

LOS ANGELES COUNTY SOFT BOTTOM CHANNELS
2003 FOCUSED SURVEY RESULTS

2003
Lanier
Spec

Prepared for:

County of Los Angeles
Department of Public Works
900 S. Fremont Avenue, 11th Floor
Alhambra, CA 91803

Contact: Carrie Inciong, P.E.

Prepared by:

BonTerra Consulting
151 Kalmus Drive, Suite E-200
Costa Mesa, CA 92626
(714) 444-9199

Contact: Thomas E. Smith, Jr., AICP
Principal
and
Amber Oneal
Project Manager/Ecologist

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EXECUTIVE SUMMARY/RECOMMENDATIONS

The following summarizes the results of the 2003 focused survey results and provides recommendations for the Los Angeles County soft-bottom channel reaches. A summary of the 2003 focused survey results is provided in Table ES-1, and a summary of the 2002 focused survey results is provided in Table ES-2.

FISH

Santa Ana Sucker

The Santa Ana sucker has potential to occur in Reaches #12, 39, 80, and 82 when water is present. During Summer 2003, water was present in Reaches #12, 39, 80, and 82. All of these reaches were seined. The seining did not detect the presence of the Santa Ana sucker.

Although the surveys in these reaches were negative this year, the Santa Ana sucker is known to occur in the vicinity and could occur in these reaches in subsequent years. Therefore, it is recommended that during the pre-clearing surveys, the biologist should note whether there is water in these reaches. If sufficient water exists, then pre-construction surveys (i.e., seining) for this species should be conducted by a qualified fish specialist. If the Santa Ana sucker is determined to be absent from the reach, then clearing can proceed as scheduled. If the Santa Ana sucker is determined to be present in the reach, then it is recommended that the reach should not be cleared that year to avoid all impacts on this species. If this is not possible, a 10-foot buffer of vegetation should be left adjacent to each side of the active channel. A 10-foot strip of vegetation adjacent to each side of the remaining vegetation area should be cleared by hand. Outside of this area, mechanized maintenance could be used. This approach should minimize impacts on the fish in the active channel by leaving vegetation to serve as refugia, to continue to shade the water so that the temperature of the water is not changed significantly, and by minimizing turbidity in the stream from vegetation removal. A biological monitor should be present during the clearing.

The timing of the channel maintenance can be considered a minimization at all sites. The Department performs its maintenance activities in late summer/early fall during low water. This timing minimizes potential impacts to habitat by performing maintenance when many areas will be dry. Furthermore, maintenance is performed outside the primary reproductive season of the Santa Ana sucker, which reproduces from late March through June.

Although the Santa Ana sucker is expected to be absent in most years, it is recommended that the Department obtain take authorization so that if it is present in subsequent years, no further permitting would be required.

Unarmored Three-spine Stickleback

The unarmored three-spine stickleback has potential to occur in Reaches #47, 55, 56, 58-62, 66, 67, 69, 70, 71, 80, 82, 86, and 87 when water is present. During Summer 2003, Reaches #47, 55, 56, 58, 59, 62, 66, and 69 were found to be dry. Water was present in Reaches #60, 61, 67, 70, 71, 75, 80, 82, 86, and 87. All of the reaches with water were seined. The seining did not detect the presence of the unarmored three-spine stickleback.

Although the surveys in these reaches were negative this year, the unarmored three-spine stickleback is known to occur in the vicinity and could occur in these reaches in subsequent years. Therefore, it is recommended that during the pre-clearing surveys, the biologist should note whether there is water in these reaches. If sufficient water exists, then pre-construction surveys

(i.e., seining) for this species should be conducted by a qualified fish specialist. If the unarmored three-spine stickleback is determined to be absent from the reach, then clearing can proceed as scheduled. If the unarmored three-spine stickleback is determined to be present in the reach, then it is recommended that the reach should not be cleared that year to avoid all impacts on this species. If this is not possible, a 10-foot buffer of vegetation should be left adjacent to each side of the active channel. A 10-foot strip of vegetation adjacent to each side of the remaining vegetation area should be cleared by hand. Outside of this area, mechanized maintenance could be used. This approach should minimize impacts on the fish in the active channel by leaving vegetation to serve as refugia, to continue to shade the water so that the temperature of the water is not changed significantly, and by minimizing turbidity in the stream from vegetation removal. A biological monitor should be present during the clearing.

The timing of the channel maintenance can be considered a minimization at all sites. The Department performs its maintenance activities in late summer/early fall during low water. This timing minimizes potential impacts to habitat by performing maintenance when many areas will be dry. Furthermore, maintenance is performed outside the primary reproductive season of the sensitive fish species. The unarmored three-spine stickleback may breed at low levels throughout the year in some years, but its primary reproductive season is April through July.

Although the unarmored three-spine stickleback is expected to be absent in most years, it is recommended that the Department obtain take authorization so that if it is present in subsequent years, no further permitting would be required.

AMPHIBIANS

Arroyo Toad

The arroyo toad has potential to occur in Reaches #71, 75, 79, 80, 82, 86, and 87. Habitat assessments conducted in 2002 found that these reaches provide suitable breeding habitat during the spring season for the arroyo toad when water is present. Portions of these reaches also provide suitable aestivating and foraging habitat. Focused surveys following the USFWS protocol for this species were conducted in these reaches in 2003. The arroyo toad was observed in Reach #82, and is therefore also considered present in any sites within 0.62 mile per the protocol for this species (Reaches #71 and 80). The arroyo toad is considered absent from Reaches #75, 79, 86, and 87 at this time.

The arroyo toad was observed outside of the area that is cleared by the Department under the maintenance plan. The arroyo toad is not typically active during the time period when the maintenance occurs (September to November), with the exception of a limited number of juveniles, which stay near the active channel and increased activity of some adults after storms (Ramirez, pers. comm. 2003). Therefore, the maintenance activity would not be expected to impact the arroyo toad's foraging or breeding activities. The arroyo toad would not be expected to aestivate in the maintenance area because the area that is maintained has compacted soil. Therefore, the maintenance activities would not be expected to affect aestivation of this species. It is recommended that a biological monitor with experience with this species be present during the clearing to survey for active juveniles that may be present near the clearing area in Reach #71, 80 and 82. If any toads are observed, the toads should be captured and relocated to suitable habitat either upstream or downstream of the clearing activity.

BIRDS

Least Bell's Vireo and Southwestern Willow Flycatcher

The least Bell's vireo and southwestern willow flycatcher have potential to occur in Reaches #40b, 43a, 43b, a portion of 44, a portion of 75, 79, 80, and 82. Focused surveys following the USFWS protocol for these species were conducted in these reaches. A solitary male least Bell's vireo was observed in Reach #43a. Survey results in all other reaches were negative in 2003, even though some of the reaches were previously occupied in 2002. No southwestern willow flycatchers were observed in 2003, and none were observed during the previous surveys in 2002.

Both the least Bell's vireo and southwestern willow flycatcher are migratory species that are only present in southern California from approximately March through early September. All of the clearing work occurs outside of this period, therefore, there are no direct or indirect impacts on these species. In addition, the yearly clearing keeps the vegetation in the reaches low and shrubby, which is preferred for nesting by these species. Therefore, continuing to follow the existing maintenance plan would have no additional impact on these species.

It may be desirable to offer to do periodic surveys to collect data on the number of least Bell vireo that occur within the reaches. We recommend a protocol survey for least Bell's vireo for the eight reaches (or portions of reaches) listed above. This protocol consists of eight survey visits conducted between April 10 and July 31 with at least 10 days between each visit. We recommend that the Department conduct these surveys every other year.

No further surveys are recommended for the southwestern willow flycatcher because this species was not present in any of the reaches in 2002 or 2003. In addition, the southwestern willow flycatcher population is recovering very slowly and it is not expected to expand into any of the reaches in the near future.

PLANTS

Slender-horned Spineflower (*Dodecahema leptoceras*)

Suitable habitat for the slender-horned spineflower is present in Reaches #12, 13, 14, 19, 39, 45, 47, 55, 56, 58-62, 66, 75, 77-79, 88, 89, 92, and a new reach in Violin Canyon. Focused surveys were conducted for this species in each of these reaches. No slender-horned spineflower was observed in 2003. Therefore, it is considered to be absent from the reaches listed above. As long as the existing maintenance plan and associated access routes are followed, no additional surveys are recommended.

1.0 INTRODUCTION

In 2002, focused biological surveys and habitat assessments were conducted in 54 of the original and one new earth-bottom channels maintained by the Los Angeles County Department of Public Works (LACDPW)¹ to provide baseline information on occurrence or potential occurrence of Threatened or Endangered plant and wildlife species. Following surveys of the 54 channels in 2002, 22 reaches were determined to have no suitable habitat for Threatened or Endangered species, or species were determined to be absent and not expected to occur in the future, assuming habitat conditions would be similar to current conditions. However, due to the drought conditions of 2002, focused surveys could not be conducted for some species. Therefore, habitat assessments were conducted with recommendations for focused surveys in 2003, assuming appropriate weather conditions. Focused biological surveys were conducted between March and August 2003 in 35 of the earth-bottom channels, including the new reach, maintained by the LACDPW. The survey information provides baseline data to support regulatory agency permitting of the ongoing maintenance of these channels.

1.1 ENVIRONMENTAL SETTING

1.1.1 Regional Setting

The topography in Los Angeles County is diverse, containing coastline, flatlands, mountains, and desert within approximately 4,000 square miles. Elevations within the County range from sea level to over 10,000 feet above mean sea level (msl). The climate ranges from mild near the coast, to severe in the high mountains and in the desert. This variation in environments has created a unique and diverse collection of biological resources (England and Nelson 1976).

The San Gabriel Mountains are a prominent topographic feature that include a portion of the headwaters of the Santa Clara, Los Angeles, Rio Hondo, and San Gabriel rivers, and is the source of streams that drain into the Antelope and Fremont valleys. The San Gabriel Mountains rise 7,000 feet above msl from the Antelope and Santa Clarita valleys, and exert considerable influence on the climate, hydrology, and ecology of the lands around them. The San Andreas and other numerous faults have fractured the mountains so that they erode at a rapid rate. Hence, the stream basins along the northern slope are generally characterized by steep headwaters and sloping alluvial beds on the adjacent flatlands (San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy [RMC] and the Santa Monica Mountains Conservancy [SMMC] 2002).

The Santa Monica Mountains are also a prominent topographic feature and include the headwaters of Malibu Creek and Topanga Creek, and is the source of streams that drain the Malibu Coast. The Santa Monica Mountains are up to 10 miles wide and reach an elevation of 3,100 feet above msl at Sandstone Peak. The Santa Monica Mountains have a complex structure because they have been uplifted then eroded several times over the past 200 million years (Dale 1986; England and Nelson 1976).

There are four major rivers in Los Angeles County: the Los Angeles River is approximately 51 miles long (main stem) and drains 830 square miles; the Rio Hondo River is approximately 20 miles long (main stem) and drains 125 square miles; the San Gabriel River is approximately 59 miles long (main stem) and drains 350 square miles; and the Santa Clara River is approximately 75 miles long (main stem) and drains 1,616 square miles (Los Angeles Almanac 2002). Numerous other streams also occur in Los Angeles County. Surface water in streams and rivers is generally only

¹ This report discusses a total of 55 separate reaches because Reaches #40 and 43 each divided into two separate reaches for the purpose of the surveys only.

present during the winter and spring, in particular after storm events. Many storms do not generate sufficient runoff to sustain surface flow in all streams. In some areas, flows are supplemented with reclaimed water and agricultural and urban runoff. Particularly intense storms can result in flash floods or debris flows which can carry large amounts of sediment, rocks, and debris to be deposited in the valley below (RMC and SMMC 2002).

