

APPENDIX G
2016/2017 Wet Season
Fairy Shrimp Survey Report

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 retain 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).

Recovery Permit Coordinator

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

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 (<i>Branchinecta lindahli</i>)
PWP 4	Fairy shrimp present; Versatile fairy shrimp (<i>Branchinecta lindahli</i>)
PWP 5	Fairy shrimp present; Versatile fairy shrimp (<i>Branchinecta lindahli</i>)
PWP 6	Fairy shrimp present; Versatile fairy shrimp (<i>Branchinecta lindahli</i>)
PWP 7	None
PWP 8	Fairy shrimp present; Versatile fairy shrimp (<i>Branchinecta lindahli</i>)
PWP 9	Fairy shrimp present; Versatile fairy shrimp (<i>Branchinecta lindahli</i>)
PWP 10	None
PWP 11	Fairy shrimp present; Versatile fairy shrimp (<i>Branchinecta lindahli</i>)

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Table 2
2015/16 Vernal Pool Branchiopods Survey Results*

Basin ID	Branchiopod Species Observed
PWP 12	Fairy shrimp present; Versatile fairy shrimp (<i>Branchinecta lindahli</i>)
PWP 13	Fairy shrimp present; Versatile fairy shrimp (<i>Branchinecta lindahli</i>)
PWP 14	Fairy shrimp present; Versatile fairy shrimp (<i>Branchinecta lindahli</i>)
PWP 15	Fairy shrimp present; Versatile fairy shrimp (<i>Branchinecta lindahli</i>)
PWP 16	None
PWP 17	Fairy shrimp present; Versatile fairy shrimp (<i>Branchinecta lindahli</i>)
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.

Holland, R.F. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. Nongame-Heritage Program. California Department of Fish and Game. October 1986.

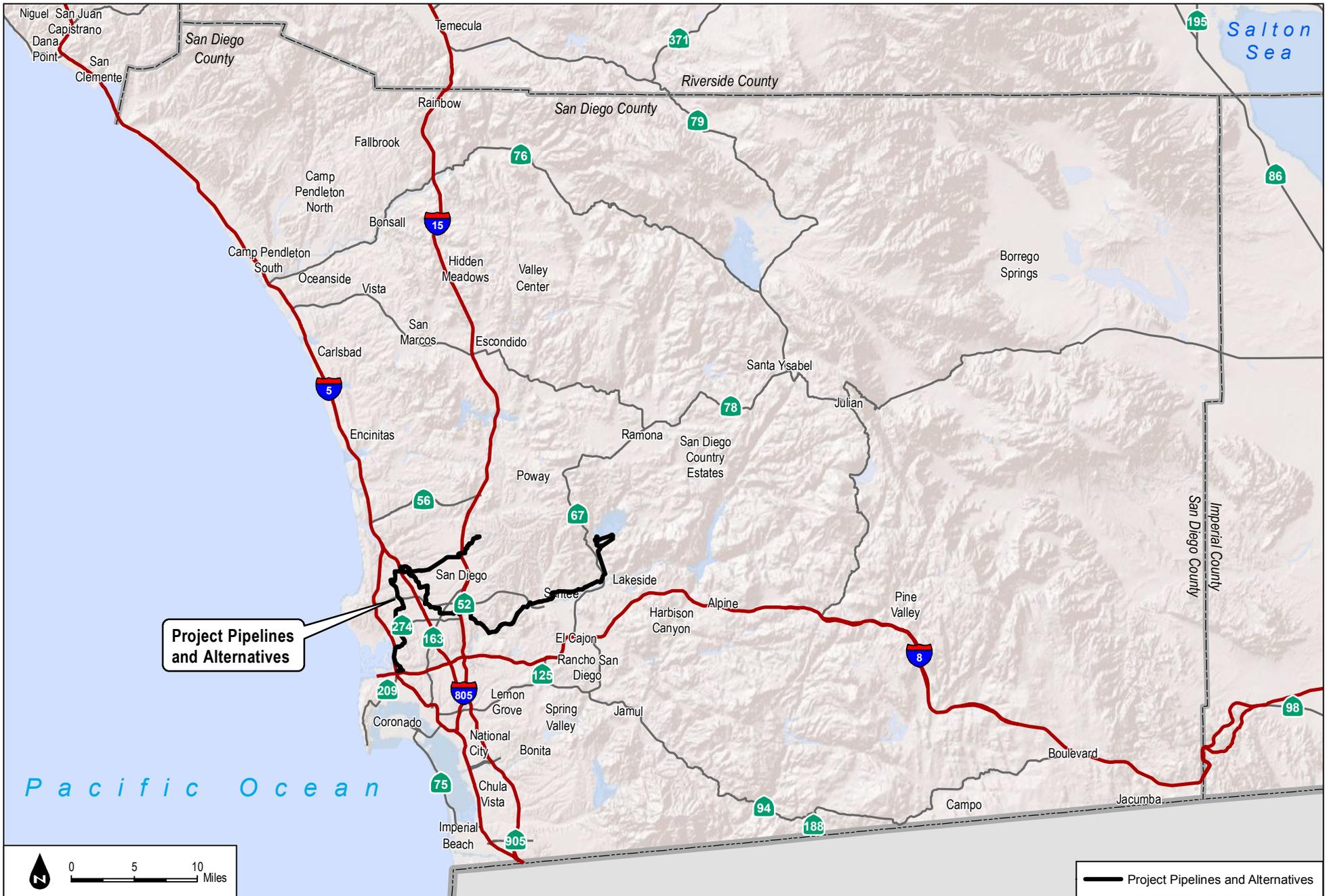
Recovery Permit Coordinator

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Oberbauer, T., M. Kelley, and J. Buegge. 2008. Draft Vegetation Communities of San Diego County. Based on “Preliminary Descriptions of the Terrestrial Natural Communities of California,” R.F. Holland, October 1986. March 2008.

