AECOM
1420 Kettner Boulevard
Suite 500
San Diego, CA 92101
www.aecom.com

619.233.1454 tel
619.233.0952 fax

July 20, 2010

Sandra Marquez
Recovery Permit Coordinator
Carlsbad Fish and Wildlife Office
6010 Hidden Valley Road
Carlsbad, California 92011

RE: 30-Day Summary Report of 2010 Focused Surveys for the Arroyo Toad for the Manzanita Energy Project

Dear Ms. Marquez:

In compliance with the Special Terms and Conditions for Endangered and Threatened Wildlife Species Permit TE-820658-4.6, AECOM submits this letter report summarizing the results of focused surveys conducted during 2010 for the federally listed arroyo toad (*Anaxyrus* [=*Bufo*] *californicus*; ARTO) associated with the Manzanita Wind Energy Project. AECOM currently holds an Endangered and Threatened Species Permit issued by the U.S. Fish and Wildlife Service (USFWS) under Section 10(a) of the federal Endangered Species Act.

Project Description

The proposed Project is composed of three different parts, described as Part A: Manzanita Wind Power Generation Project; Part B: Crestwood to Boulevard Transmission Line System Improvement Project; and Part C: New Substation on Private Land Project. Each part is described in further detail below.

Part A: Manzanita 50-MW Wind Power Generation Project

The Manzanita Wind Power Generation Project (Project) consists of the installation of up to 22 wind turbines on the Manzanita Reservation. Each turbine could generate up to 2.5 MW of power. The general alignment for 15 of the turbines follows the Tecate Divide, starting at the approximate mid-point of the reservation's southern boundary and extending north and west to the northern boundary of the reservation. Of the remaining seven proposed turbines, four would extend from north-to-south approximately 1,000 feet west of the Tecate Divide, and three would extend approximately 3,000 feet south from the northern boundary of the reservation in the northeastern portion of the reservation. There are 25 existing 2.0-MW wind turbines located along the Tecate Divide on the Campo Indian Reservation, immediately south of the Manzanita Indian Reservation and north of Interstate 8 (I-8).

Road improvements on the Manzanita Indian Reservation would be necessary along the Tecate Divide and other existing roads to gain access to the three turbines proposed in the northeastern portion of the reservation. This work would include both improvements to existing dirt roads and the potential construction of new dirt roads, depending on the final Project design. In addition, a new access road would be required to access and provide a loop for the four proposed turbines west of the Tecate Divide. Other areas of disturbance would result from lay-down and staging areas during installation.

A buffer of approximately 1,000 feet around proposed turbine locations has been used to provide flexibility for the Project design and to determine acreages for biological survey work. Using this methodology, up to 1,600 acres of disturbance could result from implementation of the Project, although the actual impact area will likely be much smaller. Anticipated impacts include disturbance associated with installation of a generation tie line (gen-tie line) that extends approximately 3 miles from the southernmost proposed turbine to the existing Crestwood Substation on the Campo Indian Reservation, south of I-8.

Part B: Crestwood to Boulevard Transmission Line System Improvement Project

The Crestwood to Boulevard Transmission Line System Improvement Project (Project) traverses between the existing Crestwood and Boulevard substations. The Project extends for approximately 4.5 miles following the existing 69-kilovolt (kV) line alignment and right-of-way. Additional right-of-way may be required along this transmission line depending on final structure design and placement. Some type of disturbance will likely occur along the length of the transmission line and would be increased in those areas where direction changes occur to allow for pulling sites and staging areas. Specific pulling sites and staging yards have not yet been identified for the Project. However, the Biological Study Area (BSA) includes a 100-foot buffer on either side of the easement, with a 500-foot buffer at angle points, to accommodate potential staging areas and pulling sites. Up to 150 acres of disturbance could result from implementation of the Project.

Part C: New Substation on Private Land Project

The New Substation on Private Land Project consists of the construction of a new substation or switchyard on private land. This proposed facility will be necessary in conjunction with the wind energy generation project. The survey area is approximately 5 acres.

Site Description

The Manzanita Indian Reservation lies along the Tecate Divide north of I-8 in eastern San Diego County (Figure 1). The Tecate Divide is a north/south-trending ridgeline that divides the Colorado River Basin watershed from the coastal watershed that drains to the Pacific Ocean. The reservation is located northwest of the community of Manzanita and directly north of Live Oak Springs, approximately 2 miles north of I-8 (Figure 2). On-site elevation ranges from approximately 3,400 to 5,000 feet above mean sea level.

The BSA, which includes lands both on and off of the Manzanita and Campo Indian Reservations, supports a variety of habitat types and vegetation communities, but is dominated by chamise chaparral with both a monotypic phase and a mixed chaparral phase. Additional vegetation communities found throughout the site and especially along ridges and slopes include redshank chaparral, big sagebrush scrub, and Sonoran subshrub scrub. A series of north/south-running ridges is located throughout the proposed Project site, separated by shallow valleys consisting of coast live oak woodland, nonnative grassland, and southern willow scrub vegetation. Interspersed throughout the chamise chaparral are areas dominated by buckwheat in shallow valleys, along riparian washes and roads, and

along firebreaks. Various large rock outcrops are scattered throughout the site but are primarily located along the ridgelines.