The Los Angeles River system has been extensively channelized to provide flood protection as it passes through several cities on its way to the Pacific Ocean. The Los Angeles River tributaries include Bell Creek, Calabasas Creek, Burbank Western Channel, Pacoima Wash, Tujunga Wash, Verdugo Wash, Arroyo Seco, Compton Creek, and the Rio Hondo River (Target Science 2002; LACDPW 2002). There are now over 400 miles of concrete-lined tributaries that feed into the main channel (Target Science 2002). Approximately 47.9 miles of the 51 mile river is concrete-lined. The three stretches where the river is not lined included the Sepulveda Flood Control Basin through the Glendale Narrows, and south of Willow Street in Long Beach (LACDPW 2002). Reclaimed water enters the Los Angeles River at the Sepulveda Basin where the Department of Water and Power releases as much as 75 million gallons of reclaimed water daily from the Donald C. Tillman Water Reclamation Plant. The Los Angeles River now has a year-round supply of water, when normally the summer and fall would be dry (Target Science 2002).

The Malibu Creek watershed is a system of independent streams that drain approximately 109 square miles in northwest Los Angeles County from the Santa Monica Mountains to the Pacific Ocean. These include Las Virgenes, Triunfo, and Cold Creeks, as well as other small streams that flow from the Santa Monica Mountains to Santa Monica Bay. These creeks flow through the cities of Agoura Hills, Calabasas, Malibu, Thousand Oaks, Westlake Village, unincorporated Los Angeles County, and Ventura County (LACDPW 2002).

The San Gabriel River begins within the Angeles National Forest and also flows through several cities on its way to the Pacific Ocean. The San Gabriel River tributaries include Walnut Creek, San Jose Creek, Coyote Creek, and numerous storm drains (LACDPW 2002). The headwaters of the San Gabriel River begin just north of Pasadena and northwest of Mount Wilson, where they flow through a steep canyon to Cogswell Reservoir. The west fork of the river then merges with the east fork and flows into the San Gabriel Reservoir. Below the reservoir, the east fork converges with the main stem of the San Gabriel River and flows through San Gabriel Canyon to Morris Reservoir. Below Morris Reservoir, the river flows through cities from Azusa to Seal Beach and empties into Long Beach Harbor (CalTrout 2002).

The Santa Clara River is unique in being the only major unchannelized river draining the San Gabriel Mountains. The Santa Clara River is fed by five major tributaries: Sand Canyon, Mint Canyon, Bouquet Canyon, South Fork, and San Francisquito Canyon (LACDPW 2002). Further west, Castaic, Piru, Sespe, and Santa Paula creeks join the river (RMC and SMMC 2002). The headwaters of the Santa Clara River are located near Acton, and the river runs approximately 100 miles to its outlet in the City of Ventura, Ventura County. Most development adjacent to the river is located in or near the City of Santa Clarita (LACDPW 2002).

The Antelope Valley watershed is a system of independent streams that drain approximately 1,200 square miles in north Los Angeles County from the San Gabriel Mountains and Kern County into the valley floor. These include Little Rock, Big Rock, and Mill creeks, as well as other small streams that flow from the San Gabriels into the Antelope Valley. Due to the surrounding topography, these streams do not drain into the sea, but into dry lakebeds on the valley floor, with most surface flows infiltrating into groundwater basins or evaporating (RMC and SMMC 2002; LACDPW 2002). Because the valley lacks defined natural channels outside the foothills, it is subject to unpredictable sheet flow patterns (LACDPW 2002). The portion of the Antelope Valley

watershed within Los Angeles County includes the cities of Lancaster and Palmdale, with sparsely developed scattered clusters of development outside these cities (LACDPW 2002). None of the reaches discussed in this report are located in the Antelope Valley Watershed.

Two other watersheds present in Los Angeles County, but not within the study area for the proposed project, are the Ballona Creek and Dominguez watersheds (LACDPW 2002).

1.1.2 Local Setting

The LACDPW currently maintains 95 earth-bottom channels located within the boundaries of the Los Angeles County Flood Control District, consisting of 885.58 acres that require management. One new channel (upper Violin Canyon) was added in 2002. These channels are located within the Los Angeles, San Gabriel, Santa Clara, and Malibu watersheds. The 96 channel reaches are located within five regions of Los Angeles County:

- Los Angeles River/San Pedro Bay: 29 channels
- Santa Monica Bay: 11 channels
- San Gabriel River: 7 channels
- Santa Clara River: 48 channels
- Antelope Valley: 1 channel

These reaches are located within unincorporated Los Angeles County and the following cities:

Agoura Hills	City of Industry
Azusa	Irwindale
Baldwin Park	La Cañada Flintridge
Calabasas	Long Beach
Carson	Los Angeles
Compton	Palmdale
Covina	Pico Rivera
Downey	Santa Clarita
El Monte	Santa Fe Springs
Glendale	

Within the 885.58 acres of earth-bottom flood control channels, vegetated areas encompassed 205.27 acres in 1997. Of the 205.27 acres, there was an estimated 105.32 acres of riparian vegetation, 63.4 acres of mule fat vegetation, and 36.55 acres of scrub vegetation (BonTerra Consulting 1999). The acreages noted above do not include the vegetation in the upper Violin Canyon channel that was added this year, nor channels that subsequently were converted to concrete-lined channels.

1.2 PROPOSED PROJECT

1.2.1 Background

To effectively control flood waters from the mountainous watersheds surrounding the Los Angeles basin, the U.S. Army Corps of Engineers (ACOE) and the Los Angeles County Flood Control District constructed concrete-bottom and earth-bottom channels leading from dams and debris basins located along the frontal slopes of the San Gabriel, Santa Monica, Verdugo, and Santa Susanna mountains. These channels, as a system, provide flood protection for Los Angeles County. Construction began in the 1930s.

Channel maintenance activities have been performed regularly within the Flood Control District channels for over 50 years. Originally constructed by the ACOE, upon completion, most of the channel facilities were transferred to Los Angeles County Flood Control District for cyclic maintenance. The ACOE's maintenance guidelines require that "debris, objectionable growth, shoals, and waste materials must not encroach on the invert. Excess materials that will not move readily with low flows must be removed. Measures must be taken to control objectionable growth by approved chemical or mechanical means (ACOE 1996).

The County formerly maintained channels clear of any vegetation, as required under 33 CFR Section 208.10, until the California Department of Fish and Game (CDFG) began requiring the County to clear vegetation on alternating sides of the channels each year. The ACOE allowed limited clearing to occur between 1993 and 1995. Anticipated heavy rains during the 1997/1998 storm season caused by El Niño conditions resulted in a statewide need to remove vegetation and sediment from earth-bottom channels to restore their flood carrying capacity. The LACDPW obtained all necessary permits to conduct this work in the 1997/1998 storm season and has continued the ongoing maintenance through Fall 2002 as approved by the permits.

1.2.2 Project Description

Vegetative growth in a channel system drastically reduces channel capacity. All earth-bottom channels were designed and constructed as relatively clean, unvegetated channels. As vegetation grows more dense, the roughness of the channel increases and the velocity of flows decrease, corresponding to a loss in carrying capacity of the channel. The vegetation also traps some of the sediments being transported by flood flows which, when deposited, further reduce channel capacity. Studies have shown that the decreased velocity and reduced flow area from increased vegetation and sediment in the channels, resulting in a loss of carrying capacity in the channels, could cause flood flows to escape the channel systems and impact adjacent properties (LACDPW May 1996).

Vegetation can also affect the structural integrity of bridges during a major storm event. Vegetation slows flood flows creating a backwater effect and increasing water surface elevations upstream. Bridges are not normally designed to withstand the forces that result from significantly increased flood water elevations. Additionally, increased flood depths upstream can result in flooding of adjacent properties and erosion of channel banks.

The LACDPW proposes to continue annual vegetation clearing in channels and perform minor grading for sediment removal, as needed, consistent with the clearing limits established by the maintenance plan. This ongoing program is necessary to restore and maintain the design capacities of the channels, ensuring the proper functioning of these facilities located within the Los Angeles County Flood Control District boundaries.

Within each reach, the LACDPW proposes to clear the same areas and acreage that have been cleared annually since 1997. Biological impacts to these channel reaches associated with the initial clearing of vegetation for maintenance activities were previously mitigated through maintaining and enhancing 62.7 acres at the Big Tujunga Wash Mitigation Bank site.

Channel clearing activities are performed primarily by mechanical means, using heavy equipment (such as trucks, bulldozers, dump trucks, and loaders), as well as other specialized equipment designed for this type of work. Hand clearing is conducted in areas where mechanical equipment cannot be used or where important biological resources exist nearby. Regulatory-approved herbicides would be applied, as necessary, to eradicate non-native vegetation including, but not limited to, giant reed (*Arundo donax*) and castor bean (*Ricinus communis*).

The channel clearing activities are performed under an existing Maintenance Plan approved by the ACOE and modified by the California Department of Fish and Game (CDFG) under the Streambed Alteration Agreement between CDFG and the LACDPW. BonTerra Consulting has reviewed the Maintenance Plan in connection with this report. In addition, BonTerra Consulting has extensive knowledge of channel clearing activities in specific reaches, having worked with the LACDPW since 1997 to provide biological monitoring of flood control channel maintenance work, pre-clearing and post-clearing photos have been taken every year to document the biological resources in these reaches in compliance with the mitigation requirements of existing permits from ACOE and CDFG.

1.3 SPECIAL STATUS SPECIES BACKGROUND

In discussions with the LACDPW concerning reissuance of its ACOE 404 permit, the USFWS recommended that surveys be conducted for the following species: Santa Ana sucker (*Catostomus santaanae*), unarmored three-spine stickleback (*Gasterosteus aculeatus williamsoni*), arroyo toad (*Bufo californicus*), California red-legged frog (*Rana aurora draytonii*), southwestern willow flycatcher (*Empidonax traillii eximius*), least Bell's vireo (*Vireo belli pusillus*), Nevin's barberry (*Berberis [Mahonia] nevinii*), and slender-horned spinyflower (*Dodecahema leptoceras*). During the 2002 surveys, two of these species, the red-legged frog and the Nevin's barberry, were determined to have no potential to occur in the channels (BonTerra Consulting 2002). Background on each of the remaining six species is provided below. Table 1.3 lists the species addressed in the biological surveys and their listing status.

1.3.1 Santa Ana Sucker

The Santa Ana sucker was listed as federally Threatened on April 12, 2000. This species is also a California Species of Special Concern. The biology of the Santa Ana sucker is poorly documented. The only substantial study on the life history of this species was done on the lowland population in the Santa Clara River (Greenfield et al 1970). Studies are underway which will improve the understanding of this species, but much of the current knowledge is based on the anecdotal observations of a few biologists that have spent many years studying the fishes of southern California.

