APPENDIX E

2016 Focused Coastal California Gnatcatcher Survey Report

DUDEK

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December 21, 2016 9420-03

Stacey Love
Recovery Permit Coordinator
U.S. Fish and Wildlife Service
2177 Salk Avenue, Suite 250
Carlsbad, California 92008

Subject: 2016 Focused Coastal California Gnatcatcher Survey Report for the Pure Water San Diego Program North City Project, County of San Diego, California

Dear Ms. Love:

This report documents the results of protocol-level presence/absence surveys for the federally listed threatened coastal California gnatcatcher (*Polioptila californica californica*) (CAGN). The surveys were conducted in support of the Pure Water San Diego Program North City Project (North City Project), located in the County of San Diego, California. The North City Project is the first phase of the City of San Diego's Public Utilities Department (PUD) proposed program to provide a safe, secure, and sustainable local drinking water supply for San Diego. The North City Project consists of the design and construction of a new advanced water treatment facility, expansion of a wastewater treatment facility, pump stations, transmission lines, and pipelines. The Project site contains approximately 575 acres of potentially CAGN-suitable habitat that were surveyed in 2016.

CAGN is a federally listed threatened species and a California Department of Fish and Wildlife (CDFW) Species of Special Concern. It is closely associated with coastal sage scrub habitat, and is thereby threatened primarily by loss, degradation, and fragmentation of this habitat. CAGN typically occurs below 820 feet above mean sea level (amsl) within 22 miles of the coast and 1,640 feet amsl for inland regions (Atwood and Bolsinger 1992). Studies have suggested that CAGN avoid nesting on very steep slopes (greater than 40%) (Bontrager 1991). CAGN is also impacted by brown-headed cowbird (*Molothrus ater*) nest parasitism (Braden et al. 1997).

LOCATION AND EXISTING CONDITIONS

North City Project pipelines extend through the cities of San Diego, Santee, and the community of Lakeside in unincorporated San Diego County, in addition to federal lands within MCAS Miramar (Figure 1, Regional Map). CAGN surveys were being conducted on MCAS Miramar in

2016 as part of their yearly monitoring. Following consultation with the U.S. Fish and Wildlife Service (USFWS), it was determined that additional surveys as part of this project were not required in suitable habitat areas of the project that overlapped with MCAS Miramar. Results of 2016 focused CAGN surveys on MCAS Miramar will be submitted to USFWS separately by MCAS Miramar biologists.

The Project site occupies portions of Township 14 South, Range 1 East, projected Sections 30 and 31; Township 14 South, Range 1 West, projected Sections 25 and 36; Township 14 South, Range 2 West, projected Sections 32, and 33; Township 15 South, Range 1 East, projected Sections 6 and 18; Township 15 South, Range 1 West, projected Sections 1, 23, and 30; Township 15 South, Range 2 West, projected Sections 6, 25, 29, 30, 31, 32, 33, 35, and 36; Township 15 South, Range 3 West, projected Sections 9, 10, 11, 16, 17, 20, 25, 26, and 28; Township 16 South, Range 2 West, projected Sections 1, 2, 3, and 4; and Township 16 South, Range 3 West, projected Section 9 on the San Vicente Reservoir, El Cajon, La Mesa, Poway, La Jolla, and Del Mar U.S. Geological Survey 7.5 minute quadrangle maps (Figure 2, Vicinity Map).

Elevations range from about 94 feet amsl in the southwestern portion of the Project site to approximately 688 feet amsl.

Soils within the Project site consist of acid igneous rock land; Altamont clay; Carlsbad-Urban Land complex, Chesterton fine sandy loam; Chesterton-Urban Land complex; Cieneba rocky and very rocky coarse sandy loam, Cieneba-Fallbrook rocky sandy loam; Diablo clay; Diablo-Olivenhain complex; Diablo-Urban land complex; Fallbrook sandy loam; Fallbrook-Vista sandy loam; Friant rocky fine sandy loam; Gaviota fine sandy loam; gravel pits; Huerhuero loam; metamorphic rock land; Olivenhain cobbly loam; Ramona sandy loam; Redding cobbly and gravelly loam; Redding-Urban land complex; riverwash; Salinas clay loam; stony land; terrace escarpments; Tujunga sand; and Visalia sandy loam (SanGIS 2016).

VEGETATION COMMUNITIES

Based on species composition and general physiognomy, three vegetation communities with primary constituent element habitats (included restored and disturbed communities) suitable for CAGN were identified on the Project site and off-site mapping areas. Their acreages are presented in Table 1.

The entire project alignment includes approximately 847 acres of CAGN-suitable habitat were mapped on the Project site according to Holland (1986) and Oberbauer (2008). Approximately 517 acres of the CAGN-suitable habitat was surveyed on the Project site (due to exclusions and inaccessible private property).

Vegetation acreages are presented in Table 1, and primary constituent element habitats suitable for CAGN are described following the table.

Table 1
Coastal California Gnatcatcher-Suitable Vegetation Communities on the North City Project Site

Total Vegetation Community/Land Cover	Total Acres*	Total Surveyed Acres*
Diegan Coastal Sage Scrub	638.4	422.3
Diegan Coastal Sage Scrub-Restored	16.0	13.6
Diegan Coastal Sage Scrub-Disturbed	155.8	78.0
Diegan Coastal Sage Scrub: Baccharis-Dominated	32.4	3.5
Diegan Coastal Sage Scrub: Baccharis-Dominated-Disturbed	4.7	0.0
Grand Total	**847.3**	**517.4**

Note:
* The difference in total acres and surveyed acres is due to restricted access to private property and MCAS Miramar lands.

Diegan Coastal Sage Scrub

Diegan coastal sage scrub is a native vegetation community. According to Oberbauer et al. (2008), coastal sage scrub is composed of a variety of soft, low, aromatic shrubs, characteristically dominated by drought-deciduous species—such as California sagebrush (*Artemisia californica*), California buckwheat (*Eriogonum fasciculatum*), and sages (*Salvia* spp.)—with scattered evergreen shrubs, including laurel sumac (*Malosma laurina*). Diegan coastal sage scrub occupies 638.4acres in many patches within undisturbed areas, and an additional 16.0 acres of restored Diegan coastal sage is located in two portions on site, including south of the San Vicente Reservoir and a small patch south of Miramar Road. In addition, 155.8 acres of disturbed Diegan coastal sage scrub occur in several areas, with the majority located north of Miramar Road and east of Interstate 805 (I-805).

Diegan Coastal Sage Scrub—Baccharis-Dominated

Diegan coastal sage scrub—Baccharis-dominated is similar to Diegan coastal sage scrub but dominated by *Baccharis* species (desert broom (*B. sarothroides*) and/or coyotebrush (*B. pilularis*) (Oberbauer et al. 2008). This community typically occurs on disturbed sites or those with nutrient-poor soils and is often found within other forms of Diegan coastal sage scrub and on upper terraces of river valleys. This community is distributed along coastal and foothills areas in San Diego County. Approximately 32.4 acres of Diegan coastal sage scrub—Baccharis-dominated, and an additional 4.7 acres of disturbed Diegan coastal sage scrub—Baccharis-dominated vegetation throughout the study area.

METHODS

Dudek conducted a desktop CAGN-habitat suitability assessment of all coastal sage scrub habitat within the Project site. A number of areas were excluded from surveys due to the patch size being too small and/or isolated to support CAGN or the patch was buffered from the construction footprint by residential or commercial buildings. A number of areas were also excluded from the surveys as access permission was not provided by the landowner.

Focused surveys for CAGN were performed within the Project site between May 18 and July 7, 2016, by permitted biologists Jeff Priest, Tricia Wotipka, Kam Muri, Brenna Ogg, and Brian Lohstroh (Table 2). Non-permitted biologists Shelly Lawrence and Johanna Page accompanied CAGN-permitted biologists as passive observers, which included sitting quietly with little or no movement for prolonged periods while studying CAGN movements with binoculars and listening carefully to vocalizations. The surveys were conducted following the currently accepted USFWS *Coastal California Gnatcatcher (Polioptila californica californica) Presence/Absence Survey Protocol* (USFWS 1997), using the breeding season survey methods. The majority of the Project alignment overlaps with the City of San Diego's Multiple Species Conservation Program Subarea Plan, with the exception of those portions of the alignment in the City of Santee and community of Lakeside, California. The survey included three visits at a minimum of 7-day intervals. Survey routes are shown in Figure 3.

Survey routes completely covered all accessible areas of suitable CAGN habitat on site. Appropriate birding binoculars (7 x 35 to 10 x 50 power) were used to aid in detecting and identifying bird species. The survey conditions were within protocol limits, as shown in Table 2. A recording of vocalizations was used frequently to elicit a response from the species. The recording was played approximately every 50 to 100 feet, and when a CAGN was detected, the playing of the recording ceased to avoid harassment. Two additional surveys were conducted in August and September to review habitat conditions for CAGN.

Table 2
Survey Conditions

Survey Pass	Survey Area	Date	Time	Personnel	Conditions
1	2	05/18/2016	6:00 AM–12:00 PM	JP	60°F–72°F; 20%–100% cc; 0 to 5 mph wind
1	7	05/19/2016	7:00 AM–12:00 PM	JP	62°F–78°F; 0%–100% cc; 0 to 8 mph wind
1	5	05/20/2016	6:10 AM–11:10 AM	BL	59°F–65°F; 50%–70% cc; 0 to 5 mph wind
1	6	05/20/2016	6:00 AM–12:00 PM	JP	60°F–72°F; 50%–90% cc; 0 to 6 mph wind
1	3	05/27/2016	6:30 AM–12:00 PM	TW	63°F–68°F; 100% cc; 0 to 2 mph wind

Table 2
Survey Conditions

Survey Pass	Survey Area	Date	Time	Personnel	Conditions
1	4	05/28/2016	6:00 AM–12:25 PM	BO	64°F–74°F; 90%–100% cc; 0 to 5 mph wind
1	8	05/30/2016	6:05 AM–11:30 AM	BO	61°F–72°F; 100% cc; 0 to 5 mph wind
1	1	06/01/2016	6:45 AM–12:00 PM	TW	62°F–69°F; 100% cc; 0 to 2 mph wind
2	2	05/25/2016	6:00 AM–12:00 PM	JP	56°F–68°F; 70%–50% cc; 0 to 6 mph wind
2	7	05/26/2016	6:10 AM–12:00 PM	JP	55°F–72°F; 90%–100% cc; 0 to 4 mph wind
2	5	05/27/2016	6:00 AM–11:44 AM	BL, SL	61°F–72°F; 70%–100% cc; 0 to 4 mph wind
2	4	06/04/2016	6:00 AM–12:00 PM	BO	60°F–85°F; 0%–100% cc; 0 to 11 mph wind
2	6	06/07/2016	6:00 AM–11:30 AM	JP	58°F–78°F; 10%–100% cc; 1 to 6 mph wind
2	1	06/09/2016	7:45 AM–11:45 AM	KM	64°F–68°F; 100% cc; 2 to 4 mph wind
2	8	06/12/2016	7:05 AM–12:00 PM	BO	61°F–70°F; 50%–100% cc; 0 to 5 mph wind
2	3	06/23/2016	7:40 AM–12:30 PM	KM	72°F–81°F; 10%–80% cc; 2 to 7 mph wind
3	5	06/03/2016	6:00 AM–11:00 AM	BL, JOP	59°F–82°F; 10%–100% cc; 0 to 5 mph wind
3	6	06/14/2016	7:45 AM–12:30 PM	KM	62°F–72°F; 0%–100% cc; 2 to 5 mph wind
3	4	06/18/2016	6:00 AM–12:00 PM	BO	53°F–89°F; 0%–50% cc; 0 to 12 mph wind
3	8	06/19/2016	6:35 AM–9:45 AM	BO	67°F–95°F; 0%–10% cc; 0 to 5 mph wind
3	2	06/20/2016	5:40 AM–11:45 AM	BL	68°F–92°F; 0% cc; 0/3 to 3 to 5 mph wind
3	6, 7	06/27/2016	6:10 AM–11:15 AM	JP	68°F–90°F; 10%–70% cc; 0 to 5 mph wind
3	3	06/30/2016	6:00 AM–12:00 PM	TW	64°F–79°F; 0%–100% cc; 0 to 4 mph wind
3	1	07/07/2016	7:45 AM–12:35 PM	KM	67°F–72°F; 0%–100% cc; 2 to 5 mph wind
3	2, 6	07/07/2016	6:00 AM–11:30 AM	JP	63°F–82°F; 0%–100% cc; 0 to 5 mph wind
3+	6, 7, 8	08/16/2016	9:30 AM–2:00 PM	BAO	73°F–98°F; 0% cc; 0 to 1 mph wind
3+	1, 2, 3, 4, 5	09/28/2016	8:40 AM– 4:10 PM	BAO	67°F–90°F; 30%–0% cc; 0 to 5 mph wind

Notes: BL = Brian Lohstroh; BO = Brenna Ogg; JP = Jeff Priest; JOP = Johanna Page; KM = Kamarul Muri; SL = Shelley Lawrence; TW = Tricia Wotipka; BAO = Brock Ortega; °F = Fahrenheit ; cc = cloud cover; mph = miles per hour.

RESULTS

Approximately 10 CAGN pairs and 45 individuals were observed in the survey area, including approximately 9 juveniles. Table 3 summarizes CAGN observations per survey area. Leg bands were not detected during these survey efforts.

Table 3
Coastal California Gnatcatcher 2016 Survey Observations

Survey Area	Survey Area Maps	Estimated Total CAGN Individuals In Survey Map	Summarized Observations
1 (79.2 acres)	1, 2, 3, 4, and 5	6	One male individual was observed immediately west of the survey area on Map 2 on 09/06/16. One female individual observed approximately 150 feet east of the survey area on Map 4 on 05/25/16. Two groups of two uncapped individuals were observed adjacent to the survey area on Map 4 on 07/07/16.
2 (66.3 acres)	5, 6, 7, 8, and 9	2	One male was observed within the survey area on 05/27/16 on Map 9, and a pair was observed in the same general area on 07/07/16.
3 (87.5 acres)	10, 11, and 12	8	One pair was observed within middle portion of the survey area on Map 11 on 06/22/16. One unknown uncapped individual was observed on the most eastern portion of Map 11 on 06/30/16. A pair and a male individual were observed on 06/30/16 in the middle portion of Map 11. In the same general area, an unknown individual was observed on 06/22/16 and a juvenile on 06/30/16.
4 (61.6 acres)	12 and 13	17	Two unknown individuals were observed at the southern extent of this survey area on two survey dates – 06/04/16 and 05/28/16. An additional territory was also identified north of this with two unknown individuals observed on 05/28/16 and 06/04/16 and a male observed on 06/16/16. A single unknown individual was observed north of this area on 06/04/16. Three additional territories were observed within this survey area. The most northern territory had observations from all three survey dates (05/28/16, 06/03/16 and 06/18/16) and an observation from a biologist surveying the adjacent survey area on 05/27/16. The next most northern territory also had observations from all three survey dates and had observations of a pair with juveniles and unknown individuals. The next territory also had observations from all three dates and included observations of a male, a pair with juveniles, and unknown individuals.
5 (55.4acres)	12 and 13	5	One male was observed on 05/20/16 in the center of a large contiguous patch of suitable habitat on Map 12. A male individual was observed at the southern extent of this survey area on Map 12 on 05/20/16 and just outside the survey area on 05/27/16. A pair of was also observed in this vicinity on 06/03/16. A pair of was observed on 05/27/16 and 06/03/16 just north of the previous pair; the pair was observed with juveniles on the 05/27/16 survey date.
6 (77.5 acres)	14, 15, 16, and 17	6	A pair was observed on Map 14 of this survey area on 06/07/16 and 06/14/16. This pair was observed with juveniles (approximately two) on 06/14/16. A second pair was observed in the same patch on 06/07/16 and was confirmed as a separate pair.
7 (57.0 acres)	16 and 17	1	There was one juvenile observed on 06/27/16 on Map 17 within this survey area.
8 (25.7 acres)	17 and 18	0	There were no CAGN observations in this survey area.

Note: "Adult" is defined as an individual known to have hatched the year prior to 2016. Otherwise, exact age unknown.

A total of 105 species of wildlife were observed or detected during the surveys: 72 bird species, 16 invertebrate species, 6 mammals, 1 amphibian species, and 10 reptile species (Attachment A).

We certify that the information in this survey report and attachments fully and accurately represent our work. Please contact Brock Ortega (bortega@dudek.com) with questions or if you require additional information.

Sincerely,

Brock Ortega
Permit #TE813545/6

Jeffrey D. Priest
Permit #TE840619/5

Brian Lohstroh
Permit #TE063608/5

Kam Muri
Permit #TE813545/6

Tricia Wotipka
Permit #TE840619/2

Brenna Ogg
Permit # TE134338/3

Att: Figures 1–3
Attachment A

cc: Brock Ortega

REFERENCES

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Bontrager, D.R. 1991. *Habitat Requirements, Home Range Requirements, and Breeding Biology of the California Gnatcatcher* (Polioptila californica) *in South Orange County, California*. Prepared for Santa Margarita Company, Ranch Santa Margarita, California. April 1991.

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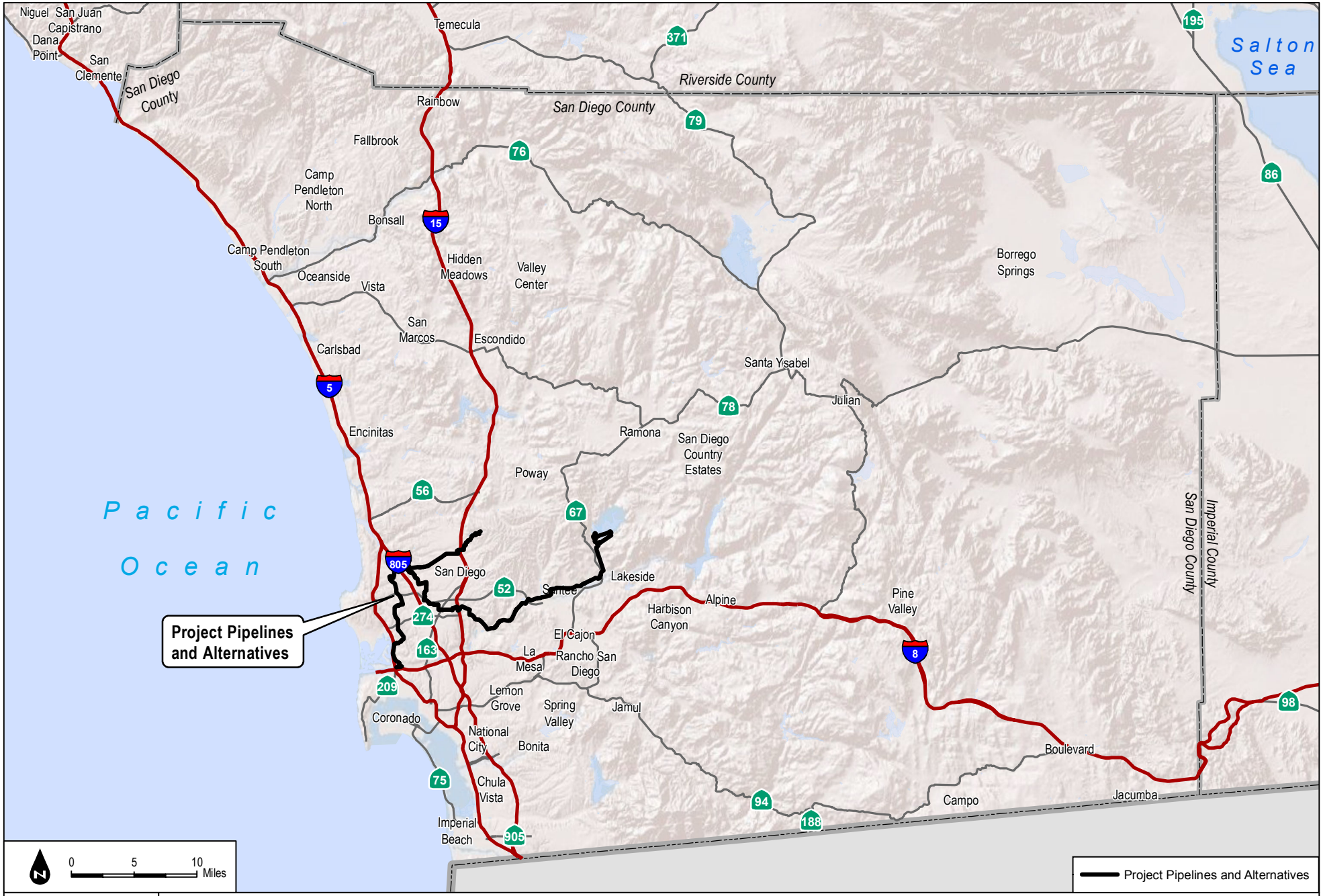

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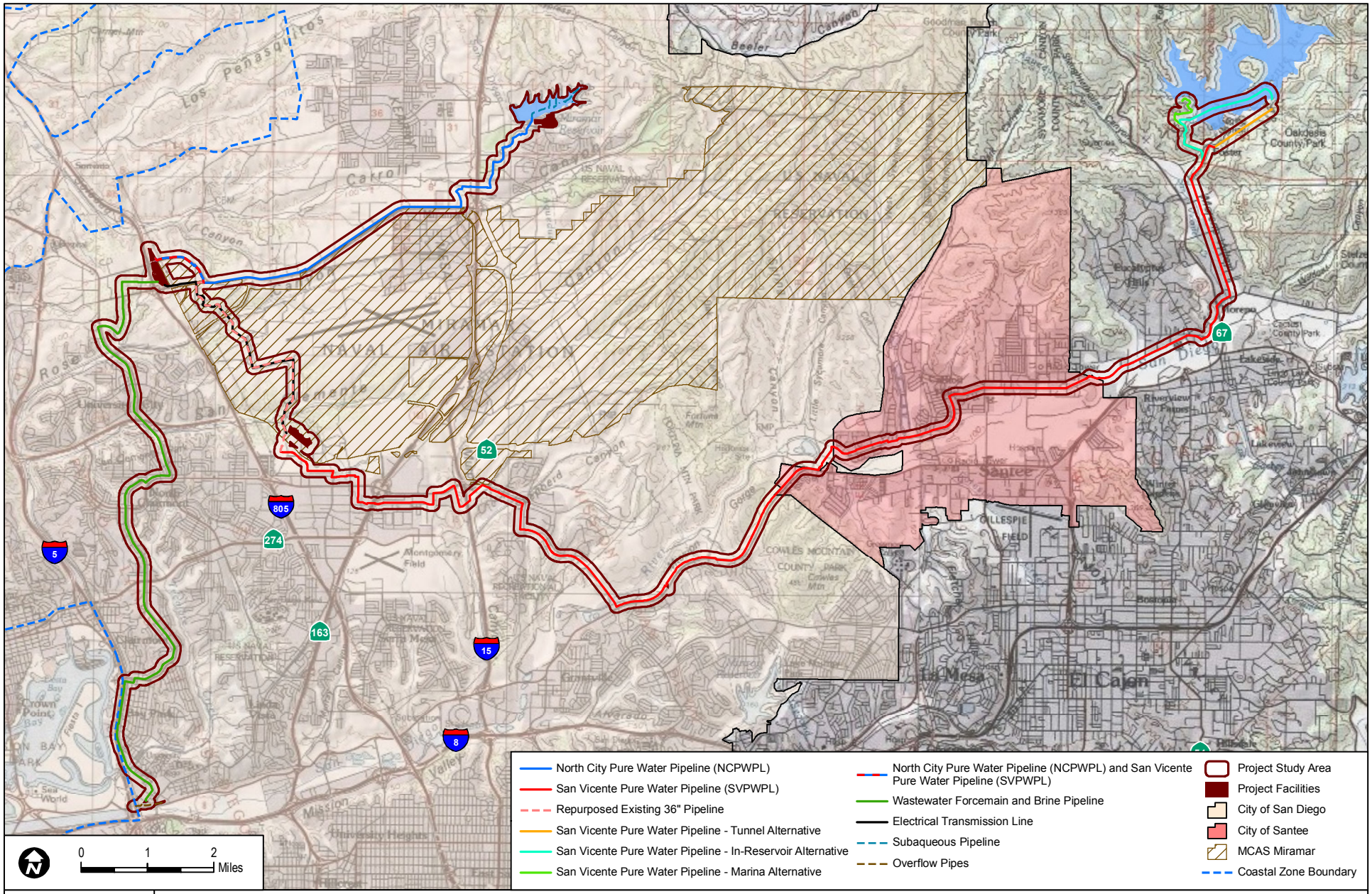
SOURCE: City San Diego 2016; ESRI 2016

FIGURE 1

Regional Map

2016 Coastal California Gnatcatcher Survey Report - Pure Water San Diego North City Project



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SOURCE: USGS 7.5-Minute Series Del Mar, Poway, San Vicente Reservoir, La Jolla, La Mesa, El Cajon Quadrangles; City of San Diego 2016; CA Coastal Commission

FIGURE 2

Vicinity Map

2016 Coastal California Gnatcatcher Survey Report - Pure Water San Diego North City Project

SOURCE: Bing Maps

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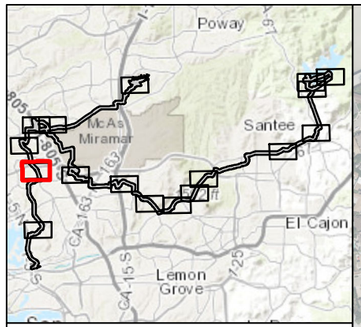
FIGURE 3-1

2016 Coastal California Gnatcatcher Survey Results - Map 1



0 290 580 Feet

SOURCE: Bing Maps

FIGURE 3-2

2016 Coastal California Gnatcatcher Survey Results - Map 2

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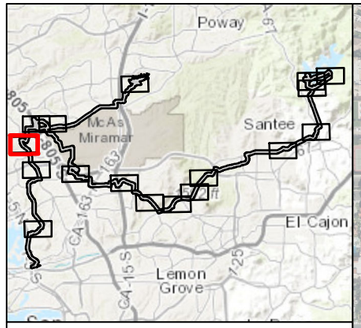


Project Study Area

CAGN Survey Routes

Suitable CAGN Habitat- No Permission to Access

Survey Areas

Survey Area 1

Vegetation Communities

CSS - Diegan Coastal Sage Scrub

dCSS - disturbed Diegan Coastal Sage Scrub

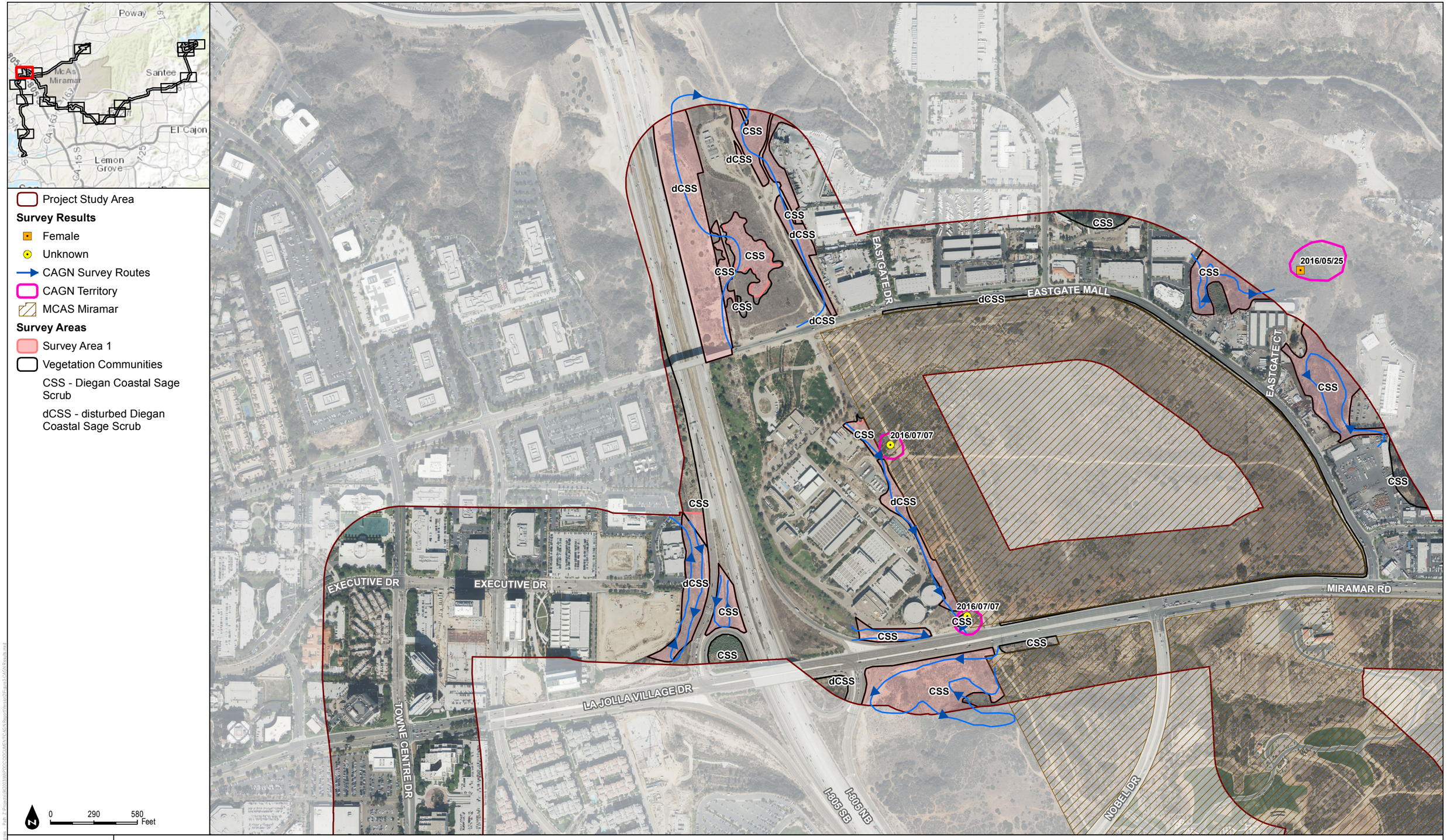
0 290 580 Feet

SOURCE: Bing Maps

DUDEK

FIGURE 3-3

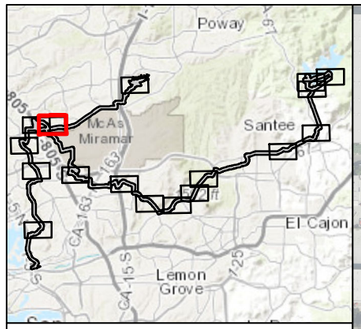
2016 Coastal California Gnatcatcher Survey Results - Map 3



SOURCE: Bing Maps

FIGURE 3-4

2016 Coastal California Gnatcatcher Survey Results - Map 4



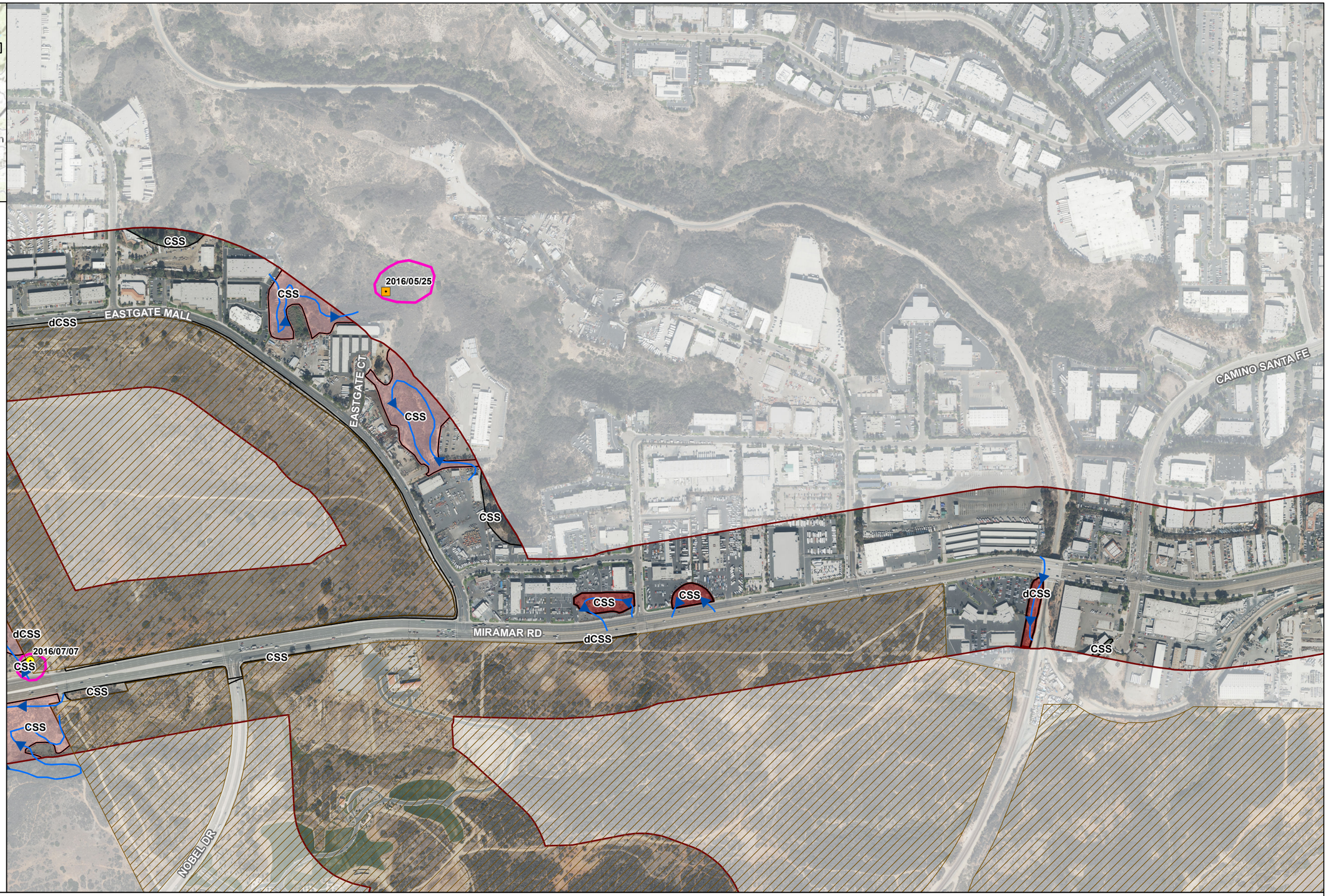
Project Study

Survey Results

- Female
- Unknown
- CAGN Survey Routes
- CAGN Territory
- MCAS Miramar

Survey Areas

- Survey Area 1
- Survey Area 2
- Vegetation Communities
  - CSS - Diegan Coastal Sage Scrub
  - dCSS - disturbed Diegan Coastal Sage Scrub



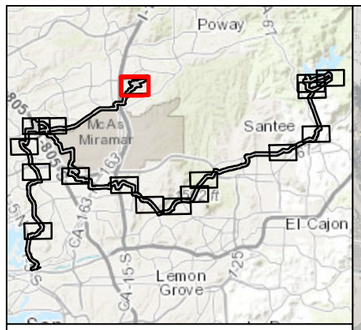
0 290 580 Feet

SOURCE: Bing Maps

FIGURE 3-5

2016 Coastal California Gnatcatcher Survey Results - Map 5

DUDEK



Project Study

CAGN Survey Routes

Survey Areas

Survey Area 2

Vegetation Communities

dCSS - disturbed Diegan Coastal Sage Scrub

0 290 580 Feet

SOURCE: Bing Maps

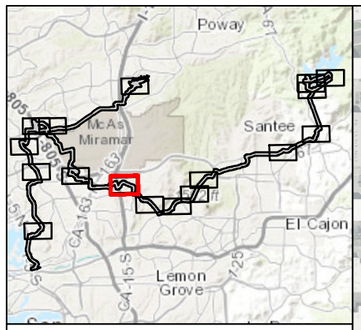
FIGURE 3-6

2016 Coastal California Gnatcatcher Survey Results - Map 6

SOURCE: Bing Maps

FIGURE 3-7

2016 Coastal California Gnatcatcher Survey Results - Map 7



Project Study Area

Survey Results

- Male
- Pair
- CAGN Survey Routes
- CAGN Territory
- Suitable CAGN Habitat- No Permission to Access
- MCAS Miramar

Survey Areas

- Survey Area 2
- Vegetation Communities
  - CSS - Diegan Coastal Sage Scrub
  - CSSB - Diegan Coastal Sage Scrub: Baccharis-dominated
  - dCSS - disturbed Diegan Coastal Sage Scrub