Background Information

The ARTO was listed by USFWS on December 16, 1994 (USFWS 1994). This listing status applied to the entire population of ARTO. Critical habitat was proposed by USFWS on June 8, 2000. A recovery plan for the species has been adopted by USFWS, which identifies critical habitat and survey protocols (USFWS 1999a). ARTO are distributed in the semiarid parts of the southwest from near Santa Margarita in San Luis Obispo County to northwestern Baja California (Jennings and Hayes 1994).

This subspecies of southwestern toad has perhaps the most specialized habitat requirements of any Californian toad (Jennings and Hayes 1994). They are typically associated with gravelly or sandy washes, stream and river banks, and arroyos. Adult ARTO spend most of the year in burrows in upland habitat near washes and streams. Nonbreeding aestivating habitat can include sage scrub, chaparral, and woodland communities.

Breeding activity is known to occur from February to June, depending on temperatures and precipitation (Sullivan 1992; Sweet 1993). Breeding occurs in quiet, clear backwaters of streams as waters recede from the floods of the wet season. Males call from suitable breeding habitat at night, and the call is a musical trill emitted in 10-second bursts. Eggs are laid on the bottom of shallow pools, usually in tangled strings of one to three rows. The eggs are sensitive to siltation and require good water quality. Because the eggs are laid in shallow water and are not anchored or attached to the substrate, they are susceptible to rapid changes in stream flow that can strand them dry or wash them downstream. The tadpoles are typically mottled or spotted black and brown, and reach a maximum length of about 1.5 inches. Tadpoles are solitary and extremely cryptic. Metamorphosed toadlets bask during the day on sandy or gravelly beaches in the late summer before beginning the subterranean life of the adults. The adults typically spend the majority of the year in burrows, are nocturnal, and are occasionally found at night foraging on open, sandy areas around the drainage. Burrows are shallow and are usually located in sandy soils on terraces adjacent to streams (USFWS 1994).

An estimated 75% of the historical habitat of the species has been destroyed, and many of the remaining populations are threatened. The primary reasons for the decline of the species include dams and water projects, urban development, agriculture and grazing, and human recreational activities in breeding areas.

Survey Methodology

This report summarizes 2010 ARTO survey activities as conducted by AECOM in the BSA. The habitat assessment was conducted prior to protocol ARTO surveys to focus efforts in suitable areas. All surveys were conducted according to the USFWS *Survey Protocol for the Arroyo Toad* (USFWS 1999b).

Habitat Assessment

Prior to the initiation of surveys, regional databases were searched to determine the closest known occurrences of ARTO in the vicinity of the BSA. The California Natural Diversity Database, USFWS, and U.S. Forest Service databases resulted in one documented ARTO location, 8.5 miles to the west of the BSA, in Cottonwood Creek where it intersects with Buckman Springs Road, within Cleveland National Forest.

A focused habitat assessment of the entire Project site was conducted on April 14, 2010, by AECOM biologists Michael Anguiano and Matt Kedziora. These biologists reviewed aerial photos to identify riparian areas with potentially suitable arroyo toad habitat. The riparian areas within the BSA were characterized based on presence of predominately sandy substrates in the channel, flat sandy terraces adjacent to the channel (upland habitat), and a watercourse of braided channels. Water was present within some stream channels; however, characterization of habitat was not contingent on the amount of water present in the channel. After field verification of these potential areas identified during the aerial photo review, biologists determined that there was 0.42 acre of potential ARTO habitat along Part B, Crestwood to Boulevard Transmission Line System Improvement Project (Figure 3). No suitable habitat for the ARTO was found within the BSA for Part A, Manzanita 50-MW Wind Power Generation Project on the Manzanita or Campo Indian Reservations, or Part C, the New Substation on Private Land Project. Appendix A contains a description and photo of the area of suitable habitat found along the transmission line corridor, which was determined to be poor habitat quality. Although there are flat sandy terraces adjacent to the stream (Appendix A), there is little to no sand present in the stream and there is no stream braiding. The streambed is several feet wide and consists of a single channel.

Protocol Surveys

Presence/absence surveys were performed in accordance with the most current guidelines set forth in the USFWS survey protocol for the ARTO (USFWS 1999b). Presence/absence surveys do not require a permit under section 10(a)(1)(A) of the Endangered Species Act of 1973. Protocol ARTO surveys were conducted over six survey sessions, each including 1 day and 1 night survey component. At least 7 days separated each survey session. Surveys occurred from April 25 through June 10, 2010. No “take” of the species occurred during protocol surveys.

Protocol surveys were conducted by AECOM biologists Michael Anguiano, Andrew Fisher, Richard Hermann, Brennan Mulrooney, and Erin Riley. Approximately 0.42 acre is considered potentially suitable ARTO breeding habitat within the Project site (Figure 3). Visual encounter surveys based on the area of known suitable habitat were used to detect ARTO.