Santa Ana suckers are small catostomids with adults commonly less than 6.9 inches standard length. Their gross morphology is generally similar to that of mountain suckers (*C. platyrhynchus*) and they possess notches at the junctions of the lower and upper lips as do mountain suckers. Large papillae are found on the anterior of the lower lip but papillae are poorly developed on the upper lip. The jaws have cartilaginous scraping edges inside the lips. They possess a short dorsal fin and a deep caudal peduncle. The fish are silver ventrally while the dorsal surface is darker with irregular blotching. The degree of dorsal darkening and blotching is variable. Breeding males develop breeding tubercles over most of the body, but the tubercles are most dense on the caudal and anal fins and the caudal peduncle. Reproductive females possess tubercles only on the caudal fin and peduncle (Moyle, 1976).

TABLE 1.3
STATUS OF SPECIES ADDRESSED

Species	Status		CNPS
	USFWS	CDFG	
Fish			
<i>Catostomus santaanae</i> Santa Ana sucker	FT	SSC	N/A
<i>Gasterosteus aculeatus williamsoni</i> unarmored three-spine stickleback	FE	SE/FP	N/A
Amphibians			
<i>Bufo californicus</i> arroyo toad	FE	SSC	N/A
Birds			
<i>Vireo bellii pusillus</i> least Bell's vireo	FE	SE	N/A
<i>Empidonax traillii extimus</i> southwestern willow flycatcher	FE	SE*	N/A
Plants			
<i>Dodecanema leptoceras</i> slender-horned spineflower	FE	SE	List 1B
Status Definitions:			
<u>USFWS</u>			
FE	Federally Endangered		
FT	Federally Threatened		
<u>CDFG</u>			
SE	State Endangered		
SSC	State Species of Special Concern		
FP	Fully Protected		
P	Protected		
<u>California Native Plant Society (CNPS)</u>			
CNPS List 1B – A species that is considered Rare, Threatened, or Endangered throughout its range.			
* The state listing included all subspecies of willow flycatcher that breed in California.			

The Santa Ana sucker is found in small to medium sized streams, usually less than 23 feet in width, with depths ranging from less than an inch to over 3.3 feet (Smith 1966; Deinstadt et al. 1990). Flow must be present but it can range from slight to swift. The native streams were all subject to severe periodic flooding, thus suckers prefer clear water but can tolerate seasonal turbidity. The preferred substrates for adults are gravel and cobble but may also include sand. Although the exact habitat of the juveniles has not been systematically documented, field observations in the Santa Clara River indicate that they are commonly found over sandy substrate, and in shallower water than the adults if a choice of such habitats is available (Baskin and Haglund, unpubl. data). During surveys in the San Gabriel River, sucker fry were observed in very shallow water (less than two inches) at the very edge of streams (Baskin and Haglund, unpubl. data). This is a microhabitat commonly exploited by very young stream fishes, where they are less vulnerable to larger piscivorous predators, and possibly where exposure to slightly elevated water temperatures can accelerate development. The Santa Ana sucker is associated with algae but not macrophytes. Although the sucker seems to be quite generalized in its habitat requirements, they appear intolerant of highly polluted or highly modified streams.

Spawning in this species occurs from April until early July, but peaks in late May or early June in the Santa Clara River (Greenfield et al 1970). The eggs are demersal and are spawned over

gravel. Fecundity is high for such a small sucker species, ranging from 4,423 eggs in a three inch standard length female to 16,151 eggs in a 8.2 inch standard length female. The species is more fecund than most other catostomids. The Santa Ana sucker is relatively short-lived, few individuals survive beyond their second year and none beyond the third year in the Santa Clara River. They are reproductively mature in their first year and thus will typically spawn for two years. Data from the West Fork of the San Gabriel River suggest a similar pattern of growth, but the fish in the West Fork live longer. Aging of Santa Ana suckers from the West Fork of the San Gabriel River by the CDFG (Drake and Sasaki 1987) led to the recognition that Santa Ana suckers could reach over four years old in the West Fork. Development of the eggs and larvae is described by Greenfield et al. (1970).

The only substantial life history study done on this species, Greenfield et. al. (1970), found that detritus, algae and diatoms comprised 97 percent of the stomach contents while aquatic insect larvae, fish scales and fish eggs accounted for the remaining three percent. Larger specimens usually had an increased amount of insect material in their stomachs. The herbivorous trophic status of the Santa Ana sucker is substantiated by its long intestine with up to eight coils.

Populations of the Santa Ana sucker exist in all of the drainages within its historic range: Los Angeles River (Big Tujunga), Santa Ana River (lower portion of the drainage) and San Gabriel River (subpopulations in each of the West, North and East forks of the upper San Gabriel River) (Swift et al 1993). In addition, the Santa Ana sucker occurs in the Santa Clara River. This may be an introduced population; however, the conclusion that the Santa Ana sucker is introduced into the Santa Clara River is based entirely on negative evidence. It was absent from incidental field collections in the early part of this century, but it appeared in collections later, no records of an introduction are known. Although the sucker exists within each of the drainages of its historic range, the distribution within each drainage has become significantly reduced.

The USFWS has been ordered by a recent court case to designate critical habitat for the Santa Ana sucker by February 21, 2004. The court case also prevents the USFWS from issuing any Section 7 concurrence or biological opinion that "may affect" the Santa Ana sucker until the final critical habitat is in place (California Trout v. Babbitt 2003).

1.3.2 Unarmored Three-spine Stickleback

The unarmored three-spine stickleback was listed as federally Endangered on October 13, 1970 and was listed as state Endangered in June 1971 (USFWS 1970; CDFG 2003a). This species is also a CDFG Fully Protected species. This scaleless fish is small, typically less than 2.4 inches. Sticklebacks can occur throughout a stream but tend to gather in areas of slow flow or standing water. In fast flowing stream sections they are found in eddies behind obstructions or along the edge of the stream where vegetation slows the flow. As the streams dry, the stickleback retreat to remaining pools until the water levels increase and they can spread throughout the stream again.

During breeding season male sticklebacks develop a distinctive nuptial coloration (red throat, blue sides and a blue eye). Males defend territories adjacent to vegetation where they construct a nest. The nest is constructed by excavating a depression in the substrate, placing a mound of algal strands and other plant material in the depression, and gluing the material together with a sticky kidney secretion. Once formed, the male creates a tunnel in the nest by wriggling his way through the mound. Once the nest has been completed, the male performs an elaborate courtship which entices females to lay their eggs in the nest. Males attract several females to the nest, each of which will lay from 50-300 eggs. After the courtship phase has passed, males defend the eggs and care for them while they develop. One activity during this period is "fanning." "Fanning" males use their pectoral fins to create water currents that flow over the eggs. This activity is apparently

necessary for normal development of the eggs. The eggs take approximately 6-8 days to hatch at 64-68 degrees Fahrenheit. The fry remain in the nest for the first couple days during which time the male continues to guard them (Wootton 1976; Haglund 1981).

Two features of the stickleback's habitat appear to be essential for the survival of the young. First, a slow flow of clear water is necessary for the proper development of the eggs. Any form of pollution or even small amounts of turbidity may interfere with normal development. Second, once the fry emerge, aquatic vegetation must be present along the shoreline to supply cover and abundant microscopic food organisms (Ono et al. 1983).

Based on size-frequency curves, gonadal examination and field observations, there is some reproduction in most months if stream flows remain low. There is however, a peak reproductive time in the spring, beginning in about March. This reproductive peak continues into the early summer then attenuates through late summer and fall. Minimum reproduction occurs in the winter months.

The species apparently lives for only one year. Thus stickleback populations tend to decline in the winter due to natural mortality and low recruitment.

The unarmored three-spine stickleback (*G. a. williamsoni*) was described by Girard in 1854; however, the type locality in the headwaters of the Santa Clara River near Acton was not unequivocally identified until 1960 (Miller 1960). At one time "unplated sticklebacks" were abundant throughout the Los Angeles basin (Culver and Hubbs 1917) but have been extirpated presumably as a result of increased urbanization in the region (e.g., Miller 1961; Irwin and Soltz 1982). The unarmored three-spine stickleback had been extirpated in the Los Angeles and Santa Ana rivers by the early 1930s, whereas it survived in the San Gabriel River into the 1940s but was gone before the end of the decade (Miller 1961). Surveys conducted during the 1980s corroborate the absence of the stickleback from these three drainages (Haglund, unpubl. data; Swift, pers. comm.).

In the Santa Clara River in Los Angeles County, the unarmored three-spine stickleback is found in the Santa Clara River from Soledad Canyon downstream to the Ventura County line wherever there is surface flow. The stickleback is also found in San Francisquito Creek and Bouquet Canyon Creek.

On November 17, 1980, the USFWS published a Proposed Rule to designate critical habitat for the federally Endangered unarmored three-spine stickleback (USFWS 1980). These lands included three zones in Los Angeles County (Del Valle, San Francisquito Canyon, and Soledad Canyon) and one zone in Santa Barbara County (San Antonio Creek). This proposed rule will not be in effect until it is finalized.

1.3.3 Arroyo Toad

The arroyo toad was listed as a federally Endangered species by the USFWS on December 16, 1994, and is considered a California Species of Special Concern (USFWS 1994). This rather uniformly warty, stocky toad has a light-colored stripe across the head that includes the eyelids.

The parotoid glands are oval-shaped, widely separated, and pale toward the front. The underside of the arroyo toad is usually buff-colored and unspotted, and the cranial crests are weak.

Early descriptions of the habitat requirements for the arroyo toad are based on detailed life history studies conducted over a period of years by Sweet (1992, 1993). Much of that work was conducted in the Los Padres National Forest in Santa Barbara County. Subsequent to this work, additional

studies of populations in other portions of the range have resulted in a somewhat broader habitat description (e.g., Griffin et al. 1999, Ramirez 1999, 2000, 2001, 2002a, 2002b, 2002c). It can generally be said that the arroyo toad frequents third order or larger washes, streams, and arroyos in semiarid parts of the southwest. Stream substrates range from sands to small cobble, with sandy banks supporting mule fat (*Baccharis salicifolia*), willows, cottonwoods (*Populus* spp.), or sycamores (*Platanus racemosa*). The arroyo toad breeds both within streams and in small backwater pools that form along the stream margins, usually in relatively shallow water (four inches).

On February 7, 2001, the USFWS published a Final Rule to designate 182,360 acres of land as critical habitat for the federally Endangered arroyo toad. These lands encompass portions of Monterey, Santa Barbara, Ventura, Los Angeles, San Bernardino, Orange, Riverside, and San Diego counties in California. The critical habitat designation would cover not only riparian habitat used by the toad, but also upland areas less than 80 feet in elevation above the adjacent stream and within 0.9 mile from the margins of occupied stream systems. Due to a recent court case, the critical habitat for this species was recently withdrawn because the economic analysis was determined to be inadequate (Building Industry Legal Defense Foundation v. Norton 2003). The revised critical habitat will be issued by July 2004 per the court order.

1.3.4 Least Bell's Vireo

The least Bell's vireo was formerly a common, even locally abundant summer resident of southern California's lowland riparian woodlands (Grinnell and Miller 1944). The substantial population decline of this avian species over the latter half of the twentieth century is attributable to the loss and degradation of riparian habitats and, perhaps more importantly, brood parasitism by the brown-headed cowbird (*Molothrus ater*). As a result, the least Bell's vireo was listed by the CDFG as state Endangered on October 2, 1980, and by the USFWS as federally Endangered on May 2, 1986 (CDFG 2003a; USFWS 1986).