USFWS. 2015. Survey Guidelines for the Listed Large Branchiopods. Sacramento, California: USFWS Pacific Southwest Region. May 31, 2015.

Weather Underground Inc. 2016–2017. Various Weather Station across San Diego County. Data accessed periodically from November 2016 through June 2017.
<http://www.wunderground.com>



Project Pipelines and Alternatives

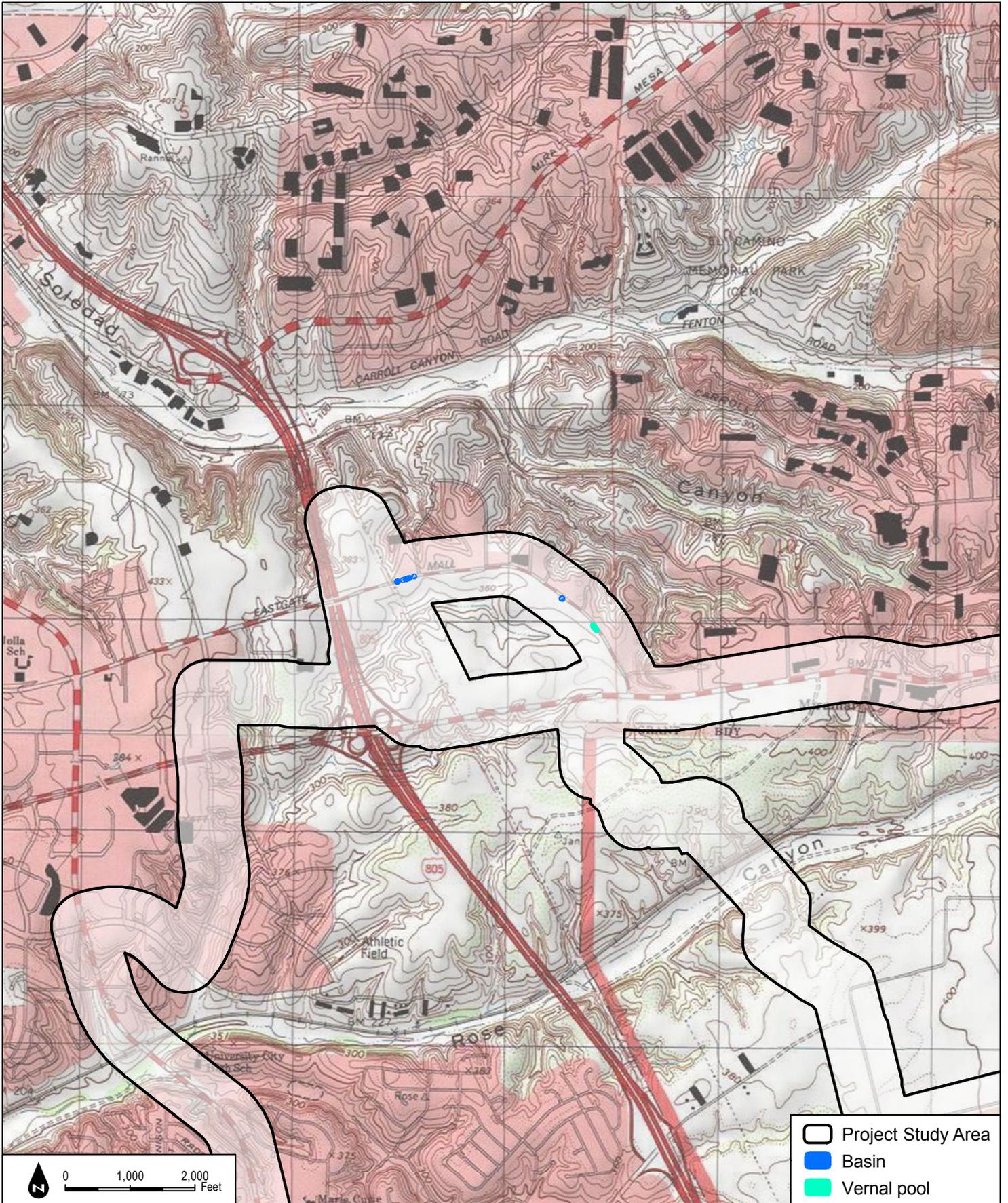
— Project Pipelines and Alternatives



SOURCE: City San Diego 2016; ESRI 2016

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

FIGURE 1
Regional Map

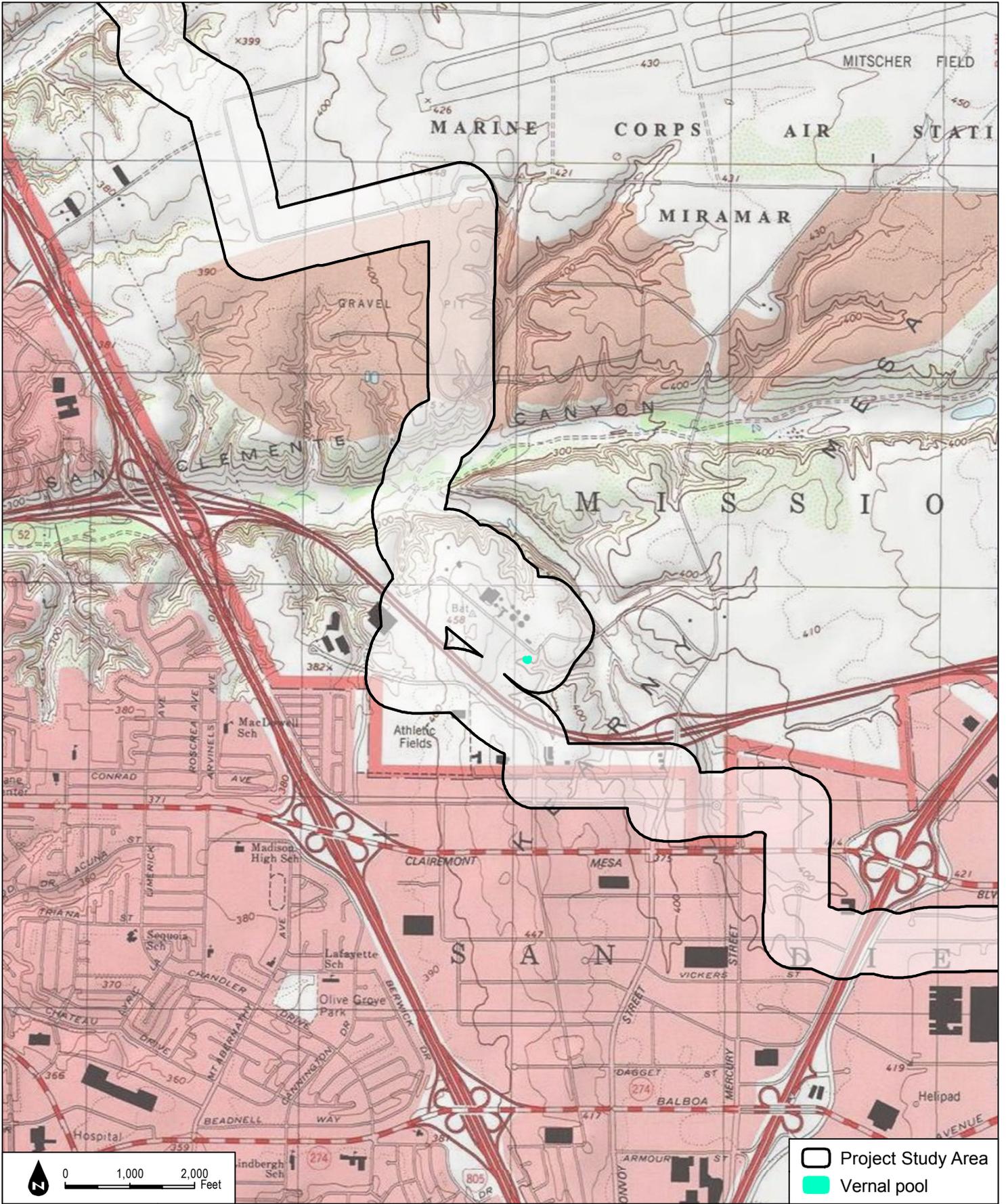


SOURCE: USGS 7.5-Minute Series El Cajon, San Vicente Reservoir Quadrangles.