During diurnal surveys, pools and still eddies at the water's edge were surveyed for the presence of egg masses or tadpoles. Surveys included walking slowly along suitable habitat edges. Headlamps and flashlights were used during nocturnal surveys to slowly scan the ground within the suitable habitat. All nocturnal surveys were conducted between 1 hour after dusk and midnight, and were conducted when temperature at dusk was 55 degrees Fahrenheit (°F) or greater. Riparian and adjacent upland trails were surveyed at night within the floodplain. Surveyors periodically stopped and remained still and silent for up to approximately 15 minutes to wait for ARTO calling, as per the USFWS protocol.

Results

No federally designated critical habitat for ARTO occurs in the BSA. A summary of survey efforts and field conditions is presented in Table 1. The site was visited 12 times (six sessions, each with day and night survey components); a cumulative total of approximately 5.5 person-hours were spent during the survey period conducting the USFWS protocol surveys. No ARTOs were observed or recorded. Copies of field data sheets are included in Appendix B. Wildlife species observed during the ARTO focused surveys are presented in Appendix C.

Discussion

No ARTO were detected during protocol surveys. The protocol ARTO survey area focused on potentially suitable habitat identified during the habitat assessment. The survey area was limited to Part B, the Crestwood to Boulevard Transmission Line System Improvement Project, and contained low-quality ARTO habitat. Overall, the ARTO habitat is sparse and fragmented by topographical features (e.g., mountains) from known arroyo toad locations. The nearest known documented location of ARTO is within the Cleveland National Forest, approximately 8.5 miles west of the BSA at Cottonwood Creek where it intersects with Buckman Springs Road. The well-documented population of ARTO at Cottonwood Creek was used as a reference site throughout the survey sessions. Cottonwood Creek contains high-quality habitat, with sandy substrates in the channel, flat sandy terrain immediately adjacent to the channel, and a watercourse of braided channels. The reference site contains more components of habitat necessary to support ARTO, such as extensive braiding; large flat and sandy banks and terraces; and frequent shallow, protected pools. Most of these habitat components were minimally represented within the Project survey area. This reference site was visited following each protocol ARTO survey. Adult ARTO were detected at Cottonwood Creek each time the area was visited in 2010 during the protocol survey season, thus verifying that ARTO were active during all six survey sessions and, if present on-site, would have likely been detected.

Table 1
Protocol Arroyo Toad Surveys
Dates, Personnel, Weather Conditions, and Observations

Survey # and Timing	Date	Time	Weather	Personnel	ARTO Observations
1 – Day	4/25/2010	1820–1840	Start: 63°F, 0% clouds, wind 0 miles per hour (mph) End: 63°F, 0% clouds, wind 0 mph	Michael Anguiano, Andrew Fisher, Erin Riley	None
1 – Night	4/25/2010	2210–2230	Temp at dusk: 58°F Start: 53°F, 0% clouds, wind 0 mph End: 53°F, 0% clouds, wind 0 mph	Michael Anguiano, Andrew Fisher, Erin Riley	None
2 – Day	5/6/2010	1530–1545	Start: 72°F, 0% clouds, wind 2–5 mph End: 72°F, 0% clouds, wind 2–5 mph	Michael Anguiano, Andrew Fisher	None
2 – Night	5/6/2010	2032–2049	Temp at dusk: 60°F Start: 54°F, 0% clouds, wind 0 mph End: 54°F, 0% clouds, wind 0 mph	Michael Anguiano, Andrew Fisher	None
3 - Day	5/13/2010	1548–1607	Start: 72°F, 20% clouds, wind 1–5 mph End: 72°F, 20% clouds, wind 1–5 mph	Michael Anguiano	None
3 – Night	5/13/2010	2034–2053	Temp at dusk: 60°F Start: 55°F, 0% clouds, wind 0 mph End: 55°F, 0% clouds, wind 0 mph	Michael Anguiano	None
4 – Day	5/20/2010	1710–1725	Start: 76°F, 0% clouds, wind 1 mph End: 76°F, 0% clouds, wind 1 mph	Andrew Fisher, Richard Hermann	None
4 – Night	5/20/2010	2040–2053	Temp at dusk: 61.1°F Start: 56°F, 0% clouds, wind 0 mph End: 56°F, 0% clouds, wind 0 mph	Andrew Fisher, Richard Hermann	None
5 – Day	6/2/2010	1728–1755	Start: 78°F, 5% clouds, wind 0 mph End: 76°F, 5% clouds, wind 0 mph	Andrew Fisher, Richard Hermann	None
5 – Night	6/2/2010	2050–2105	Temp at dusk: 59°F Start: 55°F, 0% clouds, wind 0 mph End: 50°F, 0% clouds, wind 0 mph	Andrew Fisher, Richard Hermann	None
6 – Day	6/10/2010	1736–1746	Start: 75°F, 0% clouds, wind 4.2 mph End: 75°F, 0% clouds, wind 5 mph	Andrew Fisher, Brennan Mulrooney	None
6 – Night	6/10/2010	2055–2106	Temp at dusk: 55°F Start: 52°F, 0% clouds, wind 3.6 mph End: 52°F, 100% clouds, wind 3.6 mph	Andrew Fisher, Brennan Mulrooney	None

If you have any questions or comments regarding this letter report, please contact me at (619) 233-1454. Thank you.

