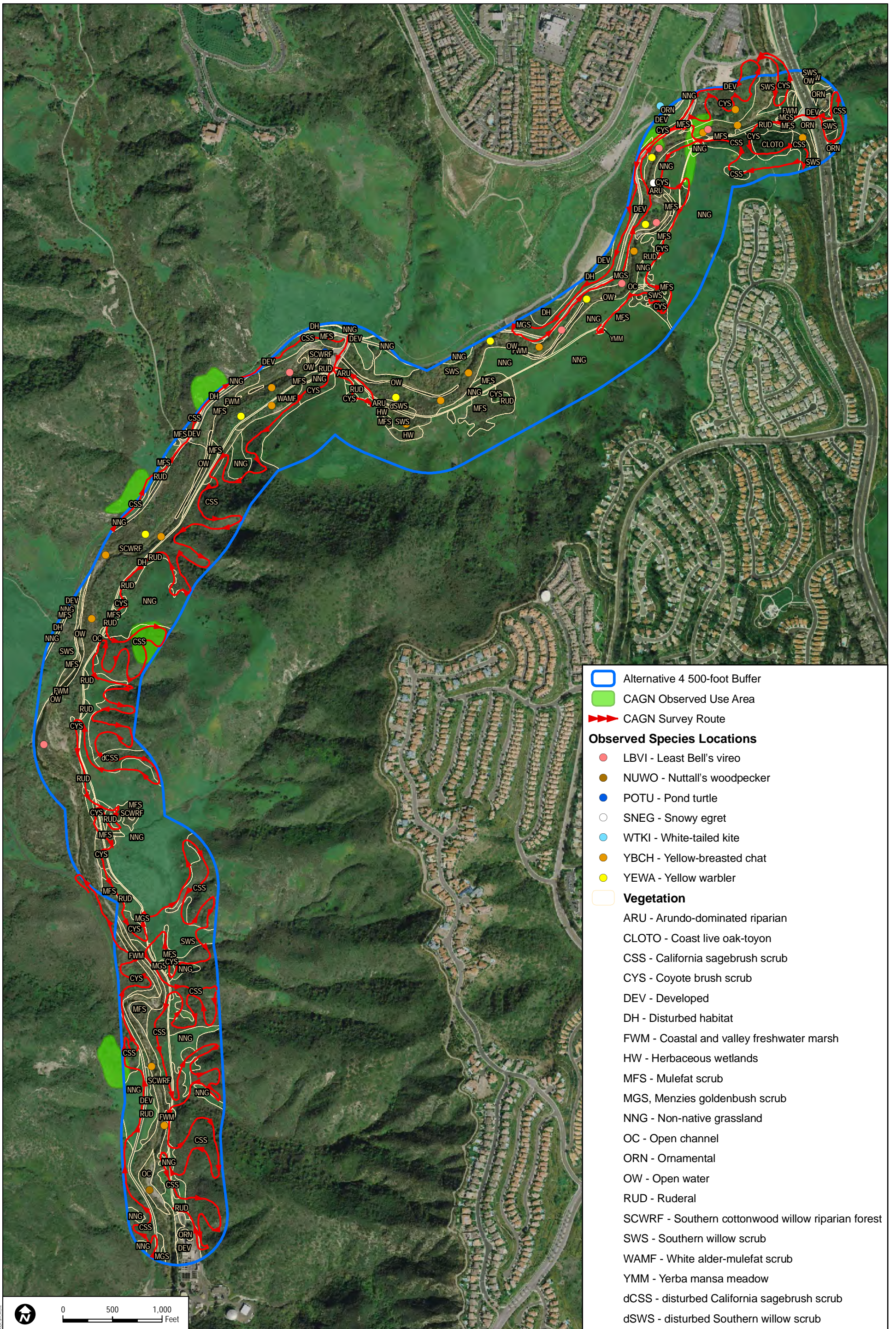
6938-02

DECEMBER 2011

FOCUSED CALIFORNIA GNATCATCHER SURVEY REPORT

FIGURE 2
Project Vicinity

Z:\Projects\6938\693802\MAPS\CAGN



□ Alternative 4 500-foot Buffer
■ CAGN Observed Use Area
→ CAGN Survey Route

Observed Species Locations

- LBVI - Least Bell's vireo
- NUWO - Nuttall's woodpecker
- POTU - Pond turtle
- SNEG - Snowy egret
- WTKI - White-tailed kite
- YBCH - Yellow-breasted chat
- YEWA - Yellow warbler

Vegetation

- ARU - Arundo-dominated riparian
- CLOTO - Coast live oak-toyon
- CSS - California sagebrush scrub
- CYS - Coyote brush scrub
- DEV - Developed
- DH - Disturbed habitat
- FWM - Coastal and valley freshwater marsh
- HW - Herbaceous wetlands
- MFS - Mulefat scrub
- MGS, Menzies goldenbush scrub
- NNG - Non-native grassland
- OC - Open channel
- ORN - Ornamental
- OW - Open water
- RUD - Ruderal
- SCWRF - Southern cottonwood willow riparian forest
- SWS - Southern willow scrub
- WAMF - White alder-mulefat scrub
- YMM - Yerba mansa meadow
- dCSS - disturbed California sagebrush scrub
- dSWS - disturbed Southern willow scrub

APPENDIX A

10-Day Pre-Survey Notification Letter

June 20, 2011

6938-02

U.S. Fish and Wildlife Service
Attn: Recovery Permit Coordinator
6010 Hidden Valley Road, Suite 101
Carlsbad, CA 92011

Subject: Amended Notification of Surveys for the California Gnatcatcher for the Coastal Treatment Plan Export Sludge Force Main Project, Orange County, California, Permit Nos. TE840619, TE813545, TE051250-1, and TE051248

Dear Recovery Permit Coordinator:

On May 6, 2011 Dudek submitted to the U.S. Fish and Wildlife Service (USFWS) a notification to conduct focused, protocol-level surveys for the California gnatcatcher (*Polioptila californica californica*; CAGN) within a 250-acre portion of the Aliso and Wood Canyons Wilderness Park. Surveys would be conducted under the authority granted by Permit Numbers TE813545, TE051250-1, TE051248, and TE840619. The project involves the replacement of approximately 15,000 linear feet of an export sludge pipeline along the east side of Aliso Creek from Alicia Parkway to the existing Coastal Treatment Plan (CTP).

Based on recommendations from the USFWS, Dudek proposes to modify its survey method to better address the number of pairs that might be affected by the proposed project, and the amount of surrounding unoccupied habitat that may be used by CAGN on a temporary basis while work is being conducted. These methods have been successfully employed by Dudek in the past for the Chevron Fullerton project. Only experienced staff will work on this project. The survey area will include all sage scrub habitat within 500 feet of the project centerline.

Estimating Population Size

CAGN will be located using a taped recording of gnatcatcher vocalizations, when necessary. The tape of recorded California gnatcatcher vocalizations will be played approximately every 50 to 100 feet depending on assumed sound attenuation due to topography to induce responses from potentially present California gnatcatchers. If a California gnatcatcher is detected, tape-playback will be terminated to minimize potential for harassment.

Once a pair or individual is located, an attempt will be made to locate the other bird of the pair and determine each bird's sex. If only one bird is located and another bird of the opposite sex does not appear within a reasonable amount of time, a note will be made to re-find and follow this bird at a later date to determine if it is paired or unpaired.

Recovery Permit Coordinator

Subject: Amended Notification of Surveys for the California Gnatcatcher for the Coastal Treatment Plan Export Sludge Force Main Project, Orange County, California, Permit Nos. TE840619, TE813545, TE051250-1, and TE051248

Once a bird or pair is located, the first person will follow the gnatcatcher pair (or individual), the second (and in some cases third or fourth observers) observer will begin searching for a second pair/individual nearby that may be occupying an adjacent territory. The two observers will synchronize their watches, communicate with each other using walkie-talkies or phones, and each observer will keep a record of the time he or she had birds under observation. Simultaneous observation of males and females together in two nearby locations will establish the presence of two pairs. NOTE: In many cases, individual males can be recognized by unique plumage markings. Where two males were clearly recognizable by differences in their plumage, then simultaneous observations may not be necessary.

Once it is determined that two pairs are present in adjacent territories, polygons will be drawn on an aerial map showing the approximate separation of these two pairs. In situations where determination of one versus two pairs are otherwise unclear (e.g., too much elapsed time between observations), distinguishing characters about the male's cap plumage may be used to make a determination. If there are no distinguishing characters between the males' plumage, then the particular general area in question will be re-visited at the end of the initial survey pass of the entire site to further assess gnatcatcher population in the area. A second survey visit will be conducted in all areas where individual gnatcatchers were initially observed to determine if a second bird was present, and where it is unclear if there were one or more pairs in a given area.

Because the survey effort may take many days to finish, an effort will be made to fully survey areas that appeared to be contiguous, either by habitat or topography, so that discrete survey areas may be completely surveyed with minimal risk of over estimating the number of pairs in an area. When teams arrive the following day, they will start their survey effort by locating the closest pairs from the previous day and then start searching for new adjacent pairs as described above. In this way, we will be reasonably sure that pairs were not being duplicated and we were detecting all of the pairs.

Data Recordation

Recording the times that gnatcatchers are under observation, especially the beginning and end times, is essential for this population assessment. During all survey visits, each observer will recorded the time he or she has birds under observation. Simultaneous observation of males and females together in two nearby locations can establish the presence of two pairs.

Conversely, there may be instances where gnatcatchers were observed at slightly differing times by two or more biologists in two nearby locations. Walkie-talkies or phones will be used to

Recovery Permit Coordinator

Subject: Amended Notification of Surveys for the California Gnatcatcher for the Coastal Treatment Plan Export Sludge Force Main Project, Orange County, California, Permit Nos. TE840619, TE813545, TE051250-1, and TE051248

communicate between observers and help determine if the same gnatcatchers are flying back and forth to areas where observers were located.

100-scale (1 inch = 100 feet) aerial maps of the site will be used to map and record locations and movements of California gnatcatchers detected. Binoculars will be used to aid in detecting and identifying individual gnatcatchers and other bird species.

This letter will be sent to your office via fax on June 20, 2011. Hence, according to standard USFWS protocol, surveys may commence as early as June 30, 2011, unless otherwise stated by the USFWS. A map of the project area is attached for your use.