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

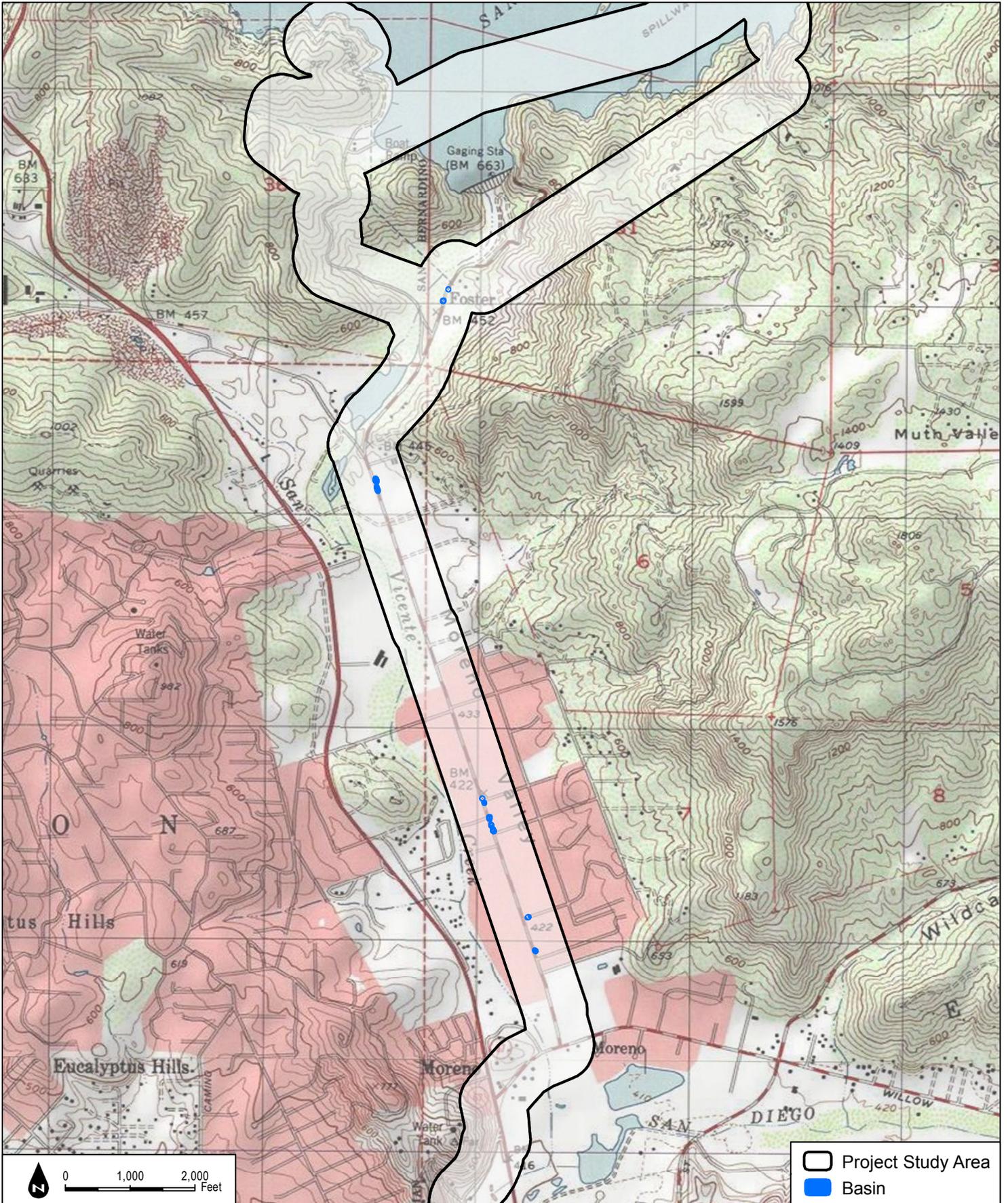


SOURCE: USGS 7.5-Minute Series El Cajon, San Vicente Reservoir Quadrangles.

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



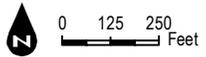
SOURCE: USGS 7.5-Minute Series El Cajon, San Vicente Reservoir Quadrangles.

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





-  Project Study Area
-  Vernal pool with versatile fairy shrimp (*Branchinecta lindahli*) present

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

FIGURE 3B
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.

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.

FIGURE 3D
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



-  Project Study Area
-  Basin with versatile fairy shrimp (*Branchinecta lindahli*) present
-  Basin

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.

FIGURE 3F
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

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)		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		66	58	5	10	1x26	2x30											D, TT, T	No FS
PWP 2		66	59	3	8	1.5x4	2x8											D, TT	No FS
PWP 3		66	59	3	8	.5x1	1.5x10											D, TT	No FS
PWP 4		67	59	4	10	1x1	1x2											D, TT	No FS
PWP 5		67	59	3	8	1x1	1x6											D, TT	No FS
PWP 6		67	59	3	10	1x3	1x6											D, TT	No FS
PWP 7		67	60	3	8	.5x4	2x6											D, TT	No FS
* PWP 8 (Bio Solids Pond)		66	65	7	15	6x12	20x20	BRLI-10's										NP, UD	FS present 7 collected
PWP 9. Morano		67	68	3	6	1x1	3x3											D, TT	No FS
GPS PWP 10		67	68	4	8	2x3	3x8											D, TT	No FS
PWP 11		67	67	3	8	2x4	5x8											D, TT	No FS
PWP 12		67	70	3	10	1.5x6	2x10											D, TT	No FS
PWP 13		67	66	5	10	6x6	8x8	10's										D, TT	No FS Shrimp young
* PWP 14		67	66	3	12	.5x2	4x2	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			
PWP 15		69	66	6	10	2x2	8x8	BRLI 10%									D, TT	FS present, 2 ⁸ collect
PWP 16		69	66	4	8	5x6	1x20										D, TT	No FS
PWP 17		69	67	6	12	3x20	5x30										D, TT	No FS
PWP 18		69	68	3	8	2x3	5x18										D, TT	No FS
PWP 19		67	66	3	6	1x2	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: 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 - 3 indahl
PWP 15		68	72	1	10	.5x5	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 lindahl*). 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		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 FS	Notostracans <i>Tadpole-shrimp</i>	Copepods	Ostracods	Cladocera	Coleoptera <i>Water Beetles</i>	Hemiptera <i>Big Spots</i>	Diptera <i>Mosquito</i>	Culicidae	Diptera Flies <i>larvae</i>			
PWP 1	482406.52 3637971.61	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 36318100.53	63	51	6	8	1.5x5	2x6												D,TT	No FS
PWP 8	485061.26 3632652.28	66	56	13	15	2x20	20x20												NP, UD	FS present
PWP 9	507278.06 3637951.13	68	60	6	6	3x8	3x8												D,TT	No FS