The Bell's vireo is a neotropical migrant that breeds in central and southwestern North America from northern Mexico to southern California, Nevada, and Utah, and east to Louisiana, and north to North Dakota, Wisconsin, and Indiana in the central U.S. (American Ornithologists Union [A.O.U.] 1998). The winter range of this vireo, although not well known, is believed to be the west coast of Central America from southern Sonora south to northwest Nicaragua, including the cape region of Baja California (Brown 1993). Of the four Bell's vireo subspecies, only two breed in California; the least Bell's vireo and the Arizona Bell's vireo (*V. b. arizonae*), which occurs in the Colorado River Valley (Garrett and Dunn 1981, Rosenberg et al. 1991). The least Bell's vireo formerly was considered a common breeder in riparian habitats throughout the Central Valley and other low elevation river systems in California and Baja California, Mexico (Franzreb 1989). Presently, the least Bell's vireo has been eliminated from much of its historical range, including the Central Valley (Franzreb 1989, Brown 1993).

From no breeding birds in Los Angeles County during the 1970s, the least Bell's vireo has been slowly increasing in numbers and breeding locations. In the 1980s, the least Bell's vireo was reported in small numbers from the northwest part of the County with a solitary male in San Francisquito Creek in 1986 and 1987; a pair in the Santa Clara River/Castaic Creek area in 1986, a solitary male in 1987, and four territorial males in 1988 (USFWS unpublished data). Territorial males were detected at new locations in the 1990s, including Whittier Narrows, Big Tujunga, Hansen Dam, and Santa Fe Dam. In summer 2000, a total of at least seven singing least Bell's vireos were reported from Hansen and Santa Fe Dams (McCaskie and Garrett 2000).

Breeding habitat of the least Bell's vireo is primarily riparian habitats dominated by willows with dense understory vegetation. Shrubs such as mule fat and California rose (*Rosa californica*) are often a component of the understory (Goldwasser 1981). The least Bell's vireo is often found in areas that include trees such as willow, sycamore, or cottonwood, particularly where the canopy is within or immediately adjacent to an understory layer of vegetation (Salata 1983). The least Bell's vireo generally nests in early successional stages of riparian habitats, with vireo nest sites frequently located in willows that are between four and ten years of age (RECON 1988, Franzreb 1989). The most critical factor in habitat structure is the presence of a dense understory shrub layer from approximately two feet to ten feet above ground (Goldwasser 1981, Salata 1983, Franzreb 1989).

On February 2, 1994, the USFWS published a final critical habitat for the least Bell's vireo designating approximately 37,560 acres of land in Santa Barbara, Ventura, Los Angeles, San Bernardino, Riverside, and San Diego counties, California. Designated critical habitat in Los Angeles County is located only in the Santa Clara River from the Interstate-5 Freeway west to the Ventura County line. The channels are all located outside of the critical habitat for this species.

1.3.5 Southwestern Willow Flycatcher

The southwestern willow flycatcher was formerly a common summer resident of southern California's lowland riparian woodlands and up into mountain canyons (Garrett and Dunn 1981). By the 1970s, the southwestern willow flycatcher was considered to be absent as a breeder in southern California (McCaskle 1975). The virtual extirpation of this species as a breeder in southern California has been attributed to the loss and degradation of riparian habitats and brood parasitism by the brown-headed cowbird. All willow flycatchers breeding in California, which includes the subspecies *E. t. brewsteri* and *E. t. adastus*, in addition to the southwestern willow flycatcher, were listed by the CDFG as state Endangered on January 3, 1991 (CDFG 2003a). The USFWS listed the southwestern willow flycatcher as federally Endangered on February 7, 1995 (USFWS 1993b).

The willow flycatcher is a neotropical migrant that breeds in the west from northern Baja California, Mexico to central British Columbia, Canada and generally east through the northern half of the United States to the Atlantic coast (A.O.U. 1998). The willow flycatcher winters in Central America from Nayarit, Mexico (Pacific coast) and Honduras (Gulf of Mexico coast) to Panama and also to northern Colombia and northwest Venezuela (Sedgwick 2000). Depending on the authority, there are four or five recognized subspecies of willow flycatcher (Sedgwick 2000). The breeding range of the southwestern willow flycatcher includes southern California, Arizona, New Mexico, western Texas and extreme southern parts of Nevada and Utah (USFWS 1993b). The California range of the southwestern willow flycatcher is north along the coast to the Santa Ynez River, Santa Barbara County, and north in the interior to the Owens River, Inyo County (Unitt 1987, USFWS unpubl.). The largest breeding populations of southwestern willow flycatcher in California are located at the South Fork of the Kern River, Kern County; the Santa Ynez River, Santa Barbara County; and the Upper San Luis Rey River and Santa Margarita River, San Diego County. The range wide population of southwestern willow flycatcher is estimated at between 300 and 500 pairs (USFWS 1997). The population of southwestern willow flycatcher in California is estimated to be about 70 pairs (USFWS 1993b). Recent estimates, such as a total of 117 pairs in 1999 (USFWS unpubl.), indicate that the southern California southwestern willow flycatcher population may slowly be recovering.

Although the southwestern willow flycatcher population in California appears to be slowly increasing, there have been no recent records of breeding in Los Angeles County. However, a breeding pair was located in the Santa Clara River near Fillmore, Ventura County, in Summer 2000.

(McCaskle and Garrett 2000). Additional territories were identified in this part of the Santa Clara River in summer 2001 (McCaskle and Garrett 2001). The Los Angeles County portion of the Santa Clara River supports suitable habitat for this species and its occurrence is anticipated.

The southwestern willow flycatcher breeds in willow dominated riparian habitats that are similar to least Bell's vireo nesting habitats. The southwestern willow flycatcher differs from least Bell's vireo in that it shows a stronger dependency on willow thickets for all its requirements (Grinnell and Miller 1944). In addition, the southwestern willow flycatcher appears to have a preference for sites with surface water in the vicinity, such as along streams, the margins of a pond or lake, and at wet mountain meadows (Grinnell and Miller 1944, Flett and Sanders 1987, Harris et al. 1987), and in Arizona the southwestern willow flycatcher invariably nests near surface water (Phillips et al. 1964). Recently, the southwestern willow flycatcher has adapted to introduced vegetation present in riparian vegetation types, such as tamarisk (*Tamarix* sp.) and Russian olive (*Elaeagnus angustifolia*) (USFWS 1993b).

The willow flycatcher is a common migrant in the interior of California and a rare to uncommon migrant along the coastal slope, with most birds during the spring season moving through southern California between May 15 and June 20 (Garrett and Dunn 1981, Unitt 1987). The spring migration of southwestern willow flycatcher is earlier than that of the northern subspecies (Unitt 1984, USFWS 1993b). As a result, surveys for nesting southwestern willow flycatcher are complicated by the presence of more abundant subspecies migrating through the range of southwestern willow flycatcher during its breeding season.

On July 22, 1997, USFWS published a final critical habitat for this species. A total of 99.8 river miles in Kern, Riverside, San Bernardino, and San Diego counties were designated for the southwestern willow flycatcher. No critical habitat was designated for the southwestern willow flycatcher in Los Angeles County.

1.3.6 Slender-horned Spineflower

The slender-horned spineflower was listed as federally Endangered on September 28, 1987, and was listed as state Endangered in 1982 (USFWS 1987; CDFG 2003b). The slender-horned spineflower is also a CNPS List 1B species (CNPS 2003). It is a low-growing annual species, typically flowering from April to May. It occurs in Los Angeles, Riverside, and San Bernardino counties (Rey 1994). Known locations include Soledad Canyon, Big Tujunga Canyon, the Santa Ana River Wash, the San Jacinto River floodplain near Hemet, the Vail Lake area east of Temecula, and Temescal Canyon near Elsinore. Its usual habitat is mature alluvial fan sage scrub in sandy to gravelly soil between about 700 and 2,500 feet elevation (Allen 1996; Wood undated). These benches are found in broad alluvial systems at the bases of mountains. Associated species often include California juniper (*Juniperus californica*), California buckwheat (*Eriogonum fasciculatum*), scalebroom (*Lepidospartum squamatum*), laurel sumac (*Malosma laurina*), lastarriaea (*Lastarriaea coriacea*), and yerba santa (*Eriodictyon trichocalyx*). It is generally found in small isolated areas lacking any evidence of surface disturbance. About three quarters of its historical locations have been extirpated by land use modifications including flood control structures, development, vehicle and recreational uses, and sand and gravel mining.

2.0 SURVEY METHODOLOGIES

BonTerra Consulting has worked with the LACDPW since 1997 to provide biological monitoring of flood control channel maintenance work in soft bottom channel reaches. In addition to the biological monitoring of the maintenance work, pre-clearing and post-clearing photos have been taken every year to document the biological resources in these reaches in compliance with the mitigation requirements of existing permits from ACOE and CDFG.

In 2002, the USFWS provided a list of Threatened and Endangered species and a list of soft-bottom channel reaches for which focused surveys would be necessary prior to maintenance activities for the 2002-2003 season. Due to the drought conditions of 2002, focused surveys could not be conducted for some species (i.e., arroyo toad and slender-horned spineflower). Therefore, habitat assessments were conducted with recommendations for focused surveys in 2003, assuming appropriate weather conditions. In addition, focused surveys were repeated for other species (i.e., unarmored three-spine stickleback, Santa Ana sucker, least Bell's vireo, and southwestern willow flycatcher) because their distributions can change from year to year. Focused biological surveys were conducted between March and August 2003 in 35 of the earth-bottom channels, including the new reach, maintained by the LACDPW.

Prior to initiating field surveys, a comprehensive literature review was conducted. This effort included a review of the most recent Biological Resources Monitoring Report prepared by BonTerra Consulting (2002), and the most recent pre- and post-clearing aerial photographs of the earth-bottom channels along the San Gabriel Mountain foothills provided by LACDPW (2002-2003). Based on the previous knowledge of the habitats in each of these channels and the one additional channel (Violin Canyon), the 2002 survey results, and requests by the USFWS, 35 reaches with potential to support these Threatened or Endangered plant and wildlife species were identified. Survey methodologies for each species are provided below.

For each species surveyed, the surveys were conducted according to USFWS protocols or, in the absence of written protocols, according to a methodology accepted by USFWS. The biologists conducted the surveys in the most appropriate time possible, given limitations of season and rainfall, to ensure maximum opportunity to observe the species. Digital photos of each reach were taken during the 2002 surveys. These photos were not updated in 2003 because site conditions had not changed substantially since 2002.

2.1 SPECIAL STATUS FISH SPECIES

In 2002, habitat assessments were conducted in 22 reaches, which were determined based on knowledge of the distribution of southern California fishes, published and unpublished literature, and the California Natural Diversity Database (CNDDB) (CDFG 2003a). The habitat of each of the 22 reaches was evaluated in 2002 to determine the potential to support the unarmored three-spine stickleback and Santa Ana sucker. During 2002, Los Angeles had the lowest recorded rainfall since records have been kept. As a result, reaches that were dry last year have the potential to support fish during periods of normal and above normal rainfall. Therefore, focused surveys for these species were repeated in 2003.