Sincerely,

Erin Riley
Wildlife Biologist

Attachments: Figure 1 – Regional Map
Figure 2 – Vicinity Map
Figure 3 – Arroyo Toad Survey Area
Appendix A – Habitat Assessment Memo
Appendix B – Field Data Sheets
Appendix C – Wildlife Species Detected During Arroyo Toad Surveys

09080155.02 Manzanita Wind ARTO 30-Day Rpt

Literature Cited

Jennings, M. R., and M. P. Hayes
1994 Amphibian and Reptiles Species of Special Concern in California. California Department of Fish and Game. i + 255 pp.

Sullivan, B. K.
1992 Calling Behavior of the Southwestern Toad (*Bufo microscaphus*). *Herpetologica* 48 (4): 383–389.

Sweet, S. S.
1993 Second Report on the Biology and Status of the Arroyo Toad (*Bufo microscaphus californicus*) on the Los Padres National Forest of Southern California. Report to the United States Department of Agriculture, Forest Service, Los Padres National Forest, Goleta, California. ii + 73 pp.

U.S. Fish and Wildlife Service (USFWS)
1994 Endangered and Threatened Wildlife and Plants; Determination of Endangered Status for the Arroyo Southwestern Toad. Federal Register 59 (241): 64859-64866.

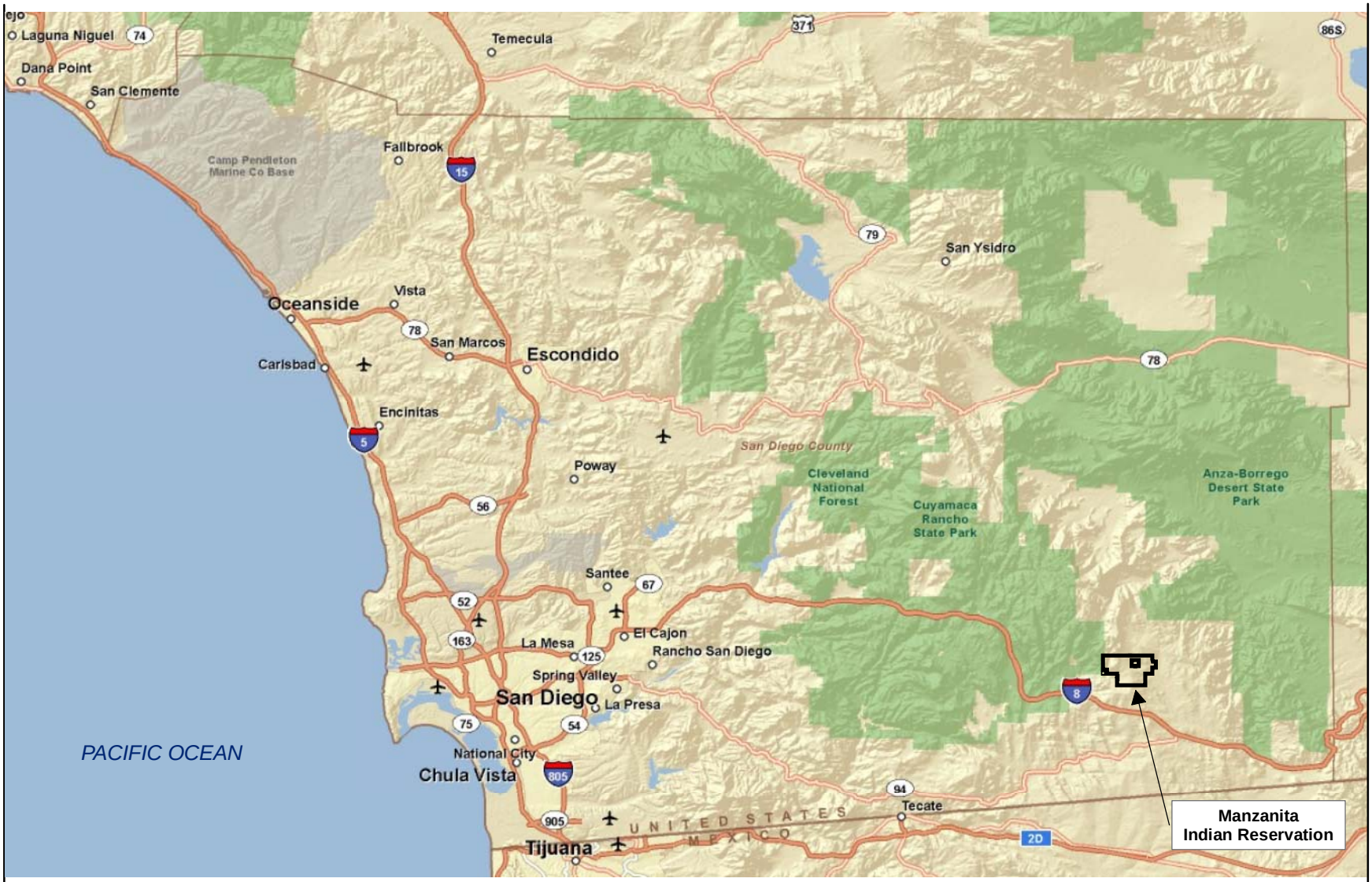
1999a Arroyo Southwestern Toad (*Bufo microscaphus californicus*) Recovery Plan. U.S. Fish and Wildlife Service, Portland, Oregon. vi + 119 pp.