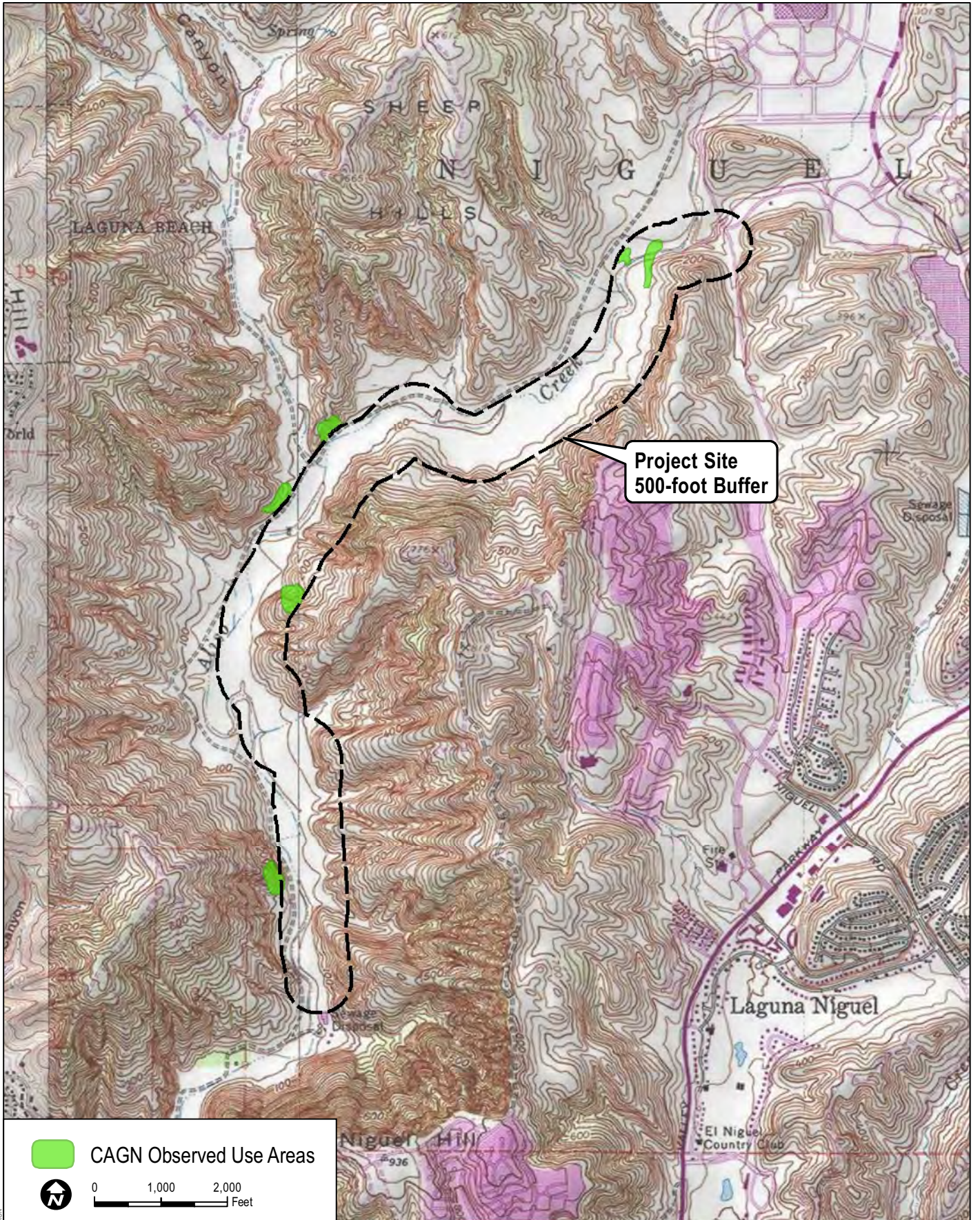
Thank you for your consideration. Please contact me at (760) 479-4295 if there are any questions concerning the modified survey methods.

Sincerely,




Tricia Wotipka
Wildlife Biologist

Att: Project Vicinity Map



Project Site
500-foot Buffer

 CAGN Observed Use Areas



0 1,000 2,000
Feet

DUDEK

SOURCE: USGS 7.5-Minute Series San Juan Capistrano Quadrangle.

6938-02

DECEMBER 2011

FOCUSED CALIFORNIA GNATCATCHER SURVEY REPORT

FIGURE 2
Project Vicinity

APPENDIX B

*Cumulative List of Wildlife Species
Observed or Detected at the Project Site*

APPENDIX B
List of Wildlife Species Observed or Detected at the Project Site

WILDLIFE SPECIES – VERTEBRATES

REPTILES

ANGUIDAE – ALLIGATOR LIZARDS

Gerrhonotus multicarinatus – southern alligator lizard

EMYDIDAE – BOX AND WATER TURTLE

Actinemys marmorata pallida – southwestern pond turtle

IGUANIDAE – IGUANID LIZARDS

Sceloporus occidentalis – western fence lizard

Uta stansburiana – side-blotched lizard

VIPERIDAE – VIPERS

Crotalus oreganus – western rattlesnake

AMPHIBIANS

HYLIDAE – TREEFROGS

Hyla regilla – Northern Pacific treefrog

RANIDAE – TRUE FROGS

* *Rana catesbeiana* – bullfrog

FISH

CYPRINIDAE – CYPRINIDS

* *Cyprinus carpio* – common carp

BUTTERFLIES AND MOTHS

NYMPHALIDAE – BRUSH-FOOTED BUTTERFLIES

Coenonympha californica californica – California ringlet

Danaus plexippus – monarch

Junonia coenia – buckeye

Limnitis lorquini – Lorquin's admiral

Nymphalis antiopa – mourning cloak

PAPILIONIDAE – SWALLOWTAILS

Papilio eurymedon – pale swallowtail

APPENDIX B (Continued)

Papilio rutulus – tiger swallowtail

Papilio zelicaon lucas – anise swallowtail

PIERIDAE – WHITES AND SULFURS

Anthocharis sara sara – Pacific Sara orangetip

Colias eurydice – California dogface

Pieris rapae rapae – cabbage butterfly

Pontia protodice – checkered white

BIRDS

ACCIPITRIDAE – HAWKS

Accipiter cooperii – Cooper’s hawk

Buteo lineatus – red-shouldered hawk

Buteo jamaicensis – red-tailed hawk

Elanus leucurus – white-tailed kite

AEGITHALIDAE – BUSHTITS

Psaltriparus minimus – bushtit

ARDEIDAE – HERONS

Ardea alba – great egret

Ardea herodias – great blue heron

Egretta thula – snowy egret

ANATIDAE – WATERFOWL

Anas platyrhynchos – mallard

CAPRIMULGIDAE – GOATSUCKERS

Chordeiles acutipennis – lesser nighthawk

CARDINALIDAE – CARDINALS AND GROSBEAKS

Passerina caerulea – blue grosbeak

Pheucticus melanocephalus – black-headed grosbeak

CATHARTIDAE – NEW WORLD VULTURES

Cathartes aura – turkey vulture

CHARADRIIDAE – PLOVERS

Charadrius vociferus – killdeer

APPENDIX B (Continued)

COLUMBIDAE – PIGEONS AND DOVES

- * *Columba livia* – rock dove
- Zenaida macroura* – mourning dove

CORVIDAE – JAYS AND CROWS

- Apelocoma californica* – western scrub-jay
- Corvus brachyrhynchos* – American crow
- Corvus corax* – common raven

CUCULIDAE – CUCKOOS AND ROADRUNNERS

- Geococcyx californianus* – greater roadrunner

EMBERIZIDAE – BUNTINGS AND SPARROWS

- Melospiza melodia* – song sparrow
- Pipilo crissalis* – California towhee
- Pipilo maculatus* – spotted towhee

FALCONIDAE – FALCONS

- Falco sparverius* – American kestrel

FRINGILLIDAE – FINCHES

- Carpodacus mexicanus* – house finch
- Carduelis psaltria* – lesser goldfinch
- Carduelis tristis* – American goldfinch

HIRUNDINIDAE – SWALLOWS

- Hirundo rustica* – barn swallow
- Petrochelidon pyrrhonota* – cliff swallow
- Stelgidopteryx serripennis* – northern rough-winged swallow

ICTERIDAE – BLACKBIRDS AND ORIOLES

- Icterus cucullatus* – hooded oriole
- Molothrus ater* – brown-headed cowbird

LARIDAE – GULLS AND TERNS

- Larus* sp. – gull

MIMIDAE – THRASHERS

- Mimus polyglottos* – northern mockingbird
- Toxostoma redivivum* – California thrasher

APPENDIX B (Continued)

PARULIDAE – WOOD WARBLERS

- Dendroica petechia* – yellow warbler
- Geothlypis trichas* – common yellowthroat
- Icteria virens* – yellow-breasted chat
- Wilsonia pusilla* – Wilson’s warbler

PARULIDAE – WOOD WARBLERS

- Geothlypis trichas* – common yellowthroat
- Wilsonia pusilla* – Wilson’s warbler

PHASIANIDAE – PHEASANTS AND QUAILS

- Callipepla californica* – California quail

PICIDAE – WOODPECKERS

- Picoides nuttallii* – Nuttall’s woodpecker
- Picoides scalaris* – ladder-backed woodpecker
- Picoides pubescens* – downy woodpecker

PTILOGONATIDAE – SILKY-FLYCATCHERS

- Phainopepla nitens* – phainopepla

REGULIDAE – KINGLETS

- Regulus calendula* – ruby-crowned kinglet

SYLVIIDAE – GNATCATCHERS

- Polioptila californica* – California gnatcatcher

TIMALIIDAE – LAUGHINGTHRUSH AND WRENTIT

- Chamaea fasciata* – wrentit

TROCHILIDAE – HUMMINGBIRDS

- Archilochus alexandri* – black-chinned hummingbird
- Calypte anna* – Anna’s hummingbird
- Calypte costae* – Costa’s hummingbird
- Selasphorus rufus* – rufous hummingbird
- Selasphorus sasi* – Allen’s hummingbird

TROGLODYTIDAE – WRENS

- Thryomanes bewickii* – Bewick’s wren
- Troglodytes aedon* – house wren

APPENDIX B (Continued)

TURDIDAE – THRUSHES AND BABBLERS

Sialia mexicana – western bluebird

TYRANNIDAE – TYRANT FLYCATCHERS

Empidonax difficilis – Pacific-slope flycatcher

Myiarchus cinerascens – ash-throated flycatcher

Sayornis nigricans – black phoebe

Sayornis saya – Say’s phoebe

Tyrannus vociferans – Cassin’s kingbird

Tyrannus verticalis – western kingbird

VIREONIDAE – VIREOS

Vireo bellii pusillus – least Bell’s vireo

MAMMALS

CANIDAE – WOLVES AND FOXES

Canis latrans – coyote

CERVIDAE – DEERS

Odocoileus hemionus – mule deer

FELIDAE – CATS

Felis concolor – mountain lion (scat)

GEOMYIDAE – POCKET GOPHERS

Thomomys bottae – Botta’s pocket gopher

LEPORIDAE – HARES AND RABBITS

Sylvilagus bachmani – brush rabbit

MURIDAE – RATS AND MICE

Neotoma sp. – woodrat (midden)