PWP 10	507243.77 3638107.35	68	61	8	8	3x8	3x8												D,TT	No FS
PWP 11	507077.48 3638515.05	68	63	8	8	5x8	5x8												D,TT	No FS
PWP 12	507067.13 3638540.17	68	64	10	10	2x10	2x10												D,TT	No FS
PWP 13	507059.25 3638574.63	68	63	10	10	8x8	8x8												D,TT	FS present
PWP 14	507034.73 3638045.18	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: 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)		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	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 3638187.97	59	58	7	10	1x6	1x6											D,TT	No FS
PWP 7	481479.58 36318180.53	59	58	6	8	2x6	2x6											D,TT	No FS
PWP 8	485061.26 3632652.28	61	58	10	15	20x20	20x20											NP	No FS
PWP 9	507278.06 3637951.13	63	59	5	6	3x8	3x8											D,TT	No FS
PWP 10	507243.77 3638107.35	63	59	7	8	3x8	3x8											D,TT	No FS
PWP 11	507077.48 36380515.05	64	59	7	8	5x8	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	507034.73 3638245.18	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 lindahl*).
 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: 12/26/10 **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	64	57	8	10	8x8	8x8											D, TT	No FS
PWP 16	506520.24 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 3641066.23	64	58	5	8	5x8	5x8											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 SAN DIEGO COUNTY Township: _____ Range: _____ 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	10	10	3x40	2x20 3x40											D, TT	No FS
PWP 2	482253.80 3638105.22	54	53	8	8	4x20	2x20 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 3638187.97	55	56	10	10	1x6	1x6											D, TT	No FS
PWP 7	481478.58 36318100.53	55	56	8	8	2x6	2x6											D, TT	No FS
PWP 8	485061.26 3632652.28	55	56	15	15	20x20	20x20	BRL										UD, NP	2 ♂ Branch. ¹⁰⁹⁵ collected
PWP 9	507278.06 3637951.13	56	57	6	6	2x3 3x8	3x8											D, TT	No FS
PWP 10	507243.77 3638107.35	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 3638574.67	59	56	10	10	8x8	8x8											D, TT	No FS
PWP 14	507034.73 3638245.18	60	56	12	12	4x2	4x2											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 = *Lindieriella 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: 1/2/17 **Time:** **Weather Conditions:** of, mph winds, %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 15	507024.91 3639664.95	60	56	10	10	8x8	8x8											D,TT	NoFS
PWP 16	506520.27 3640117.92	61	57	8	8	1x20	1x20											D,TT	NoFS
PWP 17	506513.76 3640160.06	61	55	12	12	5x30	5x30											D,TT	NoFS
PWP 18	506823.36 3641006.23	61	55	8	8	5x18	5x18											D,TT	NoFS
PWP 19	506847.90 3641059.89	61	55	6	6	8x16	8x16											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 = *Lindleriella occidentalis*, BRLL = *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: 1/9/17 Time: 0820-1500 Weather Conditions: 66-63°F, 1-4 mph winds, 100% cc - Rain