0 290 580 Feet

I-15 NB
I-15 SB
CLAIREMONT MESA BLVD
CLAIREMONT MESA BLVD
MURPHY CANYON RD
MURPHY CANYON RD
REPECHO DR
ANTIGUA BLVD
SANTO RD
RUFFIN CT
PORTO CT
TIERRASANTA BLVD
CSSB
CSSB
dCSS
dCSS
dCSS
dCSS
CSS
CSS
CSS
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2016/05/27
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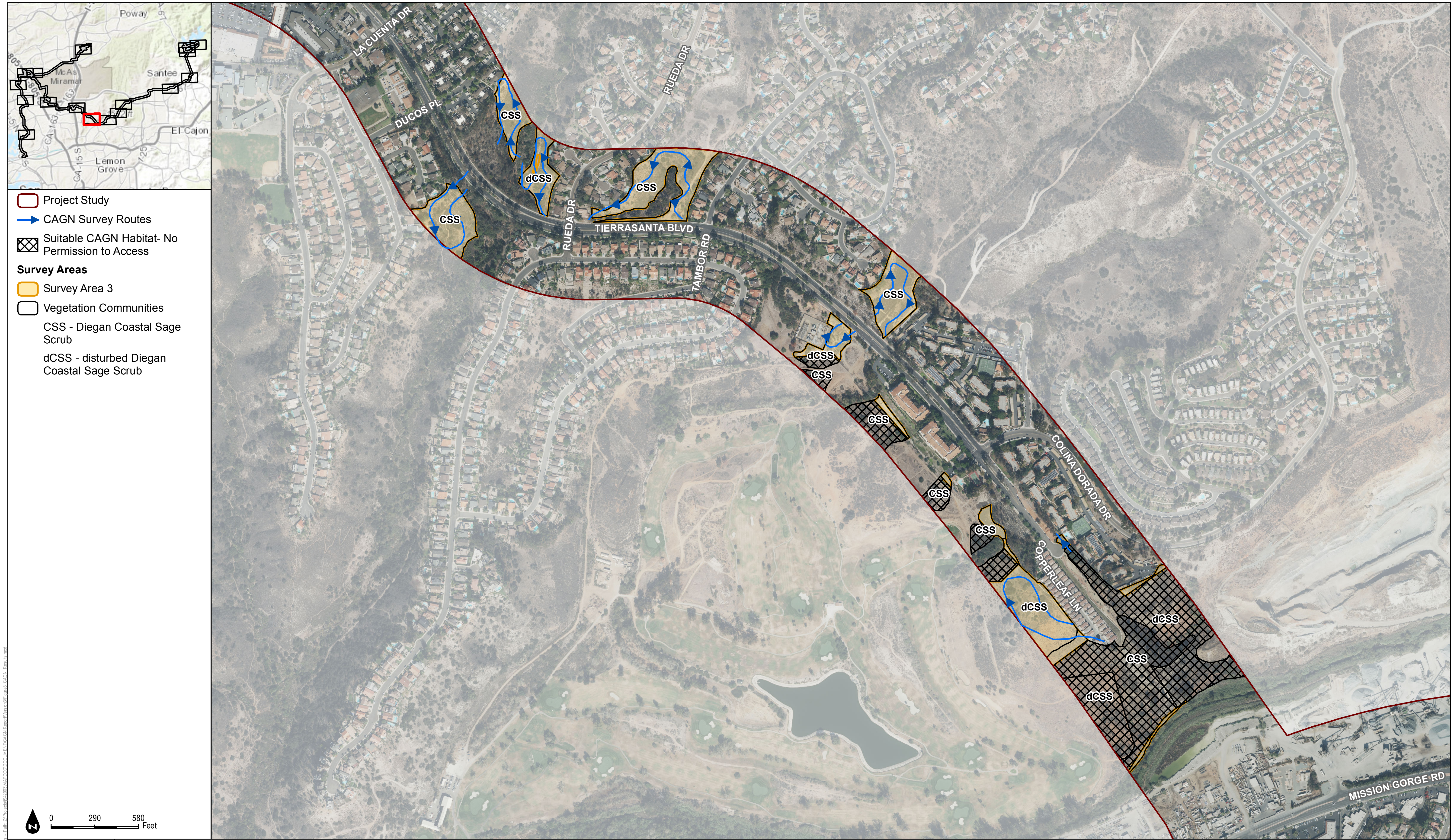
2016/07/07

SOURCE: Bing Maps

DUDEK

FIGURE 3-8

2016 Coastal California Gnatcatcher Survey Results - Map 8



SOURCE: Bing Maps

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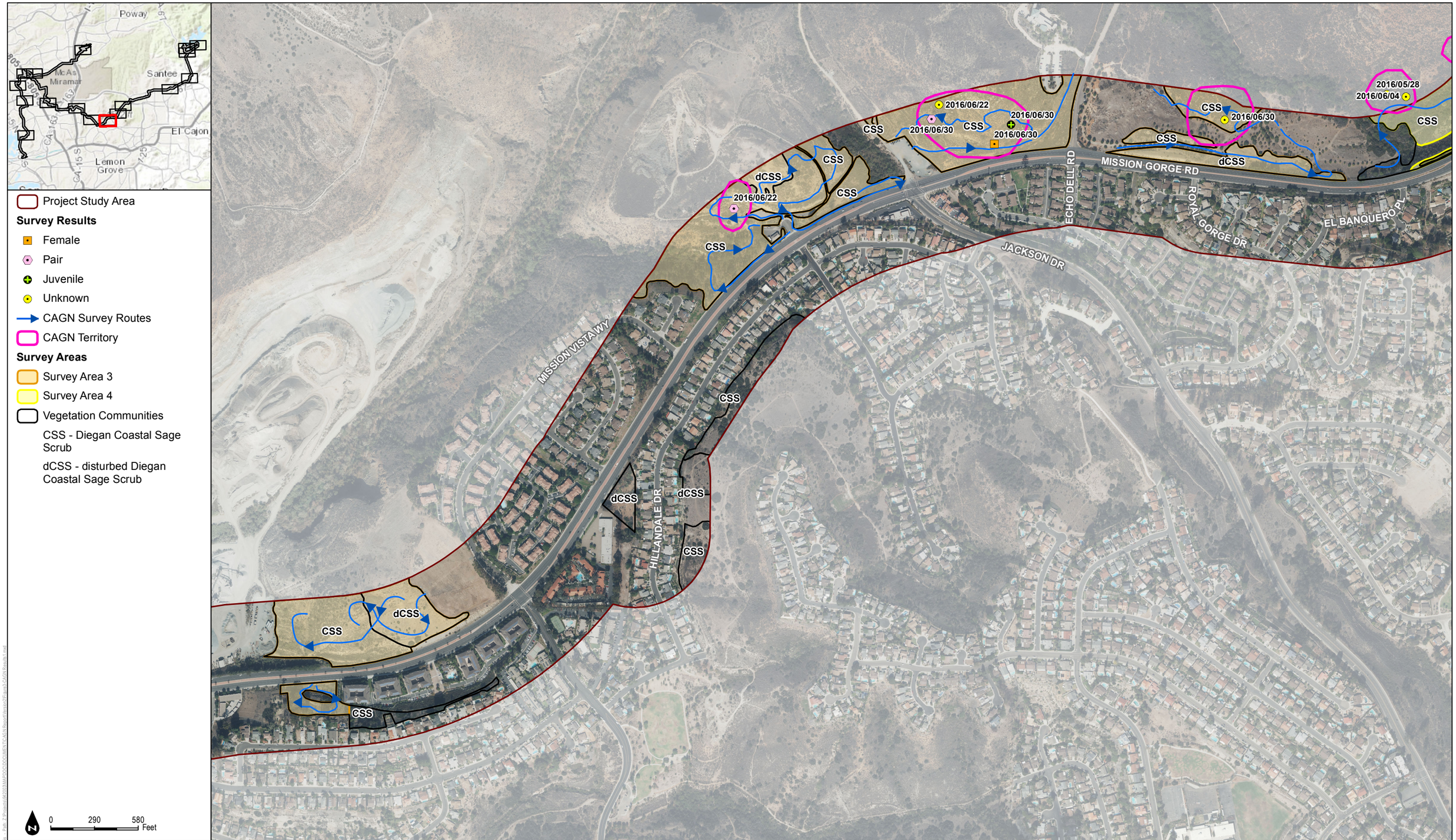
FIGURE 3-9

2016 Coastal California Gnatcatcher Survey Results - Map 9

2016 Coastal California Gnatcatcher Survey Report - Pure Water San Diego North City Project



SOURCE: Bing Maps

FIGURE 3-10

2016 Coastal California Gnatcatcher Survey Results - Map 10

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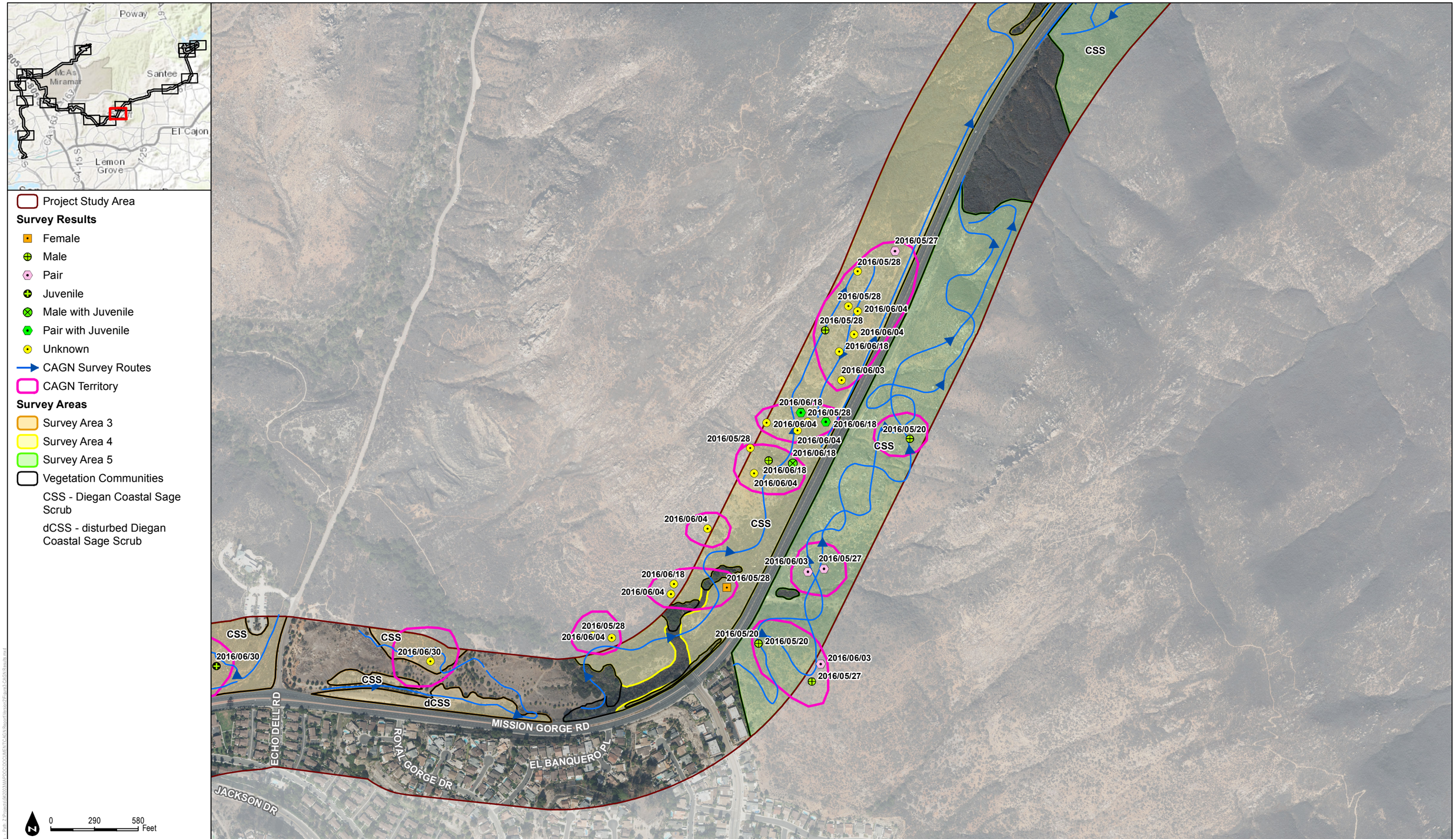
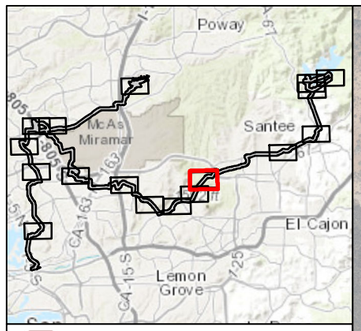


SOURCE: Bing Maps

FIGURE 3-11

2016 Coastal California Gnatcatcher Survey Results - Map 11



Project Study

CAGN Survey Routes

Suitable CAGN Habitat- No Permission to Access

Survey Areas

Survey Area 4

Survey Area 5

Vegetation Communities

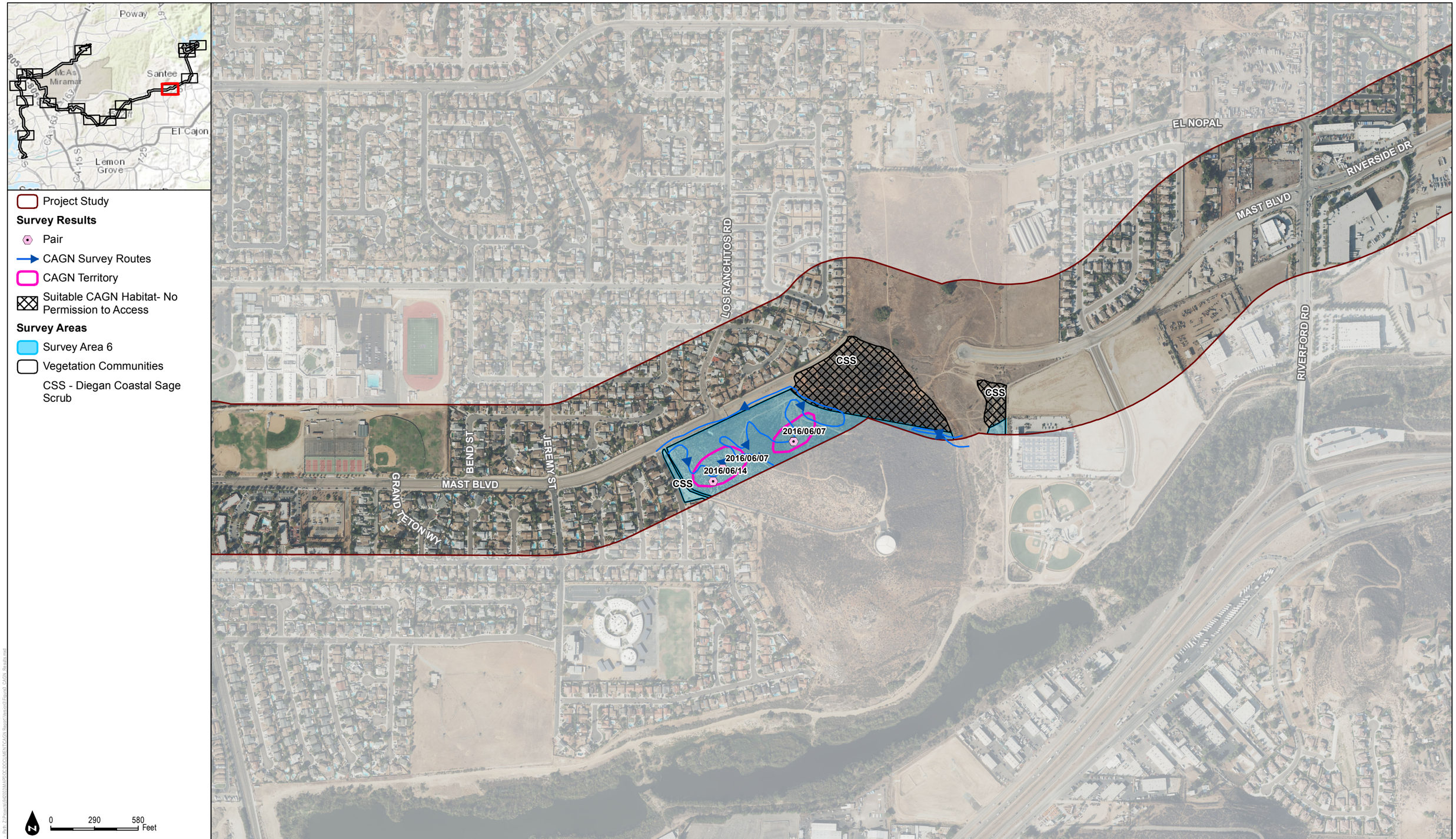
CSS - Diegan Coastal Sage Scrub

SOURCE: Bing Maps

DUDEK

FIGURE 3-12

2016 Coastal California Gnatcatcher Survey Results - Map 12

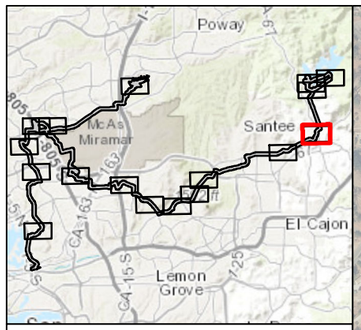


SOURCE: Bing Maps

FIGURE 3-13

2016 Coastal California Gnatcatcher Survey Results - Map 13

DUDEK



Project Study

CAGN Survey Routes

Suitable CAGN Habitat- No Permission to Access

Survey Areas

Survey Area 6

Vegetation Communities

CSS - Diegan Coastal Sage Scrub

SR-67

WILLOW RD

WILLOW RD

CSS

CSS

CSS

LAKESIDE AVE

RIVERSIDE DR

LAKESIDE AVE

CHANNEL RD

SR-67

SR-67

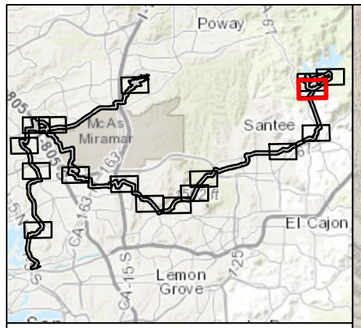
0 290 580 Feet

SOURCE: Bing Maps

FIGURE 3-14

2016 Coastal California Gnatcatcher Survey Results - Map 14

DUDEK



Project Study Area

San Vicente Pure Water Pipeline - Tunnel Alternative

Tunnel Entrance (Impact only at Entrance location; Survey conducted within 500' Buffer)

Survey Results

Juvenile

CAGN Survey Routes

CAGN Territory

Survey Areas

Survey Area 6

Survey Area 7

Survey Area 8

Vegetation Communities

CSS - Diegan Coastal Sage Scrub

CSS-r - Diegan Coastal Sage Scrub-Restored

0 295 590 Feet

2016/06/27

CSS

CSS-r

MORENO AVE

SR-67

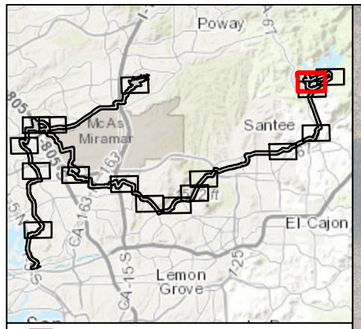
Impact only at Tunnel Entrance; Survey conducted within 500' Buffer

SOURCE: Bing Maps

FIGURE 3-15

2016 Coastal California Gnatcatcher Survey Results - Map 15

DUDEK



Project Study Area

San Vicente Pure Water Pipeline - Tunnel Alternative

Tunnel Entrance (Impact only at Entrance location; Survey conducted within 500' Buffer)

Survey Results

Juvenile

CAGN Survey Routes

CAGN Territory

Survey Areas

Survey Area 6

Survey Area 7

Survey Area 8

Vegetation Communities

CSS - Diegan Coastal Sage Scrub

CSS-r - Diegan Coastal Sage Scrub-Restored

0 295 590 Feet

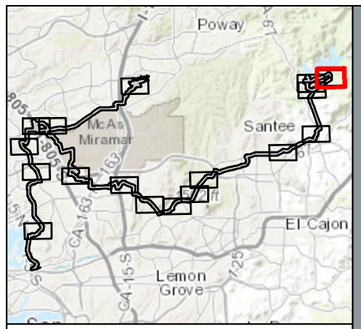
CSS-r
CSS-r
CSS
CSS
CSS
2016/06/27
CSS
CSS
CSS-r
CSS-r
CSS
CSS
CSS
MORENO AVE
CSS
CSS-r
CSS
CSS
CSS
CSS
CSS

Impact only at Tunnel Entrance; Survey conducted within 500' Buffer

SOURCE: Bing Maps

FIGURE 3-16

2016 Coastal California Gnatcatcher Survey Results - Map 16



SOURCE: Bing Maps

DUDEK

FIGURE 3-17

2016 Coastal California Gnatcatcher Survey Results - Map 17

ATTACHMENT A

Wildlife Species Observed in Study Area

ATTACHMENT A
Wildlife Species Observed in Study Area

BIRD

BLACKBIRDS, ORIOLES, AND ALLIES

ICTERIDAE—BLACKBIRDS

Icterus bullockii—Bullock's oriole

* *Molothrus ater*—brown/headed cowbird

BUSHTITS

AEGITHALIDAE—LONG/TAILED TITS AND BUSHTITS

Psaltriparus minimus—bushtit

CARDINALS, GROSBEAKS, AND ALLIES

CARDINALIDAE—CARDINALS AND ALLIES

Pheucticus melanocephalus—black/headed grosbeak

EMBERIZINES

EMBERIZIDAE—EMBERIZIDS

Melospiza melodia—song sparrow

Melozone crissalis—California towhee

Pipilo maculatus—spotted towhee

FALCONS

FALCONIDAE—CARACARAS AND FALCONS

Falco sparverius—American kestrel

FINCHES

FRINGILLIDAE—FRINGILLINE AND CARDUELINE FINCHES AND ALLIES

Spinus psaltria—lesser goldfinch

Haemorhous mexicanus—house finch

FLYCATCHERS

TYRANNIDAE—TYRANT FLYCATCHERS

Contopus sordidulus—western wood/pewee

Myiarchus cinerascens—ash/throated flycatcher

Sayornis nigricans—black phoebe
Sayornis saya—Say's phoebe
Tyrannus verticalis—western kingbird
Tyrannus vociferans—Cassin's kingbird

HAWKS

ACCIPITRIDAE—HAWKS, KITES, EAGLES, AND ALLIES

Buteo jamaicensis—red/tailed hawk
Buteo lineatus—red/shouldered hawk

HUMMINGBIRDS

TROCHILIDAE—HUMMINGBIRDS

Calypte anna—Anna's hummingbird
Selasphorus sasin—Allen's hummingbird

JAYS, MAGPIES, AND CROWS

CORVIDAE—CROWS AND JAYS

Aphelocoma californica—western scrub/jay
Corvus brachyrhynchos—American crow
Corvus corax—common raven

MOCKINGBIRDS AND THRASHERS

MIMIDAE—MOCKINGBIRDS AND THRASHERS

Mimus polyglottos—northern mockingbird
Toxostoma redivivum—California thrasher

NEW WORLD QUAIL

ODONTOPHORIDAE—NEW WORLD QUAIL

Callipepla californica—California quail

NEW WORLD VULTURES

CATHARTIDAE—CARDINALS AND ALLIES

Cathartes aura—turkey vulture

OLD WORLD WARBLERS AND GNATCATCHERS

SYLVIIDAE—SYLVIID WARBLERS

Polioptila caerulea—blue/gray gnatcatcher
Polioptila californica californica—coastal California gnatcatcher

PIGEONS AND DOVES

COLUMBIDAE—PIGEONS AND DOVES

Zenaida macroura—mourning dove
* *Columba livia*—rock pigeon (rock dove)

ROADRUNNERS AND CUCKOOS

CUCULIDAE—CUCKOOS, ROADRUNNERS, AND ANIS

Geococcyx californianus—greater roadrunner

SILKY FLYCATCHERS

PTILOGONATIDAE—SILKY/FLYCATCHERS

Phainopepla nitens—phainopepla

SWALLOWS

HIRUNDINIDAE—SWALLOWS

Hirundo rustica—barn swallow
Petrochelidon pyrrhonota—cliff swallow
Stelgidopteryx serripennis—northern rough/winged swallow

SWIFTS

APODIDAE—SWIFTS

Aeronautes saxatalis—white/throated swift

WOOD WARBLERS AND ALLIES

PARULIDAE—WOOD/WARBLERS

Geothlypis trichas—common yellowthroat
Oreothlypis celata—orange/crowned warbler

WOODPECKERS

PICIDAE—WOODPECKERS AND ALLIES

Melanerpes formicivorus—Acorn woodpecker
Picoides nuttallii—Nuttall's woodpecker
Colaptes auratus—northern flicker

WRENS

TROGLODYTIDAE—WRENS

Salpinctes obsoletus—rock wren
Thryomanes bewickii—Bewick's wren
Troglodytes aedon—house wren
Campylorhynchus brunneicapillus—cactus wren

WRENTITS

TIMALIIDAE—BABBLERS

Chamaea fasciata—wrentit

INVERTEBRATE

BUTTERFLIES

NYMPHALIDAE—BRUSH/FOOTED BUTTERFLIES

Junonia coenia—common buckeye
Limenitis lorquini—Lorquin's admiral

RIODINIDAE—METALMARKS

Apodemia mormo virgulti—Behr's metalmark

HESPERIIDAE—SKIPPERS

Erynnis funeralis—funereal duskywing

PAPILIONIDAE—SWALLOWTAILS

Papilio zelicaon—anise swallowtail

PIERIDAE—WHITES AND SULFURS

Pieris rapae—cabbage white
Pontia protodice—checkered white

MAMMAL

CANIDS

CANIDAE—WOLVES AND FOXES

Canis latrans—coyote

HARES AND RABBITS

LEPORIDAE—HARES AND RABBITS

Sylvilagus audubonii—desert cottontail

Sylvilagus bachmani—brush rabbit

RACCOONS

PROCYONIDAE—RACCOONS AND RELATIVES

Procyon lotor—raccoon

RATS AND MICE

MURIDAE—RATS AND MICE

Neotoma fuscipes—dusky/footed woodrat

SQUIRRELS

SCIURIDAE—SQUIRRELS

Spermophilus (Otospermophilus) beecheyi—California ground squirrel

UNGULATES

CERVIDAE—DEERS

Odocoileus hemionus—mule deer

REPTILE

LIZARDS

PHRYNOSOMATIDAE—IGUANID LIZARDS

Sceloporus occidentalis—western fence lizard

Uta stansburiana—common side/blotched lizard

SNAKES

VIPERIDAE—VIPERS

Crotalus ruber—red diamondback rattlesnake

* signifies introduced (non/native) species

APPENDIX F

2016 Focused Least Bell's Vireo and Southwestern Willow Flycatcher

DUDEK

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October 25, 2016 9420-03

Recovery Permit Coordinator
U.S. Fish and Wildlife Service
2177 Salk Avenue, Suite 250
Carlsbad, California 92008

Subject: ***2016 Focused Least Bell's Vireo and Southwestern Willow Flycatcher Survey Report for the Pure Water San Diego Program North City Project, County of San Diego, California***

Dear Recovery Permit Coordinator:

This report documents the results of protocol-level presence/absence surveys for the state- and federally listed endangered least Bell's Vireo (*Vireo bellii pusillus*; vireo) and the state- and federally listed endangered southwestern willow flycatcher (*Empidonax traillii extimus*; flycatcher). The surveys were conducted in support of the Pure Water San Diego Program North City project (North City Project), located in the County of San Diego, California. The North City Project is the first phase of the City of San Diego's Public Utilities Department (PUD) proposed program to provide a safe, secure, and sustainable local drinking water supply for San Diego. The North City Project consists of the design and construction of a new advanced water treatment facility, expansion of a wastewater treatment facility, pump stations, transmission lines, and pipelines. The North City Project site contains approximately 147.3 acres of potentially suitable vireo and flycatcher habitat that were surveyed in 2016.

The vireo and flycatcher 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

North City Project pipelines extend from the Cities of San Diego, Santee, and the community of Lakeside in unincorporated San Diego County, in addition to federal lands within MCAS Miramar (Figure 1, Regional Map). The site occupies portions of Township 14 South, Range 1 East, projected Sections 30 and 31; Township 14 South, Range 1 West, projected Sections 25 and 36; Township 14 South, Range 2 West, projected Sections 32, and 33; Township 15 South, Range 1 East, projected Sections 6 and 18; Township 15 South, Range 1 West, projected

Sections 1, 23 and 30; Township 15 South, Range 2 West, projected Sections 6, 25, 29, 30, 31, 32, 33, 35 and 36; Township 15 South, Range 3 West, projected Sections 9, 10, 11, 16, 17, 20, 25, 26, and 28; Township 16 South, Range 2 West, projected Sections 1, 2, 3, and 4; and Township 16 South, Range 3 West, projected Section 9 on the San Vicente Reservoir, El Cajon, La Mesa, Poway, La Jolla, and Del Mar U.S. Geological Survey 7.5 minute quadrangle maps (Figure 2, Vicinity Map).

Elevations range from about 94 feet above mean sea level in the southwestern portion of Pure Water Program area to approximately 688-feet above mean sea level.

Soils on site consist of acid igneous rock land; Altamont clay; Carlsbad-Urban Land complex, Chesterton fine sandy loam; Chesterton-Urban Land complex; Cieneba rocky and very rocky coarse sandy loam, Cieneba-Fallbrook rocky sandy loam; Diablo clay; Diablo-Olivenhain complex; Diablo-Urban land complex; Fallbrook sandy loam; Fallbrook-Vista sandy loam; Friant rocky fine sandy loam; Gaviota fine sandy loam; gravel pits; Huerhuero loam; metamorphic rock land; Olivenhain cobbly loam; Ramona sandy loam; Redding cobbly and gravelly loam; Redding-Urban land complex; riverwash; Salinas clay loam; stony land; terrace escarpments; Tujunga sand; and Visalia sandy loam (USDA 2016).

VEGETATION COMMUNITIES

Based on species composition and general physiognomy, 13 vegetation communities were identified on the Pure Water Program site and off-site mapping areas (Figure 3, Vegetation Communities). Their acreages are presented in Table 1. Approximately 147.3 acres of vireo- and flycatcher-suitable habitat were mapped on the Project site according to Oberbauer et al. (2008).

Vegetation acreages are presented in Table 1, and primary constituent element habitats suitable for vireo and flycatcher are described following the table.

Table 1
Vireo and Flycatcher-Suitable Vegetation Communities on the Pure Water Program Site

Vegetation Community	Acres
Arundo-Dominated Riparian	7.5
disturbed Mulefat Scrub	1.9
disturbed Southern Willow Scrub	4.1
Mulefat Scrub	6.5
Southern Arroyo Willow Riparian Forest	29.1
Southern Coast Live Oak Riparian Forest	3.6

Table 1
Vireo and Flycatcher-Suitable Vegetation Communities on the Pure Water Program Site

Vegetation Community	Acres
Southern Cottonwood-Willow Riparian Forest	26.1
Southern Riparian Forest	6.8
Southern Sycamore-Alder Riparian Woodland	8.1
Southern Willow Scrub	53.6
Total	**147.3**

Arundo-Dominated Riparian

Arundo-dominated riparian is densely vegetated riparian thickets dominated by giant reed (*Arundo donax*) (Oberbauer et al. 2008). Arundo-dominated riparian primarily occurs along major rivers in coastal Southern California, including Otay River, Sweetwater River, San Diego River, San Dieguito River, and San Luis Rey River.

Mulefat Scrub (including Disturbed forms)

Mulefat scrub is a depauperate, tall, herbaceous riparian scrub strongly dominated by mulefat (*Baccharis salicifolia*). This early seral community is maintained by frequent flooding. Site factors include intermittent stream channels with fairly coarse substrate and moderate depth to the water table (Oberbauer et al. 2008). This community type is widely scattered along intermittent streams and near larger rivers.

Areas mapped as mulefat scrub within the Project Area are dominated by mulefat and are typically found along drainages that receive intermittent water throughout the year.

Disturbed mulefat scrub was mapped where 50% or more of the vegetation cover was dominated by non-native vegetation.

Southern Arroyo Willow Riparian Woodland

Southern arroyo willow riparian woodland is described by Oberbauer et al. (2008) as a dense, low, closed-canopy broad-leaved, winter-deciduous woodland dominated by arroyo willow (*Salix lasiolepis*). Arroyo willow generally grows as a large, tree-like shrub. Characteristic species include white alder (*Alnus rhombifolia*), California wax myrtle (*Myrica californica*), and Pacific willow (*Salix lasiandra*).

Southern Coast Live Oak Riparian Forest

Southern coast live oak riparian forest is a dense riparian forest dominated by coast live oak (*Quercus agrifolia*), often with an herbaceous understory. This community occurs along the bottom or outer slopes of larger streams (Oberbauer et al. 2008). Areas mapped as oak riparian forest are dominated by coast live oak.

Southern Cottonwood-Willow Riparian Forest

Southern cottonwood-willow riparian forest is dominated by deciduous trees species: Fremont cottonwood (*Populus fremontii*) or balsam poplar (*Populus trichocarpa*), and various willow trees (*Salix* spp.) (Oberbauer et al. 2008). The shrub layer typically includes various willow species (Oberbauer et al. 2008).

Southern Riparian Forest

Southern riparian forest is a dense riparian forest dominated by western sycamore (*Platanus racemose*), *Populus* species, and other wetland plants (Oberbauer et al. 2008). Southern riparian forests are primarily found along streams and rivers.

Southern Sycamore–Alder Riparian Woodland

Southern sycamore–alder riparian woodland is described by Oberbauer et al. (2008) as a tall, open, broad-leaved, winter-deciduous streamside woodland dominated by well-spaced western sycamore and often also white alder. Seldom forming closed canopy forests, these stands may appear as trees scattered in a shrubby thicket of sclerophyllous (i.e., evergreen) and deciduous species and are subject to seasonally high-intensity flooding. Characteristic species of this habitat type include California mugwort (*Artemisia douglasiana*), coast live oak, California blackberry (*Rubus ursinus*), California laurel (*Umbellularia californica*), and giant stinging nettle (*Urtica holosericea*).

Southern Willow Scrub (including Disturbed forms)

Southern willow scrub is a dense, broad-leafed, winter-deciduous riparian thicket dominated by several species of willow (*Salix* spp.) that occurs on loose, large-grained alluvium along stream channels. The closed canopy inhibits the development of a diverse understory. It may contain scattered Fremont's cottonwood and western sycamore trees emerging above the willow canopy and requires repeated flooding to avoid succession to a community dominated by these trees (Oberbauer et al. 2008).

On site, southern willow scrub occurs in patches dominated by arroyo willow (*Salix lasiolepis*) and black willow, with an understory of mulefat (*Baccharis salicifolia*).

Disturbed southern willow scrub was mapped where 50% or more of the vegetation cover was dominated by non-native vegetation.

METHODS

Suitable habitat areas within the study area were surveyed eight times for vireo and five times for flycatcher. Flycatcher-permitted Dudek wildlife biologists Paul M. Lemons (Permit #TE051248), Brock A. Ortega (Permit # TE813545-6), Jeff D. Priest (Permit # TE840619-3), and Anita M. Hayworth (Permit # TE781084-8) conducted all combined flycatcher/vireo surveys, while qualified Dudek biologists Callie J. Ford, Patricia Schuyler, Erin Bergman, and Marshall Paymard conducted vireo surveys on some visits (Table 2). Only flycatcher-permitted biologists used audio-playback techniques to elicit flycatcher responses. Focused surveys for these species were initiated on April 25, 2016, and continued through July 31, 2016.