MUSTELIDAE – WEASELS, SKUNKS, AND OTTERS

Mustela sp. – weasel (scat)

PROCYONIDAE – RACCOONS AND RELATIVES

Procyon lotor – common raccoon

Lynx rufus – bobcat

APPENDIX B (Continued)

SCIURIDAE – SQUIRRELS

Spermophilus beecheyi – California ground squirrel

* signifies introduced (non-native) species

APPENDIX G

Focused Least Bell's Vireo and Southwestern Willow Flycatcher Survey

December 30, 2011

6938-02

U.S. Fish and Wildlife Service
Attn: Recovery Permit Coordinator
6010 Hidden Valley Road
Carlsbad, California 92009

Subject: Focused Least Bell's Vireo and Southwestern Willow Flycatcher Surveys for the Coastal Treatment Plant Export Sludge Force Main Project, South Orange County Wastewater Authority, Orange County, California

Dear Recovery Permit Coordinator:

This report documents the results of fourteen (14) protocol-level presence/absence surveys for the state- and federally-listed endangered least Bell's Vireo (*Vireo bellii pusillus*; vireo), and ten (10) protocol-level presence/absence surveys for the state- and federally-listed endangered southwestern willow flycatcher (*Empidonax traillii extimus*; flycatcher). These focused surveys were conducted within an approximately 386.94-acre study area on the grounds of the Aliso and Wood Canyons Wilderness Park under the authority granted by Permit Numbers TE-813545, TE-1011482, and TE-840619 by Dudek in 2011. These surveys were conducted within all suitable habitat onsite (*i.e.*, southern willow scrub and other suitable riparian habitat).

The southwestern willow flycatcher and least Bell's vireo are closely associated with riparian habitats, especially densely-vegetated willow scrub and riparian forest vegetation. These species are threatened primarily by loss, degradation, and fragmentation of riparian habitats. They also are impacted by brown-headed cowbird (*Molothrus ater*) nest parasitism.

LOCATION AND EXISTING CONDITIONS

The proposed project is located in the southern end of Orange County, California on the grounds of the Aliso and Wood Canyons Wilderness Park, a park owned and operated by the County of Orange (County). The proposed project extends from Alicia Parkway south to the South Orange County Wastewater Authority's (SOCWA) Coastal Treatment Plant. The project area is located on the U.S. Geological Survey (USGS) 7.5 minute map, San Juan Capistrano quadrangle, in an unsectioned portion of Range 8 West and Township 7 South (*Figures 1 and 2*). The northern terminus of the project is at

Recovery Permit Coordinator

Subject: Focused Least Bell's Vireo and Southwestern Willow Flycatcher Surveys for the Coastal Treatment Plant Export Sludge Force Main Project, Orange County, California

latitude 33° 33' 01"N and longitude 117° 43' 02" W; the southern terminus is at latitude 33° 33' 01"N and longitude 117° 43' 02" W.

The topography within the study area varies from approximately 44 feet above mean sea level (AMSL) in Aliso Creek to approximately 200 ASML in the adjacent uplands. Aliso Creek traverses the central to western portion of the site and is characterized by steep, erosive channel banks.

According to the U.S. Department of Agriculture (1978), upland soils within the project area are predominantly well-drained loams of the following series: Botella loam, 2 to 9 percent slopes; Botella clay loam, 9 to 15 percent slopes; Calleguas clay loam, 50 to 75 percent slopes, eroded; Corralitos loamy sand, moderately fine substratum; Sorrento loam, 0 to 2 percent slopes; and Sorrento loam, 2 to 9 percent slopes. In addition, there are clay soils in the following series: Bosanko clay, 30 to 50 percent slopes. Bosanko clays are known to support sensitive plant species (e.g., thread-leaved brodiaea) in Orange County (Roberts, pers. comm. 2000). These clay soils may also be represented in the loam series as inclusions which are too small to be mapped at the series level. Also within some of the series, notably the Calleguas clay loam, there are areas of rock/sandstone outcropping. Within Aliso Creek, soils are classified as Riverwash series and consist of unconsolidated alluvium.

The proposed project involves the replacement of two parallel four-inch cast iron pipes that transport primary sludge and thickened waste-activated sludge from SOCWA's Coastal Treatment Plant (CTP) to the Regional Treatment Plant (RTP) for solids processing.

VEGETATION COMMUNITIES

Twenty-one vegetation communities or land covers were identified onsite (*Figure 3*). These communities include native upland communities (California sagebrush scrub, disturbed California sagebrush scrub, coyote brush scrub, Menzies goldenbush scrub, California annual grassland, and coast live oak-toyon); riparian and wetlands communities (southern willow scrub, disturbed southern willow scrub, southern cottonwood willow riparian forest, arundo-dominated riparian, mulefat scrub, white alder-mulefat scrub, herbaceous wetlands, yerba mansa meadow, coastal and valley freshwater marsh, open water and open channel); and non-native uplands (developed land, disturbed habitat, ruderal and ornamental).

Vegetation acreages are presented in *Table 1*, their spatial distributions are shown on *Figure 3*, and habitats suitable for vireo and flycatcher are described following the table.

Recovery Permit Coordinator

Subject: Focused Least Bell's Vireo and Southwestern Willow Flycatcher Surveys for the Coastal Treatment Plant Export Sludge Force Main Project, Orange County, California

**TABLE 1
HABITAT AND LAND COVER ACREAGES IN STUDY AREA**

Vegetation Community/Land Cover	Acreage
<i>Native Uplands</i>	
California Sagebrush Scrub	83.15
Disturbed California Sagebrush Scrub	2.14
Coyote Brush Scrub	20.12
Menzies Goldenbush Scrub	6.73
California Annual Grassland	133.80
Coast Live Oak-Toyon	2.13
<i>Subtotal</i>	<i>248.07</i>
<i>Riparian and Wetland Communities</i>	
Southern Willow Scrub	34.03
Disturbed Southern Willow Scrub	0.39
Southern Cottonwood Willow Riparian Forest	50.13
Arundo-Dominated Riparian	0.53
Mulefat Scrub	14.87
White Alder-Mulefat Scrub	1.58
Herbaceous Wetlands	1.00
Yerba Mansa Meadow	0.10
Coastal and Valley Freshwater Marsh	1.58
Open Water	3.63
Open Channel	1.55
<i>Subtotal</i>	<i>109.39</i>
<i>Non-Native Land Covers</i>	
Developed Land	13.41
Disturbed Habitat	5.92
Ruderal	8.13
Ornamental	2.02
<i>Subtotal</i>	<i>29.48</i>
TOTAL	386.94

Southern Willow Scrub and Disturbed Southern Willow Scrub

Southern willow scrub is a broad-leafed, winter-deciduous riparian community dominated by willow (*Salix*) species, with scattered Fremont's cottonwood (*Populus fremontii*) and western sycamore (*Platanus racemosa*). Due to the density of the shrub canopy, the understory is fairly depauperate. This community is typically found along intermittent streams and creeks in southern California (Holland 1986). Within the project area, southern willow scrub is primarily associated with Sulphur Creek, Aliso Creek, and tributaries to Aliso Creek within the Aliso and Wood Canyons Wilderness

Recovery Permit Coordinator

Subject: Focused Least Bell's Vireo and Southwestern Willow Flycatcher Surveys for the Coastal Treatment Plant Export Sludge Force Main Project, Orange County, California

Park. Southern willow scrub is found along the length of Aliso Creek and is dominated by arroyo willow (*Salix lasiolepis*) and sandbar willow (*Salix exigua*), with scattered individuals of young black willow (*Salix gooddingii*) and western sycamore. This community occurs in a matrix with mulefat scrub and freshwater marsh. In some areas, Fremont's cottonwood and white alder (*Alnus rhombifolia*) are present in small patches; however, it appears that some of these areas may have been planted. White alder is not known from the Aliso drainage (Roberts, pers. comm. 2000). Where present, understory species include mugwort (*Artemisia douglasiana*), cocklebur (*Xanthium* sp.), and western ragweed (*Ambrosia psilostachya*), as well as freshwater marsh species such as California bulrush (*Scirpus californicus*) and broad-leaved cattail (*Typha latifolia*). This habitat type also includes areas of freshwater marsh and open channel that were too small to map as separate habitat types.

Disturbed southern willow scrub is similar in species composition to native southern willow scrub but it supports anywhere from 20 to 50 percent cover of giant reed (*Arundo donax*) and other non-native species.

Mulefat Scrub

Mulefat scrub is a relatively dense, shrubby community that, while dominated by mulefat (*Baccharis salicifolia*), often contains shrubby willow species, facultative herbaceous species such as western ragweed and mugwort, and, even occasionally, upland shrub species such as coastal goldenbush (*Isocoma menziesii*) (Holland 1986). Within the study area, mulefat scrub is found in a matrix with southern willow scrub, extending into dryer areas on upper floodplain terraces where it also intergrades with menzies goldenbush scrub habitat.

Disturbed mulefat scrub refers to those areas containing at least 50 percent cover of mulefat scrub and at least 50 percent cover of non-native understory species including bull thistle (*Cirsium vulgare*), giant reed, and bromes (*Bromus* sp.).

Mulefat-White Alder Scrub

Mulefat-white alder scrub, although not recognized by Gray and Bramlett (1992), is a distinct vegetational community within the proposed study area. It occurs as a sliver of woody vegetation adjacent to the dirt access road and at the toe of an annual grassland-coastal sage scrub slope. It appears that this area may have been planted as a potential wind break because white alder is not known from the Aliso drainage (Roberts, pers. comm. 2000). This community is supported by an understory comprised of non-native grasses and forbs including bromes, black mustard (*Brassica nigra*), and yellow-star thistle.

METHODS

Focused surveys for the flycatcher and vireo were conducted by Dudek biologists Brock A. Ortega (BAO), Dave M. Compton (DMC), Jeffrey D. Priest (JDP), and Tricia L. Wotipka (TLW) from May 2011– July 2011. Mr. Priest holds federal permit TE-840619; Mr. Ortega holds federal permit TE-813545; and Mr. Compton holds federal permit TE-1011482 to conduct surveys for the flycatcher. A federal recovery permit is not required to conduct surveys for the vireo. All surveys conducted by Ms. Wotipka were focused on the detection of vireo while Mr. Priest, Mr. Ortega, and Mr. Compton conducted all surveys which focused on the flycatcher and vireo simultaneously.

The distribution of suitable habitat within the study area is characterized as a linear mosaic of southern willow scrub (including disturbed forms), mule fat scrub, and marsh habitat along Aliso Creek. The band of suitable habitat is approximately 4,000 feet long and ranges in width from approximately 50 to 200 feet wide.