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	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 3638203.92	60	61	8	8	1.5x10	1.5x10											D,TT	No FS
PWP 4	481532.83 3638146.63	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	481479.58 36318100.53	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	507243.77 3638107.35	62	64	8	8	3x8	3x8											D,TT	No FS
PWP 11	507077.48 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	507034.73 3638445.18	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 = *Lindieriella 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: 1/2/17 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	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 3641066.23	63	63	8	8	5x18	5x18											D,TT	No FS
PWP 19	506847.90 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 SAN DIEGO COUNTY Township: _____ Range: _____ Section: _____

SURVEYOR / Permit Number: PAUL LEMONS, TE 051248-5

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)		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			
PWP 1	482406.52 3637971.61	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 3638187.97	56	58	10	10	1x6	1x6										D,TT	No FS
PWP 7	481478.58 36318182.53	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. <i>lindahli</i> collected 100%
PWP 9	507278.06 3637951.13	57	58	6	6	8x8	8x8	BRLI									D,TT	1 ♂ Branch. <i>lindahli</i> collected 100%
PWP 10	507243.77 3638107.35	57	58	7	8	3x8	3x8										D,TT	No FS
PWP 11	507107.48 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 3638574.63	59	58	10	10	8x8	8x8										D,TT	No FS
PWP 14	507034.43 3638645.18	59	58	10	12	4x12	4x12	BRLI									D,TT	1 ♂ B. collected <i>lindahli</i> 100%

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 = *Lindieriella 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:** of, 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	61	59	6	10	3x8	8x8	BRLI 10's										D,TT	2♂, 1♀ <i>Branchinecta lindahli</i> collected
PWP 16	506520.21 3640117.92	62	60	8	8	1x2	1x20											D,TT	No FS
PWP 17	506513.76 3640160.06	62	60	10	12	5x30	5x30											D,TT	No FS
PWP 18	506823.36 3641006.23	63	60	8	8	5x18	5x18											D,TT	No FS
PWP 19	506847.90 3641059.89	63	60	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 = *Lindieriella 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: 1/23/17 Time: 0900-1520 Weather Conditions: 54-56 °F, 3-15 mph winds, 100-98% CC, Some rain