Table 2
Vireo and Flycatcher Survey Schedule and Conditions

Survey Pass #/ Focus	Date	Hours	Personnel	Survey Area	Conditions (temperature, cloud cover, wind speed)
1-LBVI	2016-04-25	6:51 AM–9:52 AM	PS	3	57–61°F; 70–80% cc; 0-2 to 0-1 mph wind
1-LBVI	2016-04-27	6:02 AM–11:00 AM	KS	1A	55–62°F; 10–40% cc; 1-5 mph wind
1-LBVI	2016-04-28	6:02 AM–11:00 AM	KS	1B	55–58°F; 100% cc; 3-5 mph wind
1-LBVI	2016-05-04	6:28 AM–11:06 AM	CF	2	64–69°F; 0–100% cc; 0 mph wind
2-LBVI	2016-05-09	6:00 AM–10:59 AM	KS	1A	64–66°F; 90–100% cc; 2-3 mph wind
2-LBVI	2016-05-09	7:20 AM–10:16 AM	PS	3	63–68°F; 40–80% cc; 0-1 mph wind
2-LBVI	2016-05-10	6:04 AM–11:00 AM	KS	1B	64–70°F; 100% cc; 1 mph wind
2-LBVI 1-SWFL	2016-05-17	4:50 AM–10:35 AM	JP	2	57–65°F; 100% cc; 0-1 to 1-4 mph wind
3-LBVI 1-SWFL	2016-05-19	5:58 AM–10:31 AM	BO	1B	53–64°F; 100% cc; 0-1 mph wind
3-LBVI 1-SWFL	2016-05-19	5:40 AM–11:00 AM	PL	1A	56–67°F; 100% cc; 0 to 1-4 mph wind
1-SWFL	2016-05-19	5:54 AM–11:09 AM	AH	3	61–75°F; 30–100% cc; 2-3 mph wind
3-LBVI 2- SWFL	2016-06-01	5:00 AM–11:00 AM	JP	2	54–65°F; 100% cc; 0-1 to 1-4 mph wind
2- SWFL	2016-06-02	5:04 AM–10:08 AM	AH	3	57–75°F; 0% cc; 2-3 mph wind

Table 2
Vireo and Flycatcher Survey Schedule and Conditions

Survey Pass #/ Focus	Date	Hours	Personnel	Survey Area	Conditions (temperature, cloud cover, wind speed)
4-LBVI 2- SWFL	2016-06-03	5:50 AM–11:00 AM	PL	1A	58–76°F; 0–100% cc; 0-1 to 2-5 mph wind
4-LBVI 2- SWFL	2016-06-04	6:03 AM–10:50 AM	BO	1B	63–85°F; 70% cc; 0-1 mph wind
3-LBVI	2016-06-06	7:25 AM–10:15 AM	PS	3	64–72°F; 10–100% cc; 0-2 mph wind
5-LBVI 3- SWFL	2016-06-16	5:50 AM–11:00 AM	PL	1A	62–79°F; 0–10% cc; 0-1 to 1-4 mph wind
4-LBVI	2016-06-17	6:57 AM–10:05 AM	PS	3	64–79°F; 0–10% cc; 0-2 mph wind
5-LBVI 3- SWFL	2016-06-17	5:14 AM–10:32 AM	BO	1B	60–75°F; 20% cc; 0 mph wind
4-LBVI 3- SWFL	2016-06-17	5:00 AM–11:00 AM	JP	2	50–85°F; 0–10% cc; 0-2 to 1-3 mph wind
3- SWFL	2016-06-17	5:08 AM–10:09 AM	AH	3	64–75°F; 30–70% cc; 2-3 mph wind
6-LBVI	2016-06-26	6:08 AM–11:02 AM	MP	1A	66–80°F; 0–10% cc; 1-2 mph wind
6-LBVI	2016-06-27	6:00 AM–11:02 AM	MP	1B	67–78°F; 10% cc; 1-2 mph wind
5-LBVI	2016-06-27	6:05 AM–10:46 AM	PS	3	66–82°F; 0–50% cc; 0-2 mph wind
5-LBVI 4- SWFL	2016-06-30	5:00 AM–11:00 AM	JP	2	62–80°F; 0–100% cc; 0-1 to 3-6 mph wind
4- SWFL	2016-07-01	5:33 AM–10:10 AM	AH	3	65–73°F; 0–100% cc; 2 mph wind
7-LBVI 4- SWFL	2016-07-05	5:31 AM–10:48 AM	BO	1B	65–82°F; 0–100% cc; 5 mph wind
7-LBVI 4- SWFL	2016-07-07	5:50 AM–11:00 AM	PL	1A	63–74°F; 0–100% cc; 0 to 1-5 mph wind
6-LBVI	2016-07-08	6:05 AM–10:54 AM	PS	3	64–77°F; 0–100% cc; 0-2 mph wind
6-LBVI 5- SWFL	2016-07-11	5:00 AM–11:00 AM	JP	2	64–76°F; 0–100% cc; 1-4 to 1-5 mph wind
5- SWFL	2016-07-14	5:30 AM–10:15 AM	AH	3	66–70°F; 50–100% cc; 1 mph wind
8-LBVI 5- SWFL	2016-07-15	5:53 AM–11:05 AM	BO	1B	65–77°F; 0–100% cc; 0-3 mph wind
8-LBVI 5- SWFL	2016-07-17	6:00 AM–11:00 AM	PL	1A	64–77°F; 0–100% cc; 0-1 to 2-6 mph wind
7-LBVI	2016-07-20	6:12 AM–10:39 AM	PS	3	64–82°F; 10–100% cc; 0-2 mph wind
7-LBVI	2016-07-21	6:00 AM–11:03 AM	MP	2	65–86°F; 10% cc; 1-2 to 2-3 mph wind
8-LBVI	2016-07-31	5:57 AM–11:57 AM	EB	3	69.3–85.1°F; 0–100% cc; 0-0.6 mph wind
8-LBVI	2016-07-31	6:20 AM–11:25 AM	CF	2	68–86°F; 0–100% cc; 0 mph wind

Notes: LBVI = least Bell's vireo; SWFL = Southwestern willow flycatcher; AH = Anita Hayworth; BO = Brock Ortega; CF = Callie Ford; EB = Erin Bergman; JP = Jeff Priest; KS = Kevin Shaw; MP = Marshall Paymard; PL = Paul Lemons; PS = Patricia Schuyler; cc = cloud cover; mph = miles per hour; °F = degrees Fahrenheit.

As directed by Stacey Love, United States Fish & Wildlife Service (USFWS) Recovery Permit Coordinator (via email sent on April 27, 2016), surveys for vireo and flycatcher were not conducted concurrently. Due to differences in detectability, surveys were conducted sequentially, with surveys for the flycatcher first (i.e., first thing in the morning) and surveys for the vireo conducted afterwards. Additionally, for linear survey routes within a riparian corridor: flycatchers were surveyed from the starting point to the end, and vireos were surveyed on the way back. This route was arranged to cover all suitable habitat on site (depicted on Figure 3). A vegetation map (1:2,400 scale; 1 inch=200 feet) of the study area was available to record any detected vireo or flycatcher. Binoculars (7×50, 10×42, 10×50) were used to aid in detecting and identifying wildlife species.

The five surveys conducted for flycatcher followed the currently accepted protocol (*A Natural History Summary and Survey Protocol for the Southwestern Willow Flycatcher* [Sogge et al. 2010]), which states that a minimum of five survey visits is needed to evaluate project effects on flycatchers. It is recommended that one survey is made between May 15 and 31, two surveys between June 1 and June 24, and two surveys between June 25 and July 17. Surveys during the final period (June 25 and July 17) were separated by at least five days. 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.

A Section 10(a)(1)(A) permit is not required to conduct presence/absence surveys for vireo. The eight surveys for vireo followed the currently accepted *Least Bell's Vireo Survey Guidelines* (USFWS, 2001), which states that a minimum of eight survey visits should be made to all riparian areas and any other potential vireo habitats between April 10 and 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 were not used during the surveys. Surveys were conducted between dawn and noon and were not conducted during periods of excessive or abnormal cold, heat, wind, rain, or other inclement weather.

Weather conditions, time of day, and season were appropriate for the detection of flycatcher and vireo (Table 2).

RESULTS

Ten (10) vireo Use Areas were observed on several occasions during the 2016 survey effort. Observed vireo use areas are defined as the specific areas of habitat that each vireo was observed

utilizing throughout the 2016 survey effort. All vireos detected within the study area were adult males, either singing or directly observed, and are shown in Figures 3a through 3n. Due to the long linear project alignment and fragmented suitable habitat areas to be accessed throughout the alignment, long periods of time were not spent at each vireo location to determine behavior (i.e., paired, unpaired, breeding status) of each individual vireo.

A one-time observation of willow flycatcher (*Empidonax traillii*) was observed by biologist Brock Ortega on May 19, 2016 (Figure 3f). The flycatcher was vocal, responding to taped playback, with no breeding behavior observed during this observation. According to Sogge (2010), because this flycatcher was observed during Period 1 (May 15 to 31) was not observed again during all remaining survey visits, it is not expected to be a southwestern willow flycatcher breeding within the study area.

Sensitive species observed included coastal California gnatcatcher (*Polioptila californica californica*), a federally listed threatened species; yellow-breasted chat (*Icteria virens*), a California Department of Fish and Wildlife (CDFW) Species of Special Concern; yellow warbler (*Dendroica petechia*), a CDFW Species of Special Concern; southwestern pond turtle (*Actinemys marmorata pallida*), a CDFW Species of Special Concern; Cooper's hawk (*Accipiter cooperii*), a CDFW Watch List species; and Nuttall's woodpecker (*Picoides nuttallii*), a USFWS Bird of Conservation Concern. Sensitive species observation locations are shown in Figures 3a through 3n. Brown-headed cowbird was also detected within the study area (Figure 3m).

One hundred twenty-seven wildlife species were observed during the focused surveys. A full list of wildlife species observed during the survey is provided in Appendix A. Data forms (Sogge et al. 2010) for willow flycatcher are included as Appendix B.

Please feel free to contact me at 760.479.4238 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,

Paul Lemons
Wildlife Biologist

Brock Ortega
Permit #TE813545-6

Anita Hayworth
Permit #TE781084-8

Jeffrey D. Priest
Permit #TE840619

Att: Figures 1–3n
Appendix A and B

cc: Brock Ortega

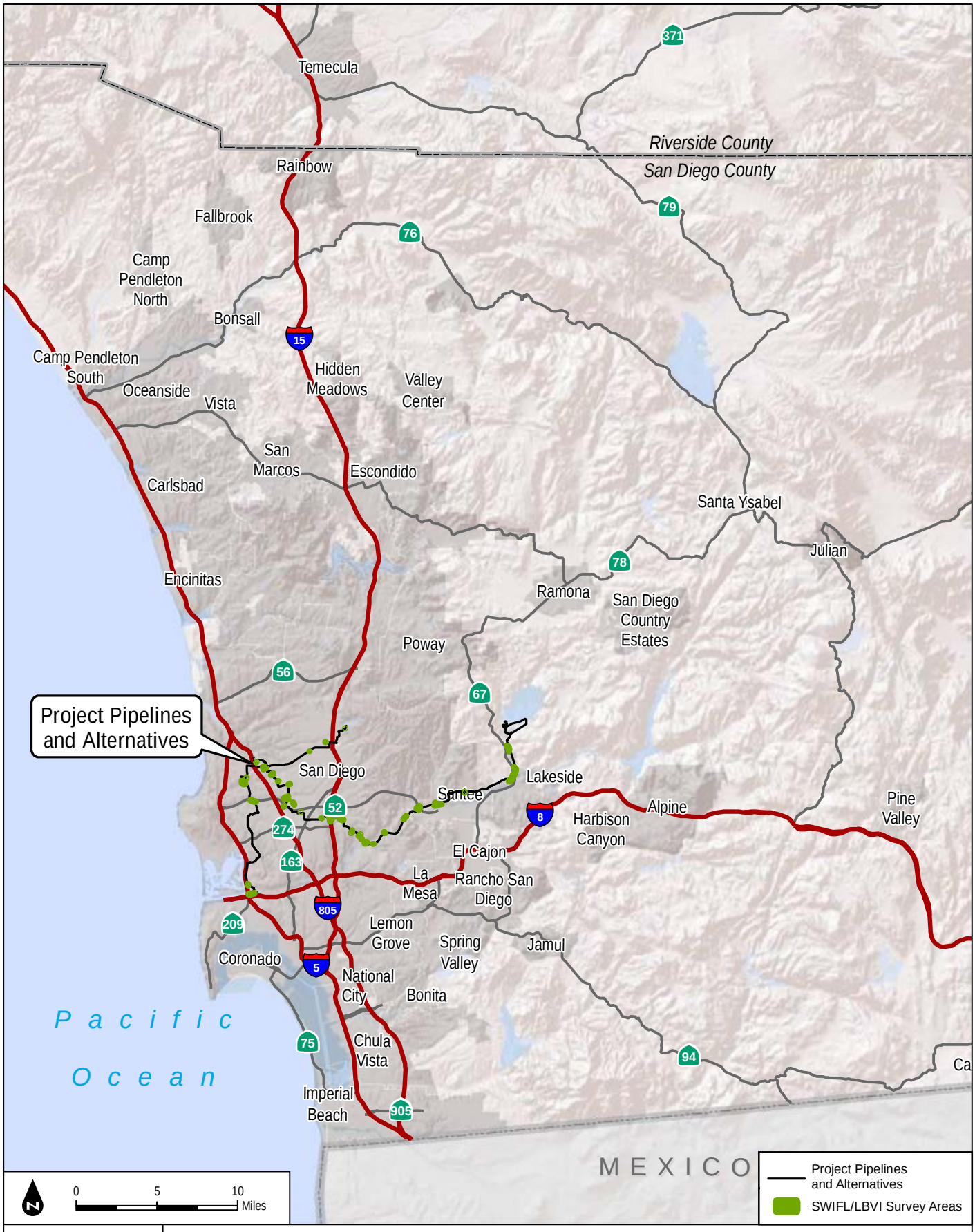
REFERENCES

Oberbauer, Thomas, Meghan Kelly, and Jeremy Buegge. March 2008. Draft Vegetation Communities of San Diego County. Based on "Preliminary Descriptions of the Terrestrial Natural Communities of California", Robert F. Holland, Ph.D., October 1986.

Sogge, M.K., Ahlers, Darrell, and Sferra, S.J., 2010. *A Natural History Summary and Survey Protocol for the Southwestern Willow Flycatcher*. U.S. Geological Survey Techniques and Methods 2A-10, 38 p.

USDA (U.S. Department of Agriculture). 2016. Web Soil Survey. USDA Natural Resources Conservation Service, Soil Survey Staff. Accessed August 2016. http://websoilsurvey.nrcs.usda.gov/.

USFWS. 2001. *Least Bell's Vireo Survey Guidelines*. January 19.

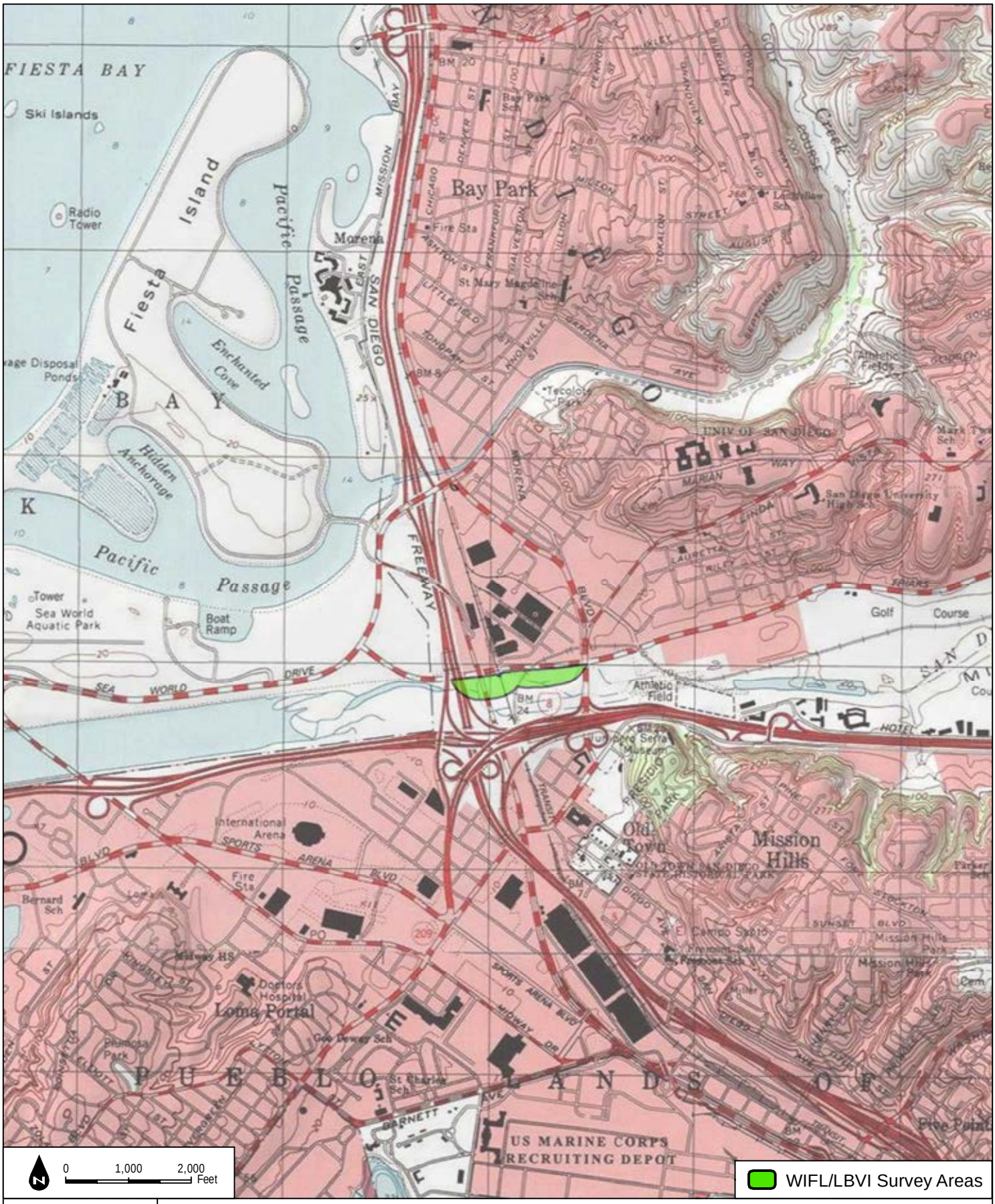


DUDEK

FIGURE 1

Regional Map

2016 Focused Least Bell's Vireo and Southwestern Willow Flycatcher Survey Report for the Pure Water San Diego Program, County of San Diego, California

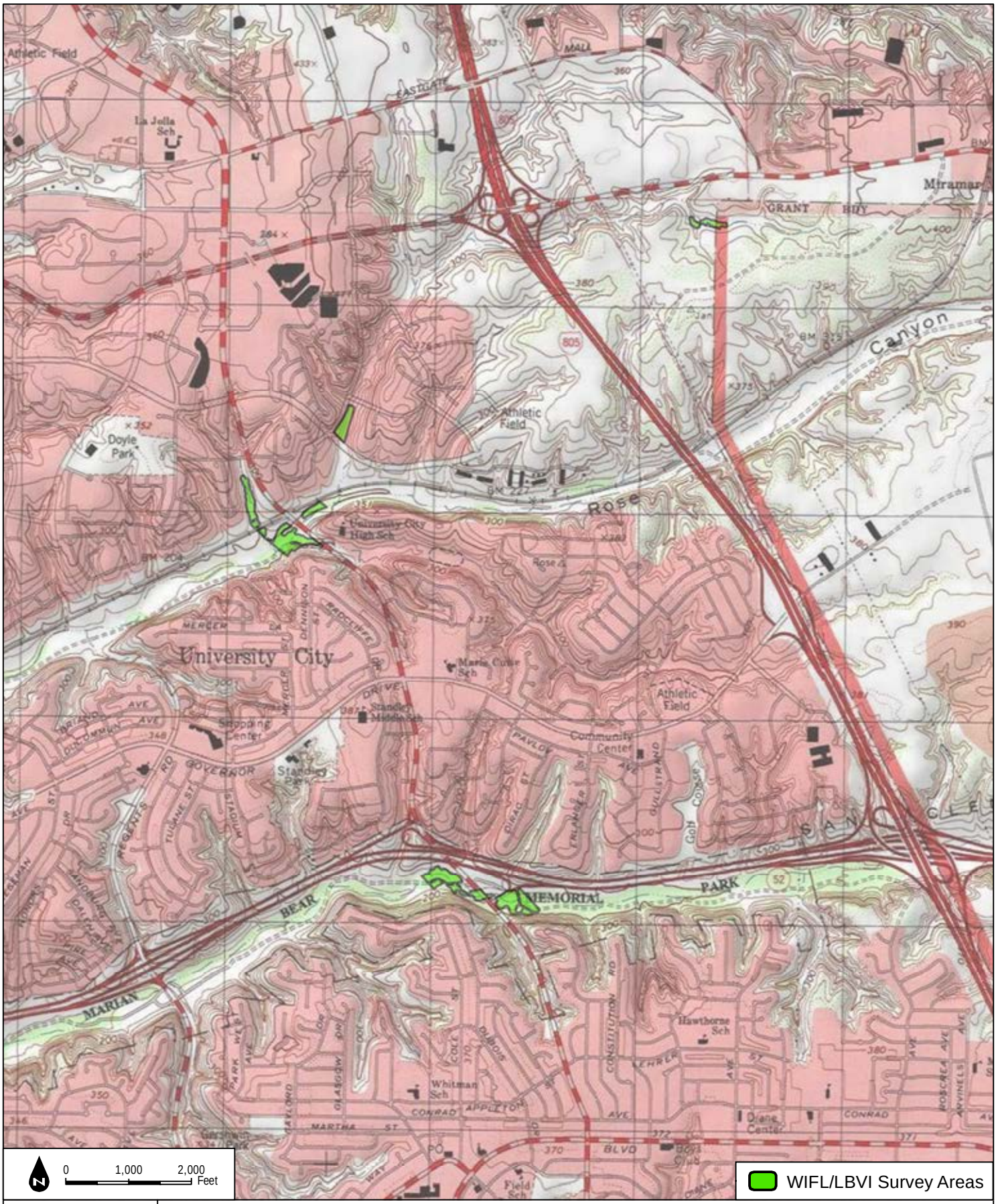


SOURCE: USGS 7.5-Minute Series La Jolla and Point Loma Quadrangles.

Figure 2A

Vicinity Map

DUDEK



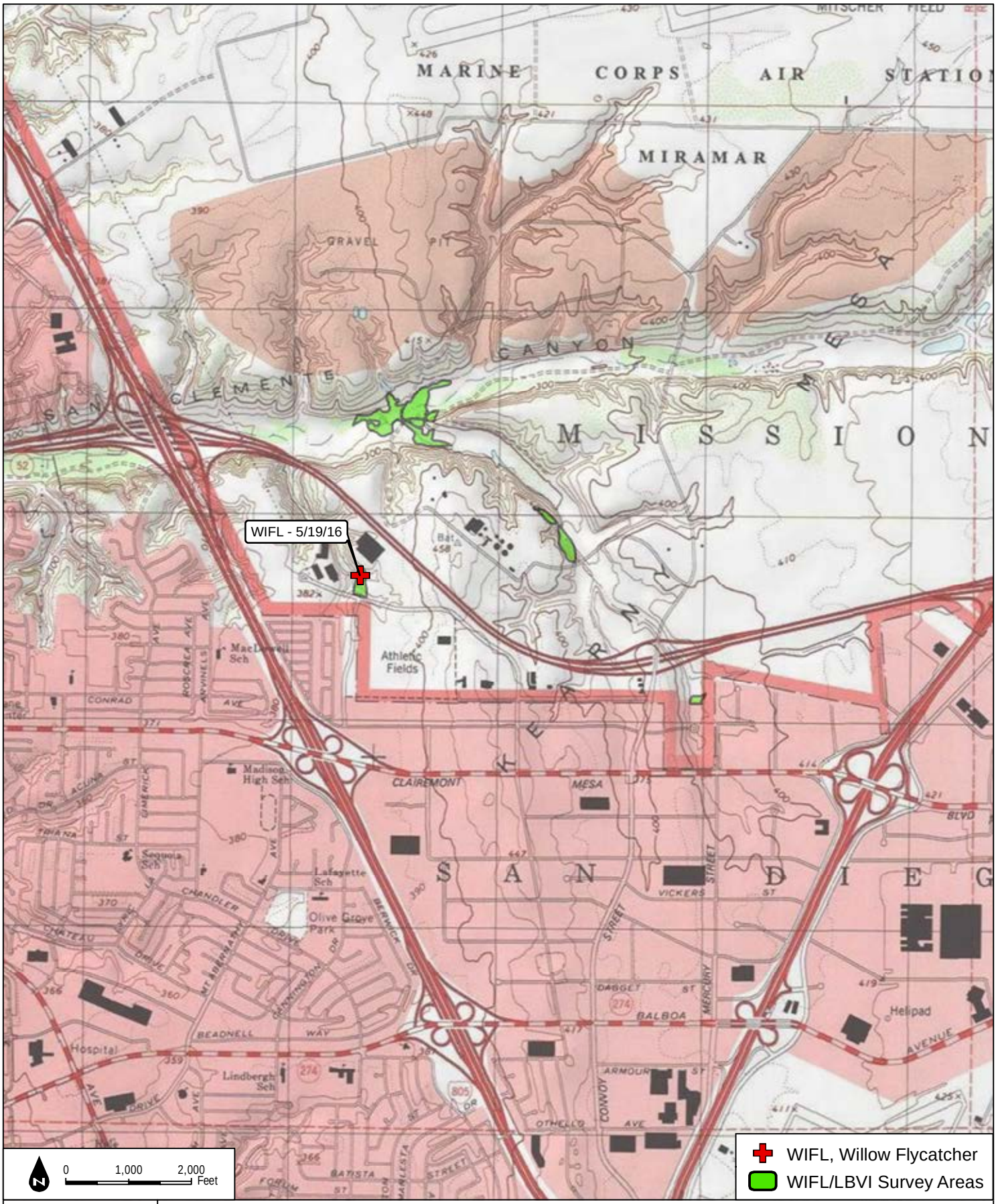
DUDEK

SOURCE: USGS 7.5-Minute Series La Jolla and Del Mar Quadrangles.

Figure 2B

Vicinity Map

2016 Focused Least Bell's Vireo and Southwestern Willow Flycatcher Survey Report for the Pure Water San Diego Program, County of San Diego, California



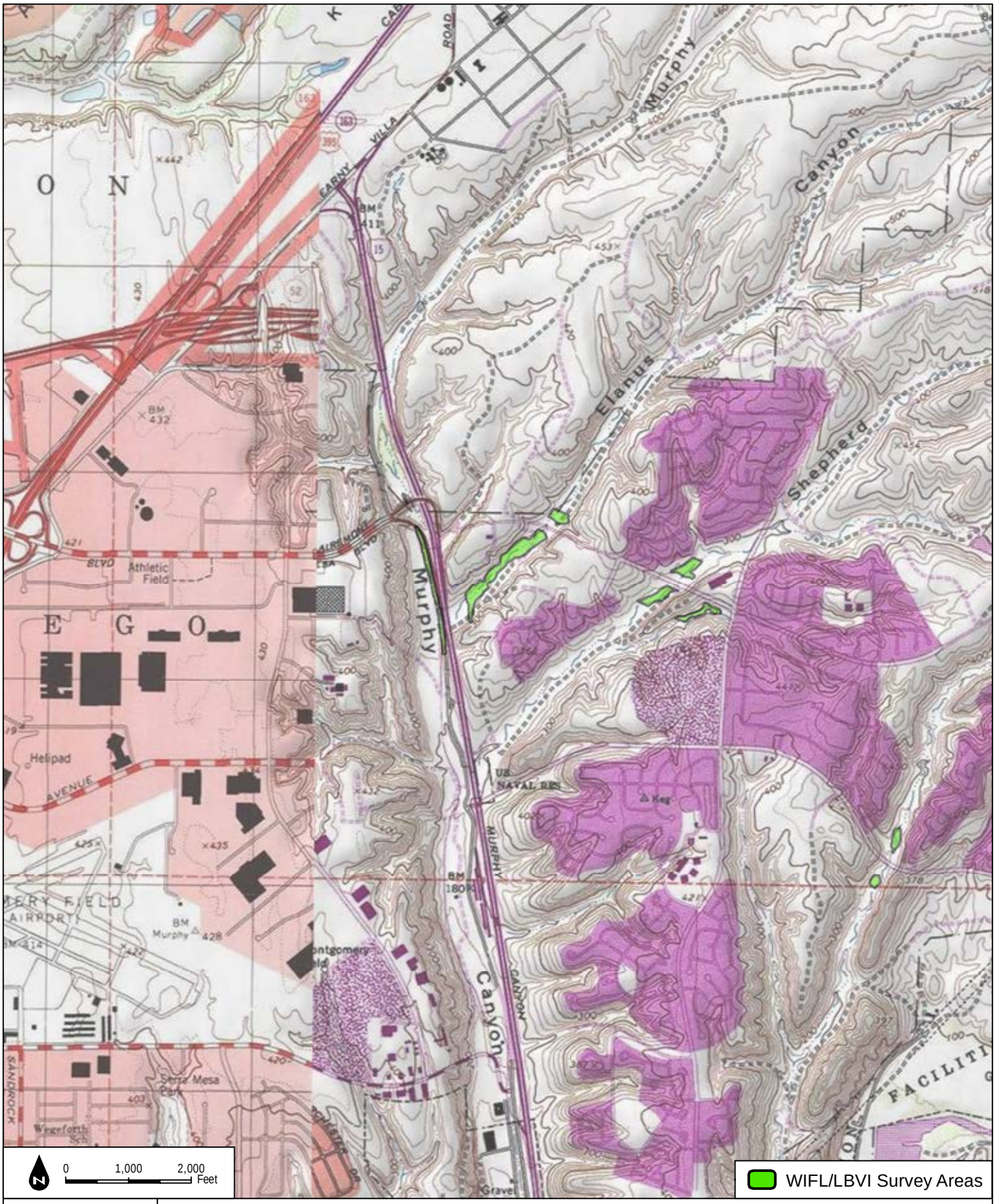
DUDEK

SOURCE: USGS 7.5-Minute Series La Jolla Quadrangle.

Figure 2C

Vicinity Map

2016 Focused Least Bell's Vireo and Southwestern Willow Flycatcher Survey Report for the Pure Water San Diego Program, County of San Diego, California

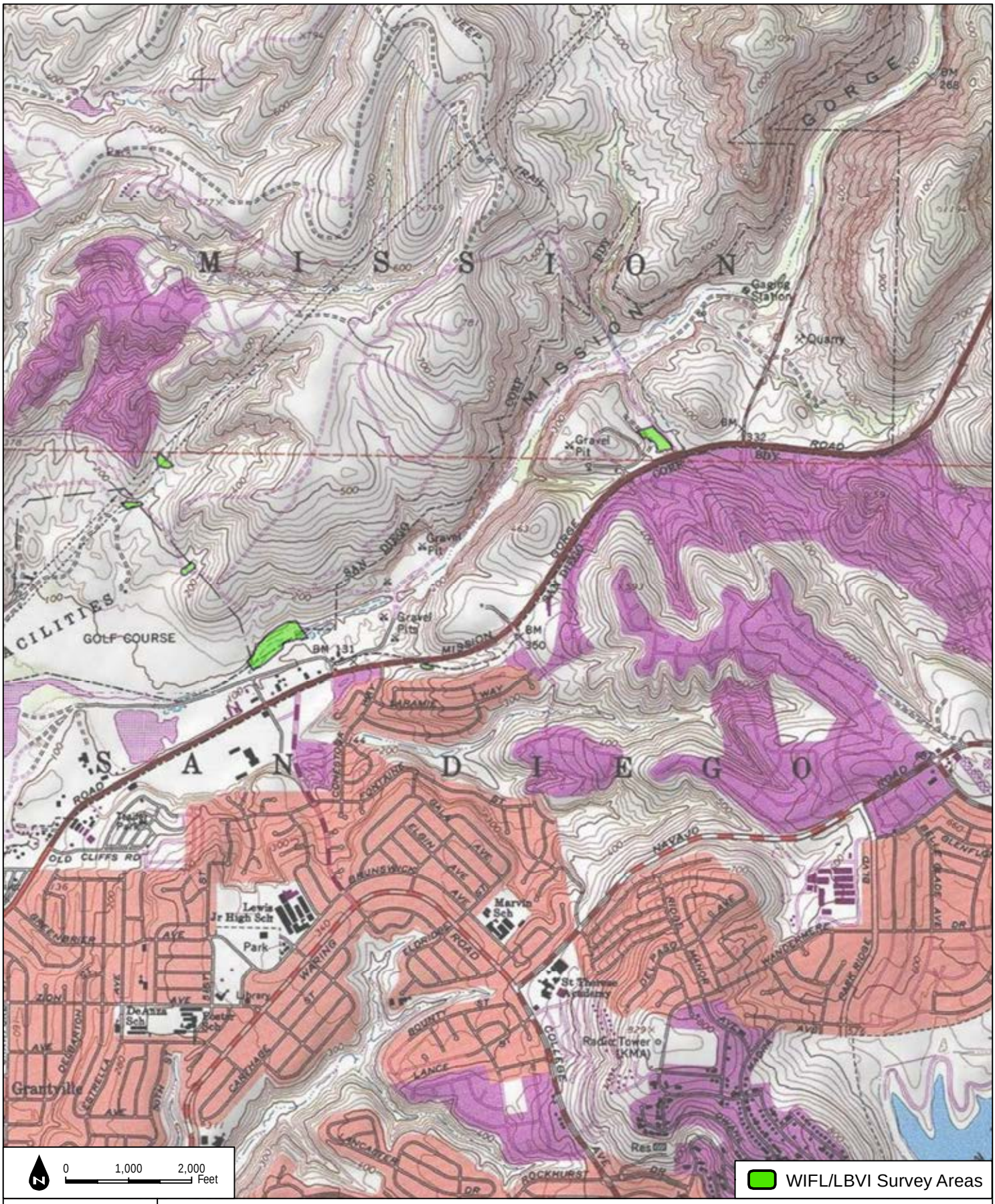


SOURCE: USGS 7.5-Minute Series La Jolla and La Mesa Quadrangles.

Figure 2D

Vicinity Map

DUDEK

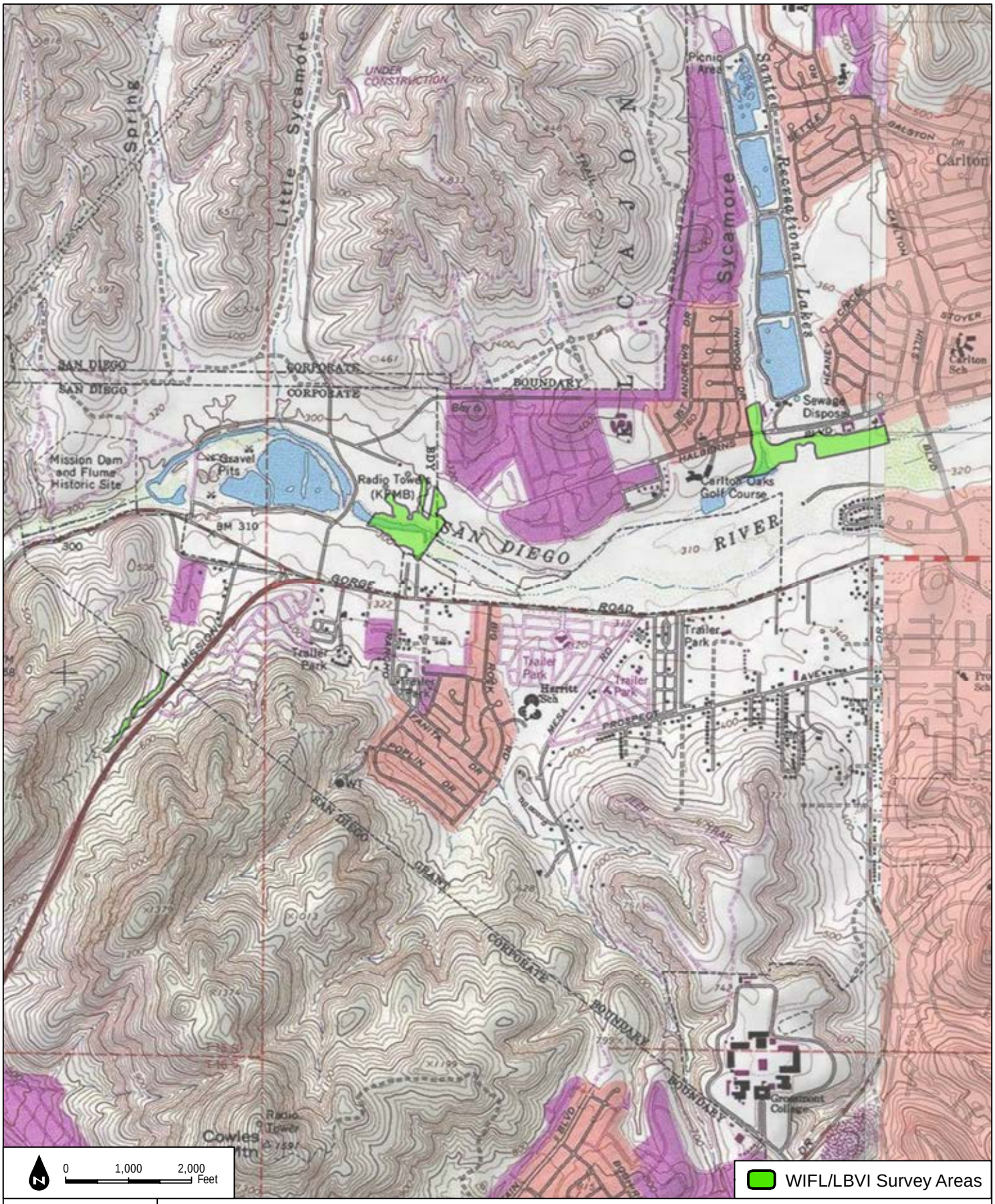


SOURCE: USGS 7.5-Minute Series La Mesa Quadrangle.