In 2003, Dr. Jonathan Baskin (Permit #TE781377-4) and Dr. Thomas Haglund (Permit #TE781377-4) examined one reach in the Los Angeles River drainage (Reach #12); one reach in the San Gabriel River drainage (Reach #39); and 18 reaches in the Santa Clara River drainage (Reaches #47, 55, 56, 58-62, 66, 67, 69, 70, 71, 75, 80, 82, 86, 87). Three reaches that were surveyed in 2002 (Reaches #79, 99, and the New Reach in Violin Canyon) were not surveyed in 2003 because these reaches were discontinuous with known populations or provided no suitable

habitat so the unarmored three-spine stickleback and Santa Ana sucker would not be expected to occur in these reaches in subsequent years. Reach #71 was added this year based on a request from the USFWS.

The potential of the habitat to support special status fish species was determined based on the presence or absence of water, and appropriate habitat during the Summer 2003. Future potential of currently dry reaches to support fish was based on the habitat structure visible and the existence of a source population. Eleven reaches with appropriate habitat present in Summer 2003 were seined in order to determine the presence or absence of special status fish. In the Los Angeles River drainage Reach #12 was seined; in the San Gabriel River drainage Reach #39 was seined; and in the Santa Clara River drainage Reaches #60, 61, 67, 70, 71, 80, 82, 86, and 87 were seined.

2.2 SPECIAL STATUS AMPHIBIAN SPECIES

2.2.1 Arroyo Toad

The initial studies conducted in 2002 included a background literature review and habitat assessment for each of the channels that represented suitable arroyo toad breeding and/or upland habitat. The literature review included the documentation of relevant literature on the presence of the arroyo toad within and/or adjacent to each reach including areas both up and downstream. This included review of Federal Register listings, protocols, and species data provided by the USFWS, CNRDB, consultation with qualified experts familiar with the distribution and natural history of the arroyo toad, and review of unpublished biological resource letter reports and assessments conducted within the region.

Based on the results of the literature review, prior BonTerra surveys of the channels, and as requested by the USFWS, seven reaches were determined to warrant a habitat assessment to determine the presence or absence of suitable habitat for the arroyo toad. All seven of these reaches were in the Santa Clara River drainage watershed (Reaches #75, 79, 80, 82, 86, 87, and the New Reach in Violin Canyon). The habitat assessment was conducted by Ruben Ramirez (Permit #780566) and followed the guidelines presented in "Survey Protocol for the Arroyo Toad" (USFWS 1999b). Each of the seven reaches was surveyed on foot to characterize aquatic (breeding) and upland habitat (refugia) types and to document any characteristic sign (clutches, larvae, juveniles, adults). Also, as stated in the USFWS protocol, areas within 0.6 mile of documented arroyo toad sites (previously documented by the presence of eggs, larvae, juveniles, or adults) that have suitable habitat would be presumed to have arroyo toads (USFWS 1999b). Representative photographs were taken of all seven reaches during the habitat assessment. In addition to following the guidelines outlined above, all field surveys adhered to "The Declining Amphibian Population Task Force Fieldwork Code of Practice". One of these seven reaches, the new reach in Violin Canyon, was determined to have no suitable habitat for the arroyo toad. The remaining six reaches were determined to have suitable habitat for the arroyo toad.

Based on the results of the habitat assessments, focused arroyo toad surveys were conducted during the 2003 arroyo toad breeding season on the six channels with suitable habitat for the arroyo toad from the 2002 habitat assessments. In addition, focused surveys were also conducted in Reach #71 at the request of the USFWS. All seven of the reaches that warranted focused surveys are located in the Santa Clara River drainage, which includes the Santa Clara River, South Fork of the Santa Clara River, Castaic Creek, and Violin Canyon drainage (Reaches #71, 75, 79, 80, 82, 86 and 87). The focused surveys were conducted by Ruben Ramirez and followed the guidelines presented in "Survey Protocol for the Arroyo Toad" (USFWS 1999b). Each of the seven reaches was surveyed on foot to characterize aquatic (breeding) and upland habitat (refugia) types

and to document any characteristic sign (clutches, larvae, juveniles, adults). Six USFWS protocol surveys were conducted for each of the seven reaches. These surveys included both a diurnal and nocturnal component. The initial (diurnal) surveys included walking each reach in an effort to assess and document the suitability of breeding and upland habitat for the arroyo toad. These initial surveys also focused on locating any areas of inundation that may have represented suitable breeding pools (egg clutches and/or tadpoles). These surveys identified portions within each reach with the highest probability to support the arroyo toad. Following the initial surveys, areas identified during the daytime surveys were visited again at night in order to detect active toads. The same routes were covered repeatedly throughout the evening to insure that no individuals went undetected. Each individual toad found was sexed, aged, measured (snout-vent length), weighed, and its location recorded using a Global Positioning System (GPS), in addition to mapping the location onto an aerial photograph.

Three of the channels (Reaches #82, 86, and 87) surveyed are within the USFWS designated critical habitat for the arroyo toad (Northern Recovery Unit, Unit 6, Upper Santa Clara River Basin, Los Angeles County) (USFWS 2001), described as follows:

"Subunit 6b includes Castaic Creek below Castaic Lake to the confluence with the Santa Clara River.... Arroyo toads are found on Castaic Creek both above and below the reservoir, and recent surveys have found evidence of the species on San Francisquito Creek". (USFWS 2001).

However, due to a recent court case, the critical habitat for this species was recently withdrawn because the economic analysis was determined to be inadequate (Building Industry Legal Defense Foundation v. Norton 2003). The revised critical habitat will be issued by July 2004 per the court order.

2.3 SPECIAL STATUS BIRD SPECIES

The initial literature review included the documentation of relevant literature on the presence of the least Bell's vireo and southwestern willow flycatcher in Los Angeles County. This included review of Federal Register listings, protocols, and species data provided by the USFWS, CNDDb, consultation with qualified experts familiar with the distribution and natural history of the least Bell's vireo and southwestern willow flycatcher, and review of unpublished biological resource letter reports and assessments.

Based on the results of the literature review, prior BonTerra surveys of the channels, and as requested by the USFWS, eight of the reaches were determined to warrant repeated focused surveys for the least Bell's vireo and southwestern willow flycatcher. These reaches included three reaches in the San Gabriel River (Reaches #40b, 43a, 43b, and a portion of 44); and four reaches in the Santa Clara River drainage (a portion of Reaches #75, 79, 80, and 82). Surveys for the southwestern willow flycatcher and least Bell's vireo were conducted by Dharm Pelligrini (Permit No. TE048660) and Jim Pike (Permit No. 832946) under the supervision of Brian Daniels (Permit No. TE821401-1). Surveys followed the USFWS protocol for both species.

According to the survey protocol for southwestern willow flycatcher, a total of five surveys must be performed within three specified time periods at least five days apart. The first survey must be conducted between May 15 and May 31; the second survey must be conducted between June 1 and June 21; and three surveys must be conducted between June 22 and July 17, with the first of the three final surveys conducted between June 22 and June 30. Eight surveys are recommended in the survey protocol for the least Bell's vireo. Surveys for the least Bell's vireo and southwestern willow flycatcher can be performed simultaneously because of their similar habitat requirements.

The survey area consisted of all riparian habitat in each reach. The riparian habitat was systematically surveyed by walking slowly and methodically along two transects (downstream then upstream or the reverse) with some variance depending on streambed width. Taped vocalizations of southwestern willow flycatcher were used to elicit a response from any potentially territorial southwestern willow flycatcher; taped vocalizations of least Bell's vireo were not used according to typical survey methods for this species. If no southwestern willow flycatchers were detected after the initial tape playing, the recording was usually replayed at least once. All, if any, observations of willow flycatcher (all subspecies) and least Bell's vireo, including pertinent behavior, were recorded and their locations mapped in the field. It should be noted that all subspecies of the willow flycatcher breeding in California are listed as state Endangered species. During our surveys, migrant willow flycatcher individuals were noted.

The surveys were conducted under optimal weather conditions, and during the early morning hours when bird activity is at its peak. Numbers were recorded for all bird species detected during the surveys including notable observations of any special status species or other birds such as the brown-headed cowbird. Lists of species observed during these surveys are included in Appendix A.

2.4 SPECIAL STATUS PLANT SPECIES

Based on the results of a literature review, prior BonTerra surveys of the channels, and as requested by the USFWS, 23 of the reaches were determined to warrant focused surveys to determine the presence or absence of slender-horned spineflower. These reaches included four reaches in the Los Angeles River drainage (Reaches #12-14, and 19); one reach in the San Gabriel River drainage (Reaches #39); and 18 reaches in the Santa Clara River drainage (Reaches #45, 47, 55, 56, 58-62, 66, 75, 77-79, 88, 89, 92, and the New Reach in Violin Canyon).

During the surveys, all plant species were identified in the field or collected for future identification. Plants were identified using keys, descriptions, and illustrations in Hickman (1993), Munz (1974), Abrams (1923, 1960), and other regional references. In conformance with CDFG guidelines (2000), surveys were (a) conducted during flowering (or fruiting) seasons for the special status plants known from the area, (b) floristic in nature, (c) consistent with conservation ethics, (d) systematically covered all habitat types on the site, and (e) well documented, by this report and by voucher specimens to be deposited at Rancho Santa Ana Botanic Garden. The phenology of the plant was confirmed by personal communications with other regional botanists to determine the appropriate survey time.

The botanical surveys were conducted by Scott White, at times assisted by either Michael Honer or Dylan Hannon. Each reach was surveyed by walking using meandering transects along its entire length, searching for slender-horned spineflower in the appropriate alluvial bench habitat, with exception of the San Gabriel River where it passes through urban development in the Los Angeles Basin. Field notes were taken during the surveys. If found, the location of each population of special status species observed would have been mapped, and voucher specimens would have been collected and deposited in an appropriate herbarium to ensure accuracy in the identification. Lists of plant species observed during the surveys are included in Appendix B.

3.0 SURVEY RESULTS

The following section presents the results of the biological surveys conducted within each reach. Reaches are grouped by geographic location and include Los Angeles River/San Pedro Bay, Santa Monica Bay, San Gabriel River, and the Santa Clara River. Each channel reach contains different habitat types, and therefore varies in the types of special status species it has potential to support. To facilitate cross-referencing with the 2002 reports, all reaches surveyed in 2002 are noted in the document. However, survey results are provided only for reaches surveyed in 2003. The results of the 2002 surveys are included in the 2002 report prepared by BonTerra Consulting (2002). Tables ES-1 and ES-2 summarize the results of the surveys conducted at each reach in 2003 and 2002, respectively.

3.1.1 Reach #4 – Browns Creek

3.1.1.1 Project Location

Reach #4, Browns Creek, is located within the Los Angeles River watershed, approximately 0.2 mile west of the Ronald Reagan Freeway (118 Freeway) and De Soto Avenue intersection in the community of Chatsworth in the City of Los Angeles. The limits of Reach #4 are approximately 556 feet upstream of Rinaldi Street to 1,895 feet upstream of Rinaldi Street. Reach #4 is 1,243 feet in total length. The reach is found on the Oat Mountain USGS 7.5 x 15-minute quadrangle map. Refer to Thomas Guide, Los Angeles County, page 500-B2.

No surveys were required at this reach in 2003. Survey results for 2002 are provided in the 2002 focused survey results report (BonTerra Consulting 2002).