Surveys for flycatcher were conducted concurrently with the vireo surveys. All surveys consisted of slowly walking a methodical, meandering transect within and adjacent to all riparian habitat onsite. The perimeter also was surveyed. This route was arranged to cover all suitable habitat onsite. A vegetation map (scale 1"=200') of the project site was available to record any detected vireo or flycatcher. Binoculars (10x42) were used to aid in detecting and identifying wildlife species.

The 10 surveys conducted for flycatcher followed the currently accepted protocol (Sogge et al., 1997) in conjunction with the 2000 Southwestern Willow Flycatcher Protocol Revision (revised in 2004) issued by the U.S. Fish and Wildlife Service, which states that a minimum of five survey visits is needed to evaluate project effects on flycatchers. The entire survey area was divided in two halves, to facilitate smaller and more thorough survey passes. The surveys were paired; the entire length of the survey area was surveyed within a period of 24 hours. Surveys designated as "a" in the following survey table began at Alicia Parkway and covered the northern half of the project area. Surveys designated as "b" in the table began at the SOCWA CTP at the southern end of the survey area, and covered the southern half of the survey area. The entire survey area was surveyed a total of five times over the course of the season.

For flycatcher, it is recommended that one survey is made during the period from May 15 to 31, one survey is made from June 1 to 21 and three surveys are made between June 22 and July 17. A tape of recorded flycatcher vocalizations was used approximately every 50 to 100 feet within suitable habitat to induce flycatcher responses. If a flycatcher had been detected, playing of the tape would have ceased to avoid harassment. Surveys for the southwestern flycatcher were conducted under Section 10(a), Permit Nos. TE-813545, TE-1011482, and TE-840619.

Recovery Permit Coordinator

Subject: Focused Least Bell's Vireo and Southwestern Willow Flycatcher Surveys for the Coastal Treatment Plant Export Sludge Force Main Project, Orange County, California

A Section 10(a)(1)(A) permit is not required to conduct presence/absence surveys for vireo. The fourteen surveys for vireo followed the currently accepted protocol (U.S. Fish and Wildlife Service, April 8, 1999, Least Bell's Vireo Survey Guidelines) which states that a minimum of eight survey visits should be made to all riparian areas and any other potential vireo habitats during the period from April 10 to July 31. The site visits are required to be conducted at least 10 days apart to maximize the detection of early and late arrivals, females, non-vocal birds, and nesting pairs. Taped playback of vireo vocalizations are not to be used during the surveys. Surveys are to be conducted between dawn and 1100 and are not be conducted during periods of excessive or abnormal cold, heat, wind, rain, or other inclement weather.

A map of the survey routes for flycatcher detection is included in *Figure 4*. Weather conditions, time of day and season were appropriate for the detection of flycatcher and vireo (*Table 2*). Surveys for flycatcher indicate the survey pass number and the area of the site that was surveyed.

TABLE 2
Schedule of Surveys

DATE	HOURS	FOCUS	PERSONNEL	CONDITIONS
5/20/11	0630-1130	WIFL/LBVI: 1a	JDP	56-77°F ; 1-3 mph winds; 95-75% clouds
5/21/11	0600-1130	WIFL/LBVI: 1b	BAO	60-80°F ; 3-5 mph winds; 100-70% clouds
5/31/11	0730-1200	LBVI	JDP, TLW	62-75°F ; 2-5 mph winds; 5% clouds
6/10/11	0600-1115	WIFL/LBVI: 2a	JDP	59-64°F ; 0-4 mph winds; 100% clouds
6/10/11	0700-1100	WIFL/LBVI: 2b	BAO	56°F ; 3 mph winds; 100% clouds; drizzle
6/20/11	0630-1130	WIFL/LBVI: 3a	JDP	58-75°F ; 2-5 mph winds; 100-0% clouds
6/20/11	0600-1100	WIFL/LBVI: 3b	BAO	60°F ; 0 mph winds; 100% clouds
6/30/11	0630-1130	WIFL/LBVI: 4a	JDP	56-78°F ; 0-5 mph winds; 0% clouds
6/30/11	0600-1100	WIFL/LBVI: 4b	BAO	55°F ; 0 mph winds; 20% clouds
7/10/11	0615-1115	WIFL/LBVI: 5a	JDP	66-77°F ; 2-4 mph winds; 100-10% clouds
7/10/11	0450-1017	WIFL/LBVI: 5b	DMC	65-83°F ; 0-4 mph winds; 100-60% clouds
7/19/11	0630-1100	LBVI	TLW	65-83°F ; 0-2 mph winds; 100-10% clouds
7/20/11	0625-1100	LBVI	TLW	65-85°F ; 0-2 mph winds; 100-0% clouds
7/29/11	0700-1100	LBVI	TLW, JDP	66-73°F ; 0-5 mph winds; 100% clouds

*Abbreviations: WIFL/LBVI-southwestern willow flycatcher / least Bell's vireo

BAO: Brock A. Ortega

DMC: Dave M. Compton

JDP: Jeffrey D. Priest

TLW: Tricia L. Wotipka

Recovery Permit Coordinator

Subject: Focused Least Bell's Vireo and Southwestern Willow Flycatcher Surveys for the Coastal Treatment Plant Export Sludge Force Main Project, Orange County, California

RESULTS

Seven pairs of least Bell's vireo were observed in the main stem of Aliso Creek during the 2011 focused surveys. The upstream section of Aliso Creek from the Aliso Creek Wildlife Habitat Enhancement Project (ACWHEP) structure to Alicia Parkway supported the highest concentration of least Bell's vireo with five documented pairs. Two pairs of least Bell's vireo were mapped in Aliso Creek from the ACWHEP structure downstream to the CTP. These two pairs, however, were only documented on one occasion (May 21) and were not detected during the remaining surveys. No southwestern willow flycatchers were observed during the 2011 focused survey effort.

One hundred (100) species of wildlife were observed during focused vireo and flycatcher surveys for the project. Other sensitive species observed during the surveys included the southwestern pond turtle, California gnatcatcher, yellow-breasted chat, yellow warbler, white-tailed kite, and Cooper's hawk. A full list of wildlife species observed during the surveys is provided in *Appendix A*. Data forms for willow flycatcher are included as *Appendix B*. Site photos are included as *Appendix C*. Please feel free to contact me at 760.942.5147 with questions or if you require additional information.

I certify that the information in this survey report and attached exhibits fully and accurately represent my work.

Sincerely,



Tricia L. Wotipka
Senior Biologist
Dudek

*att.: Figures 1-4
Appendices A-C*

*cc: Jeff Priest, Dudek
Brock Ortega, Dudek
Dave Compton, Dudek*

Recovery Permit Coordinator

Subject: Focused Least Bell's Vireo and Southwestern Willow Flycatcher Surveys for the Coastal Treatment Plant Export Sludge Force Main Project, Orange County, California

REFERENCES

Gray, J. and D. Bramlet. 1992. *Habitat Classification System; Natural Resources Geographic Information System (GIS) Project*. Prepared for County of Orange Environmental Management Agency. May.

Holland, R. F. 1986. *Preliminary descriptions of the terrestrial natural communities of California*. Nongame-Heritage Program, California Department of Fish and Game.

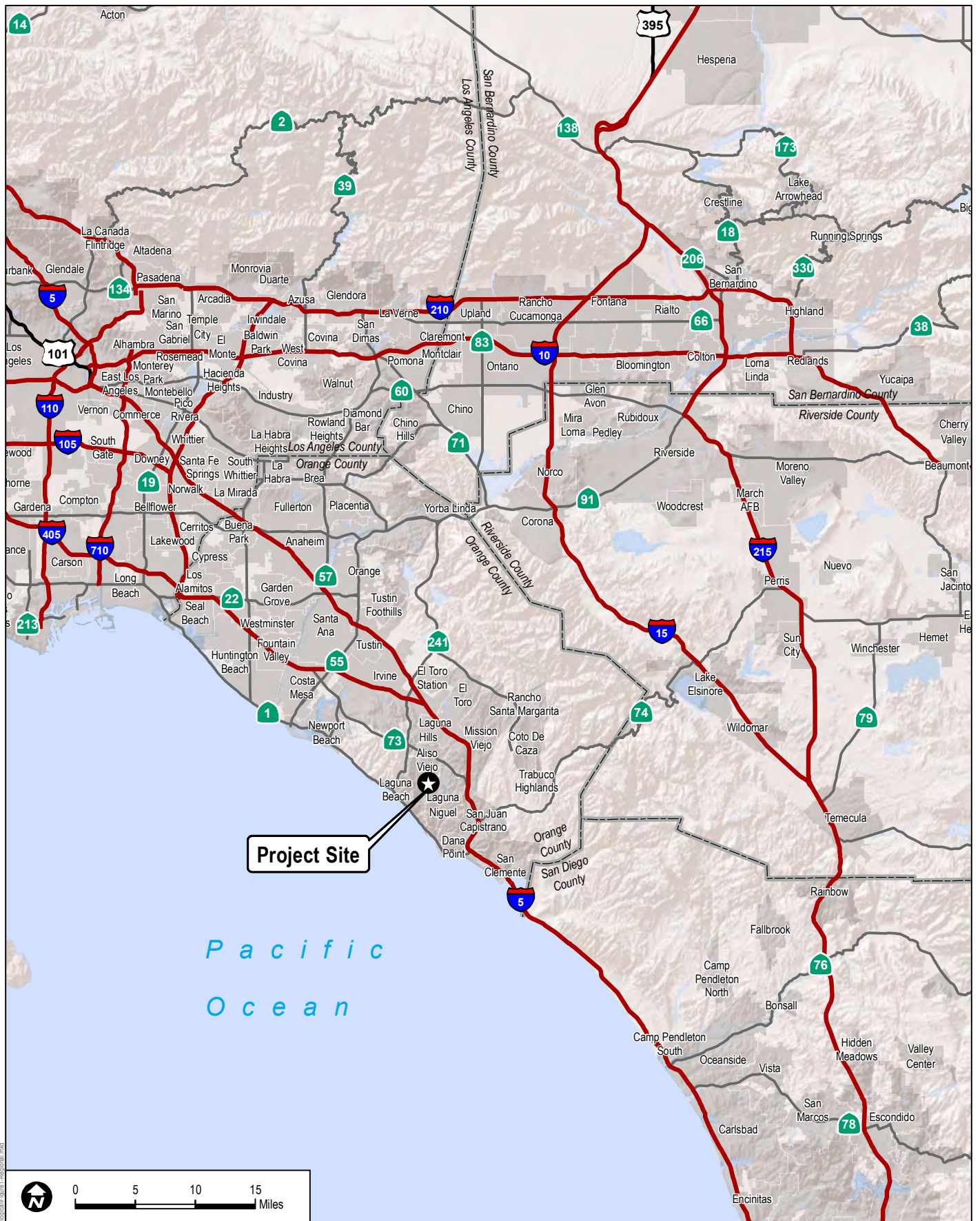
Sogge, M.K., R.M. Marshall, S.J. Sierra, and T.J. Tibbitts. 1997. *A southwestern willow flycatcher natural history summary and survey protocol*. National Park Service. U.S. Dept. Of Interior.