Figure 2E

Vicinity Map

DUDEK

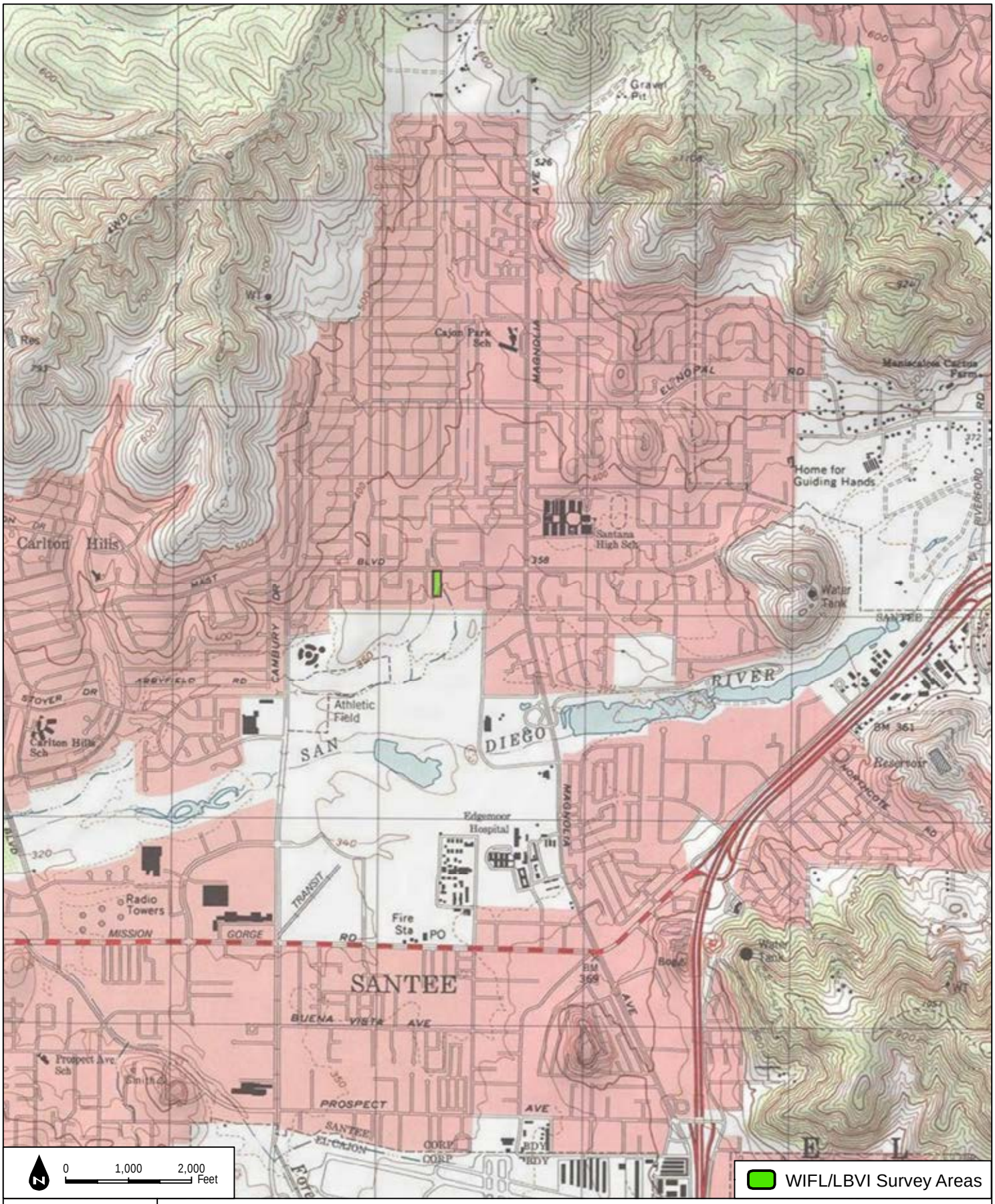


DUDEK

SOURCE: USGS 7.5-Minute Series La Mesa and El Cajon Quadrangles.

Figure 2F

Vicinity Map



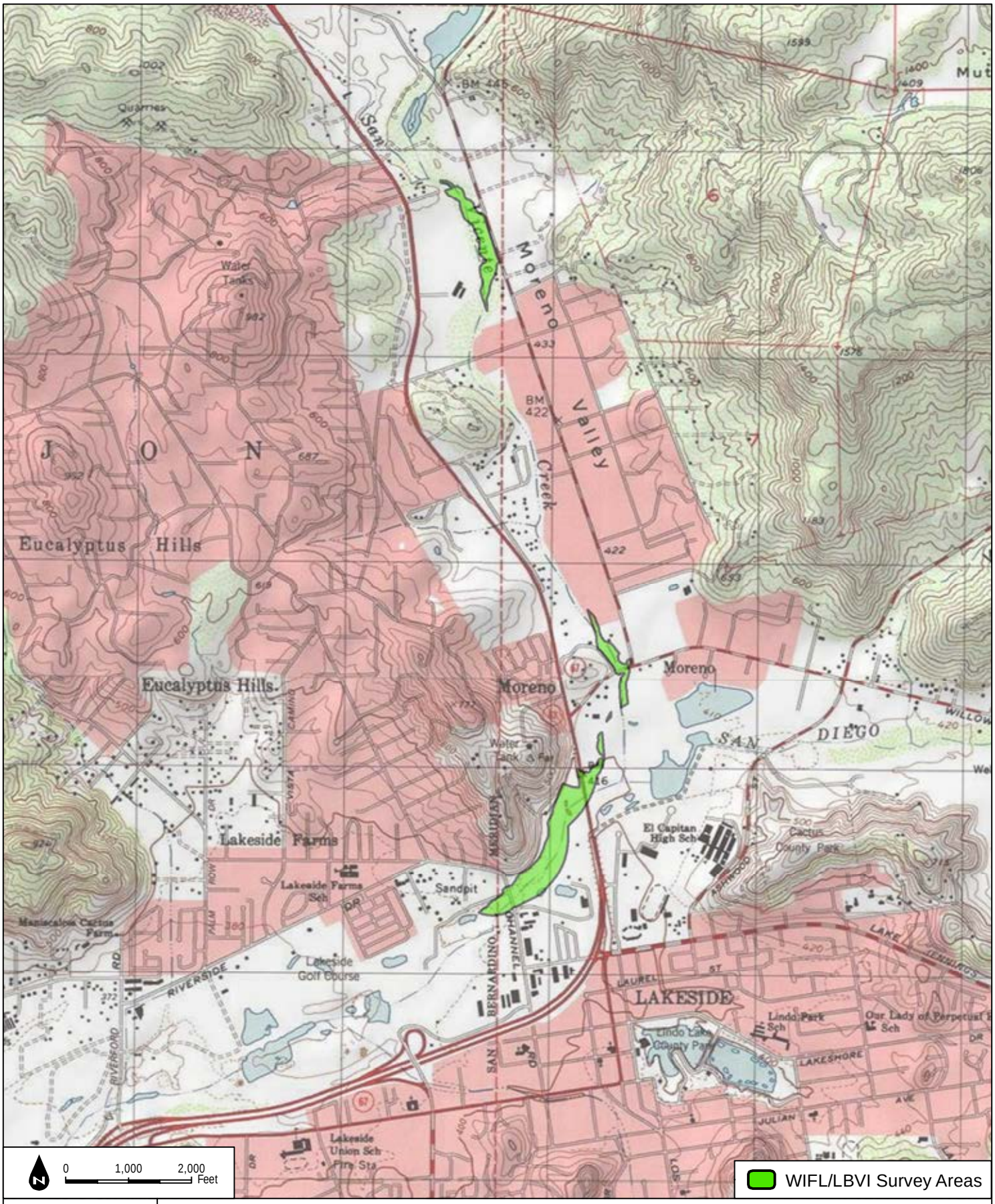
DUDEK

SOURCE: USGS 7.5-Minute Series San Vicente Reservoir and El Cajon Quadrangles.

Figure 2G

Vicinity Map

2016 Focused Least Bell's Vireo and Southwestern Willow Flycatcher Survey Report for the Pure Water San Diego Program, County of San Diego, California



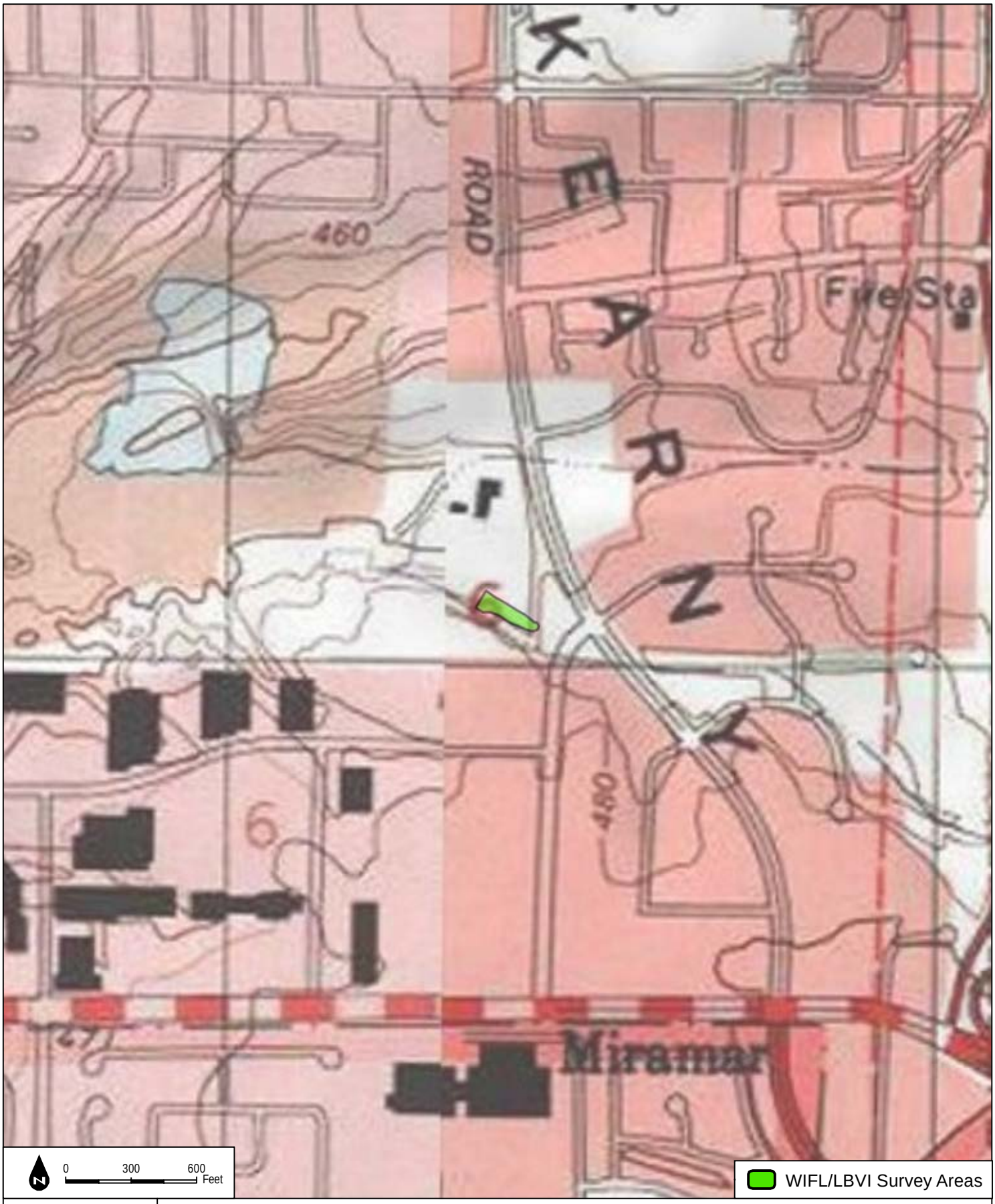
DUDEK

SOURCE: USGS 7.5-Minute Series San Vicente Reservoir and El Cajon Quadrangles.

Figure 2H

Vicinity Map

2016 Focused Least Bell's Vireo and Southwestern Willow Flycatcher Survey Report for the Pure Water San Diego Program, County of San Diego, California

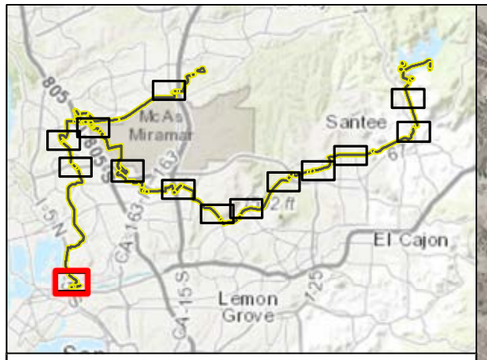


DUDEK

SOURCE: USGS 7.5-Minute Series Del Mar, Poway, La Jolla and La Mesa Quadrangles.

Figure 2I

Vicinity Map



LEGEND

- Pipeline Study Area - 500 FT Buffer
- Project Pipeline Impacts
- SWFL/ LBVI Survey Route
- Suitable SWFL/ LBVI Habitat

Code, Dudek_VegCom

- ARU, Arundo-Dominated Riparian
- CAM, Cismontane Alkali Marsh
- DEV, Urban/Developed
- DH, Disturbed Habitat
- DW, Disturbed Wetland
- FWM, Coastal and Valley Freshwater Marsh
- HW, Herbaceous wetland
- MFS, Mule Fat Scrub
- NVC, Non-Vegetated Channel or Floodway
- OW, Open Water
- SWS, Southern Willow Scrub
- dSWS, disturbed Southern Willow Scrub

Riparian Habitat

SWIFL/LBVI Survey Areas

- Survey Area 1A
- Survey Area 1B
- Survey Area 2
- Survey Area 3

0 305 610 Feet

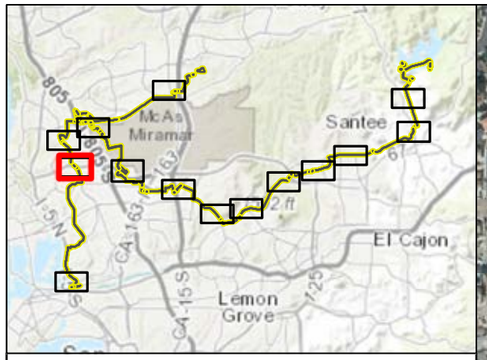
SWS CAM SWS HW FWM MFS DEV CAM SWS MFS OW ARU DH dSWS dSWS NVC dSWS DH NVC DW

SOURCE: ESRI Word Topographic Basemap, 2016

DUDEK

Figure 3a
Survey Results Map

2016 Focused Least Bell's Vireo and Southwestern Willow Flycatcher Survey Report for the Pure Water San Diego Program, County of San Diego, California



LEGEND

- Pipeline Study Area - 500 FT Buffer
- Project Pipeline Impacts
- SWFL/ LBVI Survey Route

Survey Results

Species Code, Common Name

- POTU,Southwestern pond turtle
- Suitable SWFL/ LBVI Habitat

Code, Dudek_VegCom

- MFS, Mule Fat Scrub
- NVC, Non-Vegetated Channel or Floodway
- SCLO, Southern Coast Live Oak Riparian Forest
- SRF, Southern Riparian Forest
- SWRF, Southern Arroyo Willow Riparian Forest

Riparian Habitat

SWIFL/LBVI Survey Areas

- Survey Area 1A
- Survey Area 1B
- Survey Area 2
- Survey Area 3

N

0 305 610 Feet

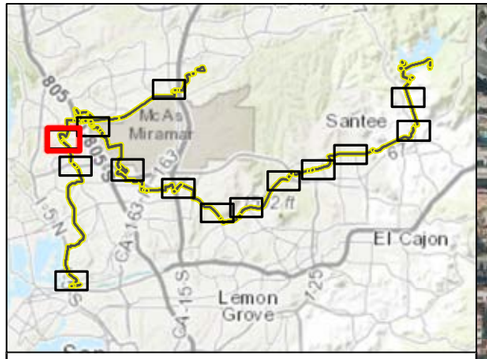
SCLO
SRF
SRF
SRF
SRF
SRF
POTU

SOURCE: ESRI Word Topographic Basemap, 2016

DUDEK

Figure 3b
Survey Results Map

2016 Focused Least Bell's Vireo and Southwestern Willow Flycatcher Survey Report for the Pure Water San Diego Program, County of San Diego, California



LEGEND

- Pipeline Study Area - 500 FT Buffer
- Project Pipeline Impacts
- SWFL/ LBVI Survey Route

Survey Results

Species Code, Common Name

- COHA,Cooper's Hawk
- YEWA,Yellow warbler
- Suitable SWFL/ LBVI Habitat

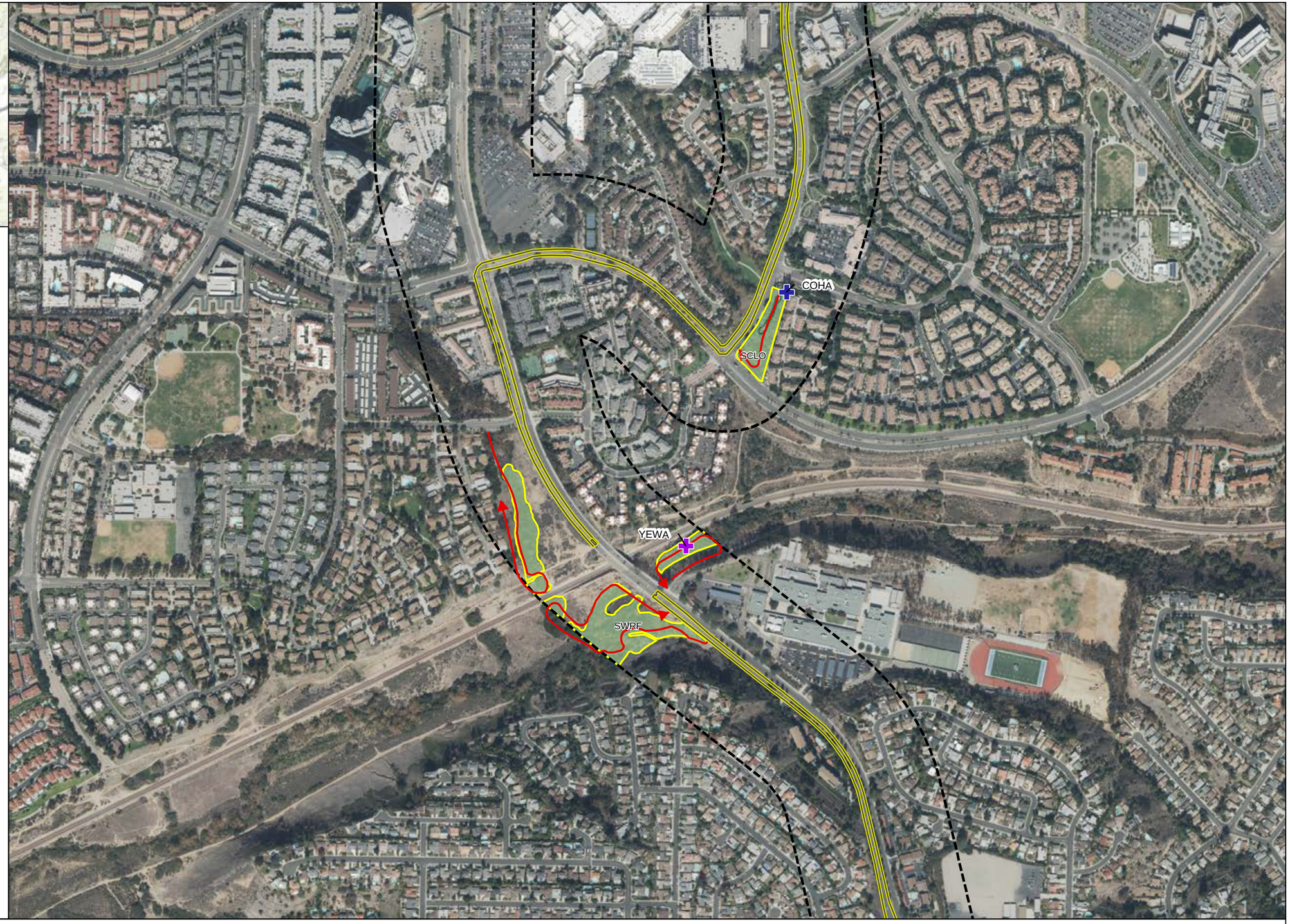
Code, Dudek_VegCom

- FWM, Coastal and Valley Freshwater Marsh
- SCLO, Southern Coast Live Oak Riparian Forest
- SWRF, Southern Arroyo Willow Riparian Forest
- SWS, Southern Willow Scrub

Riparian Habitat

SWIFL/LBVI Survey Areas

- Survey Area 1A
- Survey Area 1B
- Survey Area 2
- Survey Area 3



N

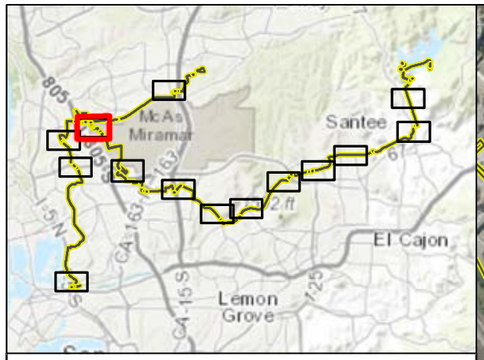
0 305 610 Feet

SOURCE: ESRI Word Topographic Basemap, 2016

DUDEK

Figure 3c
Survey Results Map

2016 Focused Least Bell's Vireo and Southwestern Willow Flycatcher Survey Report for the Pure Water San Diego Program, County of San Diego, California



LEGEND

- Pipeline Study Area - 500 FT Buffer
- Project Pipeline Impacts
- SWFL/ LBVI Survey Route
- Suitable SWFL/ LBVI Habitat

Code, Dudek_VegCom

- FWM, Coastal and Valley Freshwater Marsh
- SWS, Southern Willow Scrub

Riparian Habitat

SWIFL/LBVI Survey Areas

- Survey Area 1A
- Survey Area 1B
- Survey Area 2
- Survey Area 3

0 305 610 Feet

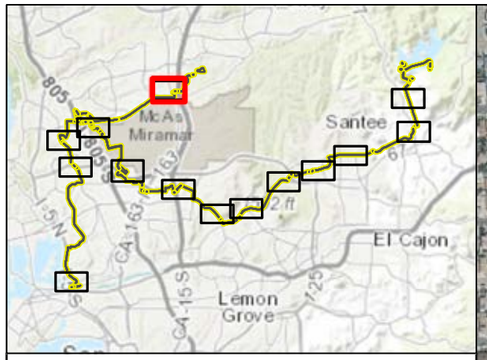
SOURCE: ESRI Word Topographic Basemap, 2016

Figure 3d

Survey Results Map

2016 Focused Least Bell's Vireo and Southwestern Willow Flycatcher Survey Report for the Pure Water San Diego Program, County of San Diego, California

DUDEK



LEGEND

- Pipeline Study Area - 500 FT Buffer
- Project Pipeline Impacts
- SWFL/ LBVI Survey Route
- Suitable SWFL/ LBVI Habitat

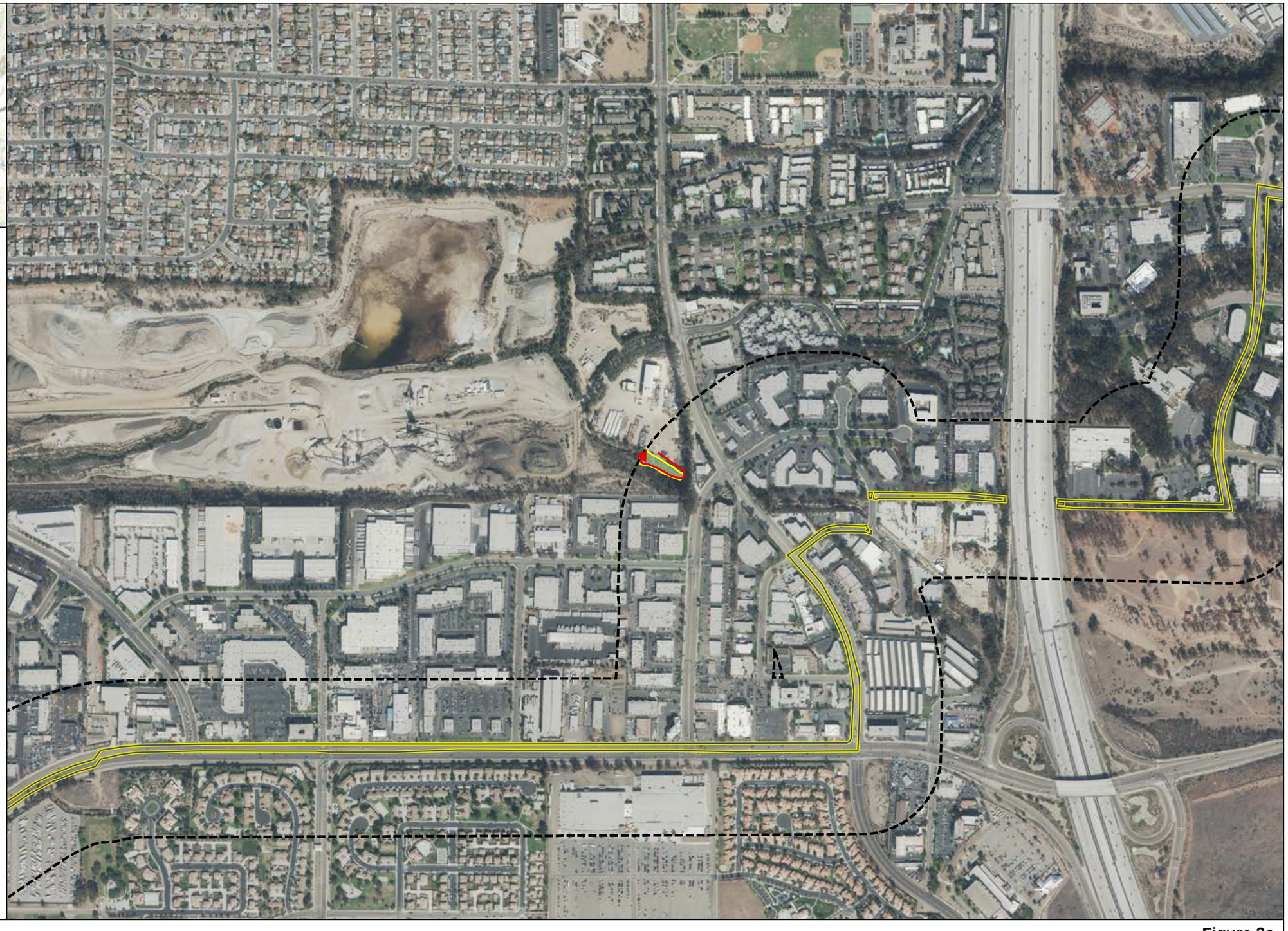
Code, Dudek_VegCom

SWS, Southern Willow Scrub

Riparian Habitat

SWIFL/LBVI Survey Areas

- Survey Area 1A
- Survey Area 1B
- Survey Area 2
- Survey Area 3

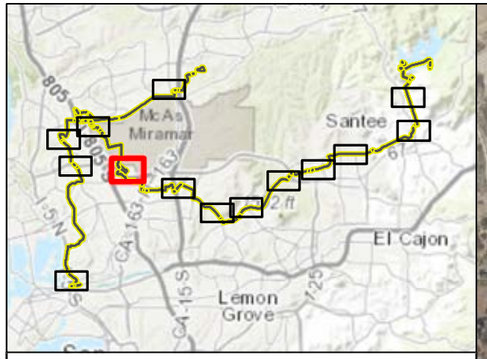


SOURCE: ESRI Word Topographic Basemap, 2016

DUDEK

Figure 3e
Survey Results Map

2016 Focused Least Bell's Vireo and Southwestern Willow Flycatcher Survey Report for the Pure Water San Diego Program, County of San Diego, California



LEGEND

- Pipeline Study Area - 500 FT Buffer
- Project Pipeline Impacts
- SWFL/ LBVI Survey Route

Survey Results

Species Code, Common Name

- WIFL,Willow Flycatcher
- YBCH,Yellow-breasted chat
- YEWA,Yellow warbler
- Suitable SWFL/ LBVI Habitat

Code, Dudek_VegCom

- CSS-CHP, Coastal Sage-Chaparral Transition
- DH, Disturbed Habitat
- SARW, Southern Sycamore-Alder Riparian Woodland
- SMX, Southern Mixed Chaparral
- SRF, Southern Riparian Forest
- SWS, Southern Willow Scrub
- dSWS, disturbed Southern Willow Scrub

Riparian Habitat

SWIFL/LBVI Survey Areas

- Survey Area 1A
- Survey Area 1B
- Survey Area 2
- Survey Area 3

0 305 610 Feet

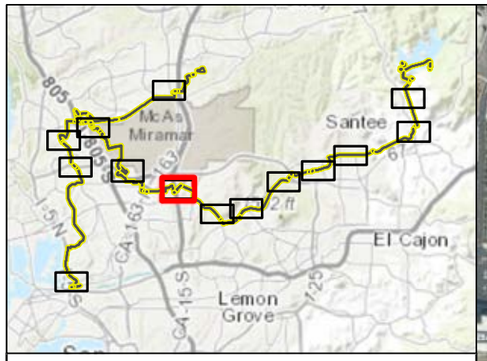
SARW
YBCH
SWS
SARW
SARW
SWS
YEWA
SWS
YBCH
DH
WIFL - 5/19/16
YEWA
SRF
DEV

SOURCE: ESRI Word Topographic Basemap, 2016

DUDEK

Figure 3f
Survey Results Map

2016 Focused Least Bell's Vireo and Southwestern Willow Flycatcher Survey Report for the Pure Water San Diego Program, County of San Diego, California



LEGEND

- Pipeline Study Area - 500 FT Buffer
- Project Pipeline Impacts
- SWFL/ LBVI Survey Route

Survey Results

Species Code, Common Name

- YEWA,Yellow warbler
- Suitable SWFL/ LBVI Habitat

Code, Dudek_VegCom

- FWM, Coastal and Valley Freshwater Marsh
- SCWRF, Southern Cottonwood-Willow Riparian Forest
- SWRF, Southern Arroyo Willow Riparian Forest
- SWS, Southern Willow Scrub

Riparian Habitat

SWIFL/LBVI Survey Areas

- Survey Area 1A
- Survey Area 1B
- Survey Area 2
- Survey Area 3

0 305 610 Feet

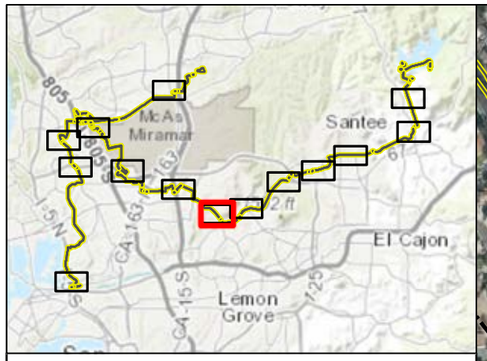
SWRF
YEWA
SWRF
SCWRF
FWM
YEWA
SWS
YEWA
YEWA

SOURCE: ESRI Word Topographic Basemap, 2016

DUDEK

Figure 3g
Survey Results Map

2016 Focused Least Bell's Vireo and Southwestern Willow Flycatcher Survey Report for the Pure Water San Diego Program, County of San Diego, California



LEGEND

- Pipeline Study Area - 500 FT Buffer
- Project Pipeline Impacts
- SWFL/ LBVI Survey Route

Survey Results

Species Code, Common Name

- YEWA,Yellow warbler
- Suitable SWFL/ LBVI Habitat

Code, Dudek_VegCom

- ARU, Arundo-Dominated Riparian
- FWM, Coastal and Valley Freshwater Marsh
- OW, Open Water
- SWS, Southern Willow Scrub

Riparian Habitat

SWIFL/LBVI Survey Areas

- Survey Area 1A
- Survey Area 1B
- Survey Area 2
- Survey Area 3

0 305 610 Feet

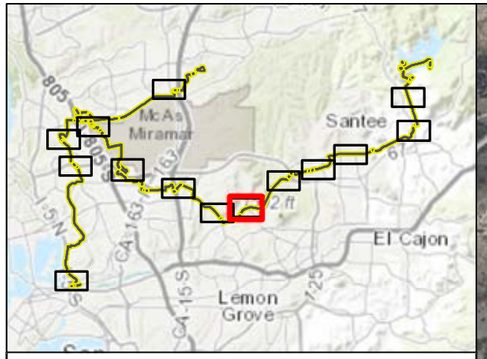
SWS
SWS
YEWA
YEWA
ARU
OW
FWM

SOURCE: ESRI Word Topographic Basemap, 2016

DUDEK

Figure 3h
Survey Results Map

2016 Focused Least Bell's Vireo and Southwestern Willow Flycatcher Survey Report for the Pure Water San Diego Program, County of San Diego, California



LEGEND

- Pipeline Study Area - 500 FT Buffer
- Project Pipeline Impacts
- SWFL/ LBVI Survey Route

Survey Results

Species Code, Common Name

- COHA,Cooper's Hawk
- Suitable SWFL/ LBVI Habitat

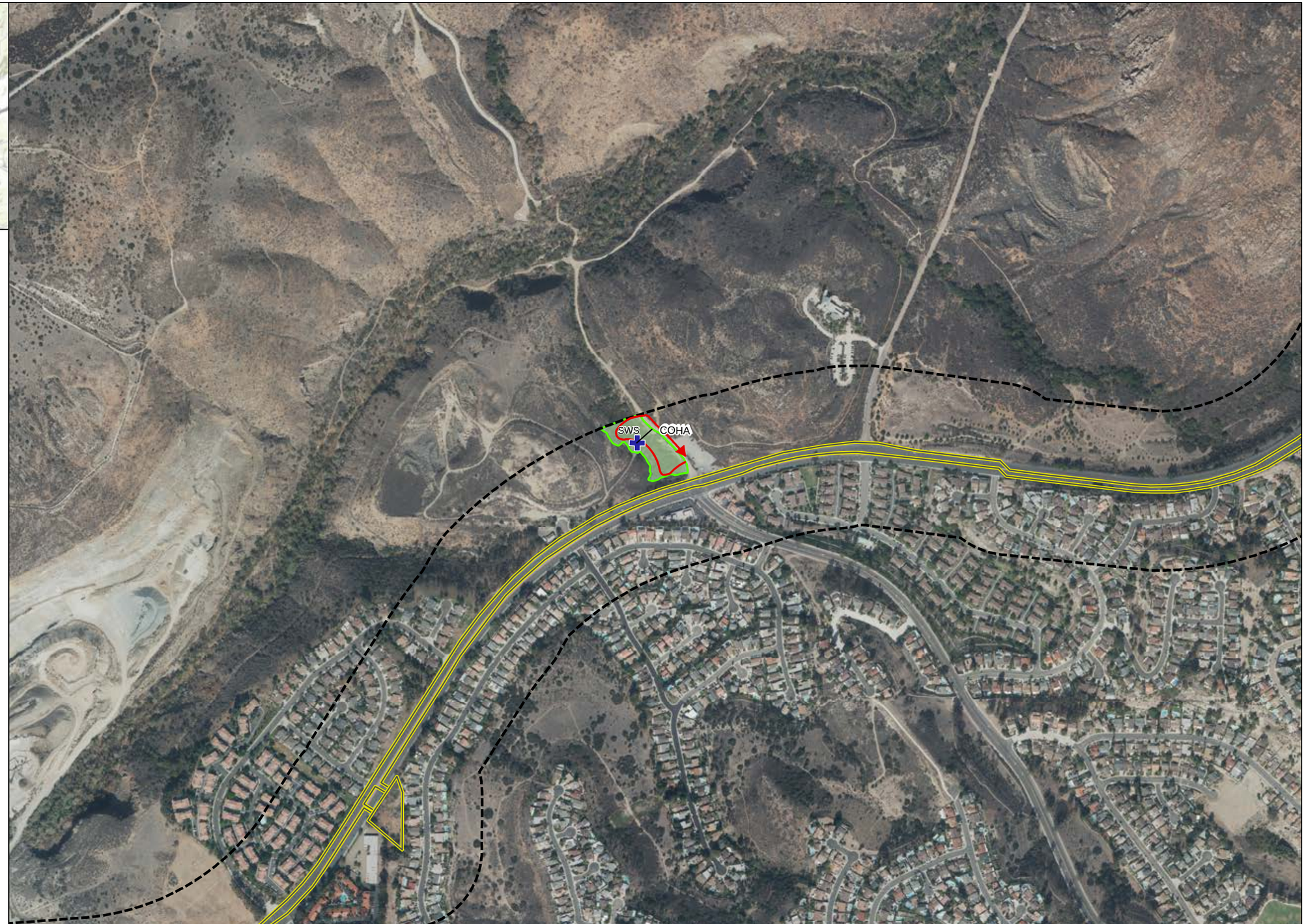
Code, Dudek_VegCom

SWS, Southern Willow Scrub

Riparian Habitat

SWIFL/LBVI Survey Areas

- Survey Area 1A
- Survey Area 1B
- Survey Area 2
- Survey Area 3



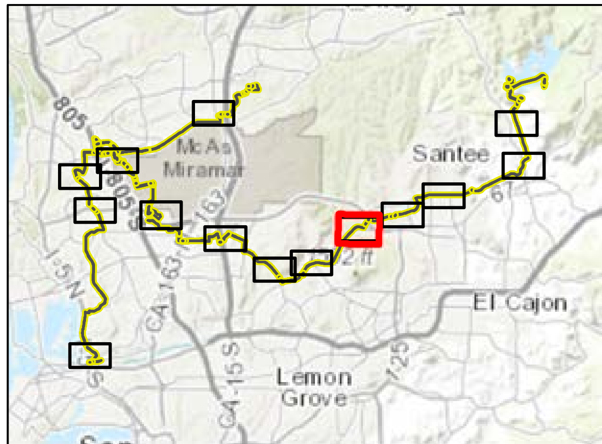
0 305 610 Feet

SOURCE: ESRI Word Topographic Basemap, 2016

DUDEK

Figure 3i
Survey Results Map

2016 Focused Least Bell's Vireo and Southwestern Willow Flycatcher Survey Report for the Pure Water San Diego Program, County of San Diego, California