Feature ID #	UTM (Northing, Easting, Datum)	Temp (°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	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 36318100.53	54	56	8	8	1.5x6	2x6											D,TT	No FS
PWP 8	485061.26 3637652.28	55	57	15	15	20x20	20x20	BRLI ^{10%}										NP	B. lindahli 38
PWP 9	507278.06 3637951.13	55	56	8	6	5x5	3x3											D,TT	No FS - area Flooded
PWP 10	507243.77 3638107.35	56	56	10	8	4x10	3x8											D,TT	No FS - Flooded
PWP 11	507647.48 36388515.05	56	56	10	8	10x25	5x8											D,TT	No FS
PWP 12	507667.13 36388540.17	56	57	10	10	4x15	2x10											D,TT	No FS
PWP 13	507659.25 36388574.63	56	57	10	10	10x10	8x8											D,TT	No FS
PWP 14	507634.73 36388445.18	56	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 = *Lindieriella 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: 54-56 °F, 3-15 mph winds, 100-90 %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			
<u>cont'd</u> PWP 15	<u>507024.91 3639664.95</u>	<u>56</u>	<u>56</u>	<u>10</u>	<u>10</u>	<u>? 20x20</u>	<u>8x8</u>											<u>Rain</u> <u>No FS, Flooded</u>	
PWP 16	<u>506520.24 3640117.92</u>	<u>56</u>	<u>56</u>	<u>8</u>	<u>8</u>	<u>F</u>	<u>1x20</u>												
PWP 17	<u>506513.76 3640160.06</u>	<u>56</u>	<u>56</u>	<u>12</u>	<u>12</u>	<u>0</u>	<u>5x30</u>												
PWP 18	<u>506823.36 3641006.23</u>	<u>56</u>	<u>56</u>	<u>8</u>	<u>8</u>	<u>D</u>	<u>5x18</u>												
PWP 19	<u>506847.90 3641059.89</u>	<u>56</u>	<u>57</u>	<u>6</u>	<u>6</u>	<u>D</u>	<u>3x16</u>												
						<u>ALL Wet</u>													

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: 9-62 °F, 0-7 mph winds, 10-20% 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			
PWP 1	482406.52 3637971.61	60	50	1.5ft.	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	18 ⁺ , 10's
PWP 5	481519.59 3638192.16	62	49	6	8	1x6	1x8	BRLI				X					D,TT	18 ⁺ , 10's
PWP 6	481505.26 3638187.97	62	47	3	10	1x2	1x6	BRLI				X			X		D,TT	18 B. lindahli 10's
PWP 7	481478.58 36318100.53	62	50	3	8	5x5	2x6					X					D,TT	No FS
PWP 8	481506.26 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	507243.77 3638107.35	67	57	4	8	2x2	3x8										D,TT	No FS
PWP 11	507677.48 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	507034.73 3638245.18	68	58	6	12	4x2	4x2										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 = *Lindieriella 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: 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 3638192.10	58	52	4	8	5x2	1x8											D,TT	NoFS
PWP 6	481505.26 3638187.97				10		1x6											D,TT	Dry
PWP 7	481478.58 36318180.53				8		2x6											D,TT	Dry
PWP 8	485061.26 3632652.28	59	55	6	15	10x15	20x20	BRLI 10's										NP	BRLI 2 ♂
PWP 9	507278.06 3637951.13	60	54	3	6	1x2	3x8											D,TT	NoFS
PWP 10	507243.77 3638107.35	60	54	3	8	1x1	3x8											D,TT	NoFS
PWP 11	507077.48 3638515.05	60	55	3	8	1x5	5x8											D,TT	NoFS
PWP 12	507067.13 3638540.17				10		2x10											D,TT	Dry
PWP 13	507059.25 3638574.63				10		8x8											D,TT	Dry
PWP 14	507034.73 3638645.18				12		4x2											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 Township: REPORT Range: Section:

SURVEYOR / Permit Number: PAUL LEMONS - TE051248-5

Date: 2/6/14 Time: Weather Conditions: of, 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	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	NoFS
PWP 19	506847.90 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 = *Lindieriella 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: 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 3638203.92	63	66	6	8	1x6	1.5x10											D,TT	No FS
PWP 4	481532.83 3638146.63	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	67	9	15	20x20	20x20											NP	No FS, tadpoles ^{w/TT?}
PWP 9	507278.06 3637951.13	72	66	5	6	6x6	8x8											D,TT	No FS
PWP 10	507243.77 3638107.35	72	67	4	8	2x6	3x8											D,TT	No FS
PWP 11	507677.48 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	507034.73 3638445.19	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 = *Lindieriella 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.

CONTINUED

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: 2/13/17 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	70	3	10	6x8	8x8											D,TT	No FS
PWP 16	506520.24 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 3641066.23	74	67	3	8	5x12	5x18											D,TT	No FS
PWP 19	506847.90 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 SAN DIEGO COUNTY Township: _____ Range: _____ Section: _____