1999b Survey Protocol for the Arroyo Toad. Available at http://www.fws.gov/ventura/speciesinfo/protocols_guidelines/U.S. Fish and Wildlife Service. May 19.

FIGURES

Manzanita Wind Energy Project Arroyo Toad Survey 30-day Report

Path: P:\2009\09080155_Manz_SDGE\06GIS\6.3_Layout\regional_map.mxd, 07/01/10, LeeJ

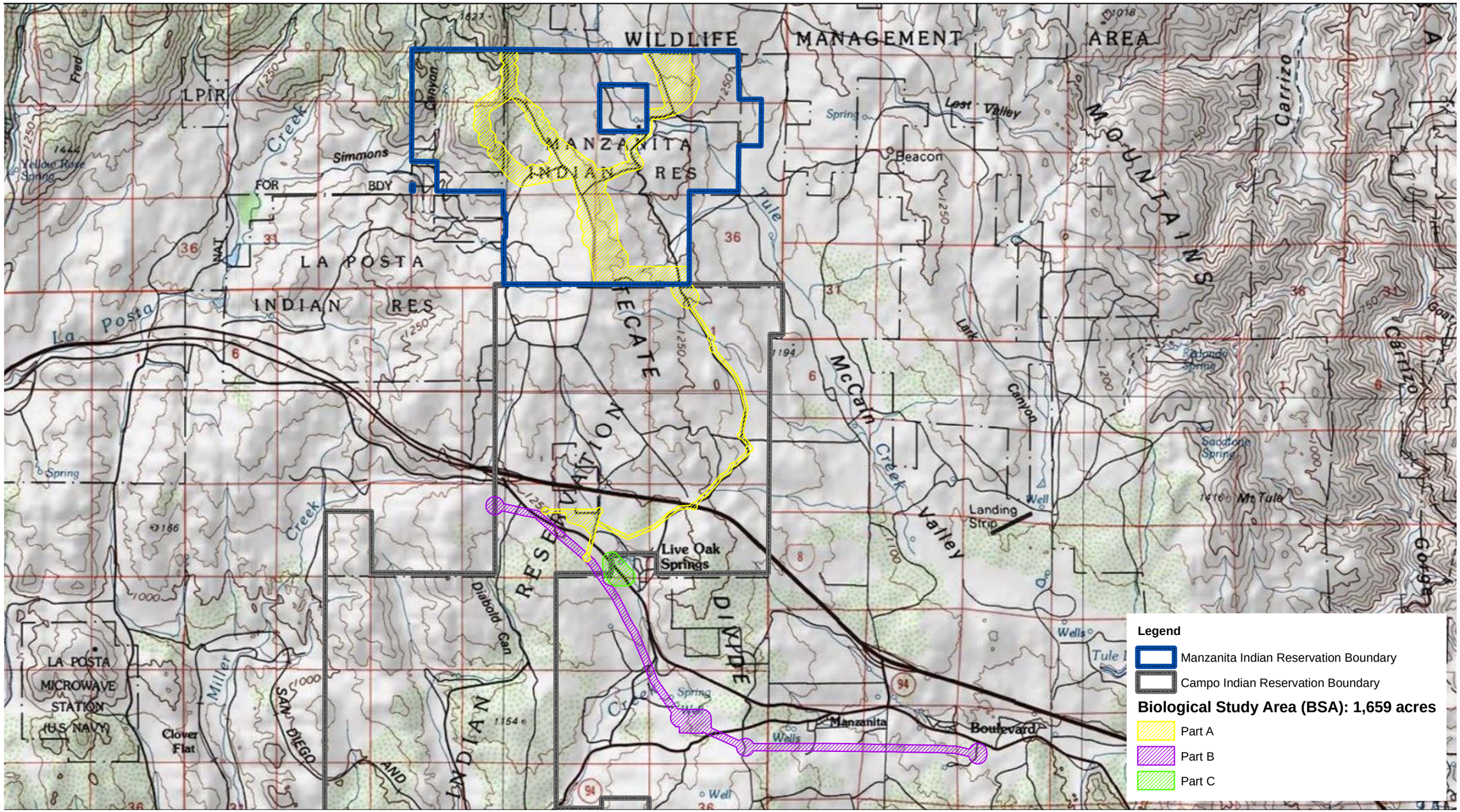


Source: ESRI 2009

12.8 0 12.8 Miles

Scale: 1 = 810,771.7; 1 inch = 12.8 mile(s)

Figure 1
Regional Map



Source: Tierra del Sol 1959; Live Oak Springs 1975; Campo 1959; Cameron Corners 1988