LEGEND

- Pipeline Study Area - 500 FT Buffer
- Project Pipeline Impacts
- Observed LBVI Use Area
- SWFL/ LBVI Survey Route

Survey Results

Species Code, Common Name

- LBVI-adult male,Least Bell's Vireo
- NUWO,Nutall's woodpecker
- YBCH,Yellow-breasted chat
- YEWA,Yellow warbler
- Suitable SWFL/ LBVI Habitat

Code, Dudek_VegCom

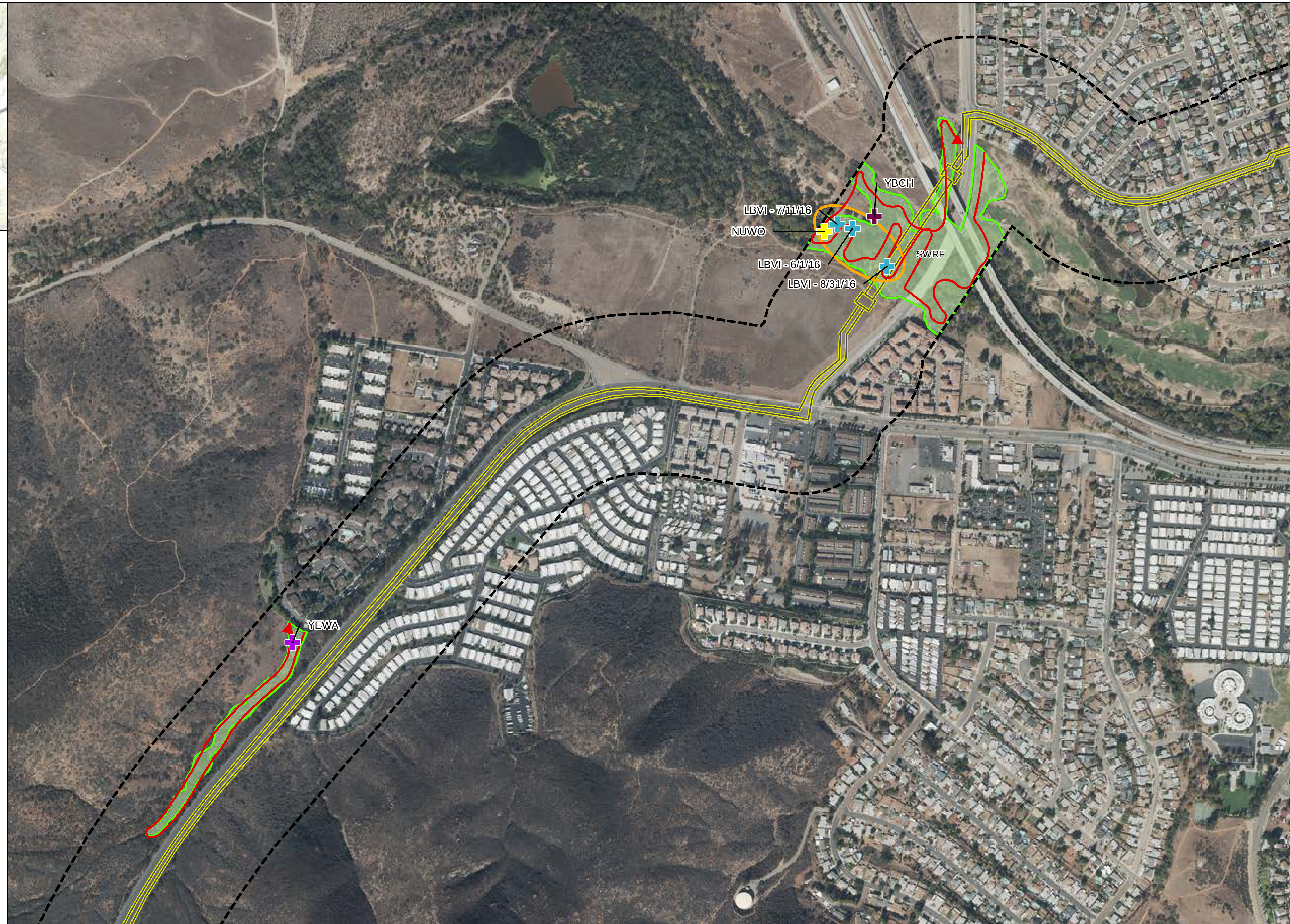
SWRF, Southern Arroyo Willow Riparian Forest

Riparian Habitat

SWIFL/LBVI Survey Areas

- Survey Area 1A
- Survey Area 1B
- Survey Area 2
- Survey Area 3

0 305 610 Feet



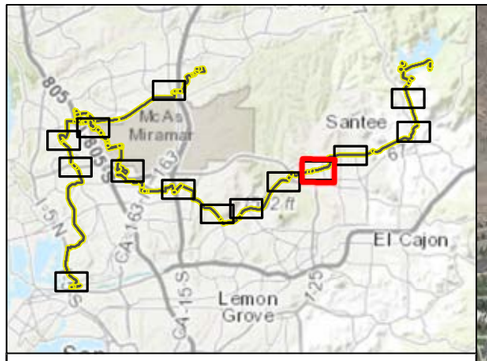
DUDEK

SOURCE: ESRI Word Topographic Basemap, 2016

Figure 3j

Survey Results Map

2016 Focused Least Bell's Vireo and Southwestern Willow Flycatcher Survey Report for the Pure Water San Diego Program, County of San Diego, California



LEGEND

- Pipeline Study Area - 500 FT Buffer
- Project Pipeline Impacts
- Observed LBVI Use Area
- SWFL/ LBVI Survey Route

Survey Results

Species Code, Common Name

- COHA,Cooper's Hawk
- LBVI-adult male,Least Bell's Vireo
- NUWO,Nutall's woodpecker
- YBCH,Yellow-breasted chat
- Suitable SWFL/ LBVI Habitat

Code, Dudek_VegCom

- SWS, Southern Willow Scrub

Riparian Habitat

SWIFL/LBVI Survey Areas

- Survey Area 1A
- Survey Area 1B
- Survey Area 2
- Survey Area 3

0 305 610 Feet

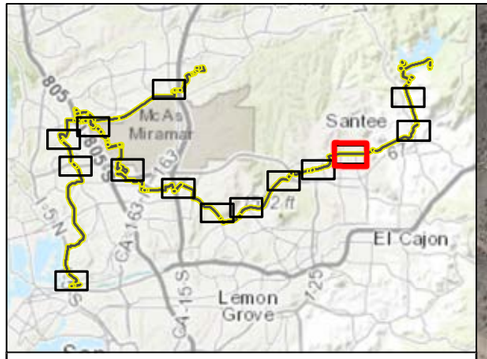
LBVI - 5/17/16
LBVI - 7/11/16
LBVI - 6/30/16
LBVI - 7/31/16
YBCH
NUWO
LBVI - 6/30/16
LBVI - 5/17/16
NUWO
NUWO
COHA
YBCH
SWS
YBCH
YBCH
YBCH
YBCH
YBCH
YBCH
LBVI - 6/30/16
LBVI - 7/11/16

SOURCE: ESRI Word Topographic Basemap, 2016

DUDEK

Figure 3k
Survey Results Map

2016 Focused Least Bell's Vireo and Southwestern Willow Flycatcher Survey Report for the Pure Water San Diego Program, County of San Diego, California



LEGEND

- Pipeline Study Area - 500 FT Buffer
- Project Pipeline Impacts
- Observed LBVI Use Area
- SWFL/ LBVI Survey Route

Survey Results

Species Code, Common Name

- LBVI-adult male,Least Bell's Vireo
- YEWA,Yellow warbler
- Suitable SWFL/ LBVI Habitat

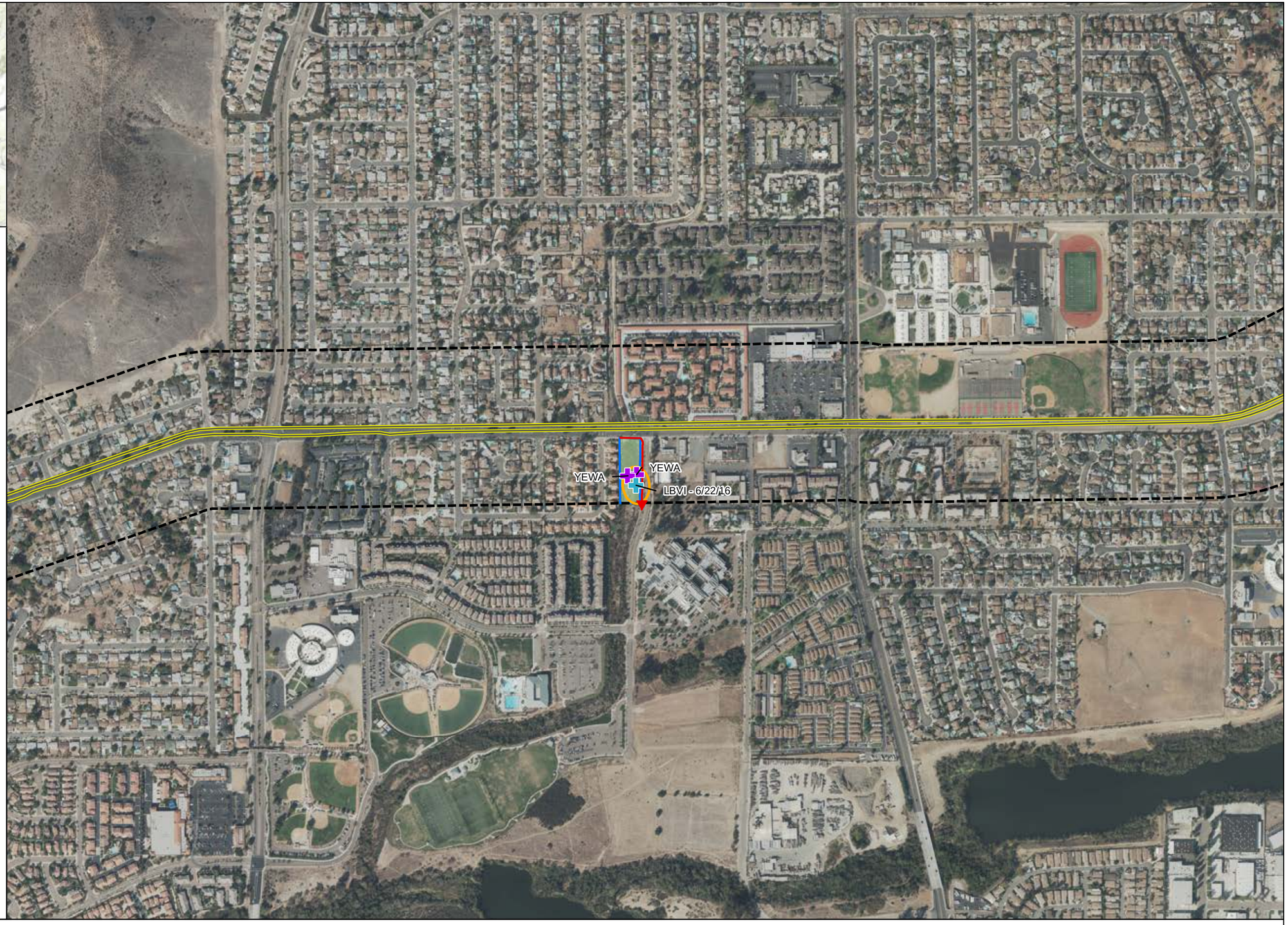
Code, Dudek_VegCom

- SWS, Southern Willow Scrub

Riparian Habitat

SWIFL/LBVI Survey Areas

- Survey Area 1A
- Survey Area 1B
- Survey Area 2
- Survey Area 3



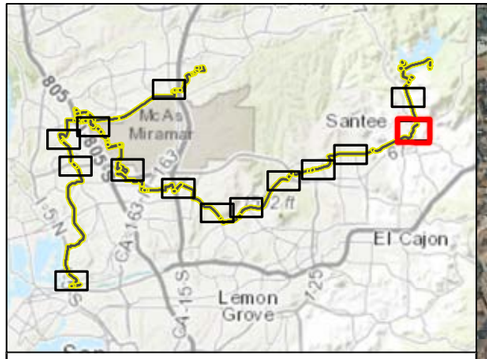
0 305 610 Feet

SOURCE: ESRI Word Topographic Basemap, 2016

DUDEK

Figure 3l
Survey Results Map

2016 Focused Least Bell's Vireo and Southwestern Willow Flycatcher Survey Report for the Pure Water San Diego Program, County of San Diego, California



LEGEND

- Pipeline Study Area - 500 FT Buffer
- Project Pipeline Impacts
- Observed LBVI Use Area
- SWFL/ LBVI Survey Route

Survey Results

Species Code, Common Name

- BHCO,brown headed cowbird
- CAGN,California Gnatcatcher
- COHA,Cooper's Hawk
- LBVI-adult male,Least Bell's Vireo
- NUWO,Nutall's woodpecker
- YEWA,Yellow warbler
- Suitable SWFL/ LBVI Habitat

Code, Dudek_VegCom

- CSS, Diegan Coastal Sage Scrub
- DEV, Urban/Developed
- NVC, Non-Vegetated Channel or Floodway
- OW, Open Water
- SCWRF, Southern Cottonwood-Willow Riparian Forest
- SWRF, Southern Arroyo Willow Riparian Forest
- SWS, Southern Willow Scrub

Riparian Habitat

SWIFL/LBVI Survey Areas

- Survey Area 1A
- Survey Area 1B
- Survey Area 2
- Survey Area 3

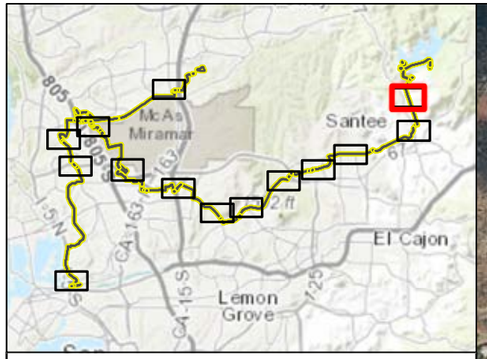
0 305 610 Feet

SOURCE: ESRI Word Topographic Basemap, 2016

DUDEK

Figure 3m
Survey Results Map

2016 Focused Least Bell's Vireo and Southwestern Willow Flycatcher Survey Report for the Pure Water San Diego Program, County of San Diego, California



LEGEND

- Pipeline Study Area - 500 FT Buffer
- Project Pipeline Impacts
- SWFL/ LBVI Survey Route

Survey Results

Species Code, Common Name

- YEWA,Yellow warbler
- Suitable SWFL/ LBVI Habitat

Code, Dudek_VegCom

- ARU, Arundo-Dominated Riparian
- DEV, Urban/Developed
- MFS, Mule Fat Scrub
- dMFS, disturbed Mule Fat Scrub

Riparian Habitat

SWIFL/LBVI Survey Areas

- Survey Area 1A
- Survey Area 1B
- Survey Area 2
- Survey Area 3

0 305 610 Feet

SOURCE: ESRI Word Topographic Basemap, 2016

Figure 3n
Survey Results Map

2016 Focused Least Bell's Vireo and Southwestern Willow Flycatcher Survey Report for the Pure Water San Diego Program, County of San Diego, California

APPENDIX A

Wildlife Species Observed in Study Area

ATTACHMENT A
Wildlife Species Observed in Study Area

AMPHIBIANS

FROGS

RANIDAE—TONGUELESS FROGS

* *Lithobates catesbeianus*—American bullfrog

BIRDS

BLACKBIRDS, ORIOLES, AND ALLIES

ICTERIDAE—BLACKBIRDS

Agelaius phoeniceus—red-winged blackbird
Euphagus cyanocephalus—Brewer's blackbird
Icterus bullockii—Bullock's oriole
Quiscalus mexicanus—great-tailed grackle
* *Molothrus ater*—brown-headed cowbird
Icterus cucullatus—hooded oriole

BUSHTITS

AEGITHALIDAE—LONG-TAILED TITS AND BUSHTITS

Psaltriparus minimus—bushtit

CARDINALS, GROSBEAKS, AND ALLIES

CARDINALIDAE—CARDINALS AND ALLIES

Passerina amoena—Lazuli bunting
Piranga ludoviciana—western tanager
Passerina caerulea—blue grosbeak
Pheucticus melanocephalus—black-headed grosbeak

CORMORANTS

PHALACROCORACIDAE—CORMORANTS

Phalacrocorax auritus—double-crested cormorant

EMBERIZINES

EMBERIZIDAE—EMBERIZIDS

Chondestes grammacus—lark sparrow

Melospiza lincolnii—Lincoln's sparrow
Melospiza melodia—song sparrow
Melozone crissalis—California towhee
Pipilo maculatus—spotted towhee
Zonotrichia leucophrys—white-crowned sparrow
Aimophila ruficeps—rufous-crowned sparrow
Junco hyemalis—dark-eyed junco

FALCONS

FALCONIDAE—CARACARAS AND FALCONS
Falco sparverius—American kestrel

FINCHES

FRINGILLIDAE—FRINGILLINE AND CARDUELINE FINCHES AND ALLIES
Spinus psaltria—lesser goldfinch
Spinus tristis—American goldfinch
Haemorhous mexicanus—house finch

FLYCATCHERS

TYRANNIDAE—TYRANT FLYCATCHERS
Contopus sordidulus—western wood-pewee
Empidonax traillii—willow flycatcher
Myiarchus cinerascens—ash-throated flycatcher
Sayornis nigricans—black phoebe
Sayornis saya—Say's phoebe
Tyrannus verticalis—western kingbird
Tyrannus vociferans—Cassin's kingbird
Empidonax difficilis—Pacific-slope flycatcher

GOATSUCKERS

CAPRIMULGIDAE—GOATSUCKERS
Chordeiles acutipennis—lesser nighthawk

GREBES

PODICIPEDIDAE—GREBES
Podilymbus podiceps—pied-billed grebe

HAWKS

ACCIPITRIDAE—HAWKS, KITES, EAGLES, AND ALLIES

Accipiter cooperii—Cooper's hawk
Buteo jamaicensis—red-tailed hawk
Buteo lineatus—red-shouldered hawk
Circus cyaneus—northern harrier
Elanus leucurus—white-tailed kite

HERONS AND BITTERNS

ARDEIDAE—HERONS, BITTERNS, AND ALLIES

Ardea alba—great egret
Ardea herodias—great blue heron
Butorides virescens—green heron
Egretta thula—snowy egret
Nycticorax nycticorax—black-crowned night-heron

HUMMINGBIRDS

TROCHILIDAE—HUMMINGBIRDS

Calypte anna—Anna's hummingbird
Calypte costae—Costa's hummingbird
Selasphorus sasin—Allen's hummingbird

JAYS, MAGPIES, AND CROWS

CORVIDAE—CROWS AND JAYS

Aphelocoma californica—western scrub-jay
Corvus brachyrhynchos—American crow
Corvus corax—common raven

KINGLETS

REGULIDAE—KINGLETS

Regulus calendula—ruby-crowned kinglet

MOCKINGBIRDS AND THRASHERS

MIMIDAE—MOCKINGBIRDS AND THRASHERS

Mimus polyglottos—northern mockingbird
Toxostoma redivivum—California thrasher

NEW WORLD QUAIL

ODONTOPHORIDAE—NEW WORLD QUAIL

Callipepla californica—California quail

NEW WORLD VULTURES

CATHARTIDAE—CARDINALS AND ALLIES

Cathartes aura—turkey vulture

OLD WORLD SPARROWS

PASSERIDAE—OLD WORLD SPARROWS

* *Passer domesticus*—house sparrow

OLD WORLD WARBLERS AND GNATCATCHERS

SYLVIIDAE—SYLVIID WARBLERS

Polioptila caerulea—blue-gray gnatcatcher

Polioptila californica californica—coastal California gnatcatcher

OWLS

TYTONIDAE—BARN OWLS

Tyto alba—barn owl

PIGEONS AND DOVES

COLUMBIDAE—PIGEONS AND DOVES

Zenaida macroura—mourning dove

* *Columba livia*—rock pigeon (rock dove)

* *Streptopelia decaocto*—Eurasian collared-dove

RAILS, GALLINULES, AND COOTS

RALLIDAE—RAILS, GALLINULES, AND COOTS

Fulica americana—American coot

SHOREBIRDS

CHARADRIIDAE—LAPWINGS AND PLOVERS

Charadrius vociferus—killdeer

SILKY FLYCATCHERS

PTILOGONATIDAE—SILKY-FLYCATCHERS

Phainopepla nitens—phainopepla

STARLINGS AND ALLIES

STURNIDAE—STARLINGS

* *Sturnus vulgaris*—European starling

SWALLOWS

HIRUNDINIDAE—SWALLOWS

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

SWIFTS

APODIDAE—SWIFTS

Aeronautes saxatalis—white-throated swift

TERNS AND GULLS

LARIDAE—GULLS, TERNS, AND SKIMMERS

Larus occidentalis—western gull
Sterna hirundo—common tern
Hydroprogne caspia—Caspian tern

THRUSHES

TURDIDAE—THRUSHES

Catharus guttatus—hermit thrush
Sialia mexicana—western bluebird
Turdus migratorius—American robin

TITMICE

PARIDAE—CHICKADEES AND TITMICE

Baeolophus inornatus—oak titmouse

VIREOS

VIREONIDAE—VIREOS

Vireo bellii pusillus—least Bell's vireo
Vireo gilvus—warbling vireo
Vireo huttoni—Hutton's vireo

WATERFOWL

ANATIDAE—DUCKS, GEESE, AND SWANS

Anas platyrhynchos—mallard
Anas strepera—gadwall
Lophodytes cucullatus—hooded merganser

WAXWINGS

BOMBYCILLIDAE—WAXWINGS

Bombycilla cedrorum—cedar waxwing

WOOD WARBLERS AND ALLIES

PARULIDAE—WOOD-WARBLERS

Geothlypis trichas—common yellowthroat
Icteria virens—yellow-breasted chat
Oreothlypis celata—orange-crowned warbler
Cardellina pusilla—Wilson's warbler
Setophaga petechia—yellow warbler
Setophaga townsendi—Townsend's warbler

WOODPECKERS

PICIDAE—WOODPECKERS AND ALLIES

Melanerpes formicivorus—Acorn woodpecker
Picoides nuttallii—Nuttall's woodpecker
Picoides pubescens—downy woodpecker
Colaptes auratus—northern flicker

WRENS

TROGLODYTIDAE—WRENS

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

INVERTEBRATES

BUTTERFLIES

LYCAENIDAE—BLUES, HAIRSTREAKS, AND COPPERS

Leptotes marina—marine blue

NYMPHALIDAE—BRUSH-FOOTED BUTTERFLIES

Adelpha bredowii—California sister
Danaus gilippus—queen
Junonia coenia—common buckeye
Nymphalis antiopa—mourning cloak
Vanessa annabella—west coast lady
Vanessa atalanta—red admiral
Vanessa cardui—painted lady
Danaus plexippus—monarch

RIODINIDAE—METALMARKS

Apodemia mormo virgulti—Behr's metalmark

PAPILIONIDAE—SWALLOWTAILS

Papilio eurymedon—pale swallowtail
Papilio rutulus—western tiger swallowtail
Papilio zelicaon—anise swallowtail

PIERIDAE—WHITES AND SULFURS

Phoebis sennae—cloudless sulphur
Pieris rapae—cabbage white
Pontia protodice—checkered white
Pontia sisymbrii—spring white

MAMMAL

CANIDS

CANIDAE—WOLVES AND FOXES

Canis latrans—coyote

CATS

FELIDAE—CATS

Lynx rufus—bobcat

DOMESTIC

CANIDAE—WOLVES AND FOXES

* *Canis lupus familiaris*—domestic dog

HARES AND RABBITS

LEPORIDAE—HARES AND RABBITS

Sylvilagus audubonii—desert cottontail

Sylvilagus bachmani—brush rabbit

MUSTELIDS

MEPHITIDAE—SKUNKS

Mephitis mephitis—striped skunk

POCKET GOPHERS

GEOMYIDAE—POCKET GOPHERS

Thomomys bottae—Botta's pocket gopher

RACCOONS

PROCYONIDAE—RACCOONS AND RELATIVES

Procyon lotor—raccoon

SQUIRRELS

SCIURIDAE—SQUIRRELS

Spermophilus (Otospermophilus) beecheyi—California ground squirrel

UNGULATES

CERVIDAE—DEERS

Odocoileus hemionus—mule deer

REPTILES

LIZARDS

PHRYNOSOMATIDAE—IGUANID LIZARDS

Sceloporus occidentalis—western fence lizard

Uta stanburiana—common side-blotched lizard

TEIIDAE—WHIPTAIL LIZARDS

Aspidoscelis hyperythra beldingi—Belding's orange-throated whiptail

SNAKES

VIPERIDAE—VIPERS

Crotalus ruber—red diamondback rattlesnake

TURTLES

EMYDIDAE—BOX AND WATER TURTLES

Actinemys marmorata—western pond turtle

* signifies introduced (non-native) species

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APPENDIX B

Willow Flycatcher Survey and Detection Forms

Appendix 1. Willow Flycatcher Survey and Detection Form

Always check the U.S. Fish and Wildlife Service Arizona Ecological Services Field Office web site (http://www.fws.gov/southwest/es/arizona/) for the most up-to-date version.

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

Site Name Pure Water State CA County San Diego
USGS Quad Name Several - See report Elevation 28 - 210 (meters)
Creek, River, Wetland, or Lake Name Several throughout San Diego County
Is copy of USGS map marked with survey area and WIFL sightings attached (as required)? Yes X No ___

Survey Area 1A

Survey Coordinates. Start: E 481059.27 N 3624902.48 UTM Datum NAD 27 (See instructions)
Stop: E 508963.00 N 3642959.89 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 2016	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, *Diorhabda* spp.]). If *Diorhabda* 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 # 1 Observer(s) Paul Lemons (PL)	Date 5/19 Start 0540 Stop 1100 Total hrs 5.3	0	0	0	0					
Survey # 2 Observer(s) PL	Date 6/3 Start 0550 Stop 1100 Total hrs 5.1	0	0	0	0					
Survey # 3 Observer(s) PL	Date 6/16 Start 0550 Stop 1100 Total hrs 5.1	0	0	0	0					
Survey # 4 Observer(s) PL	Date 7/7 Start 0550 Stop 1100 Total hrs 5.1	0	0	0	0					
Survey # 5 Observer(s) PL	Date 7/17 Start 0550 Stop 1100 Total hrs 5	0	0	0	0					
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 25.6		Total Adult Residents	Total Pairs	Total Territories	Total Nests	Were any Willow Flycatchers color-banded? Yes ___ No ___ If yes, report color combination(s) in the comments section on back of form and report to USFWS. N/A - No WIFL detected				
		0	0	0	0					

Reporting Individual Paul Lemons Date Report Completed September 2016
US Fish and Wildlife Service Permit # TE051248-5 State Wildlife Agency Permit # SC-R640

***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 Paul Lemons Phone # 760-942-5147
Affiliation Consultant - Dudek E-mail plemons@dudek.com
Site Name Pure Water San Diego Program Date Report Completed Sept 2016

Did you verify that this site name is consistent with that used in previous years? Yes ___ No ___ Not Applicable X
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. N/A
Did you survey the same general area during each visit to this site this year? Yes X No ___ If no, summarize below.

Management Authority for Survey Area : Federal___ Municipal/County X State ___ Tribal ___ Private ___
Name of Management Entity or Owner (e.g., Tonto National Forest) City of San Diego

Length of area surveyed: ~37,400 (meters) = Approximate length of Entire Project Alignment

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

___ Native broadleaf plants (entirely or almost entirely, > 90% native, includes high-elevation willow)

X 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 name.
Salix lasiolepis, Plantanus racemosa, Populus fremontii

Average height of canopy (Do not include a range): 25 (meters)

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

Comments (attach additional sheets if necessary)

No WIFL detected

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

Territory Number	All Dates Detected	UTM N	UTM E	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 1. Willow Flycatcher Survey and Detection Form

Always check the U.S. Fish and Wildlife Service Arizona Ecological Services Field Office web site (http://www.fws.gov/southwest/es/arizona/) for the most up-to-date version.

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

Site Name Pure Waters State CA County San Diego
USGS Quad Name Several - see report Elevation 28 - 210 (meters)
Creek, River, Wetland, or Lake Name Several throughout San Diego County
Is copy of USGS map marked with survey area and WIFL sightings attached (as required)? Yes X No ___

Survey Area 1B

Survey Coordinates: Start: E 481059.27 N 3624902.48 UTM Datum NAD27 (See instructions)
Stop: E 508963.00 N 3642959.87 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 2016	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, *Dorthabida* spp.)). If *Dorthabida* 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 # 1 Observer(s) Brook Ortega (BO)	Date 5/19 Start 0558 Stop 1031 Total hrs 4.5	1	0	0	N	foraging; not SWFL				
Survey # 2 Observer(s) BO	Date 6/4 Start 0603 Stop 1050 Total hrs 4.8	-	-	-	-					
Survey # 3 Observer(s) BO	Date 6/17 Start 0514 Stop 1032 Total hrs 5.25	-	-	-	-					
Survey # 4 Observer(s) BO	Date 7/5 Start 0531 Stop 1048 Total hrs 5.25	-	-	-	-					
Survey # 5 Observer(s) BO	Date 7/15 Start 0553 Stop 1105 Total hrs 5.2	-	-	-	-					

Overall Site Summary	Total Adult Residents	Total Pairs	Total Territories	Total Nests
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 25.1	0	0	0	0

Were any Willow Flycatchers color-banded? Yes___ No ✓
If yes, report color combination(s) in the comments section on back of form and report to USFWS.

Reporting Individual Brook Ortega Date Report Completed ___
US Fish and Wildlife Service Permit # TE-13545-6 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 Brad Ortega Phone # 760-942-5147
Affiliation Consultant - Dudek E-mail bortega@dudek.com
Site Name Pure Water San Diego Program Date Report Completed _____

Did you verify that this site name is consistent with that used in previous years? Yes ___ No ___ Not Applicable X
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. N/A
Did you survey the same general area during each visit to this site this year? Yes X No ___ If no, summarize below.

Management Authority for Survey Area : Federal___ Municipal/County X State___ Tribal___ Private___
Name of Management Entity or Owner (e.g., Tonto National Forest) City of San Diego

Length of area surveyed: ~37,400 (meters) = Approximate length of Entire Project Alignment

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

___ Native broadleaf plants (entirely or almost entirely, > 90% native, includes high-elevation willow)

✓ 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 name.
Salix sp., Baccharis salicifolia; Platanus sp.

Average height of canopy (Do not include a range): 20 (meters)

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

Comments (attach additional sheets if necessary)

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

Territory Number	All Dates Detected	UTM N	UTM E	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 1. Willow Flycatcher Survey and Detection Form

Always check the U.S. Fish and Wildlife Service Arizona Ecological Services Field Office web site (http://www.fws.gov/southwest/es/arizona/) for the most up-to-date version.

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

Site Name Pure Water State CA County San Diego
USGS Quad Name Several - See report Elevation 28 - 210 (meters)
Creek, River, Wetland, or Lake Name Several throughout San Diego County
Is copy of USGS map marked with survey area and WIFL sightings attached (as required)? Yes X No ___

Survey Area 2

Survey Coordinates: Start: E 481059.27 N 3624902.48 UTM Datum NAD27 (See instructions)
Stop: E 508963.00 N 3642959.87 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 2016	Number of Adult WIFLs	Estimated Number of Pairs	Est. mated 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, *Diorhabda* spp.]). If *Diorhabda* 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.			
Survey # 1 Observer(s) Jeff Priest (JP)	Date 5/19 Start 0450 Stop 1035 Total hrs 5.75	0	0	0	N		# Birds	Sex	UTM E	UTM N
Survey # 2 Observer(s) JP	Date 6/1 Start 0500 Stop 1100 Total hrs 6	0	0	0	N		# Birds	Sex	UTM E	UTM N
Survey # 3 Observer(s) JP	Date 6/17 Start 0500 Stop 1100 Total hrs 6	0	0	0	N		# Birds	Sex	UTM E	UTM N
Survey # 4 Observer(s) JP	Date 6/30 Start 0500 Stop 1100 Total hrs 6	0	0	0	N	BHCO 3♂, 1♀	# Birds	Sex	UTM E	UTM N
Survey # 5 Observer(s) JP	Date 7/11 Start 0500 Stop 1100 Total hrs 6	0	0	0	N	BHCO 2♂, 1♀	# Birds	Sex	UTM E	UTM N

Overall Site Summary	Total Adult Residents	Total Pairs	Total Territories	Total Nests
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 29.75	0	0	0	0

Were any Willow Flycatchers color-banded? Yes___ No ___
If yes, report color combination(s) in the comments section on back of form and report to USFWS.

Reporting Individual Jeff Priest Date Report Completed ___
US Fish and Wildlife Service Permit # TE840619-3 State Wildlife Agency Permit # SC-2211

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 Jeff Priest Phone # 760-942-5147
Affiliation Consultant - Dudek E-mail
Site Name Pure Water San Diego Program Date Report Completed

Did you verify that this site name is consistent with that used in previous years? Yes ___ No ___ Not Applicable X
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. N/A
Did you survey the same general area during each visit to this site this year? Yes X No ___ If no, summarize below.

Management Authority for Survey Area: Federal___ Municipal/County X State ___ Tribal ___ Private ___
Name of Management Entity or Owner (e.g., Tonto National Forest) City of San Diego

Length of area surveyed: ~37,400 (meters) = Approximate length of Entire Project Alignment

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

___ Native broadleaf plants (entirely or almost entirely, > 90% native, includes high-elevation willow)

X 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 name.
(Willow) Salix lasiolepis, (Sycamore) Platanus racemosa, (Mule fat) Baccharis salicifolia

Average height of canopy (Do not include a range): 8m (meters)

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

Comments (attach additional sheets if necessary)
No WIFL observed.

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

Territory Number	All Dates Detected	UTM N	UTM E	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 1. Willow Flycatcher Survey and Detection Form

Always check the U.S. Fish and Wildlife Service Arizona Ecological Services Field Office web site (http://www.fws.gov/southwest/es/arizona/) for the most up-to-date version.

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

Site Name Pure Waters State CA County San Diego
USGS Quad Name Several - See report Elevation 28 - 210 (meters)
Creek, River, Wetland, or Lake Name Several throughout San Diego County
Is copy of USGS map marked with survey area and WIFL sightings attached (as required)? Yes X No ___

Survey Area 3

Survey Coordinates: Start: E 481059.27 N 3624902.48 UTM Datum NAD27 (See instructions)
Stop: E 508963.00 N 3642959.87 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 2016	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, *Diorhabda* spp.]). If *Diorhabda* 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 # 1 Observer(s) Anita Haywarth (AH)	Date 5/19 Start 0554 Stop 1109 Total hrs 5.25	0	0	0	N					
Survey # 2 Observer(s) AH	Date 6/2 Start 0504 Stop 1003 Total hrs 5	0	0	0	N					
Survey # 3 Observer(s) AH	Date 6/17 Start 0508 Stop 1009 Total hrs 5	0	0	0	N					
Survey # 4 Observer(s) AH	Date 7/1 Start 0535 Stop 1010 Total hrs 4.6	0	0	0	N					
Survey # 5 Observer(s) AH	Date 7/14 Start 0530 Stop 1015 Total hrs 4.75	0	0	0	N					

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 24.6	Total Adult Residents	Total Pairs	Total Territories	Total Nests
	0	0	0	0

Were any Willow Flycatchers color-banded? Yes___ No ___
If yes, report color combination(s) in the comments section on back of form and report to USFWS.