3.1.2 Reach #7 – Bull Creek

3.1.2.1 Project Location

Reach #7, Bull Creek Main Channel Outlet, is located within the Los Angeles River watershed, approximately 0.25 mile southeast of the Victory Boulevard and Balboa Boulevard intersection in the Sepulveda Dam Recreation Area in the City of Los Angeles. The limits of Reach #7 are approximately 165 feet downstream of Victory Boulevard to the confluence with the Los Angeles River. Reach #7 is 2,602 feet in total length. The reach is found on the Van Nuys USGS 7.5 x 15-minute quadrangle map. Refer to Thomas Guide, Los Angeles County, page 531-D7.

No surveys were required at this reach in 2003. Survey results for 2002 are provided in the 2002 focused survey results report (BonTerra Consulting 2002).

3.1.3 Reach #12 – Haines Canyon Main Channel Outlet

3.1.3.1 Project Location

Reach #12, Haines Canyon Main Channel Outlet, is located within the Tujunga Wash Watershed, approximately one mile northwest of the Mount Gleason Avenue and Foothill Boulevard intersection in the community of Sunland in the City of Los Angeles (Exhibit 3.1.3-1). The limits of Reach #12 are approximately 791 feet downstream of Wentworth Street to approximately 1,228 feet downstream of Wentworth Street. Reach #12 is 437 feet in total length. The reach is found on the Sunland USGS 7.5 x 15-minute quadrangle map. Refer to Thomas Guide, Los Angeles County, page 503-F2.

3.1.3.2 Survey Results

The table below summarizes the type of surveys completed, survey dates, and surveying biologist for each survey within this reach. Photographs of this reach are shown in Exhibit 3.1.3-2.

TABLE 3.1.3
REACH #12 – HAINES CANYON MAIN CHANNEL OUTLET

Survey Type	Survey Dates	Surveying Biologist
Focused Survey for the Santa Ana Sucker	August 1, 2003	Jonathan Baskin Ph.D. Thomas Haglund Ph.D.
Focused Survey for the Slender-horned Spineflower	July 31, 2003	Scott White

Santa Ana Sucker

There is good surface flow with pools and riffles in Reach #12, which provide excellent fish habitat. There is well-developed emergent and aquatic vegetation with some riparian development. The substrate is heterogeneous, and includes fine sediment to cobbles. The channel is well defined and is clearly an area of perennial water. Three native fish species are known to occur downstream: Santa Ana sucker, Santa Ana speckled dace (*Rhinichthys osculus* ssp.), and arroyo chub (*Gila orcutti*). The reach of Haines Creek containing the three native fish species is currently separated from Reach #12 by a dry stretch. Suitable habitat for the Santa Ana sucker is present in Reach #12.

Seining was conducted at Reach #12. The arroyo chub, a California Species of Special Concern, was abundant. However, no other fishes were present. The Pacific treefrog (*Hyla regilla*) was also common. This reach has the potential to support other native fishes. Currently, only the arroyo chub is present, but there is a downstream source for both Santa Ana speckled dace and Santa Ana sucker. The Santa Ana sucker was not observed during seining in Summer 2003. It should be noted that while the arroyo chub and Santa Ana speckled dace are special status fish species, they are not listed as Threatened or Endangered by the resource agencies and no take authorization would be required for these species.

In years where there is sufficient water, it is recommended that this reach be monitored prior to any channel maintenance.

Slender-horned Spineflower

Reach #12 contains a narrow riparian channel along the southern edge of Tujunga Wash. Although no suitable habitat is present for the slender-horned spineflower within Reach #12, high quality alluvial sage scrub habitat is present in Tujunga Wash and the slender-horned spineflower is known to occur there. Although this habitat is located outside of the reach where maintenance activities occur, focused surveys were recommended following the 2002 habitat assessment due to its close proximity to the reach.

No slender-horned spineflower was observed during the 2003 surveys.

3.1.4 Reach #13 – Project No. 5215 Unit 1

3.1.4.1 Project Location

Reach #13, Project No. 5215 Unit 1, is located within the Tujunga Wash watershed, approximately one mile northwest of the Foothill Freeway (210 Freeway) and Wentworth Street intersection in the community of Shadow Hills in the City of Los Angeles (Exhibit 3.1.4-1). The limits of Reach #13 are between approximately 1,030 feet downstream of Foothill Boulevard and approximately

1,535 feet downstream of Foothill Boulevard. Reach #13 is 537 feet in total length. The reach is found on the Sunland USGS 7.5 x 15-minute quadrangle map. Refer to Thomas Guide, Los Angeles County, page 503-B2.

3.1.4.2 Survey Results

The table below summarizes the type of surveys completed, survey dates, and surveying biologist for each survey within this reach. Photographs of this reach are shown in Exhibit 3.1.4-2.

**TABLE 3.1.4
REACH #13 – PROJECT NO. 5215 UNIT 1**

Survey Type	Survey Dates	Surveying Biologist
Focused Survey for the Slender-horned Spineflower	July 31, 2003	Scott White

Slender-horned Spineflower

Reach #13 consists of a ditch with intermittent flow surrounded by alluvial scrub and some adjacent equestrian trails. Although there is no potential habitat for the slender-horned spineflower within the ditch or existing access road, suitable habitat is present on the banks of the reach and other adjacent areas. In addition, the slender-horned spineflower is known to occur in the vicinity of Reach #13. Therefore, suitable habitat for the slender-horned spineflower is present in Reach #13 and focused surveys were recommended following the 2002 habitat assessment.

No slender-horned spineflower was observed during the 2003 surveys.

3.1.5 Reach #14 – May Channel (Main Channel Outlet into Pacoima Canyon)

3.1.5.1 Project Location

Reach #14, May Channel (Main Channel Outlet into Pacoima Canyon), is located within the Pacoima Wash Watershed, approximately 1.25 miles east of the Foothill Freeway (210 Freeway) and Hubbard Street intersection in the City of Los Angeles (Exhibit 3.1.5-1). The limits of Reach #14 are 3,038 feet downstream of Hubbard Street to approximately 3,728 feet downstream of the confluence of Hubbard Street with the Pacoima Canyon. Reach #14 is 690 feet in total length. The reach is found on the San Fernando USGS 7.5 x 15-minute quadrangle map. Refer to Thomas Guide, Los Angeles County, page 482-E3.

3.1.5.2 Survey Results

The table below summarizes the type of surveys completed, survey dates, and surveying biologist for each survey within this reach. Photographs of this reach are shown in Exhibit 3.1.5-2.

**TABLE 3.1.5
REACH #14 – MAY CHANNEL
(MAIN CHANNEL OUTLET INTO PACOIMA CANYON)**

Survey Type	Survey Dates	Surveying Biologist
Focused Survey for the Slender-horned	July 28, 2003	Scott White

Slender-horned Spineflower

Reach #14 consists of an incised channel that extends from the adjacent golf course to the confluence below the access road bridge. Both running and standing water are present in this reach and are probably the result of excess irrigation runoff from the golf course. Above the access road bridge, there is no suitable habitat for the slender-horned spineflower within the channel or the adjacent weedy disturbed areas. However, below the access road bridge there is high quality alluvial sage scrub habitat that provides potential for the slender-horned spineflower. Although this habitat is located outside of the reach where maintenance activities occur, focused surveys were recommended following the 2002 habitat assessment due to its close proximity to the reach.

No slender-horned spineflower was observed during the 2003 surveys.

3.1.6 Reach #17 – Sheep Corral Channel

3.1.6.1 Project Location

Reach #17, Sheep Corral Channel, is located within the Verdugo Wash Watershed, approximately 0.25 mile west of the Honolulu Avenue and Dunsmore Avenue intersection in the City of Glendale. The limits of Reach #17 are approximately 850 feet upstream of Forest Glen Drive to 1,150 feet upstream of Forest Glen Drive. Reach #17 is 300 feet in total length. The reach is found on the Burbank USGS 7.5 x 15-minute quadrangle map. Refer to Thomas Guide, Los Angeles County, page 534-D1.

No surveys were required at this reach in 2003. Survey results for 2002 are provided in the 2002 focused survey results report (BonTerra Consulting 2002).

3.1.7 Reach #18 – Engleheard Channel

3.1.7.1 Project Location

Reach #18, Engleheard Channel, is located within the Verdugo Wash Watershed, approximately 0.3 mile south of the Honolulu Avenue and La Crescenta Avenue intersection in the City of Glendale. The limits of Reach #18 are from the confluence of Reach #18 with the Verdugo Wash to approximately 800 feet upstream of the confluence. Reach #18 is 800 feet in total length. The reach is found on the Pasadena USGS 7.5 x 15-minute quadrangle map. Refer to Thomas Guide, Los Angeles County, page 534-F3 to G3.

No surveys were required at this reach in 2003. Survey results for 2002 are provided in the 2002 focused survey results report (BonTerra Consulting 2002).

3.1.8 Reach #19 – Pickens Canyon

3.1.8.1 Project Location

Reach #19, Pickens Canyon, is located within the Verdugo Wash Watershed, approximately 0.75 mile north of the Foothill Boulevard and Ocean View Boulevard intersection in the City of La Canada-Flintridge and the community of La Crescenta (Exhibit 3.1.8-1). The limits of Reach #19 are from the downstream edge of Panorama Drive to the Pickens Debris Basin. Reach #19 is 2,406 feet in total length. The reach is found on the Pasadena USGS 7.5 x 15-minute quadrangle map. Refer to Thomas Guide, Los Angeles County, pages 504-H5 to 534-H1.

3.1.8.2 Survey Results

The table below summarizes the type of surveys completed, survey dates, and surveying biologist for each survey within this reach. Photographs of this reach are shown in Exhibit 3.1.8-2.

**TABLE 3.1.8
REACH #19 – PICKENS CANYON**

Survey Type	Survey Dates	Surveying Biologist
Focused Survey for the Slender-horned Spineflower	July 31, 2003	Scott White

Slender-horned Spineflower

Reach #19 consists of drop structures above and below a pedestrian bridge at Mountain Avenue. This reach is a steep rocky channel surrounded by residential land uses. Early-successional alluvial scrub is present in this reach. This channel is regularly reworked by scouring and deposition during floods. There is no obvious area previously maintained in this reach. Suitable habitat for the slender-horned spineflower is present in this reach. However, the potential for this species is low due to the young vegetation and low probability of seed dispersal from adjacent areas. Focused surveys for this species were recommended following the 2002 habitat assessment.

No slender-horned spineflower was observed during the 2003 surveys.

Two small groups of Coulter's matilija poppy (*Romneya coulteri*), a CNPS List 4 species, were observed on the upper west bank of the reach. The Coulter's matilija poppy probably occurs in this reach because it is cultivated in a yard and has expanded vegetatively into the reach. CNPS List 4 species are on the "watch list", often due to a naturally limited distribution, but are typically considered relatively common at this time. They have no protection from the resource agencies and impacts to these species are typically considered less than significant unless a substantial population is impacted. However, impacts on these species should be avoided or minimized to the extent practicable.

3.1.9 Reach #20 – Webber Channel (Stream at Private Bridge)

3.1.9.1 Project Location

Reach #20, Webber Channel (stream at private bridge), is located within the Verdugo Wash Watershed, approximately 0.75 mile northeast of the Foothill Boulevard and Ocean View Boulevard intersection in the City of La Canada-Flintridge. The limits of Reach #20 are approximately 746 feet upstream of Los Amigos Street to approximately 861 feet upstream of Los Amigos Street. Reach #20 is 115 feet in total length. The reach is found on the Pasadena USGS 7.5 x 15-minute quadrangle map. Refer to Thomas Guide, Los Angeles County, page 504-J7.