5,500 2,750 0 5,500 Feet

Scale: 1 = 66,000; 1 inch = 5,500 feet

Figure 2
Vicinity Map

Path: P:\2009\09080155_Manz_SDGE\06GIS\6.3_Layout\vicinity.mxd, 07/02/10, ShahS2

Source: DigitalGlobe 2008; Invenergy 2010

4,000 2,000 0 4,000 Feet

Scale: 1 = 48,000; 1 inch = 4,000 feet

Figure 3
Arroyo Toad Survey Area

Path: P:\2009\09080155_Manz_SDGE\06GIS\6.3_Layout\BioAnalysis\ARTO_HabAssmnt_11x17.mxd, 07/09/10, ShahS2

APPENDIX A

HABITAT ASSESSMENT MEMO

AECOM
1420 Kettner Boulevard
Suite 500
San Diego, CA 92101
www.aecom.com

619.233.1454 tel
619.233.0952 fax

Memorandum

To	Beverly Blessent, SDGE	Page	1 of 2
CC			
Subject	Arroyo Toad Habitat Assessment at Manzanita Wind Energy Project		
From	Matt Valerio/Erin Riley, AECOM		
Date	April 19, 2010		

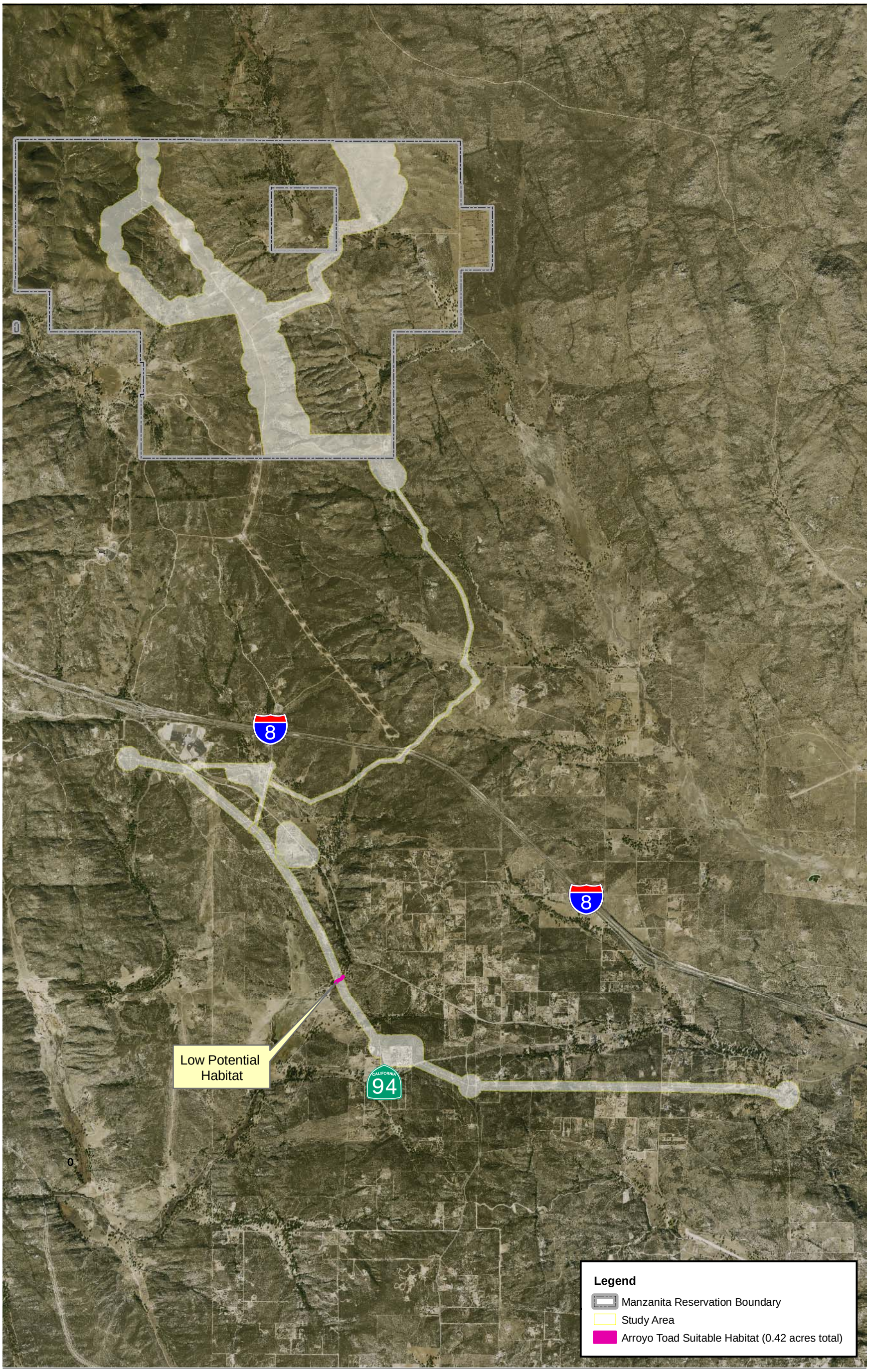
Arroyo toad (*Bufo californicus*) habitat assessments were conducted on April 14, 2010 from approximately 9 AM until 1 PM for the Manzanita Wind Energy Project. The assessments were conducted by AECOM biologists Michael Anguiano and Matt Kedziora. Prior to arriving onsite, biologists reviewed aerial photos to identify areas that may potentially contain arroyo toad habitat. After field verification of these potential areas identified during the aerial photo review, biologists determined that there was one area that contained low suitable arroyo toad habitat (Figure 1). The habitat was characterized based on the following: presence of predominately sandy substrates in the channel; flat sandy terraces immediately adjacent to the channel (upland habitat); and having a watercourse of braided channels. Although water was present within the stream channel, characterization of habitat was not influenced by the amount of water present in the channel.