Reporting Individual Anita Haywarth Date Report Completed September 2016
US Fish and Wildlife Service Permit # TE-181084-8 State Wildlife Agency Permit # 10810
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 Anita Haysworth Phone # 760-942-5147
Affiliation Consultant - Dudek E-mail ahayworth@dudek.com
Site Name Pure Water San Diego Program Date Report Completed Sept 2016

Did you verify that this site name is consistent with that used in previous years? Yes ___ No ___ Not Applicable X
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. N/A
Did you survey the same general area during each visit to this site this year? Yes X No ___ If no, summarize below.

Management Authority for Survey Area: Federal ___ Municipal/County X State ___ Tribal ___ Private ___
Name of Management Entity or Owner (e.g., Tonto National Forest) City of San Diego

Length of area surveyed: ~37,400 (meters) - Approximate length of Entire Project Alignment

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

___ Native broadleaf plants (entirely or almost entirely, > 90% native, includes high-elevation willow)

___ Mixed native and exotic plants (mostly native, 50 - 90% native)

X 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 name.
Tamarisk sp.; Salix ~~sp.~~ goodingii; Baccharis salicifolia

Average height of canopy (Do not include a range): 6.1 (meters)

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

Comments (attach additional sheets if necessary)

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

Territory Number	All Dates Detected	UTM N	UTM E	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 G

2016/2017 Wet Season
Fairy Shrimp Survey Report

DUDEK

MAIN OFFICE
605 THIRD STREET
ENCINITAS, CALIFORNIA 92024
T 760.942.5147 T 800.450.1818 F 760.632.0164

August 15, 2017 9420

U.S. Fish and Wildlife Service
Attn: Recovery Permit Coordinator
2177 Salk Avenue, Suite 250
Carlsbad, California 92008

Subject: ***2016/17 Wet Season Presence/Absence Survey for Vernal Pool Branchiopods, Pure Water San Diego Program North City Project, San Diego County, California***

The 2016/17 wet season survey for the presence or absence of two federally listed endangered vernal pool branchiopod species, Riverside fairy shrimp (*Streptocephalus woottoni*) and San Diego fairy shrimp (*Branchinecta sandiegonensis*), was conducted between December 5, 2016, and May 19, 2017. Dudek biologist Paul Lemons (TE-051248-5) conducted the surveys according to the *Survey Guidelines for the Listed Large Branchiopods* (USFWS 2015). This report summarizes the results of the 2016/2017 wet season survey in order to fulfill the report requirements in accordance with the Section 10(a)(1)(A) Recovery Permit for the Pure Water San Diego Program North City Project, located in San Diego County, California.

A total of 19 basins were identified as suitable habitat for vernal pool branchiopods and were surveyed during the 2016/2017 wet survey season. These 19 basins were identified as new in 2016/17 and not previously surveyed.

PROJECT LOCATION AND EXISTING CONDITIONS

Proposed North City Project pipelines extend through the cities of San Diego, Santee, and the community of Lakeside in unincorporated San Diego County, in addition to federal lands within MCAS Miramar (Figure 1, Regional Map). The Project site occupies portions of Township 14 South, Range 1 East, projected Sections 30 and 31; Township 14 South, Range 1 West, projected Sections 25 and 36; Township 14 South, Range 2 West, projected Sections 32, and 33; Township 15 South, Range 1 East, projected Sections 6 and 18; Township 15 South, Range 1 West, projected Sections 1, 23, and 30; Township 15 South, Range 2 West, projected Sections 6, 25, 29, 30, 31, 32, 33, 35, and 36; Township 15 South, Range 3 West, projected Sections 9, 10, 11, 16, 17, 20, 25, 26, and 28; Township 16 South, Range 2 West, projected Sections 1, 2, 3, and 4; and Township 16 South, Range 3 West, projected Section 9 on the San Vicente Reservoir, El Cajon, La Mesa, Poway, La Jolla, and Del Mar U.S. Geological Survey 7.5 minute quadrangle maps (Figure 2, Vicinity Map).

Elevations range from about 94 feet amsl in the southwestern portion of the Project site to approximately 688 feet amsl.

Soils within the Project site consist of acid igneous rock land; Altamont clay; Carlsbad-Urban Land complex, Chesterton fine sandy loam; Chesterton-Urban Land complex; Cieneba rocky and very rocky coarse sandy loam, Cieneba-Fallbrook rocky sandy loam; Diablo clay; Diablo-Olivenhain complex; Diablo-Urban land complex; Fallbrook sandy loam; Fallbrook-Vista sandy loam; Friant rocky fine sandy loam; Gaviota fine sandy loam; gravel pits; Huerhuero loam; metamorphic rock land; Olivenhain cobbly loam; Ramona sandy loam; Redding cobbly and gravelly loam; Redding-Urban land complex; riverwash; Salinas clay loam; stony land; terrace escarpments; Tujunga sand; and Visalia sandy loam (SanGIS 2016).

VEGETATION COMMUNITIES, LAND COVERS, AND WET FEATURES

A total of 28 vegetation communities and/or land cover types were identified within a 500-foot buffer of the Miramar Reservoir Alternative study area, and 26 vegetation communities and/or land cover types were observed within a 500-foot buffer of the San Vicente Pipeline Alternative study area. Dominate vegetation community/land cover categories within the study areas include disturbed and developed areas, scrub and chaparral, riparian and bottomlands, woodlands, and grasslands.

Suitable and potentially suitable habitat (i.e., ephemerally wet/ponded basins) for vernal pool branchiopods was identified on site and consists primarily of road rut (man-made) depressions, lacking vegetation, located immediately adjacent to roads and driveway access areas along the proposed project alignments; however, one basin (PWP 8) appears to be a naturally occurring pool adjacent to the Metro Biosolids Center (located north of State Route 52 (SR-52), adjacent to the Miramar Landfill). All of the basins surveyed are considered potentially suitable habitat for vernal pool branchiopods. All 19 basins surveyed were found in areas mapped as disturbed habitat.

Disturbed habitats are areas that have been physically disturbed and are no longer recognizable as native or naturalized vegetation associations (Oberbauer et al. 2008). These areas may continue to retail soil substrate. If vegetation is present, it is almost entirely composed of non-native vegetation, such as ornamentals or ruderal exotic species. Examples of these areas may include graded landscapes or areas, graded firebreaks, graded construction pads, construction staging areas, off-highway vehicle (OHV) trails, areas repeatedly cleared for fuel management, or repeatedly used areas that prevent revegetation (e.g., parking lots, trails that have persisted for years). On site, the dirt roads, dirt trails, and OHV areas are mapped as disturbed habitat.

PREVIOUS BRACHIOPOD STUDIES

To Dudek's knowledge, no previous protocol-level surveys have been conducted within the basins surveyed during the 2016/17 wet season and discussed in this report.

SURVEY METHODS

The surveys methods follow the current USFWS survey guidelines protocol (USFWS 2015). The onset of the 2016/17 wet season survey at the project site began with a significant rain event occurring between November 26 and November 28, 2016. Within 24 hours after this rain event, the entire proposed alignment was visited by biologist Brock Ortega to confirm pooling. Mapping (using a Trimble GeoXT handheld Global Positioning System (GPS) unit) of inundated basins was conducted by Dudek biologist Monique O'Conner on December 1, 2016. The first day of protocol-level sampling (and all surveys thereafter) was conducted by biologist Paul Lemons on December 5, 2016. The protocol states that sampling must be initiated within 7 days of inundation. All suitable habitat basins on site that met the USFWS inundation criteria (i.e., depth of 3 centimeters (1.2 inches) or greater 24 hours after a rain event) to initiate protocol-level surveys were sampled, and USFWS survey forms were completed.

After initial inundation, all wet basins were surveyed at approximately 1-week intervals, according to the survey protocol, until dried up. Basins that dried up and then refilled were surveyed within 7 days of refilling and surveys were reinitiated at the 1-week interval. During the 2016/17 wet season survey, the project site was visited on 24 occasions. A schedule of the 2016/17 wet season survey effort is presented in Table 1. Due to significant rainfall on February 27, 2017 the visit was terminated due to safety concerns from flooding.

The surveys were conducted by Dudek biologist Paul Lemons (TE-051248-5). During each site visit, Mr. Lemons evaluated all basins to document inundation levels and performed sampling when appropriate. Throughout the 2016/17 season, daily precipitation was monitored from multiple weather stations across the proposed project alignment, using Weather Underground Inc. 2016–2017).

Table 1
2015/16 Schedule of Surveys

Visit Number	Biologist	Date	Survey Type	Survey Conditions
1	BAO	November 28, 2016	Ponding check	No conditions recorded
2	MO	December 1, 2016	GPS inundated ponded basins	No conditions recorded
3	PML	December 5, 2016	Survey	0900-1500; 66°F–68°F; 50-70% cc; 2-6 mph winds
4	PML	December 12, 2016	Survey	0840-1230; 60-70°F; 80-40% cc; 0–7 mph winds
5	PML	December 19, 2016	Survey	0830-1500; 63-67°F; 0% cc; 1-3 mph winds
6	PML	December 26, 2016	Survey	0950-1600; 58-60°F; 20-30% cc; 0-5 mph winds
7	PML	January 2, 2017	Survey	0930–1500; 54-61°F; 100% cc; 0-5 mph winds
8	PML	January 9, 2017	Survey	0820–1500; 60-63°F; 100% cc; 1-4 mph winds
9	PML	January 16, 2017	Survey	0900–1500; 55–66°F; 60-5% cc; 0–5 mph winds
10	PML	January 23, 2017	Survey	0900–1520; 54-56°F; 100-90% cc; 3-15 mph winds, some rain
11	PML	January 30, 2017	Survey	0800–1440; 59-62°F; 10-20% cc; 0-7 mph winds
12	PML	February 6, 2017	Survey	0900-1520; 56-61°F; 100% cc; 1-10 mph winds
13	PML	February 13, 2017	Survey	0840-1500; 61°F–74°F; 0-60% cc; 0-4 mph winds
14	PML	February 20, 2017	Survey	0800–1430; 59-71°F; 100–40% cc; 0–6 mph winds
15	PML	February 27, 2017	Survey	0900–1400; 49–58°F; 100% cc; 4–15 mph winds; Heavy rain
16	PML	March 6, 2017	Survey	0900-1530; 54°F–76°F; 0% cc; 1-10 mph winds
17	PML	March 13, 2017	Survey	0820-1500; 59–75°F; 50-0% cc; 0-5 mph winds
18	PML	March 20, 2017	Survey- All pools dry	No conditions recorded
19	PML	March 23, 2017	Ponding check	No conditions recorded
20	PML	March 27, 2017	Survey- All pools dry	No conditions recorded
21	PML	May 8, 2017	Ponding check	No conditions recorded

Table 1
2015/16 Schedule of Surveys

Visit Number	Biologist	Date	Survey Type	Survey Conditions
22	PML	May 12, 2017	Survey	0830-1430; 63-72°F; 100-80% cc; 1-5 mph winds
23	PML	May 19, 2017	Survey- All pools dry	No conditions recorded
24	PML	June 12, 2017	Ponding check: All pools dry, wet season concluded	No conditions recorded

Surveyors: BAO = Brock Ortega; MO = Monique O'Conner; PML = Paul Lemons (TE-051248-5)
Survey Conditions: °F = degrees Fahrenheit, cc = cloud cover, mph = miles per hour

Protocol-level sampling was performed within all basins that were considered potential listed branchiopod habitat by vernal pool branchiopods and any depressions meeting the USFWS 3-centimeter (1.2-inch) inundation criteria. The location of each basin sampled was recorded using a Global Positioning System (GPS) unit with sub-meter accuracy. GPS data were downloaded into an ArcGIS file by Dudek geographic information systems (GIS) specialist Andrew Greis.

During each survey, Mr. Lemons inspected the individual basins for depth, surface area of water, air and water temperature, level of disturbance, and presence of aquatic wildlife. An aquarium dip net was passed through every basin that met the USFWS inundation criteria. All portions of ponded water were surveyed from the bottom to the surface by moving the dip net in a mild zigzag pattern through the basin as directed by the sampling protocol (USFWS 2015). Dip net contents were frequently viewed and discarded of algae, plants, and other debris material when occurring at high concentrations (USFWS 2015). Samples were collected, when needed, using the aquarium net and a 40-milliliter (1.4-ounce) glass vial. Specimens were stored in the vial with water collected where the specimen was found. Specimens were taken to the laboratory within 24 hours of collection and placed in a non-denatured ethyl alcohol (200 proof) solution for preservation. Each specimen was inspected thoroughly using a dissecting microscope and soft-tip forceps. Eriksen and Belk (1999) was used to verify the species of each specimen collected. If any listed vernal pool branchiopods would have been identified during this survey effort, the USFWS would have been notified within 10 days of occupied basins as stated in the protocol.

Survey data sheets (provided in the 2015 survey protocol) were completed for every basin that met the minimum USFWS inundation requirement at the time of sampling (Appendix A). All information was hand recorded in the field using the data sheet, with the most pertinent information (e.g., pool basin data, fairy shrimp presence/absence, and species identification) recorded. Photographs of the pool basins are included in Appendix B.

SURVEY RESULTS

Basin Descriptions

A total of 19 basins were identified as suitable habitat for vernal pool branchiopods and were surveyed during the 2016/17 wet survey season. The basins within the study area are distributed in topographically flat areas primarily along Eastgate Mall Road in the City of San Diego and Moreno Avenue in Lakeside, CA. Seventeen (17) of the basins are considered road ruts. Road ruts are depressions that are typically formed by vehicular traffic within or immediately adjacent to roadways, generally lack aquatic vegetation, and are heavily disturbed by vehicular traffic moderately to highly disturbed, showing evidence of current roadside disturbance (i.e., parked vehicles, trailers, tire tracks, trash). Two basins (PWP 1 and PWP 8) are considered vernal pools. Vernal pools are depressions that retain sufficient water level, support vernal pool indicator plant species, and likely support vernal pool branchiopods (Note that no vernal pool branchiopods were detected within PWP 1 during the 2016/17 wet season surveys).

Fairy Shrimp Presence/Absence

Neither of the two federally listed endangered vernal pool branchiopod species (Riverside fairy shrimp or San Diego fairy shrimp) were identified during the 2016/17 wet season survey effort. During the 16 survey sampling visits, 12 basins (PWP 3, PWP 4, PWP, 5, PWP 6, PWP 8, PWP 9, PWP 11, PWP 12, PWP 13, PWP 14, PWP 15, PWP 17) were found to be occupied by versatile fairy shrimp (*Branchinecta lindahli*). A summary of the survey results is provided in Table 2. The distribution of basins sampled in the study area is presented in Figure 3 attached to this report.

Table 2
2015/16 Vernal Pool Branchiopods Survey Results*

Basin ID	Branchiopod Species Observed
PWP 1	None
PWP 2	None
PWP 3	Fairy shrimp present; Versatile fairy shrimp (*Branchinecta lindahli*)
PWP 4	Fairy shrimp present; Versatile fairy shrimp (*Branchinecta lindahli*)
PWP 5	Fairy shrimp present; Versatile fairy shrimp (*Branchinecta lindahli*)
PWP 6	Fairy shrimp present; Versatile fairy shrimp (*Branchinecta lindahli*)
PWP 7	None
PWP 8	Fairy shrimp present; Versatile fairy shrimp (*Branchinecta lindahli*)
PWP 9	Fairy shrimp present; Versatile fairy shrimp (*Branchinecta lindahli*)
PWP 10	None
PWP 11	Fairy shrimp present; Versatile fairy shrimp (*Branchinecta lindahli*)

Table 2
2015/16 Vernal Pool Branchiopods Survey Results*

Basin ID	Branchiopod Species Observed
PWP 12	Fairy shrimp present; Versatile fairy shrimp (*Branchinecta lindahli*)
PWP 13	Fairy shrimp present; Versatile fairy shrimp (*Branchinecta lindahli*)
PWP 14	Fairy shrimp present; Versatile fairy shrimp (*Branchinecta lindahli*)
PWP 15	Fairy shrimp present; Versatile fairy shrimp (*Branchinecta lindahli*)
PWP 16	None
PWP 17	Fairy shrimp present; Versatile fairy shrimp (*Branchinecta lindahli*)
PWP 18	None
PWP 19	None

I certify that the information presented in this survey report and attached exhibits fully and accurately represents my work. Please contact Brock Ortega at bortega@dudek.com, Paul Lemons at plemons@dudek.com, or Danielle Mullen at dmullen@dudek.com if you have any questions regarding the contents of this report.

Sincerely,

Paul Lemons
TE051248-5

Att: *Figure 1, Regional Map*
Figure 2A–C, Vicinity Map
Figures 3A–F, Aerial Map
Appendix A, Survey Data Forms
Appendix B, Photographs

cc: *Brock Ortega, Dudek*

REFERENCES CITED

Eriksen, C., and D. Belk. 1999. *Fairy Shrimps of California's Puddles, Pools, and Playas.* Eureka, California: Mad River Press Inc.

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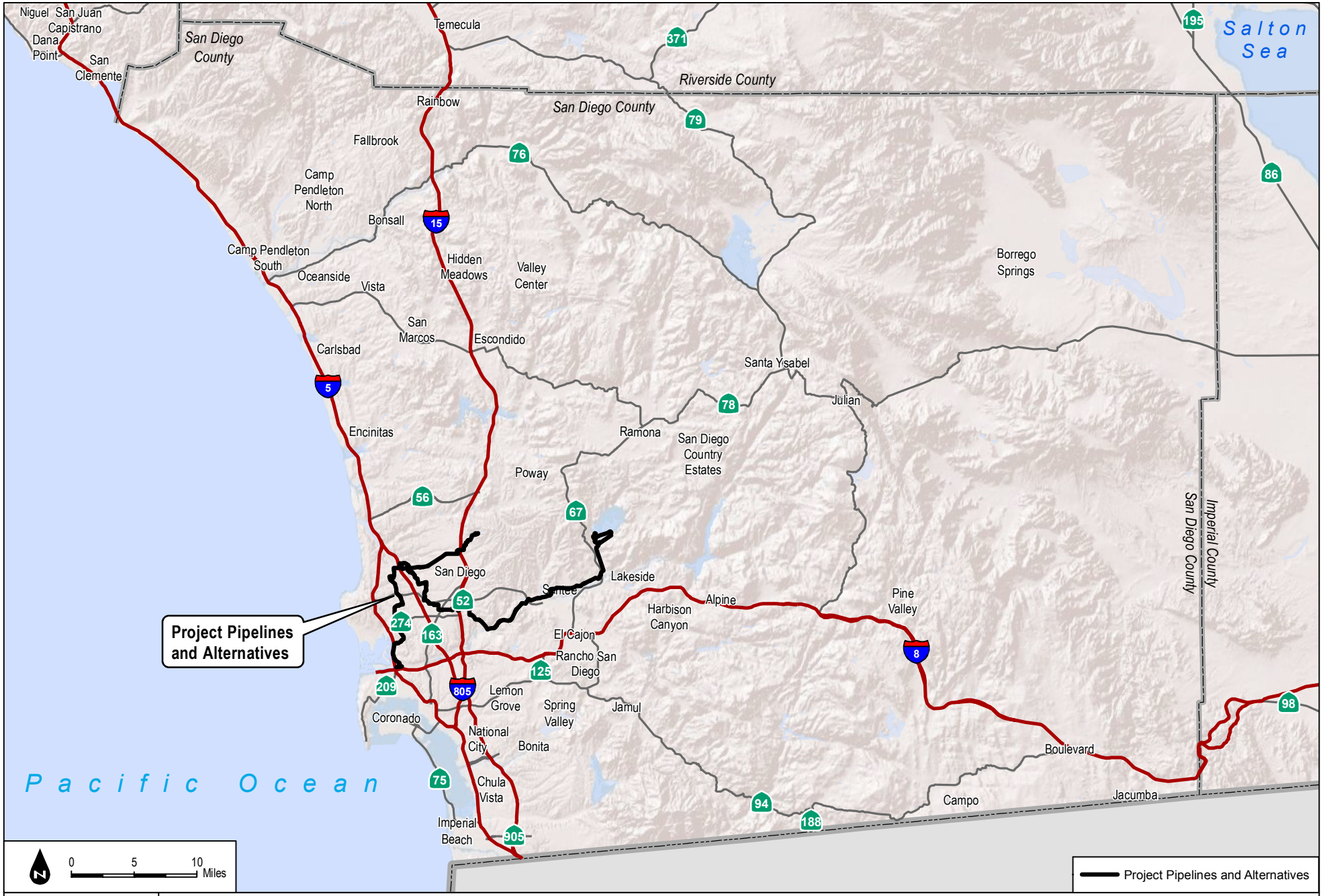


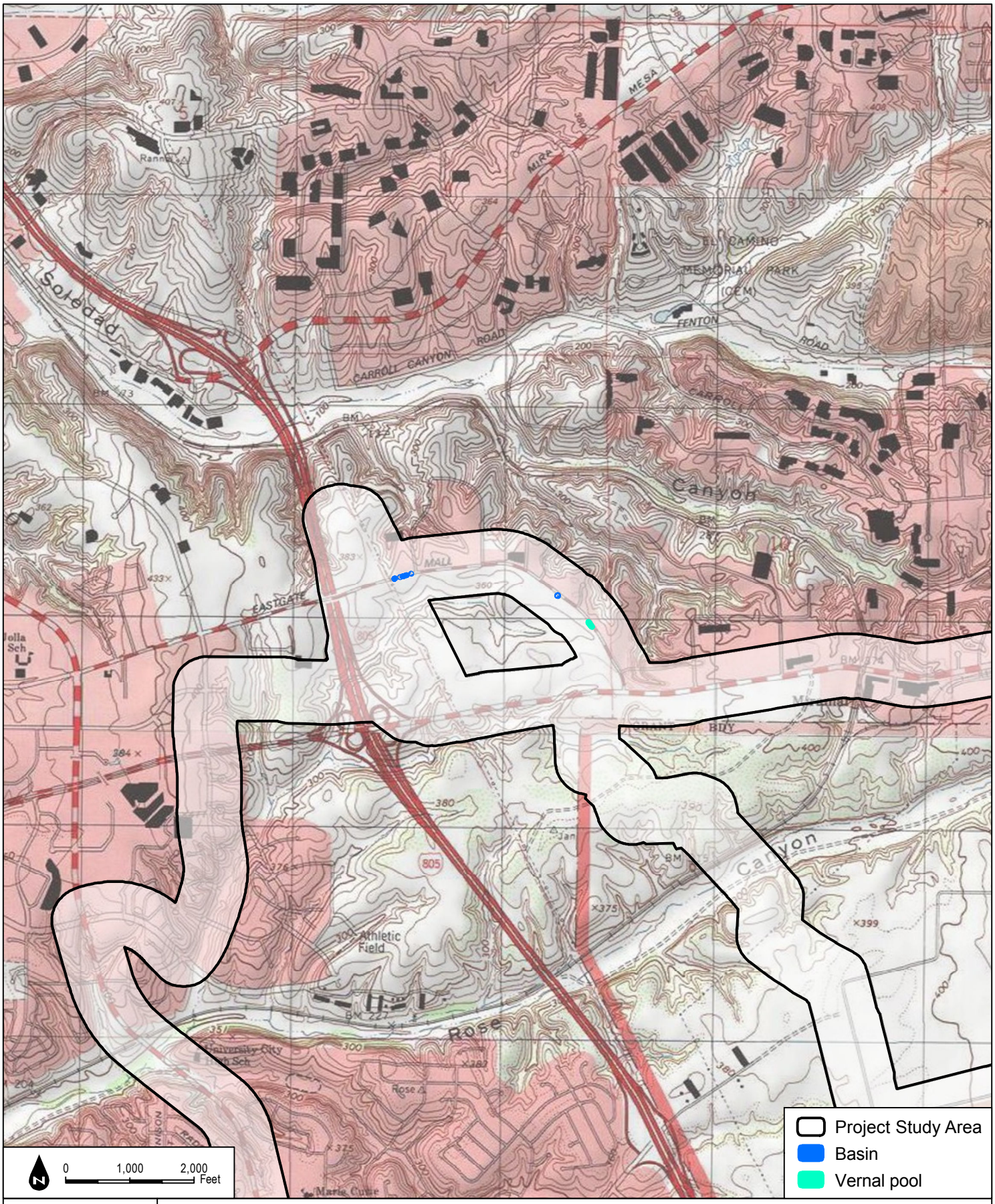
DUDEK

SOURCE: City San Diego 2016; ESRI 2016

FIGURE 1

Regional Map

2016/17 Wet Season Presence/Absence Survey for Vernal Pool Branchiopods, Pure Water San Diego Program North City Project, San Diego County, California



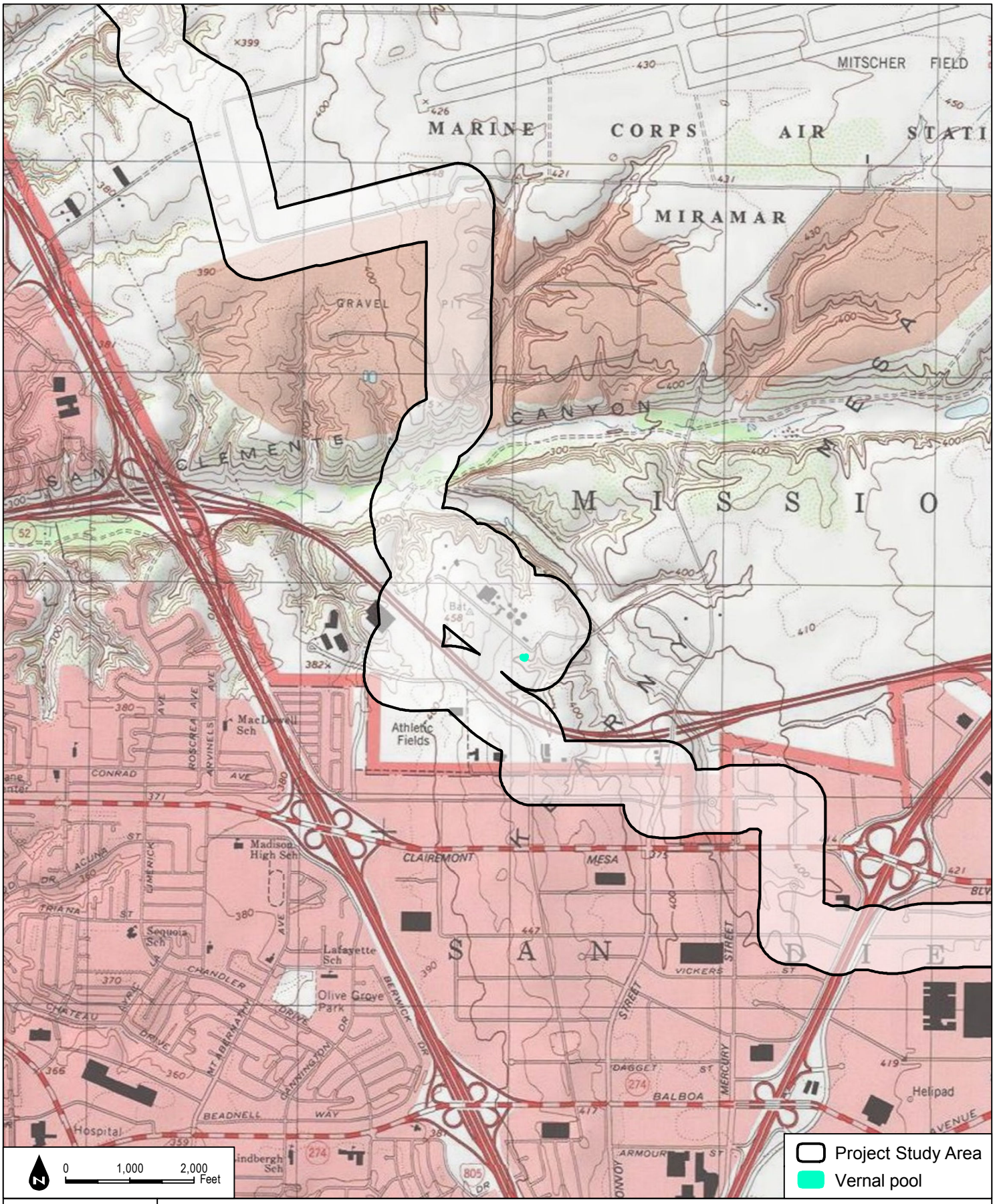
SOURCE: USGS 7.5-Minute Series El Cajon, San Vicente Reservoir Quadrangles.

FIGURE 2A

Vicinity Map

DUDEK

2016/17 Wet Season Presence/Absence Survey for Vernal Pool Branchiopods, Pure Water San Diego Program North City Project, San Diego County, California



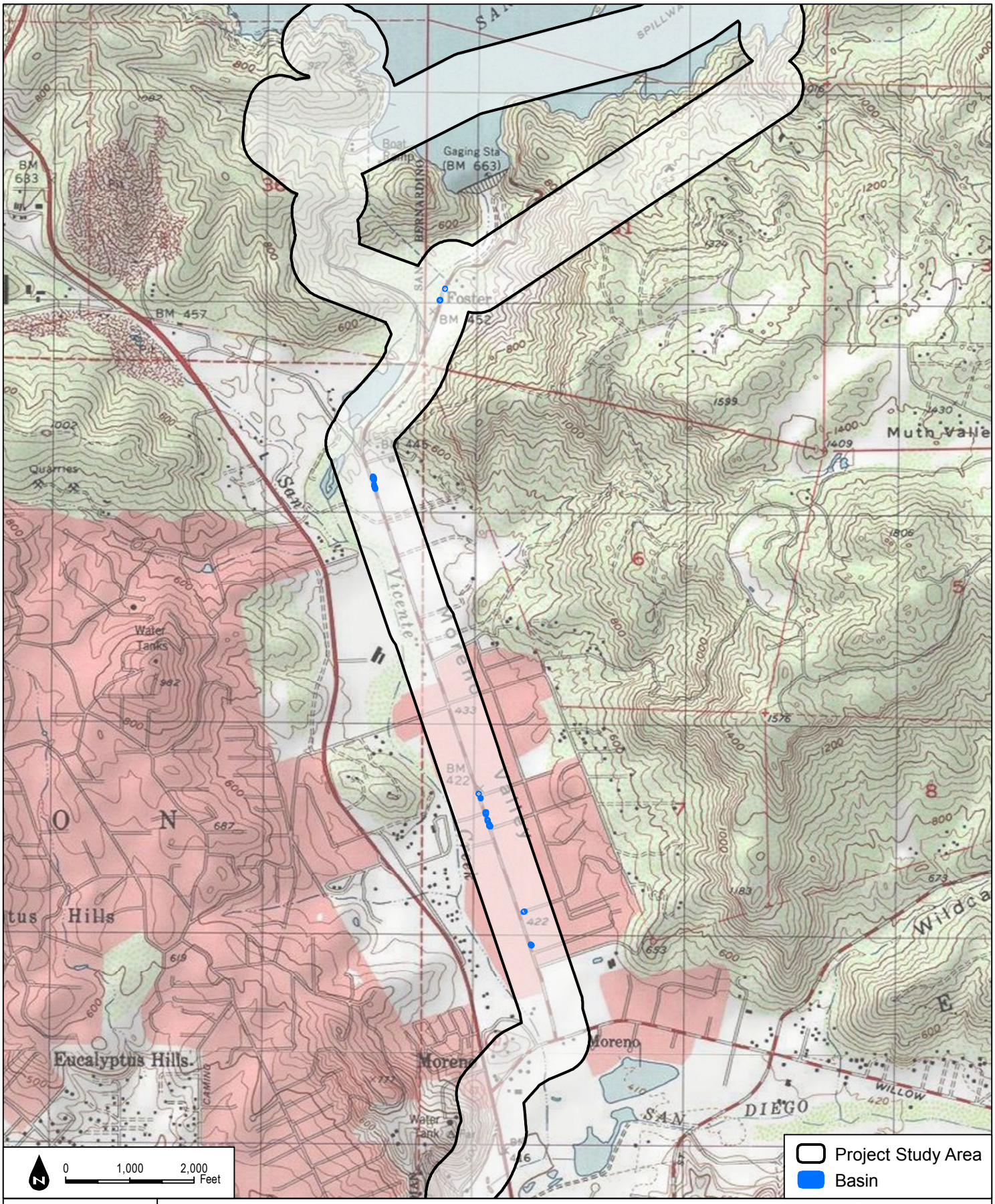
SOURCE: USGS 7.5-Minute Series El Cajon, San Vicente Reservoir Quadrangles.

FIGURE 2B

Vicinity Map

DUDEK

2016/17 Wet Season Presence/Absence Survey for Vernal Pool Branchiopods, Pure Water San Diego Program North City Project, San Diego County, California



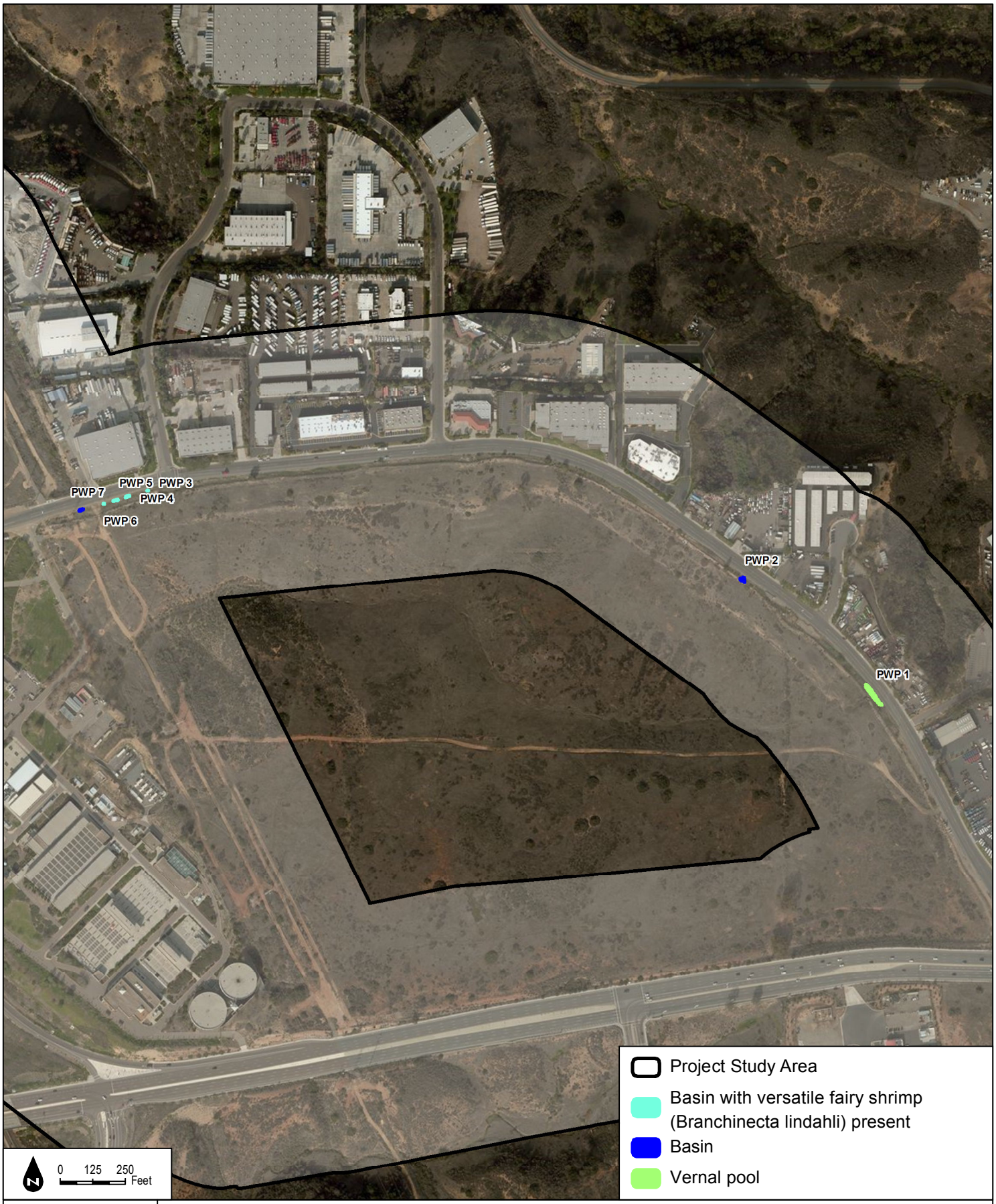
SOURCE: USGS 7.5-Minute Series El Cajon, San Vicente Reservoir Quadrangles.