United States Department of Agriculture (USDA), Soil Conservation Service and Forest Service. 1978. *Soil Survey of Orange County and Western Riverside County, California*. September.

U.S. Fish and Wildlife Service. April 8, 1999. *Least Bell's Vireo Survey Guidelines*.

U.S. Fish and Wildlife Service. July 11, 2000. *Southwestern Willow Flycatcher Protocol Revision 2000*.

U. S. Fish and Wildlife Service. April 2004. *Willow Flycatcher Survey and Detection Form (revised)*.



Project Site

Pacific
Ocean

DUDEK

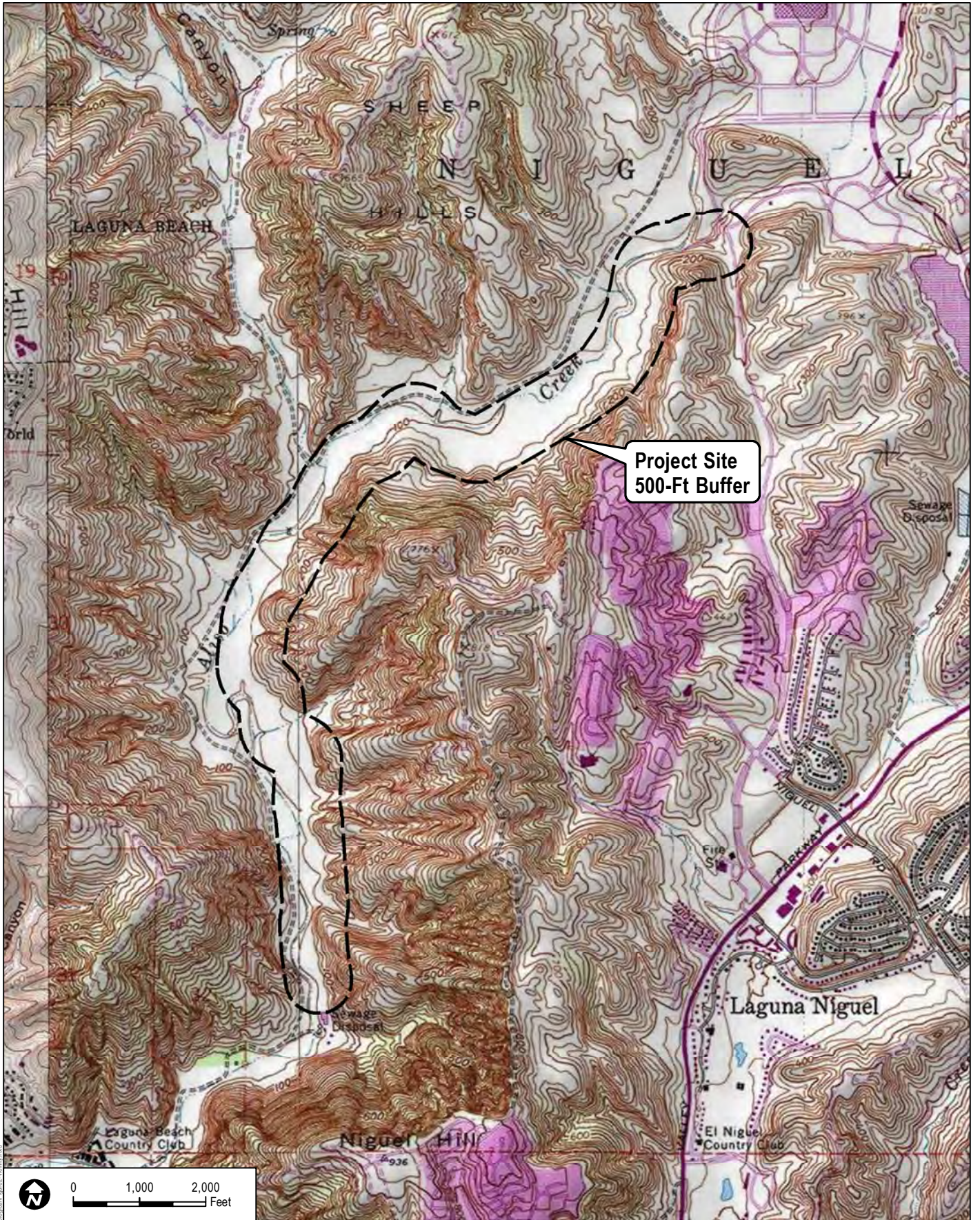
6938

NOVEMBER 2011

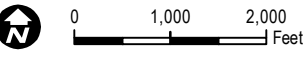
FIGURE 1
Regional Map

LBVI/WIFL REPORT - COASTAL TREATMENT PLANT EXPORT SLUDGE FORCE MAIN PROJECT

Z:\Projects\6938\01\MAPS\DOCS\ASST\Background\Figure1_Regional.mxd



Project Site
500-Ft Buffer



DUDEK

SOURCE: USGS 7.5-Minute Series San Juan Capistrano Quadrangle.