The suitable habitat present in the study area is considered to be of low habitat quality. Although there are flat sandy terraces adjacent to the stream (Photo 1), there is little to no sand present in the stream and there is no stream braiding. The streambed is several feet wide and consists of a single channel.

Focused protocol arroyo toad surveys will be completed in this riparian areas and the adjacent upland habitat. The arroyo toad survey area includes approximately 0.4 acre of habitat suitable for arroyo toad within the Study Area (Figure 1). This is an area reasonable to survey in 1 day during each of the 6 surveys completed at least 7 days apart.

The arroyo toad habitat present in the study area is sparse and fragmented from known arroyo toad locations. The nearest known location is approximately 8.5 miles to the west of Campo at Cottonwood Creek where it intersects with Buckman Springs Rd.

Photo 1 - Sandy uplands in the low quality arroyo toad habitat at Manzanita.



Source: DigitalGlobe 2008; Invenergy 2010

4,000 2,000 0 4,000 Feet

Scale: 1 = 48,000; 1 inch = 4,000 feet

Figure 1
Arroyo Toad Survey Areas

Path: P:\2009\09080155_Manz_SDGE\06GIS\6.3_Layout\BioAnalysis\ARTO_overview_11x17.mxd, 04/19/10, johnsonaa

APPENDIX B

FIELD DATA SHEETS

ARTO SURVEYS

Dusk T = 58

Observer: MAM Add'l Person: AFE/ERT GPS Unit: _____
Project: Manzanita Survey Section: _____ Map #: _____
Date: 4-25-10 Survey Type: Arroyo Toads Survey 1 of 6
Time Start: 6:20 Time End: 6:30

Start: T: 63 CC: 0 Wind Sp/Dir : 0 Relative Humidity: 30

Map/ GPS #	Time	Species	Lifestage	Location (trail, leaf litter, veg. type, etc)	Distance/ Direction (if not GPS'd at exact point)
Day start 6:20 end 6:30	6:25	W. Toad	tadpole	in water	
		PA Frog	tadpole	in water	
		W. Toad	adult	" "	
		PA Frog	adult	dead in water	
	End	T = 63	CC = 0	wind = 0	Humidity = 30
Night 10:10 10:20	start	T = 53	CC = 0	wind = 0	Humidity 71.8
		PA Frog	adult		
	End	T 53	CC 0	wind = 0	Humidity 71
			No	ARTO	

Comments:

Lifestage = eggmass, tadpole, adult
S. Willow Scrub = SWS, Tamarisk = TAM, Arundo = ARU
Upland = UPL

End: T: _____ CC: _____ Wind Sp/Dir : _____ Relative Humidity: _____

ARTO SURVEYS

Observer: MAN Add'l Person: AFI GPS Unit: GPS-4
Project: Manzanita Survey Section: Map #:
Date: 5-6-10 Survey Type: Arroyo Toads Survey 2 of 6
Time Start: 3:25pm Time End: 8:50pm

DAY Start: T: 71.5°F CC: 0 Wind Sp/Dir: 2-5E Relative Humidity: 44%

Map/ GPS #	Time	Species	Lifestage	Location (trail, leaf litter, veg. type, etc)	Distance/ Direction (if not GPS'd at exact point)
	1541	Pseudacris regilla	Adult	Calling from water	
End:	T: 71.5°F	CC: 0	Wind Sp./Dir: 2-5E	Humidity: 44%	
Night:	Start:	T: 54°F	CC: 0	Wind: 0	Humidity 77%
	2035	Pseudacris regilla			Start Time: 8:32pm
	2050	Bufo boreas			End Time: 8:54pm
	End:	T: 54°F	CC: 0	Wind: 0	Humidity: 77%

Comments: Vegetation is quickly filling in creek and covering up areas of slow moving water.
* Temp at Dusk was 60°F

Lifestage = eggmass, tadpole, adult
S. Willow Scrub = SWS, Tamarisk = TAM, Arundo = ARU
Upland = UPL

End: T: _____ CC: _____ Wind Sp/Dir: _____ Relative Humidity: _____

ARTO SURVEYS

Observer: MAN Add'l Person: _____ GPS Unit: _____
Project: Mountains Survey Section: _____ Map #: _____
Date: 5-13-16 Survey Type: Arroyo Toads Survey 3 of 6
Time Start: 3:43 Time End: 4:07