FIGURE 2C

Vicinity Map

DUDEK

2016/17 Wet Season Presence/Absence Survey for Vernal Pool Branchiopods, Pure Water San Diego Program North City Project, San Diego County, California



SOURCE: USGS 7.5-Minute Series El Cajon, San Vicente Reservoir Quadrangles.

DUDEK

FIGURE 3A

Aerial Map

2016/17 Wet Season Presence/Absence Survey for Vernal Pool Branchiopods, Pure Water San Diego Program North City Project, San Diego County, California

SOURCE: USGS 7.5-Minute Series El Cajon, San Vicente Reservoir Quadrangles.

DUDEK

FIGURE 3B

Aerial Map

2016/17 Wet Season Presence/Absence Survey for Vernal Pool Branchiopods, Pure Water San Diego Program North City Project, San Diego County, California

SOURCE: USGS 7.5-Minute Series El Cajon, San Vicente Reservoir Quadrangles.

FIGURE 3C

Aerial Map

DUDEK

2016/17 Wet Season Presence/Absence Survey for Vernal Pool Branchiopods, Pure Water San Diego Program North City Project, San Diego County, California

SOURCE: USGS 7.5-Minute Series El Cajon, San Vicente Reservoir Quadrangles.

DUDEK

FIGURE 3D

Aerial Map

2016/17 Wet Season Presence/Absence Survey for Vernal Pool Branchiopods, Pure Water San Diego Program North City Project, San Diego County, California

SOURCE: USGS 7.5-Minute Series El Cajon, San Vicente Reservoir Quadrangles.

FIGURE 3E
Aerial Map

DUDEK

2016/17 Wet Season Presence/Absence Survey for Vernal Pool Branchiopods, Pure Water San Diego Program North City Project, San Diego County, California

SOURCE: USGS 7.5-Minute Series El Cajon, San Vicente Reservoir Quadrangles.

DUDEK

FIGURE 3F
Aerial Map

2016/17 Wet Season Presence/Absence Survey for Vernal Pool Branchiopods, Pure Water San Diego Program North City Project, San Diego County, California

APPENDIX A

Survey Data Forms

Appendix 1. U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods

Site or Project Name: PWP | **County:** San Diego | **Quad:** | **Township:** | **Range:** | **Section:**

SURVEYOR / Permit Number: Paul Lemons TE051248

Date: 12/5/16 | **Time:** 0900-1500 | **Weather Conditions:** 66-68°F, 2-6 mph winds, 50-70% clouds.

Feature ID #	UTM (Northing, Easting, Datum)	Temp (°F) Air	Temp (°F) Water	Depth (cm) Average	Depth (cm) Est. Max.	Surface Area (m x m) Present	Surface Area (m x m) Est. Max.	Crustaceans: Anostracans	Notostracans	Copepods	Ostracods	Cladocera	Insects: Coleoptera	Hemiptera	Diptera Culicidae	Diptera Chironomidae	Platyhelminths (flatworms)	Habitat Condition	Notes / Voucher information
PWP 1		66	58	5	10	1×26	2×30											D, TT, T	No FS
PWP 2		66	59	3	8	1.5×4	2×8											D, TT	No FS
PWP 3		66	59	3	8	.5×1	1.5×10											D, TT	No FS
PWP 4		67	59	4	10	1×1	1×2											D, TT	No FS
PWP 5		67	59	3	8	1×1	1×6											D, TT	No FS
PWP 6		67	59	3	10	1×3	1×6											D, TT	No FS
PWP 7		67	66	3	8	.5×4	2×6											D, TT	No FS
* PWP 8 (Bio Solid Plant)		66	65	7	15	16×12	20×20	BRLI-10's										NP, UD	FS present 7 collected
PWP 9. Moreno		67	68	3	6	1×1	3×3											D, TT	No FS
GPS'd PWP 10		67	68	4	8	2×3	3×8											D, TT	No FS
PWP 11		67	67	3	8	2×4	5×8											D, TT	No FS
PWP 12		67	70	3	10	1.5×6	2×10											D, TT	No FS
PWP 13		67	66	5	10	6×6	8×8	10's										D, TT	~~No FS~~ Shrimp too young
* PWP 14		67	66	3	12	.5×2	4×12	10's BRLI										D, TT	FS Present - 2 collected

Notes: Fill in abbreviated names of Anostracans and Notostracans, for all others indicate presence with a check mark. Anostracan and Notostracan Abbreviations: Use first two letters of genus and species name (e.g., LIOC = *Linderiella occidentalis*, BRLI = *Branchinecta lindahli)*.
For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.
(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

Appendix 1. U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods

Site or Project Name:	County:	Quad:	Township:	Range:	Section:

SURVEYOR / Permit Number:

Date: 12/5 continued | Time: | Weather Conditions:

Feature ID #	UTM (Northing, Easting, Datum)	Temp (°C)		Depth (cm)		Surface Area (m x m)		Crustaceans					Insects				Platyhelminths (flatworms)	Habitat Condition	Notes / Voucher information
		Air	Water	Average	Est. Max.	Present	Est. Max.	Anostracans	Notostracans	Copepods	Ostracods	Cladocera	Coleoptera	Hemiptera	Diptera Culicidae	Diptera Chironomidae			
PWP 15		69	66	6	10	2×2	8×8	BRLI 10's										D,TT	FS present 2 ♂ collect
PWP 16		69	66	4	8	.5×6	1×20											D,TT	No FS
PWP 17		69	67	6	12	3×20	5×30											D,TT	No FS
PWP 18		69	66	3	8	2×3	5×48											D,TT	No FS
PWP 19		67	66	3	6	1×2	3×16											D,TT	No FS

Notes: Fill in abbreviated names of Anostracans and Notostracans, for all others indicate presence with a check mark. Anostracan and Notostracan Abbreviations: Use first two letters of genus and species name (e.g., LIOC = *Linderiella occidentalis*, BRLI = *Branchinecta lindahli)*.
For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.
(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

Appendix 1. U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods

Site or Project Name: PWP | **County:** San Diego | **Quad:** | **Township:** | **Range:** | **Section:**

SURVEYOR / Permit Number: Paul Lemons TE051248

Date: 12/12/16 | Time: 0840-1230 | Weather Conditions: 60-70°F, 0-7 mph, 80-40% cc

Feature ID #	UTM (Northing, Easting, Datum)	Temp (°F)		Depth (cm)		Surface Area (m x m)		Crustaceans					Insects				Platyhelminths (flatworms)	Habitat Condition	Notes / Voucher information
		Air	Water	Average	Est. Max.	Present	Est. Max.	Anostracans	Notostracans	Copepods	Ostracods	Cladocera	Coleoptera	Hemiptera	Diptera Culicidae	Diptera Chironomidae			
PWP 1		60°F	59°F	3	10	.5x5	2x30											D, TT	No FS
PWP 2		60	59	3	8	.5x2	2x8											D, TT	No FS
PWP 8		63	71	3	15	1.5x8	20x20	BRLI 10's										NP, UD	FS present 12 collected
PWP 13		68	70	4	10	4x6	8x8	BRLI 10's										D, TT	FS present - B. lindahli
PWP 15		68	72	1	10	.5x.5	8x8	BRLI 10's										D, TT	FS present
PWP 10		68	70	3	8	1x1	3x8											D, TT	No FS
All other pools dry																			

Notes: Fill in abbreviated names of Anostracans and Notostracans, for all others indicate presence with a check mark. Anostracan and Notostracan Abbreviations: Use first two letters of genus and species name (e.g., LIOC = *Linderiella occidentalis*, BRLI = *Branchinecta lindahli*).
For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.
(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

Appendix 1. U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods

Site or Project Name: PURE WATER | **County:** SAN DIEGO | **Quad:** SEE REPORT - SEVERAL THROUGHOUT SAN DIEGO COUNTY | **Township:** | **Range:** | **Section:**

SURVEYOR / Permit Number: PAUL LEMONS, TE051248-5

Date: 12/19/16 | **Time:** 0830-1500 | **Weather Conditions:** 63-68 °F, 1-3 mph winds, 0 % cc

Feature ID #	UTM (Northing, Easting, Datum)	Temp (°F) Air	Temp (°F) Water	Depth (cm) Average	Depth (cm) Est. Max.	Surface Area (m x m) Present	Surface Area (m x m) Est. Max.	Crustaceans: Anostracans FS	Crustaceans: Notostracans Tadpole Shrimp	Crustaceans: Copepods	Crustaceans: Ostracods	Crustaceans: Cladocera	Insects: Coleoptera Water Beetles	Insects: Hemiptera Bugs-Aphids	Insects: Diptera Culicidae Mosquito	Insects: Diptera Chironomidae Flies Worm-like larvae	Platyhelminths (flatworms)	Habitat Condition	Notes / Voucher information
PWP 1	482406.52 3639971.61	63	51	9	10	2x30	2x30											D,TT	No FS
PWP 2	482253.80 3638105.22	63	52	8	8	2x8	2x8											D,TT	No FS
PWP 3	481556.56 3638203.82				8		1.5x10												Dry
PWP 4	481532.83 3638196.63	63	51	6	10	1x1	1x2											D,TT	No FS
PWP 5	481519.59 3638192.16	63	50	7	8	1x6	1x6											D,TT	No FS
PWP 6	481505.26 3638187.97	63	51	6	10	1x3	1x6											D,TT	No FS
PWP 7	481478.58 3638180.53	63	51	6	8	1.5x5	2x6											D,TT	No FS
PWP 8	485061.26 3633652.28	66	56	13	15	20x20	20x20	BRLI X100's			X							NP,UD	FS present
PWP 9	507278.06 3637951.13	68	60	6	6	3x8	3x8											D,TT	No FS
PWP 10	507243.74 3638109.35	68	61	8	8	3x8	3x8											D,TT	No FS
PWP 11	507077.48 3638515.05	68	63	8	8	5x18	5x18											D,TT	No FS
PWP 12	507067.13 3638540.17	68	64	10	10	2x10	2x10											D,TT	No FS
PWP 13	507059.25 3638574.65	68	63	10	10	8x8	8x8	BRLI 10's										D,TT	FS present
PWP 14	507034.43 3638645.18	68	65	7	12	3x12	4x12											D,TT	No FS

Notes: Fill in abbreviated names of Anostracans and Notostracans, for all others indicate presence with a check mark. Anostracan and Notostracan Abbreviations: Use first two letters of genus and species name (e.g., LIOC = *Linderiella occidentalis*, BRLI = *Branchinecta lindahli*).
For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.
(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

Appendix 1. U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods

Site or Project Name: PURE WATER | **County:** SAN DIEGO | **Quad:** SEVERAL - SEE REPORT | **Township:** | **Range:** | **Section:**

SURVEYOR / Permit Number: PAUL LEMONS - TE051248-5

Date: 12/9/10 Continued | Time: | Weather Conditions: °F, mph winds, % cc

Feature ID #	UTM (Northing, Easting, Datum)	Temp (°C)		Depth (cm)		Surface Area (m x m)		Crustaceans					Insects				Platyhelminths (flatworms)	Habitat Condition	Notes / Voucher information
		Air	Water	Average	Est. Max.	Present	Est. Max.	Anostracans	Notostracans	Copepods	Ostracods	Cladocera	Coleoptera	Hemiptera	Diptera Culicidae	Diptera Chironomidae			
PWP 15	507024.91 3639664.95	68	66	10	10	8x8	8x8											D,TT	No FS
PWP 16	506520.24 3640117.92	68	63	5	8	1x20	1x20											D,TT	No FS
PWP 17	506513.76 3640160.06	68	64	6	12	3x20	5x30											D,TT	No FS
PWP 18	506823.36 3641006.23	67	63	8	8	5x18	5x18											D,TT	No FS
PWP 19	506847.40 3641059.89	67	63	6	6	5x16	8x16											D,TT	No FS

Notes: Fill in abbreviated names of Anostracans and Notostracans, for all others indicate presence with a check mark. Anostracan and Notostracan Abbreviations: Use first two letters of genus and species name (e.g., LIOC = *Linderiella occidentalis*, BRLI = *Branchinecta lindahli)*.
For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.
(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

Appendix 1. U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods

Site or Project Name: PURE WATER | **County:** SAN DIEGO | **Quad:** SEE REPORT - SEVERAL THROUGHOUT SAN DIEGO COUNTY | **Township:** | **Range:** | **Section:**

SURVEYOR / Permit Number: PAUL LEMONS, TE051248-5

Date: 12/26/16 Time: 0950-1600 Weather Conditions: 58-60°F, 0-5 mph winds, 20-30% cc

Feature ID #	UTM (Northing, Easting, Datum)	Temp (°F) Air	Temp (°F) Water	Depth (cm) Average	Depth (cm) Est. Max.	Surface Area (m x m) Present	Surface Area (m x m) Est. Max.	Crustaceans: Anostracans	Crustaceans: Notostracans	Crustaceans: Copepods	Crustaceans: Ostracods	Crustaceans: Cladocera	Insects: Coleoptera	Insects: Hemiptera	Insects: Diptera Culicidae	Insects: Diptera Chironomidae	Platyhelminths (flatworms)	Habitat Condition	Notes / Voucher information
PWP 1	482406.52 3637971.61	58	57	8	10	2x30	2x30											D,TT	No FS
PWP 2	482253.80 3638105.22	58	56	6	8	2x8	2x8											D,TT	No FS
PWP 3	481556.56 3638203.82	59	58	5	8	1x8	1.5x10											D,TT	No FS
PWP 4	481532.83 3638196.63	59	58	8	10	1x2	1x2											D,TT	No FS
PWP 5	481519.59 3638192.16	59	58	6	8	1x6	1x6											D,TT	No FS
PWP 6	481505.26 3638189.97	59	58	7	10	1x6	1x6											D,TT	No FS
PWP 7	481478.58 3638180.53	59	58	6	8	2x6	2x6											D,TT	No FS
PWP 8	485061.26 3637652.28	61	58	10	15	20x20	20x20				x							NP	No FS
PWP 9	507278.06 3637951.13	63	59	5	6	3x8	3x8											D,TT	No FS
PWP 10	507243.74 3638109.35	63	59	7	8	3x8	3x8											D,TT	No FS
PWP 11	507077.48 3638515.05	64	59	7	8	5x18	5x8											D,TT	No FS
PWP 12	507067.13 3638540.17	64	59	8	10	2x10	2x10											D,TT	No FS
PWP 13	507059.25 3638574.63	64	59	8	10	8x8	8x8											D,TT	No FS
PWP 14	507034.43 3638645.18	64	58	9	12	3x12	4x12											D,TT	No FS

Notes: Fill in abbreviated names of Anostracans and Notostracans, for all others indicate presence with a check mark. Anostracan and Notostracan Abbreviations: Use first two letters of genus and species name (e.g., LIOC = *Linderiella occidentalis*, BRLI = *Branchinecta lindahli*).
For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.
(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

Appendix 1. U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods

Site or Project Name: PURE WATER | **County:** SAN DIEGO | **Quad:** SEVERAL - SEE REPORT | **Township:** | **Range:** | **Section:**

SURVEYOR / Permit Number: PAUL LEMONS - TE051248-5

Date: 12/26/16 | Time: | Weather Conditions: °F, mph winds, % cc

Cont'd

Feature ID #	UTM (Northing, Easting, Datum)	Temp (°C)		Depth (cm)		Surface Area (m x m)		Crustaceans					Insects				Platyhelminths (flatworms)	Habitat Condition	Notes / Voucher information
		Air	Water	Average	Est. Max.	Present	Est. Max.	Anostracans	Notostracans	Copepods	Ostracods	Cladocera	Coleoptera	Hemiptera	Diptera Culicidae	Diptera Chironomidae			
PWP 15	507024.91 3638664.95	64	57	8	10	8x8	8x8											D, TT	No FS
PWP 16	506520.27 3640117.92	64	58	6	8	1x20	1x20											D, TT	No FS
PWP 17	506513.76 3640160.06	64	58	8	12	5x30	5x30											D, TT	No FS
PWP 18	506823.36 3641006.23	64	58	5	8	5x18	5x18											D, TT	No FS
PWP 19	506847.40 3641059.89	64	58	4	6	5x16	8x16											D, TT	No FS

Notes: Fill in abbreviated names of Anostracans and Notostracans, for all others indicate presence with a check mark. Anostracan and Notostracan Abbreviations: Use first two letters of genus and species name (e.g., LIOC = *Linderiella occidentalis*, BRLI = *Branchinecta lindahli*).
For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.
(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

Appendix 1. U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods

Site or Project Name: PURE WATER | **County:** SAN DIEGO | **Quad:** SEE REPORT - SEVERAL THROUGHOUT | **Township:** | **Range:** SAN DIEGO COUNTY | **Section:**

SURVEYOR / Permit Number: PAUL LEMONS, TE051248-5

Date: 1/2/17 Time: 0930-1500 Weather Conditions: 54-61 °F, 0-5 mph winds, 100 % cc

Feature ID #	UTM (Northing, Easting, Datum)	Temp (°C) °F		Depth (cm)		Surface Area (m x m)		Crustaceans					Insects				Platyhelminths (flatworms)	Habitat Condition	Notes / Voucher information
		Air	Water	Average	Est. Max.	Present	Est. Max.	Anostracans	Notostracans	Copepods	Ostracods	Cladocera	Coleoptera	Hemiptera	Diptera Culicidae	Diptera Chironomidae			
PWP 1	482406.52 3637971.61	54	54	1ft	10	3x40	~~2x80~~	3x40										D, TT	No FS
PWP 2	482253.80 3638105.22	54	53	8	8	4x20	~~2x8~~	6x30										D, TT	No FS
PWP 3	481556.56 3638203.82	54	55	8	8	2x10	1.5x10											D, TT	No FS
PWP 4	481532.83 3638196.63	54	55	10	10	1x2	1x2											D, TT	No FS
PWP 5	481519.59 3638192.16	55	56	8	8	1x6	1x6											D, TT	No FS
PWP 6	481505.26 3638189.97	55	56	10	10	1x6	1x6											D, TT	No FS
PWP 7	481478.58 3638180.53	55	56	8	8	2x6	2x6											D, TT	No FS
PWP 8	485061.26 3637652.28	55	56	15	15	20x20	20x20	BRLI										UD, NP	2 ♂ Branch. 10gs collected
PWP 9	507278.06 3637951.13	56	57	6	6	~~2~~3x8	3x8											D, TT	No FS
PWP 10	507243.74 3638109.35	56	57	8	8	3x8	3x8											D, TT	No FS
PWP 11	507077.48 3638515.05	58	56	8	8	4x8	5x8											D, TT	No FS
PWP 12	507067.13 3638540.17	58	57	10	10	2x10	2x10											D, TT	No FS
PWP 13	507059.25 3638574.63	59	56	10	10	8x8	8x8											D, TT	No FS
PWP 14	507034.43 3638645.18	60	56	12	12	4x12	4x12											D, TT	No FS

Notes: Fill in abbreviated names of Anostracans and Notostracans, for all others indicate presence with a check mark. Anostracan and Notostracan Abbreviations: Use first two letters of genus and species name (e.g., LIOC = *Linderiella occidentalis*, BRLI = *Branchinecta lindahli*).
For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.
(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

Appendix 1. U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods

Site or Project Name: Pure Water | **County:** San Diego | **Quad:** Several - See | **Township:** Report | **Range:** | **Section:**

SURVEYOR / Permit Number: Paul Lemons - TE051248-5

Date: 1/2/17 | Time: | Weather Conditions: °F, mph winds, % cc

Cont'd

Feature ID #	UTM (Northing, Easting, Datum)	Temp (°F) Air	Temp (°F) Water	Depth (cm) Average	Depth (cm) Est. Max.	Surface Area (m x m) Present	Surface Area (m x m) Est. Max.	Crustaceans: Anostracans	Crustaceans: Notostracans	Crustaceans: Copepods	Crustaceans: Ostracods	Crustaceans: Cladocera	Insects: Coleoptera	Insects: Hemiptera	Insects: Diptera Culicidae	Insects: Diptera Chironomidae	Platyhelminths (flatworms)	Habitat Condition	Notes / Voucher information
PWP 15	507024.91 3639664.95	60	56	10	10	8x8	8x8											D,TT	No FS
PWP 16	506520.27 3640119.92	61	57	8	8	1x20	1x20											D,TT	No FS
PWP 17	506513.76 3640160.06	61	55	12	12	5x30	5x30											D,TT	No FS
PWP 18	506823.36 3641006.23	61	55	8	8	5x18	5x18											D,TT	No FS
PWP 19	506847.80 3641059.89	61	55	6	6	8x16	8x16											D,TT	No FS

Notes: Fill in abbreviated names of Anostracans and Notostracans, for all others indicate presence with a check mark. Anostracan and Notostracan Abbreviations: Use first two letters of genus and species name (e.g., LIOC = *Linderiella occidentalis*, BRLI = *Branchinecta lindahli)*.
For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.
(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

Appendix 1. U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods

Site or Project Name: PURE WATER | **County:** SAN DIEGO | **Quad:** SEE REPORT - SEVERAL THROUGHOUT | **Township:** | **Range:** SAN DIEGO COUNTY | **Section:**

SURVEYOR / Permit Number: PAUL LEMONS, TE051248-5

Date: 1/9/17 | Time: 0820-1500 | Weather Conditions: 60-63°F, 1-4 mph winds, 100 % cc - Rain

Feature ID #	UTM (Northing, Easting, Datum)	Temp (°F) Air	Temp (°F) Water	Depth (cm) Average	Depth (cm) Est. Max.	Surface Area (m x m) Present	Surface Area (m x m) Est. Max.	Crustaceans: Anostracans	Crustaceans: Notostracans	Crustaceans: Copepods	Crustaceans: Ostracods	Crustaceans: Cladocera	Insects: Coleoptera	Insects: Hemiptera	Insects: Diptera Culicidae	Insects: Diptera Chironomidae	Platyhelminths (flatworms)	Habitat Condition	Notes / Voucher information
PWP 1	482406.52 3637971.61	60	59	10	10	2x30	2x30											D,TT	No FS
PWP 2	482253.80 3638105.22	60	61	8	8	2x8	2x8											D,TT	No FS
PWP 3	481556.56 3638203.82	60	61	8	8	1.5x10	1.5x10											D,TT	No FS
PWP 4	481532.83 3638196.63	60	61	10	10	1x2	1x2											D,TT	No FS
PWP 5	481519.59 3638192.16	60	61	8	8	1x6	1x6											D,TT	No FS
PWP 6	481505.26 3638187.97	60	61	10	10	1x6	1x6											D,TT	No FS
PWP 7	481498.58 3638180.53	60	61	8	8	2x6	2x6											D,TT	No FS
PWP 8	485061.26 3633652.28	61	63	15	15	20x20	20x20	BRLI										NP	BRLI - 100%
PWP 9	507278.06 3637951.13	62	63	6	6	3x3	3x3											D,TT	No FS
PWP 10	507243.74 3638107.35	62	64	8	8	3x8	3x8											D,TT	No FS
PWP 11	507047.48 3638515.05	63	63	8	8	5x8	5x8											D,TT	No FS
PWP 12	507067.13 3638540.17	63	64	10	10	2x10	2x10											D,TT	No FS
PWP 13	507059.25 3638574.63	63	63	10	10	8x8	8x8											D,TT	No FS
PWP 14	507034.43 3638645.18	63	63	12	12	4x12	4x12											D,TT	No FS

Notes: Fill in abbreviated names of Anostracans and Notostracans, for all others indicate presence with a check mark. Anostracan and Notostracan Abbreviations: Use first two letters of genus and species name (e.g., LIOC = *Linderiella occidentalis*, BRLI = *Branchinecta lindahli*).
For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.
(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

Appendix 1. U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods

Site or Project Name: PURE WATER | **County:** SAN DIEGO | **Quad:** SEVERAL - SEE REPORT | **Township:** | **Range:** | **Section:**

SURVEYOR / Permit Number: PAUL LEMONS - TE051248-5

Date: 1/9/17 Cont'd | Time: | Weather Conditions: °F, mph winds, % cc

Feature ID #	UTM (Northing, Easting, Datum)	Temp (°C)		Depth (cm)		Surface Area (m x m)		Crustaceans					Insects				Platyhelminths (flatworms)	Habitat Condition	Notes / Voucher information
		Air	Water	Average	Est. Max.	Present	Est. Max.	Anostracans	Notostracans	Copepods	Ostracods	Cladocera	Coleoptera	Hemiptera	Diptera Culicidae	Diptera Chironomidae			
PWP 15	507024.91 3639864.95	63	64	10	10	8x8	8x8											D,TT	No FS
PWP 16	506520.24 3640117.92	63	64	8	8	1x20	1x20											D,TT	No FS
PWP 17	506513.76 3640160.06	63	64	12	12	5x30	5x30											D,TT	No FS
PWP 18	506823.36 3641006.23	63	63	8	8	5x18	5x18											D,TT	No FS
PWP 19	506647.90 3641059.89	63	63	6	6	3x16	3x16											D,TT	No FS

Notes: Fill in abbreviated names of Anostracans and Notostracans, for all others indicate presence with a check mark. Anostracan and Notostracan Abbreviations: Use first two letters of genus and species name (e.g., LIOC = *Linderiella occidentalis*, BRLI = *Branchinecta lindahli)*.
For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.
(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

Appendix 1. U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods

Site or Project Name: PURE WATER | **County:** SAN DIEGO | **Quad:** SEE REPORT - SEVERAL THROUGHOUT | **Township:** | **Range:** SAN DIEGO COUNTY | **Section:**

SURVEYOR / Permit Number: PAUL LEMONS, TE051248-5

Date: 1/16/17 | **Time:** 0900-1500 | **Weather Conditions:** 55-66 °F, 0-5 mph winds, 60-5 % cc

Feature ID #	UTM (Northing, Easting, Datum)	Temp (°F) Air	Temp (°F) Water	Depth (cm) Average	Depth (cm) Est. Max.	Surface Area (m x m) Present	Surface Area (m x m) Est. Max.	Crustaceans: Anostracans	Notostracans	Copepods	Ostracods	Cladocera	Insects: Coleoptera	Hemiptera	Diptera Culicidae	Diptera Chironomidae	Platyhelminths (flatworms)	Habitat Condition	Notes / Voucher information
PWP 1	482406.52 3639971.61	55	55	10	10	2x30	2x30											D,TT	No FS
PWP 2	482253.80 3638105.22	55	55	8	8	2x8	2x8											D,TT	No FS
PWP 3	481556.56 3638203.82	55	55	8	8	1.5x10	1.5x10											D,TT	No FS
PWP 4	481532.83 3638196.63	55	58	10	10	1x2	1x2											D,TT	No FS
PWP 5	481519.59 3638192.16	56	56	8	8	1x6	1x6											D,TT	No FS
PWP 6	481505.26 3638189.97	56	58	10	10	1x6	1x6											D,TT	No FS
PWP 7	481498.58 3638180.53	56	58	8	8	2x6	2x6											D,TT	No FS
PWP 8	485061.26 3633652.28	56	65	12	15	20x20	20x20	BRLI										NP	4♂,4♀ Branch. lindahli collected 10'3
PWP 9	507298.06 3639951.13	57	58	6	6	8x8	8x8	BRLI										D,TT	1♂ Branch. lindahli collected 10'3
PWP 10	507243.74 3638107.35	57	58	7	8	3x8	3x8											D,TT	No FS
PWP 11	507077.48 3638515.05	58	58	6	8	5x8	5x8											D,TT	No FS
PWP 12	507067.13 3638540.17	58	58	8	10	2x10	2x10											D,TT	No FS
PWP 13	507059.25 3638574.65	59	58	10	10	8x8	8x8											D,TT	No FS
PWP 14	507034.93 3638645.18	59	58	10	12	4x12	4x12	BRLI										D,TT	1♂ B. lindahli collected 10'3

Notes: Fill in abbreviated names of Anostracans and Notostracans, for all others indicate presence with a check mark. Anostracan and Notostracan Abbreviations: Use first two letters of genus and species name (e.g., LIOC = *Linderiella occidentalis*, BRLI = *Branchinecta lindahli*).
For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.
(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

Appendix 1. U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods

Site or Project Name: PURE WATER	County: SAN DIEGO	Quad: SEVERAL - SEE REPORT	Township:	Range:	Section:

SURVEYOR / Permit Number: PAUL LEMONS - TE051248-5

Date: 1/16/17 Time: Weather Conditions: °F, mph winds, % cc

cont'd

Feature ID #	UTM (Northing, Easting, Datum)	Temp (°C)		Depth (cm)		Surface Area (m x m)		Crustaceans					Insects				Platyhelminths (flatworms)	Habitat Condition	Notes / Voucher information
		Air	Water	Average	Est. Max.	Present	Est. Max.	Anostracans	Notostracans	Copepods	Ostracods	Cladocera	Coleoptera	Hemiptera	Diptera Culicidae	Diptera Chironomidae			
PWP 15	507024.91 3639664.95	61	59	6	10	3×8	8×8	BRLI 10's										D, TT	20, 1♀ lindahli Branchs collected
PWP 16	506520.24 3640119.92	62	66	8	8	1×2	1×20											D, TT	No FS
PWP 17	506513.76 3640160.06	62	60	10	12	5×30	5×30											D, TT	No FS
PWP 18	506823.36 3641006.23	63	60	8	8	5×18	5×18											D, TT	No FS
PWP 19	506847.80 3641059.89	63	60	6	6	3×16	3×16											D, TT	No FS

Notes: Fill in abbreviated names of Anostracans and Notostracans, for all others indicate presence with a check mark. Anostracan and Notostracan Abbreviations: Use first two letters of genus and species name (e.g., LIOC = *Linderiella occidentalis*, BRLI = *Branchinecta lindahli)*.
For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.
(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

Appendix 1. U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods

Site or Project Name: PURE WATER | **County:** SAN DIEGO | **Quad:** SEE REPORT - SEVERAL THROUGHOUT | **Township:** | **Range:** SAN DIEGO COUNTY | **Section:**

SURVEYOR / Permit Number: PAUL LEMONS, TE051248-5

Date: 1/23/17 | **Time:** 0900-1520 | **Weather Conditions:** 54-56 °F, 3-15 mph winds, 100-98% cc, Some rain

Feature ID #	UTM (Northing, Easting, Datum)	Temp (°C) °F Air	Temp (°C) °F Water	Depth (cm) Average	Depth (cm) Est. Max.	Surface Area (m x m) Present	Surface Area (m x m) Est. Max.	Crustaceans: Anostracans	Crustaceans: Notostracans	Crustaceans: Copepods	Crustaceans: Ostracods	Crustaceans: Cladocera	Insects: Coleoptera	Insects: Hemiptera	Insects: Diptera Culicidae	Insects: Diptera Chironomidae	Platyhelminths (flatworms)	Habitat Condition	Notes / Voucher information
PWP 1	482406.52 3637971.61	54	56	10	10	2x30	2x30 → 8x70 (flooded)											D,TT	No FS
PWP 2	482253.80 3638105.22	54	57	8	8	2x8	2x8											D,TT	No FS
PWP 3	481556.56 3638203.82	54	56	6	8	1.5x10	1.5x10											D,TT	No FS
PWP 4	481532.83 3638196.63	54	58	10	10	1x2	1x2											D,TT	No FS
PWP 5	481519.59 3638192.16	54	57	8	8	1x6	1x6											D,TT	No FS
PWP 6	481505.26 3638187.97	54	57	10	10	1x6	1x6											D,TT	No FS
PWP 7	481478.58 3638180.53	54	56	8	8	1.5x6	2x6											D,TT	No FS
PWP 8	485061.26 3632652.28	55	57	15	15	20x20	20x20	BRLI 10's										NP	B. lindahli 38
PWP 9	507278.06 3637951.13	55	56	8	6	5x5	3x3											D,TT	No FS - area flooded
PWP 10	507243.74 3638107.35	56	56	10	8	4x10	3x8											D,TT	No FS - Flooded
PWP 11	507077.48 3638515.05	56	56	10	8	10x25	5x8											D,TT	No FS
PWP 12	507067.13 3638540.17	56	57	10	10	4x15	2x10											D,TT	No FS
PWP 13	507059.25 3638574.63	56	57	10	10	10x10	8x8											D,TT	No FS
PWP 14	507034.43 3638645.18	56	56	12	12	4x12	4x12											D,TT	No F

Notes: Fill in abbreviated names of Anostracans and Notostracans, for all others indicate presence with a check mark. Anostracan and Notostracan Abbreviations: Use first two letters of genus and species name (e.g., LIOC = *Linderiella occidentalis*, BRLI = *Branchinecta lindahli*).
For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.
(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

Appendix 1. U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods

Site or Project Name: Pure Water | **County:** San Diego | **Quad:** Several - See | **Township:** Report | **Range:** | **Section:**

SURVEYOR / Permit Number: Paul Lemons - TE051248-5

Date: 1/23/17 | Time: 0900-1520 | Weather Conditions: ~~100-90~~ 54-56 °F, 3-15 mph winds, 100-90 % cc

control

Feature ID #	UTM - (Northing, Easting, Datum)	Temp (°C)		Depth (cm)		Surface Area (m x m)		Crustaceans					Insects				Platyhelminths (flatworms)	Habitat Condition	Notes / Voucher information
		Air	Water	Average	Est. Max.	Present	Est. Max.	Anostracans	Notostracans	Copepods	Ostracods	Cladocera	Coleoptera	Hemiptera	Diptera Culicidae	Diptera Chironomidae			
PWP 15	507024.91 3639664.95	56	56	10	10	~~?~~ 20x20	8x8												Rain Not FS, Flooded
PWP 16	506520.29 3640117.92	56	56	8	8	F L	1x20												
PWP 17	506513.76 3640160.06	56	56	12	12	O O	5x30												
PWP 18	506823.36 3641006.23	56	56	8	8	D E	5x18												
PWP 19	506847.90 3641059.89	56	57	6	6	D I	3x16												
						All	Wet												

Notes: Fill in abbreviated names of Anostracans and Notostracans, for all others indicate presence with a check mark. Anostracan and Notostracan Abbreviations: Use first two letters of genus and species name (e.g., LIOC = *Linderiella occidentalis*, BRLI = *Branchinecta lindahli*).
For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.
(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

Appendix 1. U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods

Site or Project Name: PURE WATER | **County:** SAN DIEGO | **Quad:** SEE REPORT - SEVERAL THROUGHOUT SAN DIEGO COUNTY | **Township:** | **Range:** | **Section:**

SURVEYOR / Permit Number: PAUL LEMONS, TE051248-5

Date: 1/30/17 | Time: 0800-1440 | Weather Conditions: 51-62 °F, 0-7 mph winds, 10-20% cc

Feature ID #	UTM - (Northing, Easting, Datum)	Temp (°F) Air	Temp (°F) Water	Depth (cm) Average	Depth (cm) Est. Max.	Surface Area (m x m) Present	Surface Area (m x m) Est. Max.	Crustaceans: Anostracans	Crustaceans: Notostracans	Crustaceans: Copepods	Crustaceans: Ostracods	Crustaceans: Cladocera	Insects: Coleoptera	Insects: Hemiptera	Insects: Diptera Culicidae	Insects: Diptera Chironomidae	Platyhelminths (flatworms)	Habitat Condition	Notes / Voucher information
PWP 1	482406.52 3637971.61	60	50	1.5ft.	~~60~~ 3ft	3x30	3x30											D,TT	No FS
PWP 2	482253.80 3638105.22	60	46	8	8	2x8	2x8											D,TT	No FS
PWP 3	481556.56 3638203.82	61	47	3	8	.5x3	1.5x10											D,TT	No FS
PWP 4	481532.83 3638196.63	61	48	6	10	1x2	1x2	BRLI										D,TT	1♂, 10's
PWP 5	481519.59 3638192.16	62	49	6	8	1x6	1x8	BRLI			X							D,TT	1♂, 10's
PWP 6	481505.26 3638187.97	62	47	3	10	1x2	1x6	BRLI			x					x		D,TT	1♂ B. lindahli 10's
PWP 7	481478.58 3638180.53	62	50	3	8	.5x5	2x6				X							D,TT	No FS
PWP 8	485061.26 3637652.28	66	60	12	15	20x20	20x20	BRLI 10's										NP	3♂ B. lindahli
PWP 9	507278.06 3637951.13	67	56	4	6	2x7	3x8											D,TT	No FS
PWP 10	507243.74 3638109.35	67	57	4	8	2x2	3x8											D,TT	No FS
PWP 11	507077.48 3638515.05	67	57	5	8	3x8	5x8											D,TT	No FS
PWP 12	507067.13 3638540.17	67	57	4	10	2x6	2x10											D,TT	No FS
PWP 13	507059.25 3638574.63	68	58	5	10	4x4	8x8											D,TT	No FS
PWP 14	507034.43 3638645.18	68	58	6	12	4x12	4x12											D,TT	No FS