No surveys were required at this reach in 2003. Survey results for 2002 are provided in the 2002 focused survey results report (BonTerra Consulting 2002).

3.1.10 Reach #21 – Webber Channel (Main Channel Inlet Downstream of Bridge)

3.1.10.1 Project Location

Reach #21, Webber Channel (Main Channel Inlet Downstream of Bridge), is located within the Verdugo Wash Watershed, approximately 0.75 mile northeast of the Foothill Boulevard and Ocean View Boulevard intersection in the City of La Canada-Flintridge. The limits of Reach #21 are approximately 471 feet upstream of Los Amigos Street to approximately 496 feet upstream of Los Amigos Street. Reach #21 is 25 feet in total length. The reach is found on the Pasadena USGS 7.5 x 15-minute quadrangle map. Refer to Thomas Guide, Los Angeles County, page 504-J7.

No surveys were required at this reach in 2003. Survey results for 2002 are provided in the 2002 focused survey results report (BonTerra Consulting 2002).

3.1.11 Reach #22 – Halls Canyon

3.1.11.1 Project Location

Reach #22, Halls Canyon, is located within the Verdugo Wash Watershed, approximately one mile northeast of the Foothill Boulevard and Ocean View Boulevard intersection in the City of La Canada-Flintridge. The limits of Reach #22 are approximately 1,370 feet upstream of Jessen Drive to Halls Canyon Debris Basin. Reach #22 is 2,290 feet in total length. The reach is found on the Pasadena USGS 7.5 x 15-minute quadrangle map. Refer to Thomas Guide, Los Angeles County, page 534-J1.

No surveys were required at this reach in 2003. Survey results for 2002 are provided in the 2002 focused survey results report (BonTerra Consulting 2002).

3.1.12 Reach #25 – Los Angeles River, Willow Street to PCH

3.1.12.1 Project Location

Reach #25, Los Angeles River, is located within the Los Angeles River Watershed, immediately east of the Long Beach Freeway (710 Freeway) from Willow Street to Pacific Coast Highway, in the City of Long Beach. The limits of Reach #25 are Willow Street to the Pacific Coast Highway. Reach #25 is approximately 4,800 feet in total length. The reach is found on the Long Beach USGS 7.5 x 15-minute quadrangle map. Refer to Thomas Guide, Los Angeles County, page 795-C3 to C5.

No surveys were required at this reach in 2003. Survey results for 2002 are provided in the 2002 focused survey results report (BonTerra Consulting 2002).

3.1.13 Reach #27 – Wilmington Drain

3.1.13.1 Project Location

Reach #27, Wilmington Drain, is located within the San Pedro Bay Watershed in unincorporated Los Angeles County and within the Wilmington community of the City of Los Angeles. The limits of Reach #27 are the 110 Freeway to the Pacific Coast Highway. Reach #27 is approximately 3,584 feet in total length. The reach is found on the Torrance USGS 7.5 x 15-minute quadrangle map. Refer to Thomas Guide, Los Angeles County, page 794-B4 to B5.

No surveys were required at this reach in 2003. Survey results for 2002 are provided in the 2002 focused survey results report (BonTerra Consulting 2002).

3.1.14 Reach #99 – Kagel Canyon-Tujunga Wash

3.1.14.1 Project Location

Reach #99, Kagel Canyon-Tujunga Wash, is located within the Tujunga Wash Watershed, approximately 0.6 mile south of the Lopez Canyon Road and the Kagel Canyon road intersection, in the Kagel Canyon area of the Angeles National Forest. The limits of Reach #99 are Blue Sage Drive to the City of Los Angeles boundary. Reach #99 is 4,858 feet in total length. The reach is found on the San Fernando USGS 7.5 x 15-minute quadrangle map. Refer to Thomas Guide, Los Angeles County, pages 482-J5 to J7.

No surveys were required at this reach in 2003. Survey results for 2002 are provided in the 2002 focused survey results report (BonTerra Consulting 2002).

3.2 SANTA MONICA BAY

3.2.1 Reach #28 – Triunfo Creek (PD T2200)

3.2.1.1 Project Location

Reach #28, Triunfo Creek (PD T2200), is located within the Malibu Creek watershed in unincorporated Los Angeles County, approximately 0.1 mile east of the Mulholland Highway and Troutdale Drive intersection. The limits of Reach #28 are approximately 384 feet upstream of Mulholland Highway to the downstream edge of Mulholland Highway. Reach #28 is approximately 474 feet in total length. The reach is found on the Point Dume USGS 7.5 x 15-minute quadrangle map. Refer to Thomas Guide, Los Angeles County, page 587-H3.

No surveys were required at this reach in 2003. Survey results for 2002 are provided in the 2002 focused survey results report (BonTerra Consulting 2002).

3.2.2 Reach #31 – Las Virgenes Creek

3.2.2.1 Project Location

Reach #31, Las Virgenes Creek (PD T2055), is located within the Malibu Creek watershed, approximately 1.8 miles north of the Mulholland Highway and Las Virgenes Road intersection, in the City of Calabasas. The limits of Reach #31 are approximately 222 feet upstream of Meadow Creek Lane to approximately 475 feet upstream of Meadow Creek Lane. Reach #31 is 253 feet in total length. The reach is found on the Calabasas USGS 7.5 x 15-minute quadrangle map. Refer to Thomas Guide, Los Angeles County, page 588-G1.

No surveys were required at this reach in 2003. Survey results for 2002 are provided in the 2002 focused survey results report (BonTerra Consulting 2002).

3.2.3 Reach #32 – Stokes Canyon Channel (PD T043)

3.2.3.1 Project Location

Reach #32, Stokes Canyon Channel (PD T043), is located within the Las Virgenes Creek Watershed, in unincorporated Los Angeles County, approximately 0.5 mile east of the Mulholland Highway and Las Virgenes Road intersection in unincorporated Los Angeles County. Reach #32 is approximately 2,255 feet in total length and is located upstream of Mulholland Highway. The reach is found on the Malibu Beach USGS 7.5 x 15-minute quadrangle map. Refer to Thomas Guide, Los Angeles County, page 588-J4 to H4.

No surveys were required at this reach in 2003. Survey results for 2002 are provided in the 2002 focused survey results report (BonTerra Consulting 2002).

3.2.4 Reach #34 – Medea Creek (PDT 1005)

3.2.4.1 Project Location

Reach #34, Medea Creek (PD T1005) Main Channel Outlet, is located within the Malibu Creek Watershed, approximately 0.25 mile northeast of the Ventura Freeway (101) and Kanan Road intersection in the City of Agoura Hills. The limits of Reach #34 are from approximately 535 feet to 940 feet downstream of Kanan Road. Reach #34 is 405 feet in total length. The reach is found on the Thousand Oaks USGS 7.5 x 15-minute quadrangle map. Refer to Thomas Guide, Los Angeles County, page 558-A5.

No surveys were required at this reach in 2003. Survey results for 2002 are provided in the 2002 focused survey results report (BonTerra Consulting 2002).

3.2.5 Reach #38 – Lindero Main Channel Outlet

3.2.5.1 Project Location

Reach #38, Lindero Main Channel Outlet, is located within the Malibu Creek Watershed, approximately 0.25 mile east of the Kanan Road and Agoura Road intersection in the City of Agoura Hills. The limits of Reach #38 are approximately 83 feet downstream of Agoura Road to approximately 270 feet downstream of Agoura Road. Reach #38 is approximately 187 feet in total length. The reach is found on the Thousand Oaks USGS 7.5 x 15-minute quadrangle map. Refer to Thomas Guide, Los Angeles County, page 558-A6.

No surveys were required at this reach in 2003. Survey results for 2002 are provided in the 2002 focused survey results report (BonTerra Consulting 2002).

3.3 SAN GABRIEL RIVER

3.3.1 Reach #39 – Beatty Channel Outlet at San Gabriel River (25+99.00+50')

3.3.1.1 Project Location

Reach #39, Beatty Channel Outlet at San Gabriel River 25+99.00+50', is located within the San Gabriel River watershed, approximately 0.8 mile north of the Foothill Boulevard and Irwindale Avenue intersection in the City of Azusa (Exhibit 3.3.1-1). The limits of Reach #39 are approximately 2,323 feet downstream of Todd Avenue to approximately 2,415 feet downstream of Todd Avenue. Reach #39 is 145 feet in total length. The reach is found on the Azusa USGS 7.5 x 15-minute quadrangle map. Refer to Thomas Guide, Los Angeles County, page 568-F4.

3.3.1.2 Survey Results

The table below summarizes the type of surveys completed, survey dates, and surveying biologist for each survey within this reach. Photographs of this reach are shown in Exhibit 3.3.1-2.

**TABLE 3.3.1
REACH #39 – BEATTY CHANNEL OUTLET AT
SAN GABRIEL RIVER (25+99.00+50')**

Survey Type	Survey Dates	Surveying Biologist
Focused Survey for the Santa Ana Sucker	August 1, 2003	Jonathan Baskin Ph.D. Thomas Haglund Ph.D.
Focused Survey for the Slender-horned Scineflower	July 31, 2003	Scott White

Santa Ana Sucker

There is adequate surface flow in this reach. Emergent and aquatic vegetation are present, as well as mature riparian vegetation further downstream. There is some substrate heterogeneity, but it is all covered with fine sediments. The low flow channel is well defined. Fine sediment is present in the river below Morris Dam, making the habitat unsuitable for most native fish. Although the arroyo chub has been recorded downstream of Morris Dam in recent years, the Santa Ana sucker has not been found in this reach. The Pacific treefrog is present in this reach.

Seining was conducted at Reach #39. Two juvenile fish were observed within 13 feet of the end of the cement bottom portion of the channel. Attempts to net these individuals were unsuccessful. Both individuals were swimming in the flowing portion of the channel and could not be positively identified. However, the fish were most likely arroyo chub, a California Species of Special Concern. Based on surveys below Morris Dam in 1992, the only fishes we found were rainbow trout (*Salmo gairdneri*) and arroyo chub, although theoretically both Santa Ana sucker and Santa Ana speckled dace could occasionally occur downstream of the dam. The Santa Ana sucker was not observed during seining in Summer 2003.

If fine sediment remains downstream of Morris Dam, the habitat in this reach will remain unsuitable for the Santa Ana sucker. However, high winter flows could clean the substrate, and bring fish. In years where high winter flows occur, this reach should be monitored for the presence of the Santa Ana sucker prior to the onset of channel maintenance.

Slender-horned Spineflower

The channel in Reach #39 consists of herbaceous and shrubby hydrophytic vegetation. No suitable habitat is present for the slender-horned spineflower in Reach #39. However, there is good quality alluvial scrub next to the channel. There are no known occurrences of the slender-horned spineflower in the San Gabriel River drainage, but the alluvial scrub habitat here provides potential for this species. Although maintenance activities do not affect the suitable habitat for the slender-horned spineflower located outside Reach #39, focused surveys were recommended following the 2002 habitat assessment.

No slender-horned spineflower was observed during the 2003 surveys.