Day Start: T: 72 CC: 20 Wind Sp/Dir : 1-5 Relative Humidity: 41

Map/ GPS #	Time	Species	Lifestage	Location (trail, leaf litter, veg. type, etc)	Distance/ Direction (if not GPS'd at exact point)
		~~Arah~~	No	Speak	
End: T	72 cc	20	wind: 1-5	Hum: 41	
Night	T: 55	cc:	0 wind: 0	Hum: 63	Start 8:34
		Pacific Tree Frog	Adult	Calling chorus	
	T: ~~55~~ 55	cc:	0 wind:	0 Hum: ~~63~~ 63	End: ~~8:52~~ 8:53

Dusk Temp 60

Comments:

No ARTO

Lifestage = eggmass, tadpole, adult
S. Willow Scrub = SWS, Tamarisk = TAM, Arundo = ARU
Upland = UPL

End: T: _____ CC: _____ Wind Sp/Dir : _____ Relative Humidity: _____

ARTO SURVEYS

Survey 4 & 6

Recorder: AFI/Richard H. Project: Manzanita Survey Section: _____

Date: 5-20-2010 Survey Type: Arroyo Toad Map #: _____

Map/ GPS #	Time	Species	Lifestage	Location (trail, leaf litter, veg. type, etc)	Distance/ Direction (if not GPS'd at exact point)
Day: START:	1710	1.1avg/3.8max		76°F ; 39% humidity	Water still flowing
		Pseudacris regilla	tadpoles		0% CC
		Bufo boreas	tadpoles		
END:	1725	1.1avg/3.8max		W 76°F ; 39% humidity	0% C.C.
Night:					
START:	2040	0avg./1.0max		W 56.4°F. 73.6% humidity	0% C.C.
		Pseudacris regilla	vocalizing	in creek/near bank	
END:	2053	0avg./1.0max		W 56.4°F 73.6% humidity	0% C.C.

Comments:

Dusk: 1940 7.8Avg mph / 11.1max mph W
61.1°F 60.3% humidity

End: T: _____ CC: _____ Wind Sp/Dir : _____ Relative Humidity: _____

ARTO SURVEYS

Observer: AFT Add'l Person: Richard N. GPS Unit: GTF 4
Project: MANZANITA Survey Section: _____ Map #: _____
Date: 6-1-10 Survey Type: Arroyo Toads Survey 5 of 6
Time Start: 17:28 Time End: 17:55

DAY! Start: T: 77.5 CC: Ø Wind Sp/Dir: 1.3 WSW Relative Humidity: 30.4 %

Map/ GPS #	Time	Species	Lifestage	Location (trail, leaf litter, veg. type, etc)	Distance/ Direction (if not GPS'd at exact point)
	17:28	Bubo	tadpole	in stream	
		Hyla	tadpole	in stream	
~~Arto~~					
Day End Temp 76.1	17:55	F	Ø %CC	2.3 mph	31.7 % Humidity
Night Start	Temp: 55.2 F 2050		5 % CC	Ø mph	75 % Humidity
			no toads ~~or tadpoles~~		detected, very quiet
Night End Temp:	55 F 2105		5 % CC	Ø mph	75 % Humidity

Comments:
Dusk 4 mph W 59 % CC 58.6 F 65.7 % Humidity

Lifestage = eggmass, tadpole, adult
S. Willow Scrub = SWS; Tamarisk = TAM; Arundo = ARU
Upland = UPL

~~Night~~ End: T: _____ CC: _____ Wind Sp/Dir: _____ Relative Humidity: _____

ARTO SURVEYS

Observer: A Fisher Add'l Person: Brennan M. GPS Unit: 4
Project: MANZANITA Survey Section: MANZ-T-Line Map #:
Date: 6-10-2010 Survey Type: Arroyo Toads Survey 6 of 6
Time Start: 1733 Time End: 2106

DAY Start: T: 75.4°F CC: 0 Wind Sp/Dir: 4.2 W Relative Humidity: 10.2%

Map/ GPS #	Time	Species	Lifestage	Location (trail, leaf litter, veg. type, etc)	Distance/ Direction (if not GPS'd at exact point)
		BUFO	Tadpoles	in stream	Stream covered in
					water cress.
DAY END: 75.4°F		0% CC	5.0	Wind W	10.2% Humidity
1746					
NIGHT START: 52.2°F		100% CC		3.6 wind W	94% Hum
2055 time		HYRE	Adult	Calling	
		HYRE	tadpoles	in stream	
END:	52.2°F	100% CC		3.6 wind W	94.1 Hum
2106					
				NO ARTO Detected	

Comments:

Dusk: 7:55pm 8.4 mph W 100% CC
54.5°F 89.6% Humidity

Lifestage = eggmass, tadpole, adult
S. Willow Scrub = SWS, Tamarisk = TAM, Arundo = ARU
Upland = UPL

End: T: _____ CC: _____ Wind Sp/Dir: _____ Relative Humidity: _____

APPENDIX C

WILDLIFE SPECIES DETECTED DURING ARROYO TOAD SURVEYS

APPENDIX C

Wildlife Species Detected during Arroyo Toad Surveys

Scientific Names	Common Names
Amphibians	
Order Anura	Frogs and Toads
Family Bufonidae	
Anaxyrus (Bufo) boreas	western toad
Family Hylidae	
Pseudacris regilla	Pacific chorus frog