Notes: Fill in abbreviated names of Anostracans and Notostracans, for all others indicate presence with a check mark. Anostracan and Notostracan Abbreviations: Use first two letters of genus and species name (e.g., LIOC = *Linderiella occidentalis*, BRLI = *Branchinecta lindahli*).
For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.
(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

Appendix 1. U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods

Site or Project Name: PURE WATER	County: SAN DIEGO	Quad: SEVERAL - SEE REPORT	Township:	Range:	Section:

SURVEYOR / Permit Number: PAUL LEMONS - TE051248-5

Date: ~~1/30~~ 1/30/17 cont'd | Time: | Weather Conditions: °F, mph winds, % cc

Feature ID #	UTM - (Northing, Easting, Datum)	Temp (°C)		Depth (cm)		Surface Area (m x m)		Crustaceans					Insects				Platyhelminths (flatworms)	Habitat Condition	Notes / Voucher information
		Air	Water	Average	Est. Max.	Present	Est. Max.	Anostracans	Notostracans	Copepods	Ostracods	Cladocera	Coleoptera	Hemiptera	Diptera Culicidae	Diptera Chironomidae			
PWP 15	507024.91 3639664.95	69	61	6	10	4x5	8x8											D,TT	No FS
PWP 16	506520.24 3640117.92	70	60	6	8	1x20	1x20											D,TT	No FS
PWP 17	506513.76 3640160.06	70	60	6	12	4x25	5x30											D,TT	No FS
PWP 18	506823.36 3641006.23	71	58	6	8	4x16	5x18											D,TT	No FS
PWP 19	506847.90 3641059.89	71	60	3	6	3x8	3x16											D,TT	No FS

Notes: Fill in abbreviated names of Anostracans and Notostracans, for all others indicate presence with a check mark. Anostracan and Notostracan Abbreviations: Use first two letters of genus and species name (e.g., LIOC = *Linderiella occidentalis*, BRLI = *Branchinecta lindahli)*.
For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.
(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

Appendix 1. U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods

Site or Project Name: PURE WATER | **County:** SAN DIEGO | **Quad:** SEE REPORT - SEVERAL THROUGHOUT | **Township:** | **Range:** SAN DIEGO COUNTY | **Section:**

SURVEYOR / Permit Number: PAUL LEMONS, TE051248-5

Date: 2/6/17 Time: 0900-1520 Weather Conditions: 56-61 °F, 1-10 mph winds, 100% cc

Feature ID #	UTM (Northing, Easting, Datum)	Temp (°C)		Depth (cm)		Surface Area (m x m)		Crustaceans					Insects				Platyhelminths (flatworms)	Habitat Condition	Notes / Voucher information
		Air	Water	Average	Est. Max.	Present	Est. Max.	Anostracans	Notostracans	Copepods	Ostracods	Cladocera	Coleoptera	Hemiptera	Diptera Culicidae	Diptera Chironomidae			
PWP 1	482406.52 3637971.61				10		3x30											D,TT	Dry
PWP 2	482253.80 3638105.22	57	51	4	8	1x4	2x8											D,TT	~~Dry~~ NoFS
PWP 3	481556.56 3638203.82				8		1.5x10											D,TT	Dry
PWP 4	481532.83 3638196.63				10		1x2											D,TT	Dry
PWP 5	481519.59 3638192.16	58	52	4	8	.5x2	1x8											D,TT	NoFS
PWP 6	481505.26 3638189.97				10		1x6											D,TT	Dry
PWP 7	481478.58 3638180.53				8		2x6											D,TT	Dry
PWP 8	485061.26 3637652.28	59	55	6	15	10x45	20x20	BRLI 10's										NP	BRLI 28
PWP 9	507278.06 3639951.13	60	54	3	6	1x2	3x8											D,TT	NoFS
PWP 10	507243.74 3638109.35	60	54	3	8	1x1	3x8											D,TT	NoFS
PWP 11	507047.48 3638515.05	60	55	3	8	1x.5	5x8											D,TT	NoFS
PWP 12	507067.13 3638540.17				10		2x10											D,TT	Dry
PWP 13	507059.25 3638574.65				10		8x8											D,TT	Dry
PWP 14	507034.43 3638645.18				12		4x12											D,TT	Dry

Notes: Fill in abbreviated names of Anostracans and Notostracans, for all others indicate presence with a check mark. Anostracan and Notostracan Abbreviations: Use first two letters of genus and species name (e.g., LIOC = *Linderiella occidentalis*, BRLI = *Branchinecta lindahli)*.
For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.
(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

Appendix 1. U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods

Site or Project Name: PURE WATER	County: SAN DIEGO	Quad: SEVERAL - SEE REPORT	Township:	Range:	Section:
SURVEYOR / Permit Number: PAUL LEMONS - TE051248-5					
Date: ~~2/16~~ 2/16/17 cont'd	Time:	Weather Conditions: °F, mph winds, % cc			

Feature ID #	UTM (Northing, Easting, Datum)	Temp (°F) Air	Temp (°F) Water	Depth (cm) Average	Depth (cm) Est. Max.	Surface Area (m x m) Present	Surface Area (m x m) Est. Max.	Crustaceans: Anostracans	Crustaceans: Notostracans	Crustaceans: Copepods	Crustaceans: Ostracods	Crustaceans: Cladocera	Insects: Coleoptera	Insects: Hemiptera	Insects: Diptera Culicidae	Insects: Diptera Chironomidae	Platyhelminths (flatworms)	Habitat Condition	Notes / Voucher information
PWP 15	507024.91 3639664.95	61			10		8x8											D,TT	Dry
PWP 16	506520.27 3640117.92	61			8		1x20											D,TT	Dry
PWP 17	506513.76 3640160.06	61			12		5x30											D,TT	Dry
PWP 18	506823.36 3641066.23	61	59	4	8	2x6	5x18											D,TT	No FS
PWP 19	506847.80 3641059.89	61			6		3x6											D,TT	Dry

Notes: Fill in abbreviated names of Anostracans and Notostracans, for all others indicate presence with a check mark. Anostracan and Notostracan Abbreviations: Use first two letters of genus and species name (e.g., LIOC = *Linderiella occidentalis*, BRLI = *Branchinecta lindahli*).
For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.
(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

Appendix 1. U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods

Site or Project Name: PURE WATER | **County:** SAN DIEGO | **Quad:** SEE REPORT - SEVERAL THROUGHOUT | **Township:** | **Range:** SAN DIEGO COUNTY | **Section:**

SURVEYOR / Permit Number: PAUL LEMONS, TE051248-5

Date: 2/13/17 | **Time:** 0840-1500 | **Weather Conditions:** 61-74 °F, 0-4 mph winds, 0-60 % cc

Feature ID #	UTM (Northing, Easting, Datum)	Temp (°C)		Depth (cm)		Surface Area (m x m)		Crustaceans					Insects				Platyhelminths (flatworms)	Habitat Condition	Notes / Voucher information
		Air	Water	Average	Est. Max.	Present	Est. Max.	Anostracans	Notostracans	Copepods	Ostracods	Cladocera	Coleoptera	Hemiptera	Diptera Culicidae	Diptera Chironomidae			
PWP 1	482406.52 3637971.61	64	66	10	15	3x30	3x30											D,TT	No FS
PWP 2	482253.80 3638105.22	64	68	8	10	3x8	4x8											D,TT	No FS
PWP 3	481556.56 3638203.82	63	66	6	8	1x6	1.5x10											D,TT	No FS
PWP 4	481532.83 3638196.63	62	68	6	10	1x2	1x2											D,TT	No FS
PWP 5	481519.59 3638192.16	62	65	4	8	.5x4	1x8											D,TT	No FS
PWP 6	481505.26 3638187.97	61	64	6	10	1x5	1x6											D,TT	No FS
PWP 7	481478.58 3638180.53	61	65	4	8	1.5x6	2x6											D,TT	No FS
PWP 8	485061.26 3637652.28	65	74	9	15	20x20	20x20											NP	No FS, tadpoles WETD?
PWP 9	507278.06 3637951.13	72	66	5	6	6x6	8x8											D,TT	No FS
PWP 10	507243.74 3638107.35	72	67	4	8	2x6	3x8											D,TT	No FS
PWP 11	507077.48 3638515.05	72	68	6	8	5x8	5x8											D,TT	No FS
PWP 12	507067.13 3638540.17	72	67	3	10	1x1	2x10											D,TT	No FS
PWP 13	507059.25 3638574.65	72	66	5	10	2x8	8x8											D,TT	No FS
PWP 14	507034.43 3638645.18	72	70	3	12	4x10	4x12											D,TT	No FS

Notes: Fill in abbreviated names of Anostracans and Notostracans, for all others indicate presence with a check mark. Anostracan and Notostracan Abbreviations: Use first two letters of genus and species name (e.g., LIOC = *Linderiella occidentalis*, BRLI = *Branchinecta lindahli*).
For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.
(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

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Appendix 1. U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods

Site or Project Name: PURE WATER	County: SAN DIEGO	Quad: SEVERAL - SEE REPORT	Township:	Range:	Section:

SURVEYOR / Permit Number: PAUL LEMONS - TE051248-5

Date: 2/13/17 cont'd | Time: | Weather Conditions: °F, mph winds, % cc

Feature ID #	UTM (Northing, Easting, Datum)	Temp (°C)		Depth (cm)		Surface Area (m x m)		Crustaceans					Insects				Platyhelminths (flatworms)	Habitat Condition	Notes / Voucher information
		Air	Water	Average	Est. Max.	Present	Est. Max.	Anostracans	Notostracans	Copepods	Ostracods	Cladocera	Coleoptera	Hemiptera	Diptera Culicidae	Diptera Chironomidae			
PWP 15	507024.91 3639864.95	73	70	3	10	6x8	8x8											D,TT	No FS
PWP 16	506520.27 3640117.92	73	70	4	8	1x20	1x20											D,TT	No FS
PWP 17	506513.76 3640160.06	73	68	5	12	5x20	5x30											D,TT	No FS
PWP 18	506823.36 3641006.23	74	67	3	8	5x12	5x18											D,TT	No FS
PWP 19	506847.40 3641059.89	74	70	3	6	3x14	3x16											D,TT	No FS

Notes: Fill in abbreviated names of Anostracans and Notostracans, for all others indicate presence with a check mark. Anostracan and Notostracan Abbreviations: Use first two letters of genus and species name (e.g., LIOC = *Linderiella occidentalis*, BRLI = *Branchinecta lindahli)*.
For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.
(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

Appendix 1. U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods

Site or Project Name: PURE WATER | **County:** SAN DIEGO | **Quad:** SEE REPORT - SEVERAL THROUGHOUT | **Township:** | **Range:** SAN DIEGO COUNTY | **Section:**

SURVEYOR / Permit Number: PAUL LEMONS, TE051248-5

Date: 2/20/17 | Time: 0800-1430 | Weather Conditions: 59-71°F, 0-6 mph winds, 100-40% cc

Feature ID #	UTM (Northing, Easting, Datum)	Temp (°C)		Depth (cm)		Surface Area (m x m)		Crustaceans					Insects				Platyhelminths (flatworms)	Habitat Condition	Notes / Voucher information
		Air	Water	Average	Est. Max.	Present	Est. Max.	Anostracans	Notostracans	Copepods	Ostracods	Cladocera	Coleoptera	Hemiptera	Diptera Culicidae	Diptera Chironomidae			
PWP 1	482406.52 3637971.61	71	74	10	10	2x30	2x30											D,TT	No FS
PWP 2	482253.80 3638105.22	71	74	8	8	2x8	2x8											D,TT	No FS
PWP 3	481556.56 3638203.82	71	76	8	8	1.5x10	1.5x10	10's										D,TT	BR Two Imm.
PWP 4	481532.83 3638196.63	71	75	8	10	1x2	1x2	10's										D,TT	2♂ BRL
PWP 5	481519.59 3638192.16	71	75	8	8	1x6	1x6	10's										D,TT	2♂ BRL1
PWP 6	481505.26 3638187.97	71	77	7	10	1x6	1x6											D,TT	No FS
PWP 7	481478.58 3638180.53	71	75	6	8	1x6	2x6											D,TT	No FS
PWP 8	485061.26 3637652.28	71	70	10	15	20x20	20x20	BRL1										NP	3 BRL1, 10's
PWP 9	507278.06 3637951.13	68	66	5	6	4x10	8x8	BRL1										D,TT	1♂ BRL1, 10's
PWP 10	507243.74 3638107.35	68	66	7	8	5x8	8x8											D,TT	No FS
PWP 11	507077.48 3638515.05	69	66	7	8	5x8	5x8	BRL1										D,TT	1♂ BRL1, 10's
PWP 12	507067.13 3638540.17	69	67	6	10	2x10	2x10	BRL1										D,TT	2♂ BRL1, 10's
PWP 13	507059.25 3638574.65	70	66	10	10	15x50	8x8											D,TT	No FS, Flooded
PWP 14	507034.43 3638645.18	70	76	7	12	4x12	4x12	BRL1										D,TT	2♂ BR, 10's

Notes: Fill in abbreviated names of Anostracans and Notostracans, for all others indicate presence with a check mark. Anostracan and Notostracan Abbreviations: Use first two letters of genus and species name (e.g., LIOC = *Linderiella occidentalis*, BRLI = *Branchinecta lindahli*).
For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.
(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

Appendix 1. U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods

Site or Project Name: PURE WATER | **County:** SAN DIEGO | **Quad:** SEVERAL - SEE REPORT | **Township:** | **Range:** | **Section:**

SURVEYOR / Permit Number: PAUL LEMONS - TE051248-5

Date: 2/20/17 cont'd | Time: | Weather Conditions: °F, mph winds, % cc

Feature ID #	UTM - (Northing, Easting, Datum)	Temp (°C) °F Air	Temp (°C) °F Water	Depth (cm) Average	Depth (cm) Est. Max.	Surface Area (m x m) Present	Surface Area (m x m) Est. Max.	Crustaceans: Anostracans	Crustaceans: Notostracans	Crustaceans: Copepods	Crustaceans: Ostracods	Crustaceans: Cladocera	Insects: Coleoptera	Insects: Hemiptera	Insects: Diptera Culicidae	Insects: Diptera Chironomidae	Platyhelminths (flatworms)	Habitat Condition	Notes / Voucher information
PWP 15	507024.91 3639664.95	70	68	5	10	8x8	8x8											D,TT	No FS
PWP 16	506520.24 3640117.92	71	70	8	8	4x20	1x20											D,TT	No FS
PWP 17	506513.76 3640160.06	71	70	8	12	5x30	5x30	BRLI										D,TT	4 ♀ BR
PWP 18	506823.36 3641006.23	71	69	8	8	5x18	5x18											D,TT	No FS
PWP 19	506847.90 3641059.89	71	68	6	6	3x16	3x16											D,TT	No FS

Notes: Fill in abbreviated names of Anostracans and Notostracans, for all others indicate presence with a check mark. Anostracan and Notostracan Abbreviations: Use first two letters of genus and species name (e.g., LIOC = *Linderiella occidentalis*, BRLI = *Branchinecta lindahli*).
For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.
(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

Appendix 1. U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods

Site or Project Name: PURE WATER | **County:** SAN DIEGO | **Quad:** SEE REPORT - SEVERAL THROUGHOUT | **Township:** | **Range:** SAN DIEGO COUNTY | **Section:**

SURVEYOR / Permit Number: PAUL LEMONS, TE051248-5

Date: 2/27/17 | Time: 0900-1400 | Weather Conditions: 49-58 °F, 4-15 mph winds, 100 % cc Heavy Rain Moreno Ave Flooded.

Feature ID #	UTM (Northing, Easting, Datum)	Temp (°C)		Depth (cm)		Surface Area (m x m)		Crustaceans					Insects				Platyhelminths (flatworms)	Habitat Condition	Notes / Voucher information
		Air	Water	Average	Est. Max.	Present	Est. Max.	Anostracans	Notostracans	Copepods	Ostracods	Cladocera	Coleoptera	Hemiptera	Diptera Culicidae	Diptera Chironomidae			
PWP 1	482406.52 3637971.61	49	59	10	10	2x30	2x30											D,TT	No FS
PWP 2	482253.80 3638105.22	49	58	8	8	2x8	2x8											D,TT	No FS
PWP 3	481556.56 3638203.82	50	61	8	8	1.5x10	1.5x10											D,TT	No FS
PWP 4	481532.83 3638196.63	50	63	10	10	1x2	1x2											D,TT	No FS
PWP 5	481519.59 3638192.16	52	63	8	8	1x6	1x6											D,TT	No FS
PWP 6	481505.26 3638187.97	53	63	10	10	1x6	1x6											D,TT	No FS
PWP 7	481478.58 3638180.53	53	63	8	8	2x6	2x6											D,TT	No FS
PWP 8	485061.26 3637652.28	58	66	15	15	20x30	20x20											NP	No FS
PWP 9	507278.06 3637951.13				6		3x3											D,TT	Flooded
PWP 10	507243.74 3638109.35				8		3x8											D,TT	
PWP 11	507077.48 3638515.05				8		5x8											D,TT	
PWP 12	507067.13 3638540.17				10		2x10											D,TT	
PWP 13	507059.25 3638574.65				10		8x8											D,TT	
PWP 14	507034.43 3638645.18				12		4x12											D,TT	

Notes: Fill in abbreviated names of Anostracans and Notostracans, for all others indicate presence with a check mark. Anostracan and Notostracan Abbreviations: Use first two letters of genus and species name (e.g., LIOC = *Linderiella occidentalis*, BRLI = *Branchinecta lindahli)*.
For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.
(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

Appendix 1. U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods

Site or Project Name: PURE WATER | **County:** SAN DIEGO | **Quad:** SEVERAL - SEE REPORT | **Township:** | **Range:** | **Section:**

SURVEYOR / Permit Number: PAUL LEMONS - TE051248-5

Date: 2/24/17 | Time: 0900 | Weather Conditions: 49-58 °F, 4-15 mph winds, 100 %cc Heavy Rain!

cont'd

Feature ID #	UTM (Northing, Easting, Datum)	Temp (°C)		Depth (cm)		Surface Area (m x m)		Crustaceans					Insects				Platyhelminths (flatworms)	Habitat Condition	Notes / Voucher information
		Air	Water	Average	Est. Max.	Present	Est. Max.	Anostracans	Notostracans	Copepods	Ostracods	Cladocera	Coleoptera	Hemiptera	Diptera Culicidae	Diptera Chironomidae			
PWP 15	507024.91 3639864.95				10		8x8											D,TT	Moreno Ave Flooded
PWP 16	506520.24 3640117.92				8		1x20											D,TT	
PWP 17	506513.76 3640160.06				12		5x30											D,TT	
PWP 18	506823.36 3641006.23				8		5x18											D,TT	
PWP 19	506847.90 3641059.89				6		3x16											D,TT	

Notes: Fill in abbreviated names of Anostracans and Notostracans, for all others indicate presence with a check mark. Anostracan and Notostracan Abbreviations: Use first two letters of genus and species name (e.g., LIOC = *Linderiella occidentalis*, BRLI = *Branchinecta lindahli*).
For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.
(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

Appendix 1. U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods

Site or Project Name: PURE WATER | **County:** SAN DIEGO | **Quad:** SEE REPORT - SEVERAL THROUGHOUT | **Township:** | **Range:** SAN DIEGO COUNTY | **Section:**

SURVEYOR / Permit Number: PAUL LEMONS, TE051248-5

Date: 3/6/17 | **Time:** 0900-1530 | **Weather Conditions:** 54-76°F, 1-10 mph winds, 0% cc

Feature ID #	UTM (Northing, Easting, Datum)	Temp (°C)		Depth (cm)		Surface Area (m x m)		Crustaceans					Insects				Platyhelminths (flatworms)	Habitat Condition	Notes / Voucher information
		Air	Water	Average	Est. Max.	Present	Est. Max.	Anostracans	Notostracans	Copepods	Ostracods	Cladocera	Coleoptera	Hemiptera	Diptera Culicidae	Diptera Chironomidae			
PWP 1	482406.52 3637971.61	54	66	10	10	4x30	~~4~~x30											D,TT	No FS
PWP 2	482253.80 3638105.22	55	67	8	8	2x8	2x8											D,TT	No FS
~~PWP~~ PWP 3	481556.56 3638203.82	56	68	~~46~~	8	1x8	1.5x10	BR, 10's										D,TT	BR. too immature
PWP 4	481532.83 3638196.63	58	69	5	10	1x2	1x2											D,TT	No FS
PWP 5	481519.59 3638192.16	60	68	8	8	1x6	1x6	BRL1										D,TT	1 ♂ BRL1, 10's
PWP 6	481505.26 3638187.97	60	70	10	10	.5x4	1x6											D,TT	No FS
PWP 7	481478.58 3638180.53	60	72	5	8	.5x6	2x6											D,TT	No FS
~~B~~PWP 8	485061.26 3632652.28	63	~~67~~6	8	15	20x20	20x20											NP,AB	No FS - lots of tadpoles + algae
PWP 9	507278.06 3637951.13	70	75	3	6	3x3	~~8~~x8											D,TT	No FS
PWP 10	507243.74 3638107.35	71	73	4	8	4x4	~~8~~x8											D,TT	No FS
PWP 11	507047.48 3638515.05	72		1cm	8		5x8											D,TT	Dry <3cm
PWP 12	507067.13 3638540.17	72	76	5	10	2x10	2x10											D,TT	No FS
PWP 13	507059.25 3638574.63	73	77	4	10	1x8	8x8											D,TT	No FS
PWP 14	507034.43 3638645.18	73	76	4	12	2x10	4x12	BRL1										D,TT	4 ♂ ~~BRL~~1, 10's

Notes: Fill in abbreviated names of Anostracans and Notostracans, for all others indicate presence with a check mark. Anostracan and Notostracan Abbreviations: Use first two letters of genus and species name (e.g., LIOC = *Linderiella occidentalis*, BRLI = *Branchinecta lindahli*).
For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.
(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

Appendix 1. U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods

Site or Project Name: PURE WATER | **County:** SAN DIEGO | **Quad:** SEVERAL - SEE REPORT | **Township:** | **Range:** | **Section:**

SURVEYOR / Permit Number: PAUL LEMONS - TE051248-5

Date: 3/6/17 | Time: 0900 | Weather Conditions: 54-76 °F, 1-10 mph winds, 0 % cc

cont'd

Feature ID #	UTM - (Northing, Easting, Datum)	Temp (°C)		Depth (cm)		Surface Area (m x m)		Crustaceans					Insects				Platyhelminths (flatworms)	Habitat Condition	Notes / Voucher information
		Air	Water	Average	Est. Max.	Present	Est. Max.	Anostracans	Notostracans	Copepods	Ostracods	Cladocera	Coleoptera	Hemiptera	Diptera Culicidae	Diptera Chironomidae			
PWP 15	507024.91 3639664.95	74	77	5	10	5x60	8x8											D, TT	No FS
PWP 16	506520.24 3640117.92	75	75	4	8	5x15	1x20											D, TT	No FS
PWP 17	506513.76 3640160.06	75	76	5	12	4x15	5x30											D, TT	No FS
PWP 18	506823.36 3641006.23	76	71	5	8	5x15	5x18											D, TT	No FS
PWP 19	506847.90 3641059.89	76	71	6	6	3x16	3x16											D, TT	No FS

Notes: Fill in abbreviated names of Anostracans and Notostracans, for all others indicate presence with a check mark. Anostracan and Notostracan Abbreviations: Use first two letters of genus and species name (e.g., LIOC = *Linderiella occidentalis*, BRLI = *Branchinecta lindahli*).
For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.
(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

Appendix 1. U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods

Site or Project Name: PURE WATER | **County:** SAN DIEGO | **Quad:** SEE REPORT - SEVERAL THROUGHOUT | **Township:** | **Range:** SAN DIEGO COUNTY | **Section:**

SURVEYOR / Permit Number: PAUL LEMONS, TE05248-5

Date: 3/13/17 | Time: 0820-1500 | Weather Conditions: 59-75°F, 0-5 mph winds, 50-0% cc

Feature ID #	UTM (Northing, Easting, Datum)	Temp (°C)		Depth (cm)		Surface Area (m x m)		Crustaceans					Insects				Platyhelminths (flatworms)	Habitat Condition	Notes / Voucher information
		Air	Water	Average	Est. Max.	Present	Est. Max.	Anostracans	Notostracans	Copepods	Ostracods	Cladocera	Coleoptera	Hemiptera	Diptera Culicidae	Diptera Chironomidae			
PWP 1	482406.52 3637971.61	63	67	10	10	4x20	4x30					X				X		D,TT	No FS. Tadpoles v. small
PWP 2	482253.80 3638105.22	62	Dry	—	8	—	2x8											D,TT	Dry
PWP 3	481556.56 3638203.82	61	66	3	8	.5x2	1.5x10					X						D,TT	No FS
PWP 4	481532.83 3638196.63	60	Dry	—	10	—	1x2											D,TT	Dry
PWP 5	481519.59 3638192.16	59	60	3	8	.5x3	1x6	BRLI				X						D,TT	BRLI, 10's
PWP 6	481505.26 3638187.97	59	60	3	10	.5x3	1x6											D,TT	No FS
PWP 7	481478.58 3638180.53	59	60	3	8	.5x3	2x6											D,TT	No FS
PWP 8	485061.26 3632652.28	63	66	4	15	8x10	20x20											NP	No FS. Tadpoles
PWP 9	507278.06 3637951.13	68	72	3	6	1x2	3x8											D,TT	No FS
PWP 10	507243.74 3638107.35	68	72	3	8	2x3	8x8											D,TT	No FS
PWP 11	507077.48 3638515.05	69	Dry	—	8	—	5x8											D,TT	Dry
PWP 12	507067.13 3638540.17	70	75	4	10	2x5	2x10											D,TT	No FS
PWP 13	507059.25 3638574.63	71	76	3	10	.5x4	8x8											D,TT	No FS
PWP 14	507034.43 3638645.18	71	76	3	12	2x5	4x12	BRLI										D,TT	BRLI, 10's

Notes: Fill in abbreviated names of Anostracans and Notostracans, for all others indicate presence with a check mark. Anostracan and Notostracan Abbreviations: Use first two letters of genus and species name (e.g., LIOC = *Linderiella occidentalis*, BRLI = *Branchinecta lindahli*).
For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.
(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

Appendix 1. U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods

Site or Project Name: PURE WATER | **County:** SAN DIEGO | **Quad:** SEVERAL - SEE REPORT | **Township:** | **Range:** | **Section:**

SURVEYOR / Permit Number: PAUL LEMONS - TE051248-5

Date: 3/13/17 cont'd | Time: | Weather Conditions: °F, mph winds, % cc

Feature ID #	UTM (Northing, Easting, Datum)	Temp (°C)		Depth (cm)		Surface Area (m x m)		Crustaceans					Insects				Platyhelminths (flatworms)	Habitat Condition	Notes / Voucher information
		Air	Water	Average	Est. Max.	Present	Est. Max.	Anostracans	Notostracans	Copepods	Ostracods	Cladocera	Coleoptera	Hemiptera	Diptera Culicidae	Diptera Chironomidae			
PWP 15	507024.91 3639664.95	73	77	3	10	3x4	8x8											D,TT	NoFS
PWP 16	506520.27 3640117.92	73	77	3	8	.5x10	1x20											D,TT	NoFS
PWP 17	506513.76 3640160.06	74	77	3	12	2x12	5x30											D,TT	NoFS
PWP 18	506823.36 3641006.23	75	74	3	8	5x8	5x18											D,TT	NoFS
PWP 19	506847.40 3641059.89	75	75	3	6	3x10	3x16											D,TT	NoFS

Notes: Fill in abbreviated names of Anostracans and Notostracans, for all others indicate presence with a check mark. Anostracan and Notostracan Abbreviations: Use first two letters of genus and species name (e.g., LIOC = *Linderiella occidentalis*, BRLI = *Branchinecta lindahli*).
For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.
(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

Appendix 1. U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods

Site or Project Name: PURE WATER | **County:** SAN DIEGO | **Quad:** SEE REPORT - SEVERAL THROUGHOUT SAN DIEGO COUNTY | **Township:** | **Range:** | **Section:**

SURVEYOR / Permit Number: PAUL LEMONS, TE051248-5

Date: 5/12/17 | **Time:** 0830-1430 | **Weather Conditions:** 63-72 °F, 1-5 mph winds, 100-80 % cc

Feature ID #	UTM (Northing, Easting, Datum)	Temp (°F) Air	Temp (°F) Water	Depth (cm) Average	Depth (cm) Est. Max.	Surface Area (m x m) Present	Surface Area (m x m) Est. Max.	Crustaceans: Anostracans	Notostracans	Copepods	Ostracods	Cladocera	Insects: Coleoptera	Hemiptera	Diptera Culicidae	Diptera Chironomidae	Platyhelminths (flatworms)	Habitat Condition	Notes / Voucher information
PWP 1	482406.52 3639971.61	60	62	10	10	1x30	2x30											D,TT	No FS
PWP 2	482253.80 3638105.22	60	63	5	8	2x8	2x8											D,TT	No FS
PWP 3	481556.56 3638203.82	60	/	Dry	8	Dry	1.5x10											D,TT	Dry
PWP 4	481532.83 3638196.63	60	65	3	10	.5x1	1x2											D,TT	No FS
PWP 5	481519.59 3638192.16	60	65	3	8	.5x3	1x6											D,TT	No FS
PWP 6	481505.26 3638189.97	60	65	3	10	.5x1	1x6											D,TT	No FS
PWP 7	481478.58 3638180.53	61	/	Dry	8	Dry	2x6											D,TT	Dry
PWP 8	485061.26 3637652.28	61	63	6	15	20x20	20x20											NP	No FS
PWP 9	507278.06 3637951.13	62	63	6	6	3x8	3x8											D,TT	No FS
PWP 10	507243.74 3638107.35	62	/	Dry	8	Dry	3x8											D,TT	Dry
PWP 11	507047.48 3638515.05	62	/	Dry	8	Dry	5x8											D,TT	Dry
PWP 12	507067.13 3638540.17	62	/	Dry	10	Dry	2x10											D,TT	Dry
PWP 13	507059.25 3638574.65	62	/	Dry	10	Dry	8x8											D,TT	Dry
PWP 14	507034.43 3638645.18	62	64	3	12	1x3	4x12											D,TT	No FS

Notes: Fill in abbreviated names of Anostracans and Notostracans, for all others indicate presence with a check mark. Anostracan and Notostracan Abbreviations: Use first two letters of genus and species name (e.g., LIOC = *Linderiella occidentalis*, BRLI = *Branchinecta lindahli)*.
For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.
(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

Appendix 1. U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods

Site or Project Name: PURE WATER | **County:** SAN DIEGO | **Quad:** SEVERAL - SEE REPORT | **Township:** | **Range:** | **Section:**

SURVEYOR / Permit Number: PAUL LEMONS - TE051248-5

Date: 5/12/17 | Time: | Weather Conditions: °F, mph winds, % cc

Cont'd

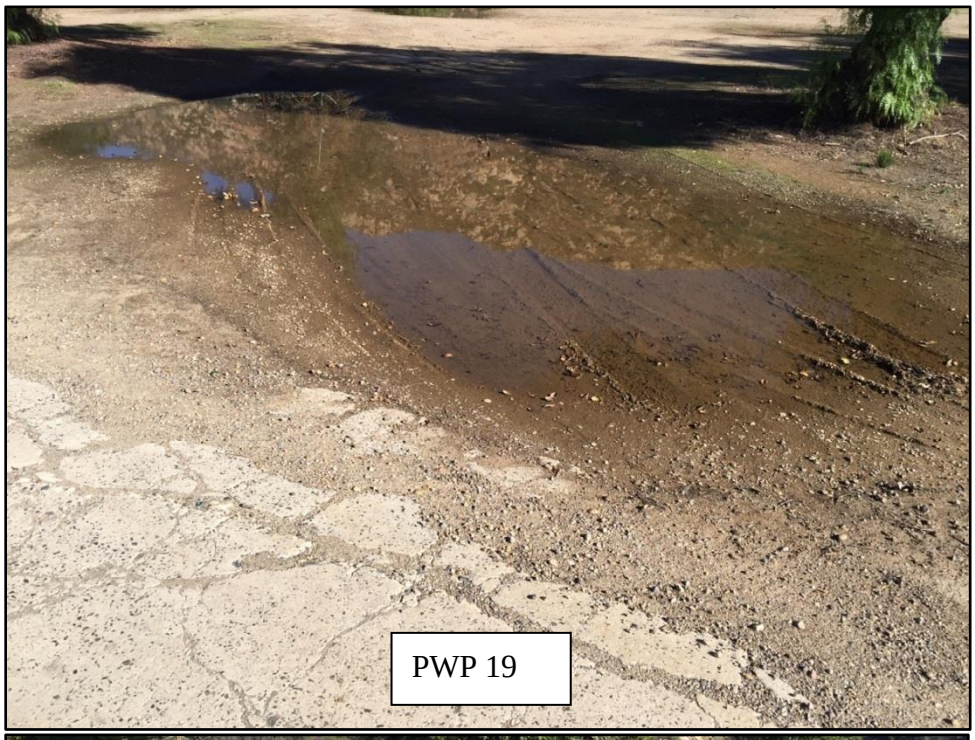
Feature ID #	UTM (Northing, Easting, Datum)	Temp (°C)		Depth (cm)		Surface Area (m x m)		Crustaceans					Insects				Platyhelminths (flatworms)	Habitat Condition	Notes / Voucher information
		Air	Water	Average	Est. Max.	Present	Est. Max.	Anostracans	Notostracans	Copepods	Ostracods	Cladocera	Coleoptera	Hemiptera	Diptera Culicidae	Diptera Chironomidae			
PWP 15	507024.91 3639864.95	63	64	3	10	4x5	8x8											D,TT	No FS
PWP 16	506520.27 3640117.92	63	65	3	8	.5x8	1x20											D,TT	No FS
PWP 17	506513.76 3640160.06	63	65	3	12	3x20	5x30											D,TT	No FS
PWP 18	506823.36 3641006.23	65	Dry	Dry	8	Dry	5x18											D,TT	Dry
PWP 19	506847.40 3641059.89	65	66	3	6	1.5x3	3x16											D,TT	No FS

Notes: Fill in abbreviated names of Anostracans and Notostracans, for all others indicate presence with a check mark. Anostracan and Notostracan Abbreviations: Use first two letters of genus and species name (e.g., LIOC = *Linderiella occidentalis*, BRLI = *Branchinecta lindahli)*.
For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.
(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

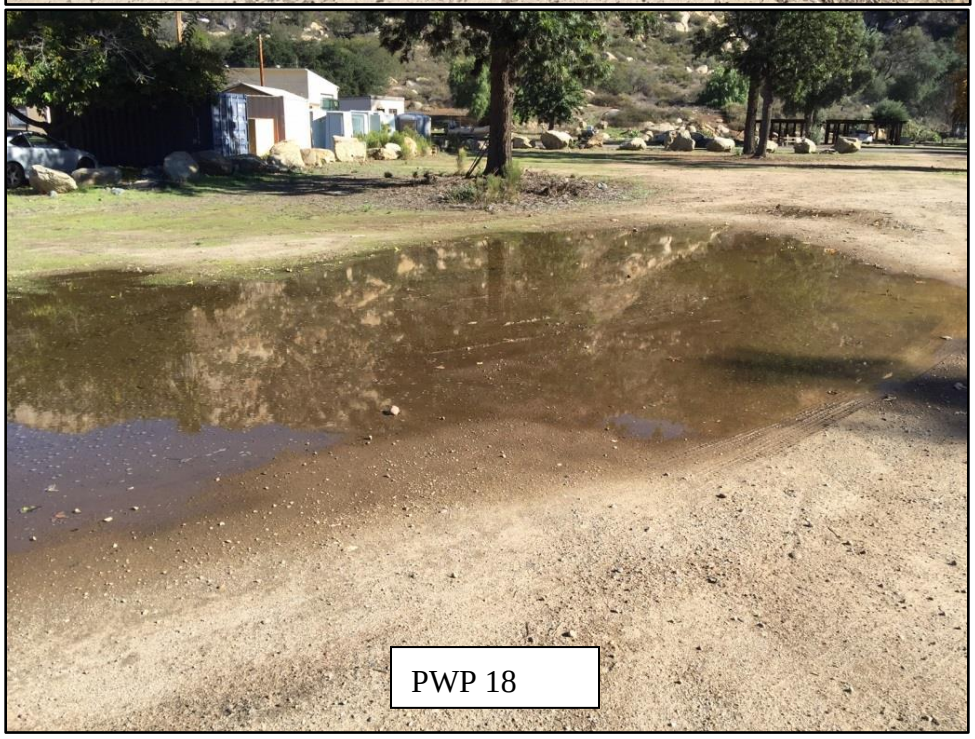
APPENDIX B

Photographs

APPENDIX B
Photographs



PWP 19



PWP 18

PWP 17

PWP 16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PWP 8


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