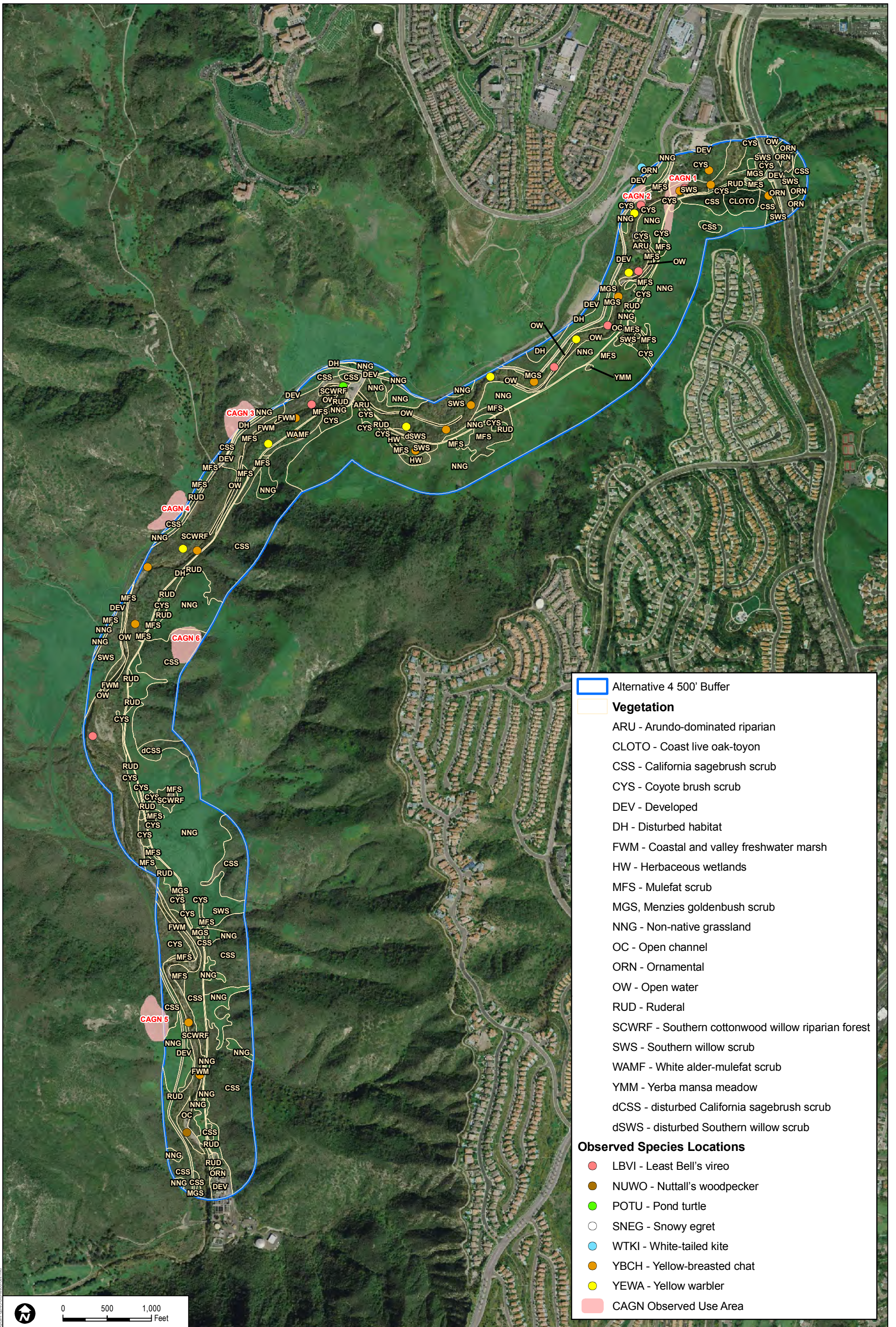
FIGURE 2
Vicinity Map

6938

NOVEMBER 2011

LBVI/WIFL REPORT - COASTAL TREATMENT PLANT EXPORT SLUDGE FORCE MAIN PROJECT

Z:\Projects\6938\11\MAP1101\CMAP\ST\Biosocof\Figure2_Vicinity.mxd



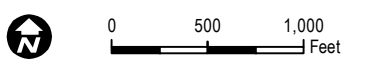
Alternative 4 500' Buffer

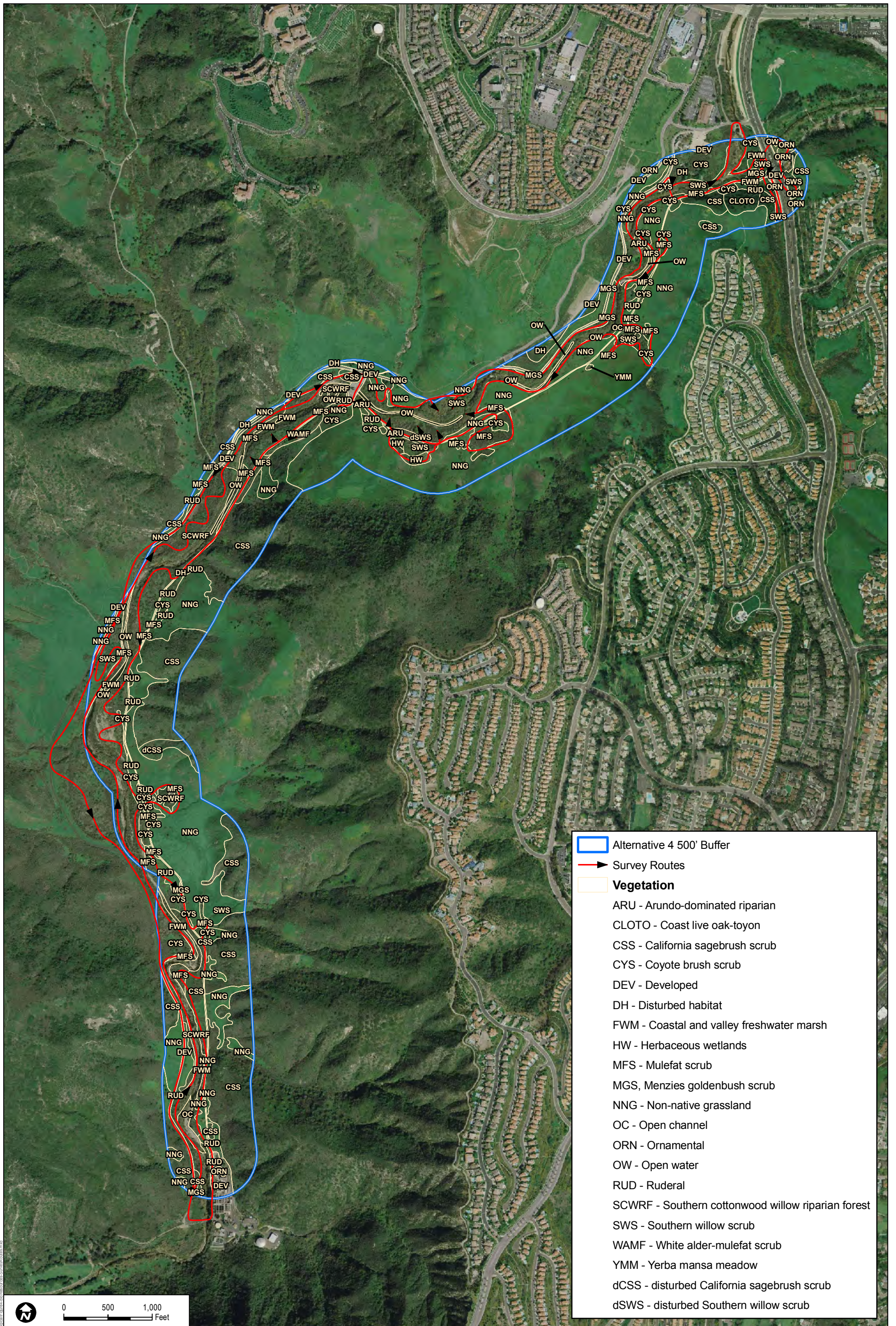
Vegetation

- ARU - Arundo-dominated riparian
- CLOTO - Coast live oak-toyon
- CSS - California sagebrush scrub
- CYS - Coyote brush scrub
- DEV - Developed
- DH - Disturbed habitat
- FWM - Coastal and valley freshwater marsh
- HW - Herbaceous wetlands
- MFS - Mulefat scrub
- MGS, Menzies goldenbush scrub
- NNG - Non-native grassland
- OC - Open channel
- ORN - Ornamental
- OW - Open water
- RUD - Ruderal
- SCWRF - Southern cottonwood willow riparian forest
- SWS - Southern willow scrub
- WAMF - White alder-mulefat scrub
- YMM - Yerba mansa meadow
- dCSS - disturbed California sagebrush scrub
- dSWS - disturbed Southern willow scrub

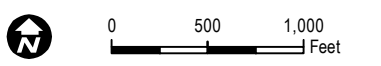
Observed Species Locations

- LBVI - Least Bell's vireo
- NUWO - Nuttall's woodpecker
- POTU - Pond turtle
- SNEG - Snowy egret
- WTKI - White-tailed kite
- YBCH - Yellow-breasted chat
- YEWA - Yellow warbler
- CAGN Observed Use Area





- Alternative 4 500' Buffer
- Survey Routes
- Vegetation**
- ARU - Arundo-dominated riparian
- CLOTO - Coast live oak-toyon
- CSS - California sagebrush scrub
- CYS - Coyote brush scrub
- DEV - Developed
- DH - Disturbed habitat
- FWM - Coastal and valley freshwater marsh
- HW - Herbaceous wetlands
- MFS - Mulefat scrub
- MGS, Menzies goldenbush scrub
- NNG - Non-native grassland
- OC - Open channel
- ORN - Ornamental
- OW - Open water
- RUD - Ruderal
- SCWRF - Southern cottonwood willow riparian forest
- SWS - Southern willow scrub
- WAMF - White alder-mulefat scrub
- YMM - Yerba mansa meadow
- dCSS - disturbed California sagebrush scrub
- dSWS - disturbed Southern willow scrub



APPENDIX A

*List of Wildlife Species Observed or Detected
at the Project Site*

APPENDIX A

List of Wildlife Species Observed or Detected at the Project Site

WILDLIFE SPECIES – VERTEBRATES

REPTILES

IGUANIDAE – IGUANID LIZARDS

Sceloporus occidentalis – western fence lizard

Uta stansburiana - side-blotched lizard

ANGUIDAE - ALLIGATOR LIZARDS

Elgaria multicarinata - southern alligator lizard

EMYDIDAE - BOX AND WATER TURTLE

Actinemys marmorata - southwestern pond turtle

AMPHIBIANS

HYLIDAE - TREEFROGS

Hyla regilla - Pacific treefrog

BIRDS

ARDEIDAE – HERONS

Ardea herodias - great blue heron

Egretta thula - snowy egret

ANATIDAE - WATERFOWL

Anas platyrhynchos - mallard

CATHARTIDAE - NEW WORLD VULTURES

Cathartes aura - turkey vulture

ACCIPITRIDAE – HAWKS

Accipiter cooperii – Cooper’s hawk

Buteo lineatus – red-shouldered hawk

Buteo jamaicensis - red-tailed hawk

Elanus leucurus – white-tailed kite

APPENDIX A

List of Wildlife Species Observed or Detected at the Project Site

FALCONIDAE - FALCONS

Falco sparverius - American kestrel

ODONTOPHORIDAE – NEW WORLD QUAIL

Callipepla californica – California quail

LARIDAE – GULLS, TERNS, AND SKIMMERS

Larus sp. – gull

RALLIDAE - RAILS & GALLINULES

Fulica americana - American coot

CHARADRIIDAE - PLOVERS

Charadrius vociferus - killdeer

COLUMBIDAE – PIGEONS & DOVES

* *Columba livia* - rock dove

Zenaida macroura – mourning dove

CUCULIDAE – CUCKOOS, ROADRUNNERS, AND ANIS

Geococcyx californianus - greater roadrunner

TYTONIDAE - BARN OWLS

Tyto alba - barn owl

STRIGIDAE - TYPICAL OWLS

Strigidae sp. – owl (pellets)

Bubo virginianus - great horned owl

CAPRIMULGIDAE - GOATSUCKERS

Chordeiles acutipennis - lesser nighthawk

Phalaenoptilus nuttallii - common poorwill

TROCHILIDAE – HUMMINGBIRDS

Hummingbird sp.

Archilochus alexandri - black-chinned hummingbird

Calypte anna – Anna's hummingbird

APPENDIX A

List of Wildlife Species Observed or Detected at the Project Site

Calypte costae – Costa's hummingbird
Selasphorus rufus - rufous hummingbird
Selasphorus sasin - Allen's hummingbird

PICIDAE – WOODPECKERS

Picoides sp. – woodpecker
Colaptes auratus - northern flicker
Picoides nuttallii – Nuttall's woodpecker
Picoides scalaris - ladder-backed woodpecker
Picoides pubescens – downy woodpecker

TYRANNIDAE – TYRANT FLYCATCHERS

Empidonax difficilis – Pacific-slope flycatcher
Myiarchus cinerascens – ash-throated flycatcher
Sayornis nigricans – black phoebe
Sayornis saya - Say's phoebe
Tyrannus vociferans – Cassin's kingbird
Tyrannus verticalis - western kingbird

HIRUNDINIDAE – SWALLOWS

Hirundo rustica - barn swallow
Petrochelidon pyrrhonota – cliff swallow
Stelgidopteryx serripennis - northern rough-winged swallow
Tachycineta bicolor - tree swallow

CORVIDAE – JAYS & CROWS

Phelocoma californica - western scrub-jay
Corvus brachyrhynchos – American crow
Corvus corax – common raven

AEGITHALIDAE – BUSHTITS

Psaltriparus minimus – bushtit

TROGLODYTIDAE – WRENS

Thryomanes bewickii – Bewick's wren
Troglodytes aedon – house wren

REGULIDAE - KINGLETS



APPENDIX A

List of Wildlife Species Observed or Detected at the Project Site

Regulus calendula - ruby-crowned kinglet

POLIOPTILIDAE – GNATCATCHERS

Polioptila californica - California gnatcatcher

TURDIDAE - THRUSHES & BABBLERS

Turdus migratorius - American robin

SYLVIIDAE – SYLVIID WARBLERS

Chamaea fasciata - wrenit

MIMIDAE – THRASHERS

Mimus polyglottos – northern mockingbird

Toxostoma redivivum – California thrasher

PTILOGONATIDAE - SILKY-FLYCATCHERS

Phainopepla nitens – phainopepla

STURNIDAE - STARLINGS

* *Sturnus vulgaris* - European starling

VIREONIDAE - VIREOS

Vireo bellii pusillus – least Bell's vireo

Vireo huttoni - Hutton's vireo

PARULIDAE - WOOD WARBLERS

Dendroica petechia - yellow warbler

Geothlypis trichas – common yellowthroat

Icteria virens - yellow-breasted chat

Oreothlypis celata - orange-crowned warbler

Wilsonia pusilla – Wilson's warbler

EMBERIZIDAE – BUNTINGS & SPARROWS

Melospiza melodia – song sparrow

Melospiza crissalis – California towhee

Pipilo maculatus - spotted towhee

CARDINALIDAE – CARDINALS AND GROSBEAKS



APPENDIX A

List of Wildlife Species Observed or Detected at the Project Site

Passerina caerulea – blue grosbeak

Pheucticus melanocephalus – black-headed grosbeak

ICTERIDAE – BLACKBIRDS & ORIOLES

Icterus cucullatus – hooded oriole

Molothrus ater - brown-headed cowbird

FRINGILLIDAE – FINCHES

Carpodacus mexicanus – house finch

Carduelis psaltria – lesser goldfinch

Carduelis tristis - American goldfinch

MAMMALS

LEPORIDAE – HARES & RABBITS

Sylvilagus bachmani – brush rabbit

SCIURIDAE - SQUIRRELS

Spermophilus beecheyi - California ground squirrel

GEOMYIDAE – POCKET GOPHERS

Thomomys sp. – pocket gopher

Thomomys bottae – Botta's pocket gopher

MURIDAE - RATS & MICE

Neotoma sp. – woodrat (middens)