SURVEYOR / Permit Number: PAUL LEMONS, TE 051248-5

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			
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 BR Tip 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 ♂ BRL
PWP 6	481505.26 3638187.97	71	77	7	10	1x6	1x6											D,TT No FS
PWP 7	481478.58 36318100.53	71	75	6	8	1x6	2x6											D,TT No FS
PWP 8	485061.26 3637652.28	71	70	10	15	20x20	20x20	BRL										NP 3 BRL, 10's
PWP 9	507278.06 3637951.13	68	66	5	6	4x10	8x8	BRL										D,TT 1 ♂ BRL, 10's
PWP 10	507243.77 3638107.35	68	66	7	8	5x8	8x8											D,TT No FS
PWP 11	507677.48 3638515.05	69	66	7	8	5x8	5x8	BRL										D,TT 1 ♂ BRL, 10's
PWP 12	507067.13 3638540.17	69	67	6	10	2x10	2x10	BRL										D,TT 2 ♂ BRL, 10's
PWP 13	507059.25 3638574.67	70	66	10	10	15x50	8x8											D,TT No FS, Flooded
PWP 14	507034.73 3638245.18	70	66	7	12	4x12	4x12	BRL										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 = *Lindieriella 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 **Time:** **Weather Conditions:** °F, mph winds, %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 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	BRL1										D,TT	4 ♂ BR
PWP 18	506823.36 3641006.23	71	69	8	8	5x8	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 SAN DIEGO COUNTY Township: _____ Range: _____ 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 Monero 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 36318100.53	53	63	8	8	2x6	2x6											D,TT	No FS
PWP 8	481506.26 3633652.28	58	66	15	15	20x30	20x20											NP	No FS
PWP 9	507278.06 3637951.13				6		3x3											D,TT	Flooded
PWP 10	507243.77 3638107.35				8		3x8											D,TT	↓
PWP 11	507677.48 3638515.05				8		5x8											D,TT	
PWP 12	507067.13 3638540.17				10		2x10											D,TT	
PWP 13	507059.25 3638574.67				10		8x8											D,TT	
PWP 14	507034.73 3638245.18				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 = *Lindieriella occidentalis*, BRLL = *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!

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	509024.91 3639664.95				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 3641066.23				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 = *Lindleriella 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: 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	4x30											D,TT	No FS
PWP 2	482253.80 3638105.22	55	67	8	8	2x8	2x8											D,TT	No FS
PWP 3	481556.56 3638203.82	56	68	8	8	1x8	1.5x10											D,TT	BR, 10's immature
PWP 4	481532.83 3638146.63	58	69	5	10	1x2	1x2											D,TT	No FS
PWP 5	481519.59 3638192.16	60	68	8	8	1x6	1x6											D,TT	1 BRLL, 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
PWP 8	485061.26 3638652.28	63	67	8	15	20x20	20x20											NP, AB	No FS - lots of tadpoles + algae
PWP 9	507278.06 3637951.13	70	75	3	6	3x3	8x8											D,TT	No FS
PWP 10	507243.77 3638107.35	71	73	4	8	4x4	8x8											D,TT	No FS
PWP 11	507077.48 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	507057.25 3638574.63	73	77	4	10	1x8	8x8											D,TT	No FS
PWP 14	507034.73 3638645.18	73	76	4	12	2x10	4x12											D,TT	4 BRLL, 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 = *Lindieriella occidentalis*, BRLL = *Branchinecta lindahl*).
 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: REPORT 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

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	5x6	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 3641066.23	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 SAN DIEGO COUNTY Township: _____ Range: _____ Section: _____

SURVEYOR / Permit Number: PAUL LEMONS, TE051248-5

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 3638146.63	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 36318102.53	59	60	3	8	5x3	2x6											D,TT	No FS
PWP 8	485061.26 3637652.28	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	507243.77 3638107.35	68	72	3	8	2x3	3x8											D,TT	No FS
PWP 11	507677.48 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 3638574.67	71	76	3	10	5x4	8x8											D,TT	No FS
PWP 14	507034.73 3638445.18	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 = *Lindieriella 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 **Time:** **Weather Conditions:** of, 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	506520.24 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	506847.90 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 = *Lindleriella 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% 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			
PWP 1	482406.52 3637971.61	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 3638197.97	60	65	3	10	.5x1	1x6										D.TT	No FS
PWP 7	481478.58 36318102.53	61	/	Dry	8	Dry	2x6										D.TT	Dry
PWP 8	485061.26 3634652.28	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	507243.77 3638107.35	62	/	Dry	8	Dry	3x8										D.TT	Dry
PWP 11	507077.48 36380515.05	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 3638574.67	62	/	Dry	10	Dry	8x8										D.TT	Dry
PWP 14	507034.73 3638445.18	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 = *Lindleriella 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

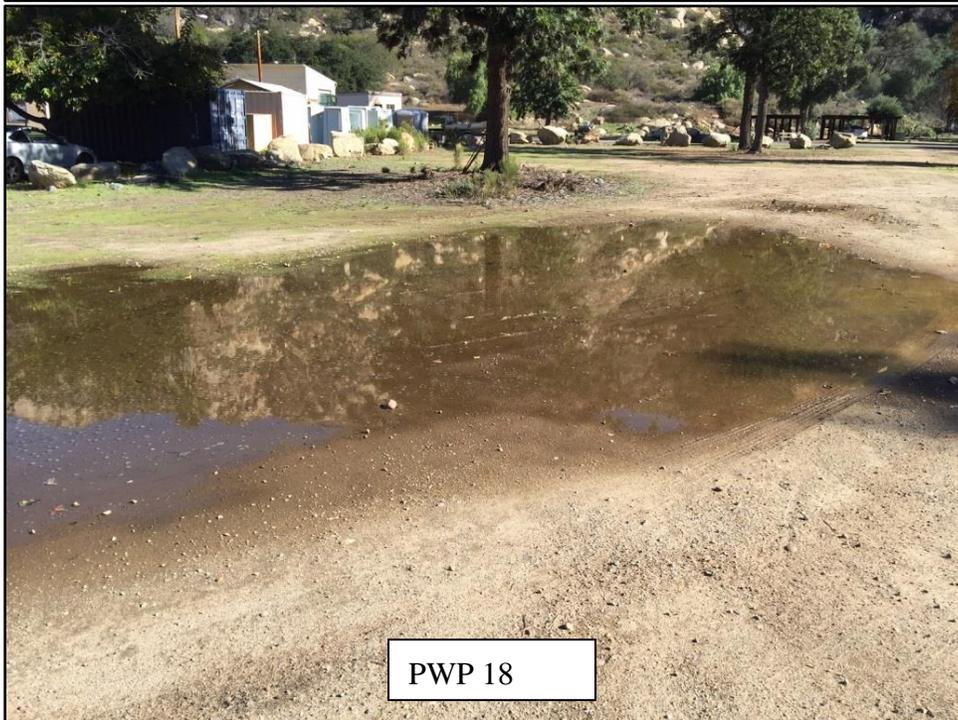
Date: 5/12/17 **Time:** **Weather Conditions:** °F, mph winds, %cc