CANIDAE – WOLVES & FOXES

Canis latrans – coyote

PROCYONIDAE - RACCOONS & RELATIVES

Procyon lotor - common raccoon

MUSTELIDAE - WEASELS, SKUNKS, & OTTERS

Mustela sp. – weasel (scat)

FELIDAE - CATS

Lynx rufus – bobcat (scat)



APPENDIX A

List of Wildlife Species Observed or Detected at the Project Site

CERVIDAE - DEERS

Odocoileus hemionus - mule deer

WILDLIFE SPECIES – INVERTEBRATES

ARTHROPODS

ARACHNIDA – ARACHNIDS

Scorpiones sp. – scorpion

BUTTERFLIES AND MOTHS

PAPILIONIDAE - SWALLOWTAILS

Papilio eurymedon - pale swallowtail

Papilio rutulus – western tiger swallowtail

Papilio zelicaon - anise swallowtail

PIERIDAE - WHITES AND SULFURS

Anthocharis sara sara - Pacific sara orangetip

Pieris rapae – cabbage white

Colias eurydice - California dogface

NYMPHALIDAE - BRUSH-FOOTED BUTTERFLIES

Coenonympha californica californica - California ringlet

Junonia coenia - common buckeye

Limenitis lorquini - Lorquin's admiral

Nymphalis antiopa – mourning cloak

Vanessa cardui - painted lady

* signifies introduced (non-native) species

APPENDIX B

Southwestern Willow Flycatcher Data Forms

Willow Flycatcher (WIFL) Survey and Detection Form (revised April 2010)

Site Name: SOCWA Coastal Treatment Plant Export Sludge Forcemain State: CA County Orange
 USGS Quad Name San Juan Capistrano Elevation 13-61 meters AMSL (meters)
 Creek, River, Wetland, or Lake Name Aliso Creek

Is copy of USGS map marked with survey area and WIFL sightings attached (as required)? Yes No

Survey Coordinates: Start: E433390 N3712557 UTM Datum NAD83 (See instructions)
 Stop: E431507 N3708952 UTM Zone 11S

If survey coordinates changed between visits, enter coordinates for each survey in comments section on back of this page.

**** Fill in additional site information on back of this page ****

Survey # Observer(s) (Full Name)	Date (m/d/y) Survey time	Number of Adult WIFLs	Estimated Number of Pairs	Estimated Number of Territories	Nest(s) Found? Y or N If Yes, number of nests	Comments (e.g., bird behavior; evidence of pairs or breeding; potential threats [livestock, cowbirds, <i>Diorhabda</i> spp.]). If <i>Diorhabda</i> found, contact USFWS and State WIFL coordinator	GPS Coordinates for WIFL Detections (this is an optional column for documenting individuals, pairs, or groups of birds found on each survey). Include additional sheets if necessary.			
							# Birds	Sex	UTM E	UTM N
Survey # 1a Observer(s) JDP	Date 05/20/11 Start 0630 Stop 1130 Total hrs 5	0	0	0	N	N/A				
Survey # 1b Observer(s) BAO	Date 05/21/11 Start 0600 Stop 1130 Total hrs 5.5	0	0	0	N	N/A				
Survey # 2a Observer(s) JDP	Date 06/10/11 Start 0600 Stop 1115 Total hrs 5.25	0	0	0	N	N/A				
Survey # 2b Observer(s) BAO	Date 06/10/11 Start 0700 Stop 1100 Total hrs 4	0	0	0	N	N/A				
Survey # 3a Observer(s) JDP	Date 06/20/11 Start 0630 Stop 1130 Total hrs 5	0	0	0	N	N/A				

Survey # Observer(s) (Full Name)	Date (m/d/y) Survey time	Number of Adult WIFLs	Estimated Number of Pairs	Estimated Number of Territories	Nest(s) Found? Y or N If Yes, number of nests	Comments (e.g., bird behavior; evidence of pairs or breeding; potential threats [livestock, cowbirds, <i>Diorhabda</i> spp.]). If <i>Diorhabda</i> found, contact USFWS and State WIFL coordinator	GPS Coordinates for WIFL Detections (this is an optional column for documenting individuals, pairs, or groups of birds found on each survey). Include additional sheets if necessary.			
							# Birds	Sex	UTM E	UTM N
Survey # 3b Observer(s) BAO	Date 06/20/11 Start 0600 Stop 1100 Total hrs 5	0	0	0	N	N/A				
Survey # 4a Observer(s) JDP	Date 06/30/11 Start 0630 Stop 1130 Total hrs 5	0	0	0	N	N/A				
Survey #4b Observer(s) BAO	Date 06/30/11 Start 0600 Stop 1100 Total hrs 5	0	0	0	N	N/A				
Survey # 5a Observer(s) JDP	Date 07/10/11 Start 0615 Stop 1115 Total hrs 5	0	0	0	N	N/A				
Survey # 5b Observer(s) DMC	Date 07/10/11 Start 0450 Stop 1017 Total hrs 5.5	0	0	0	N	N/A				
Overall Site Summary Totals do not equal the sum of each column. Include only resident adults. Do not include migrants, nestlings, and fledglings. Be careful not to double count individuals. Total Survey Hrs <u>50.25</u>		Total Adult Residents 0	Total Pairs 0	Total Territories 0	Total Nests 0	Were any Willow Flycatchers color-banded? Yes___ No <u>X</u> If yes, report color combination(s) in the comments section on back of form and report to USFWS.				

Reporting Individual Brock A. Ortega Date Report Completed 12/30/11
US Fish and Wildlife Service Permit # BAO TE813545; JDP TE840619; DMC: TE101148
State Wildlife Agency Permit # _____

Submit form to USFWS and State Wildlife Agency by September 1st. Retain a copy for your records.

Fill in the following information completely. Submit form by September 1st. Retain a copy for your records.

Reporting Individual Brock A. Ortega Phone # 760-479-4254
 Affiliation Dudek E-mail bortega@dudek.com
 Site Name SOCWA Coastal Treatment Plant Export Sludge Forcemain Date Report Completed 12/30/11
 Was this site surveyed in a previous year? Yes No Unknown
 Did you verify that this site name is consistent with that used in previous years? Yes No Not Applicable
 If site name is different, what name(s) was used in the past? N/A
 If site was surveyed last year, did you survey the same general area this year? Yes No If no, summarize below.
 Did you survey the same general area during each visit to this site this year? Yes No If no, summarize below.

Management Authority for Survey Area: Federal Municipal/County Yes State Tribal Private
 Name of Management Entity or Owner (e.g., Tonto National Forest) South Orange County Wastewater Authority

Length of area surveyed: 5 (km)

Vegetation Characteristics: Check (only one) category that best describes the predominant tree/shrub foliar layer at this site:

- Native broadleaf plants (entirely or almost entirely, > 90% native)
- Mixed native and exotic plants (mostly native, 50 - 90% native)
- Mixed native and exotic plants (mostly exotic, 50 - 90% exotic)
- Exotic/introduced plants (entirely or almost entirely, > 90% exotic)

Identify the 2-3 predominant tree/shrub species in order of dominance. Use scientific names. Arroyo willow (*Salix lasiolepis*), western sycamore (*Platanus racemosa*), and Fremont's cottonwood (*Populus fremontii*)

Average height of canopy (Do not include a range): 7 meters (meters)

Attach the following: 1) copy of USGS quad/topographical map (REQUIRED) of survey area, outlining survey site and location of WIFL detections; 2) sketch or aerial photo showing site location, patch shape, survey route, location of any detected WIFLs or their nests; 3) photos of the interior of the patch, exterior of the patch, and overall site. Describe any unique habitat features in Comments.

Comments (such as start and end coordinates of survey area if changed among surveys, supplemental visits to sites, unique habitat features. Attach additional sheets if necessary.

The survey area was divided in two halves, to facilitate smaller and more thorough survey passes. Surveys were paired: the entire length of the survey area was surveyed within a period of 24 hours. Surveys designated as "a" in the above survey table began at Alicia Parkway and covered the northern half of the project area. Surveys designated as "b" began at the SOCWA treatment plant at the southern end of the survey area, and covered the southern half of the survey area.

Territory Summary Table. Provide the following information for each verified territory at your site.

Territory Number	All Dates Detected	UTM E	UTM N	Pair Confirmed? Y or N	Nest Found? Y or N	Description of How You Confirmed Territory and Breeding Status (e.g., vocalization type, pair interactions, nesting attempts, behavior)

Attach additional sheets if necessary

APPENDIX C

*Site Photos: Interior, Exterior, and Overall Site
Examples of Habitat Patches*







APPENDIX H
Focused Southern Steelhead Survey

**Summary Results of the
Aliso Creek Southern Steelhead Survey
Conducted by ECORP Consulting, Inc.
in September 2012**

INTRODUCTION

ECORP Consulting, Inc. (ECORP) contracted with Dudek to conduct an assessment of Aliso Creek within the project area to 1) assess presence/absence of southern steelhead, 2) identify potential barriers to fish movement, 3) evaluate spawning habitat (substrates), and 4) collect standard water quality data. The steelhead survey and habitat assessment was conducted during the last two weeks of September, 2012.

METHODS

The project area encompasses a 3.6 mile (mi) reach of Aliso Creek within the ±387-acre study area for the Coastal Treatment Plant (CTP) Export Sludge Force Main Project located on the grounds of the Aliso and Wood Canyons Wilderness Park in Orange County, California. The survey was conducted to evaluate presence/absence of southern steelhead, potential spawning habitat, and the presence of physical barriers to upstream fish movement within the reach. The surveys were conducted over a three day period.

The Aliso Creek surveys were conducted by two ECORP fisheries biologists that walked the 3.6-mi reach of the creek looking for steelhead or evidence of the presence of steelhead (and incidentally for other fish species also), identifying potential spawning habitat (gravels), and evaluating potential physical barriers to upstream fish movement. With the exception of deep unwadeable pools and areas of dense impassable vegetation, the survey was conducted primarily within the stream channel. In addition to direct observations, a viewing scope and underwater camera were also used to survey for steelhead and spawning substrates.

Surveys were initiated at the downstream end of the project area adjacent to the wastewater treatment plant and continued upstream to the Alicia Parkway overcrossing. Pools and other stream areas that were too deep to wade (>1.6 meters [m]) were scanned from the bank using binoculars; and areas with dense overhanging vegetation were scanned from available viewing locations where possible. The locations of potential spawning habitat were delineated using GPS, and photos were taken. Any areas that were considered potential barriers to fish movement were photographed, and measurements were taken to determine the approximate slope and height of the barrier.