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 3639164.95	63	64	3	10	4x5	8x8											D,TT	No FS
PWP 16	506520.24 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	506847.90 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 = *Lindleriella 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



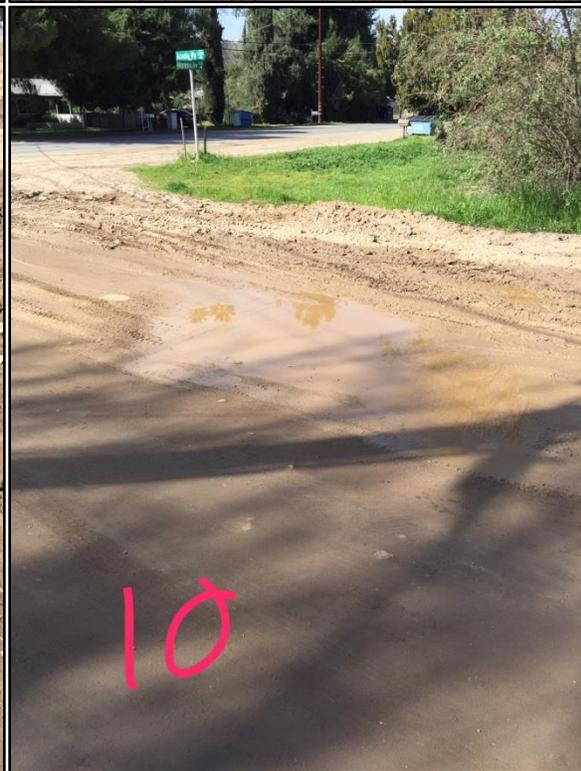
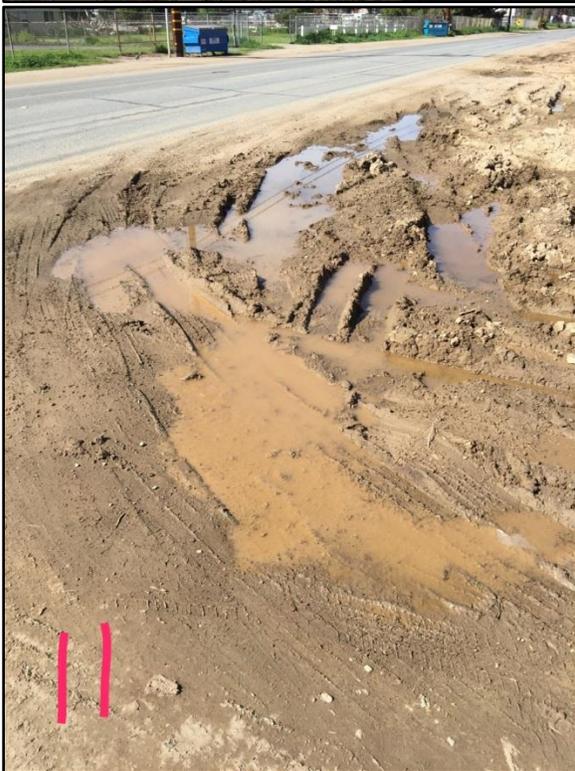
APPENDIX B (Continued)



APPENDIX B (Continued)



APPENDIX B (Continued)



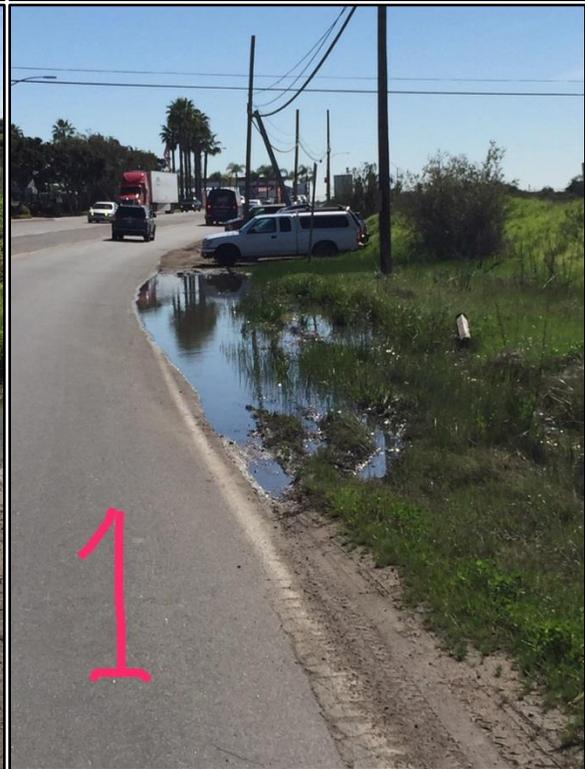
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