RESULTS

The stream survey was conducted by ECORP fisheries biologists Todd Chapman, Brian Zitt, and Adam Schroeder from September 20 to 28, 2012 (Attachment A). The reach was divided into

two survey segments for ease of data collection. Water quality data collected during the survey period is presented in Attachment B; a list of wildlife species (both terrestrial and aquatic) observed during the survey is provided in Attachment C; and representative photographs of the 3.6-mile Aliso Creek study reach are presented in Attachment D.

The lower portion of the 3.6-mi reach, which extended from the bridge adjacent to the wastewater treatment plant upstream to the concrete dam/road crossing, consisted of pools, runs, and glides. Much of the lower portion of the creek (a distance of 1.65-mi) is lined with dense cattail (*Typha latifolia*). Much of the remainder of the reach consists of dense overhanging vegetation comprised of cottonwood (*Populus* sp.), willow (*Salix* sp.), cattail, *Arundo* (*Arundo donax*), and mulefat (*Baccharis salicifolia*). In some areas, the riparian canopy and margin vegetation was lacking. Most of the creek bed consists primarily of fines, sands, and coarse particulate organic matter (CPOM). Several small pockets of gravel with some cobble (up to about 10 square feet [sq ft]) were also observed in a few locations within and adjacent to the channel; however, these substrates were almost completely embedded with fines and sand. Since these small embedded deposits of gravel and cobble were located in depositional run and glide habitats that are not well aerated, they are generally unsuitable for spawning by salmonids. Multiple non-native species were observed within the lower portion of the creek including largemouth bass (*Micropterus salmoides*), red shiner (*Cyprinella lutrensis*), common carp (*Cyprinus carpio*), western mosquitofish (*Gambusia affinis*), and red swamp crayfish (*Procambarus clarkii*). The only native aquatic species observed was a western toad (*Anaxyrus boreas*).

A concrete dam/road crossing, that provides vehicle access to the south side of the creek, is present approximately 1.65 mi upstream of the wastewater treatment plant. The dam contains an outflow culvert; however, the culvert structure and elevation above the creek channel, combined with a long high-gradient slope lacking flow-protected areas (boulder cover, etc.) likely precludes upstream migration by southern steelhead, if they were present in the system. The culvert structure includes bar racks at the upstream end of the culvert with gaps of approximately 2 to 3 inch (in). Water flows through the culvert and over a concrete lip and into a small shallow pool (approximately 7.5-m in length) with a maximum depth of about 0.3-m and very little cover, before flowing over the downstream edge of the pool. The gunited spillway below the pool is relatively steep (approximately 30 percent gradient) that extends 8.5 m to the base of the slope before dropping 1.5-m into a pool (1.5 to 2 m deep). Very little cover is present on the slope and holding/resting areas for fish are absent. Based on the steepness and length of this 30 percent slope combined with the lack of holding/resting areas, it is highly unlikely that southern steelhead would be capable of migrating up this slope. Additionally, fairly high flows would be necessary to provide sufficient depth on the slope to allow passage, which would create very high water velocities. The pool in front of the culvert is very shallow and higher flows would also produce high water velocities in this pool which has minimal cover for fish. Based on these impediments to fish migration, the dam represents the upstream limit of potential southern steelhead (and other fish) migration in Aliso Creek.

As observed in the lower portion of the 3.6-mi reach, the reach extending from the concrete dam upstream to the Alicia Parkway overcrossing (a distance of about 1.95 mi) also consisted primarily of pools, runs, and glides. Additionally, one small riffle comprised of small boulders was also present near the upstream end of the reach, but the substrate was too large to provide suitable spawning habitat. Some coarse gravel was also present immediately upstream

of this riffle; however, these substrates were also highly embedded with fines and sand. In most locations, creek substrates consisted primarily of fines, sands, and CPOM. A dense canopy of riparian vegetation occurred along the majority of the reach with only a few areas of open canopy. Riparian vegetation was composed of cottonwood, willow, cattail, *Arundo*, and mulefat.

At the upstream end of the 3.6-mi reach (in the vicinity of the Alicia Parkway overpass), stream substrates consisted primarily of fine sediments (much of which was anoxic) and the stream margin was densely vegetated with cattail. This area also contained a substantial amount of trash. Multiple non-native aquatic species were observed within this upper portion of the creek including largemouth bass, common carp, western mosquitofish, red swamp crayfish, and red-eared slider (*Trachemys scripta elegans*). The only native aquatic species observed within this upper reach was a southwestern pond turtle (*Actinemys marmorata*) hatchling.

CONCLUSIONS

The survey conducted in Aliso Creek from September 20 to 28, 2012 did not result in any observations or evidence of presence of southern steelhead or any other native fishes within the 3.6-mi study area. Stream habitat within the 3.6-mi reach were dominated by pools, runs, and glides, with very little riffle habitat. Substrates throughout most of the reach consist of fines and sand with only a few isolated small pockets of coarse gravel and cobble occurring within and adjacent to the creek; however, these larger substrates were heavily embedded with fines and sand. Additionally, a dense riparian corridor occurs along much of the reach and as a result, CPOM is relatively abundant throughout the reach.

Based on the survey, spawning habitat for southern steelhead, which generally consists of riffle or riffle-like habitats with well aerated clean substrates consisting of large gravel to small cobble, is not present within the 3.6-mi study reach. Additionally, a concrete dam/road crossing with an elevated culvert is located about 1.65-mi upstream from the treatment plant and is a barrier to upstream migration for all fish species. Due to the lack of suitable spawning and juvenile rearing habitat; sparse benthic macroinvertebrate community; generally low flows, marginal water quality, and abundant CPOM; and abundance of non-native fish species; utilization of the Aliso Creek project reach by southern steelhead is highly unlikely.

Attachment A: Survey Schedule

Date	Hours	Staff	Activity	Weather Conditions
9/20/2012	0630-1300	Brian Zitt, Adam Schroeder	Aliso Creek southern steelhead survey	Temperature range 60-85 °F, Weather: clear, Wind 0-2 mph
9/25/2012	0830-1100	Todd Chapman, Adam Schroeder	Aliso Creek southern steelhead survey	Temperature range 66-82 °F, Weather: clear, Wind 0-5 mph
9/28/2012	0900-1130	Todd Chapman, Adam Schroeder	Aliso Creek southern steelhead survey	Temperature range 67-86 °F, Weather: clear, Wind 0-3 mph

Attachment B: Water Quality Data Collected During the Aliso Creek Steelhead Survey, September 20, 2012

Date	Time	Temperature (°C)	pH	Conductivity (mS/cm)	Salinity (ppt)	Dissolved Oxygen (mg/L)	Total Dissolved Solids (g/L)	Turbidity (NTU)	Oxidation Reduction Potential (mV)
9/20/2012	7:22	21.5	8.6	4.08	2.2	4.7	2.61	10.2	69
	7:58	21.2	8.3	3.22	1.7	8.0	2.06	3.2	132
	8:59	20.8	8.1	3.26	1.7	6.4	2.09	8.6	146



A) Concrete covered riprap channel beneath the bridge leading to the Coastal Treatment Plant, facing downstream.



B) Deep pool habitat containing fine substrates, directly upstream of the bridge to the Coastal Treatment Plant.



C) Shallow, sandy stream channel with exposed sand bar and algal mats.



D) Stream bed embedded with fines and periphyton.



E) A few isolated gravel pockets were observed within the channel but were embedded with sand and fines.



F) Dry stream channel containing cobble and gravel substrates embedded with sand and fines.



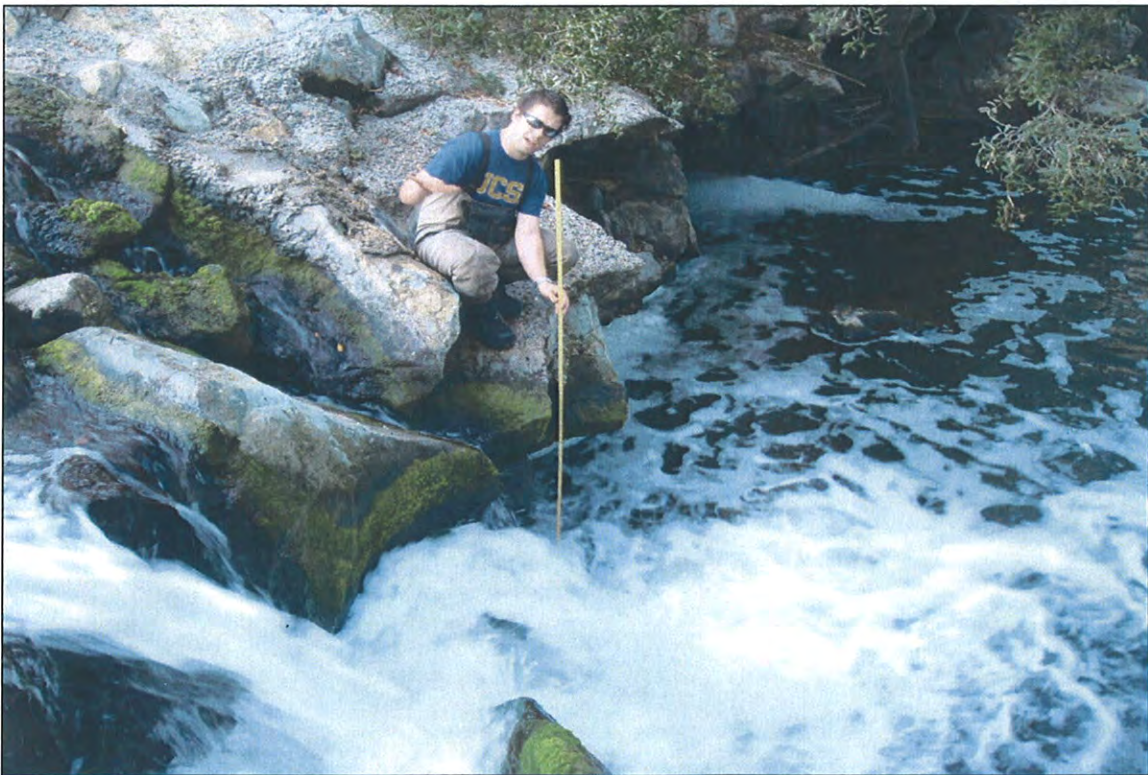
G) Bar racks on the upstream end of the culvert located within the concrete dam/road crossing, facing upstream.



H) Small, shallow pool at downstream end of culvert beneath the road crossing, facing downstream.



I) Steep gunited spillway (8.5-m long with 30 percent gradient) below the small pool immediately downstream of the culvert opening.



J) Approximately 1.5 meter vertical drop into pool below the gunited spillway.



K) Drop structure (5 to 6 ft high) located at the upstream survey boundary, Alicia Parkway overcrossing.



L) Southwestern pond turtle (*Actinemys marmorata*) hatchling observed in the Creek during the survey.