3.3.2a Reach #40a – San Gabriel River-Santa Fe Dam to I-10 Freeway

3.3.2a.1 Project Location

Reach #40a, San Gabriel River, is located within the San Gabriel River Watershed, in the San Gabriel Valley area (Exhibit 3.3.2a-1). The limits of Reach #40a are the Santa Fe Dam (upstream) and I-10 Freeway (downstream). Reach #40a has a total length of approximately 20,570 feet. The reach is found on the Baldwin Park USGS 7.5 x 15-minute quadrangle map. Refer to Thomas Guide, Los Angeles County, pages 598-B2 to 637-G1. Photographs of this reach are shown in Exhibit 3.3.2a-2.

No surveys were required at this reach in 2003. Survey results for 2002 are provided in the 2002 focused survey results report (BonTerra Consulting 2002).

3.3.2b Reach #40b – San Gabriel River-I-10 Freeway to Thienes Avenue

3.3.2b.1 Project Location

Reach #40b, San Gabriel River, is located within the San Gabriel River Watershed, in the San Gabriel Valley area (Exhibit 3.3.2b-1). The limits of Reach #40b are the I-10 freeway (upstream) and Thienes Avenue (downstream). Reach #40b has a total length of approximately 10,800 feet. The reach is found on the Baldwin Park USGS 7.5 x 15-minute quadrangle map. Refer to Thomas Guide, Los Angeles County, page 637-G1 to 637-D5.637-G1. Photographs of this reach are shown in Exhibit 3.3.2b-2.

3.3.2b.2 Survey Results

The table below summarizes the type of surveys completed, survey dates, and surveying biologist for each survey within this reach. Photographs of this reach are shown in Exhibit 3.3.2-2.

TABLE 3.3.2b
REACH #40b – SAN GABRIEL RIVER-I-10 FREEWAY
TO THIENES AVENUE

Survey Type	Survey Dates	Surveying Biologist
Focused Survey for the Least Bell's Vireo and Southwestern Willow Flycatcher	April 19, 30, May 10, 20, 30, June 10, 20, 29, July 6, and July 13, 2003	Dharm Pelligrini Brian Daniels

Least Bell's Vireo

The least Bell's vireo was not present in Reach #40a during these surveys.

As is noted in the 2002 report, one pair and one male least Bell's vireo were observed in this reach in 2002. Conditions and maintenance did not change from 2002 to 2003. The absence of the least Bell's vireo in this reach in 2003 is likely attributable to natural population fluctuations.

Southwestern Willow Flycatcher

The southwestern willow flycatcher was not present in Reach #40b during these surveys.

3.3.3 Reach #43a – San Gabriel River – Upper

3.3.3.1 Project Location

Reach #43a, San Gabriel River – Upper, is located within the San Gabriel River Watershed, in the San Gabriel Valley area (Exhibit 3.3.3-1). The limits of Reach #43a are Whittier Narrows Dam (upstream) and San Gabriel River Parkway (downstream). Reach #43a has a total length of approximately 3,450 feet. The reach is found on the Whittier USGS 7.5 x 15-minute quadrangle map. Refer to Thomas Guide, Los Angeles County, pages 677-A1-676-J2.

3.3.3.2 Survey Results

The table below summarizes the type of surveys completed, survey dates, and surveying biologist for each survey within this reach. Photographs of this reach are shown in Exhibit 3.3.3-2.

TABLE 3.3.3
REACH #43a – SAN GABRIEL RIVER – UPPER

Survey Type	Survey Dates	Surveying Biologist
Focused Survey for the Least Bell's Vireo and Southwestern Willow Flycatcher	April 19, 30, May 10, 20, 30, June 10, 20, 29, July 6, and July 13	Dharm Pelligrini Brian Daniels

Southwestern Willow Flycatcher

The southwestern willow flycatcher was not present in Reach #43b during these surveys.

3.3.5 Reach #44 – San Gabriel River – Rubber Dams

3.3.5.1 Project Location

Reach #44, San Gabriel River-Rubber Dams, is located within the San Gabriel River watershed, in the San Gabriel Valley area. The limits of Reach #44 are Beverly Boulevard (upstream) and Firestone Boulevard (downstream). Reach #44 is approximately 31,900 feet in total length. The reach is found on the El Monte USGS 7.5 x 15-minute quadrangle map. Refer to Thomas Guide, Los Angeles County, pages 676-J2 to 706-D6.

3.3.5.2 Survey Results

The table below summarizes the type of surveys completed, survey dates, and surveying biologist for each survey within this reach (Exhibit 3.3.5-1). Photographs of this reach are shown in Exhibit 3.3.5-2. Note that the patch of willow riparian habitat located within 1,000 feet of Beverly Boulevard was added for the 2003 surveys.

**TABLE 3.3.5
REACH #44 – SAN GABRIEL RIVER – RUBBER DAMS**

Survey Type	Survey Dates	Surveying Biologist
Focused Survey for the Least Bell's Vireo and Southwestern Willow Flycatcher	April 19, 30, May 10, 20, 30, June 10, 20, 29, July 6, and July 13	Dharm Palligrini Brian Daniels

Least Bell's Vireo

The least Bell's vireo was not present in Reach #44 during these surveys.

Southwestern Willow Flycatcher

The southwestern willow flycatcher was not present in Reach #44 during these surveys.

3.4 SANTA CLARA RIVER

3.4.1 Reach #45 – Sand Canyon (PD T1307) Main Channel Inlet

3.4.1.1 Project Location

Reach #45, Sand Canyon (PD T1307) Main Channel Inlet, is located within the Santa Clara River Watershed, approximately 0.5 mile north of the Soledad Canyon Road and Sand Canyon Road intersection, in the City of Santa Clarita (Exhibit 3.4.1-1). The limits of Reach #45 are approximately 1,916 feet upstream of Soledad Canyon Road to approximately 2,018 feet upstream of Soledad Canyon Road. Reach #45 is 102 feet in total length. The reach is found on the Mint Canyon USGS 7.5 x 15-minute quadrangle map. Refer to Thomas Guide, Los Angeles County, pages 4552-C1.

3.4.1.2 Survey Results

The table below summarizes the type of surveys completed, survey dates, and surveying biologist for each survey within this reach. Photographs of this reach are shown in Exhibit 3.4.1-2.

TABLE 3.4.1
REACH #45 – SAND CANYON (PD T1307) MAIN CHANNEL INLET

Survey Type	Survey Dates	Surveying Biologist
Focused Survey for the Slender-horned Spineflower	July 25, 2003	Scott White

Slender-horned Spineflower

This inlet consists mostly of vehicle-disturbed open sand. However, a few undisturbed areas around shrub groupings in the wash provide potential habitat for the slender-horned spineflower upstream from Reach #45. Although this habitat is located outside of the reach where maintenance activities occur, focused surveys were recommended following the 2002 habitat assessment due to its close proximity to the reach.

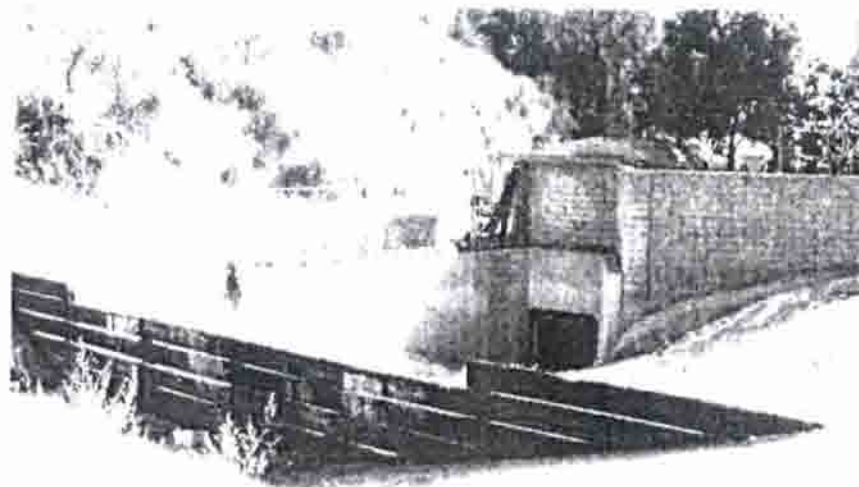
No slender-horned spineflower was observed during the 2003 surveys.

3.4.2 Reach #46 – Sand Canyon (PD T1307) Main Channel Outlet

3.4.2.1 Project Location

Reach #46, Sand Canyon (PD T1307) Main Channel Outlet, is located within the Santa Clara River Watershed, approximately 0.25 mile north of the Soledad Canyon Road and Sand Canyon Road intersection, in the City of Santa Clarita. The limits of Reach #46 are approximately 1,020 feet upstream of Soledad Canyon Road and Sand Canyon Road intersection to approximately 1,100 feet upstream this intersection. Reach #46 is 80 feet in total length. The reach is found on the Mint Canyon USGS 7.5 x 15-minute quadrangle map. Refer to Thomas Guide, Los Angeles County, pages 4552-C1.

No surveys were required at this reach in 2003. Survey results for 2002 are provided in the 2002 focused survey results report (BonTerra Consulting 2002).



Project Site Photos

Exhibit 3.4.1-2

Reach #45 - Sand Canyon (PD T1307) Main Channel Inlet

3.4.3 Reach #47 – Santa Clara River Main Channel (PD 1733 Unit 1)

3.4.3.1 Project Location

Reach #47, Santa Clara River Main Channel (PD 1733 unit 1), is located within the Santa Clara River Watershed, approximately 1.5 miles southwest of the SR-14 and Sand Canyon Road intersection in the City of Santa Clarita (Exhibit 3.4.3-1). The limits of Reach #47 are the downstream edge of State Route 14 to approximately 1,875 feet downstream of State Route 14. Reach #47 is approximately 1,875 feet in total length. The reach is found on the Mint Canyon USGS 7.5 x 15-minute quadrangle map. Refer to Thomas Guide, Los Angeles County, pages 4552-A3 to 4551-J3.

3.4.3.2 Survey Results

The Table below summarizes the type of surveys completed, survey dates, and surveying biologist for each survey within this reach. Photographs of this reach are shown in Exhibit 3.4.3-2.

TABLE 3.4.3
REACH #47 – SANTA CLARA RIVER MAIN CHANNEL (PD 1733 UNIT 1)

Survey Type	Survey Dates	Surveying Biologist
Focused Survey for the Unarmored Three-spine Stickleback	July 20, 2003	Jonathan Baskin Ph.D. Thomas Haglund Ph.D.
Focused Survey for the Slender-horned Spineflower	July 16, 2003	Scott White, Michael Honer, Dylan Hannon

Unarmored Three-spine Stickleback

This reach was dry at the time of the habitat assessment, except for the presence of some minor nuisance water. The nuisance water was examined visually and found to contain the Pacific treefrog, both adults and neonates. The water was not of suitable quality to hold fish. Therefore, no seining was conducted.

The Santa Clara River Channel in this reach contained some scrub vegetation, but there was no well-developed riparian corridor. The river channel in this reach is braided, but there is a moderately well defined primary low flow channel. The low flow channel has good substrate heterogeneity containing predominantly sand through cobble-sized particles. Although this reach was dry in 2003, it does have the potential to hold fish in normal rainfall years if surface water is present. Both the unarmored three-spine stickleback and arroyo chub were consistently collected from this stream reach in the early 1990s (Baskin and Haglund, personal observation). In addition, there is an upstream population of sticklebacks that would allow recolonization of this reach when surface water is present. In years where appropriate rainfall conditions occur, it is recommended that this reach be monitored prior to any channel maintenance.

Slender-horned Spineflower

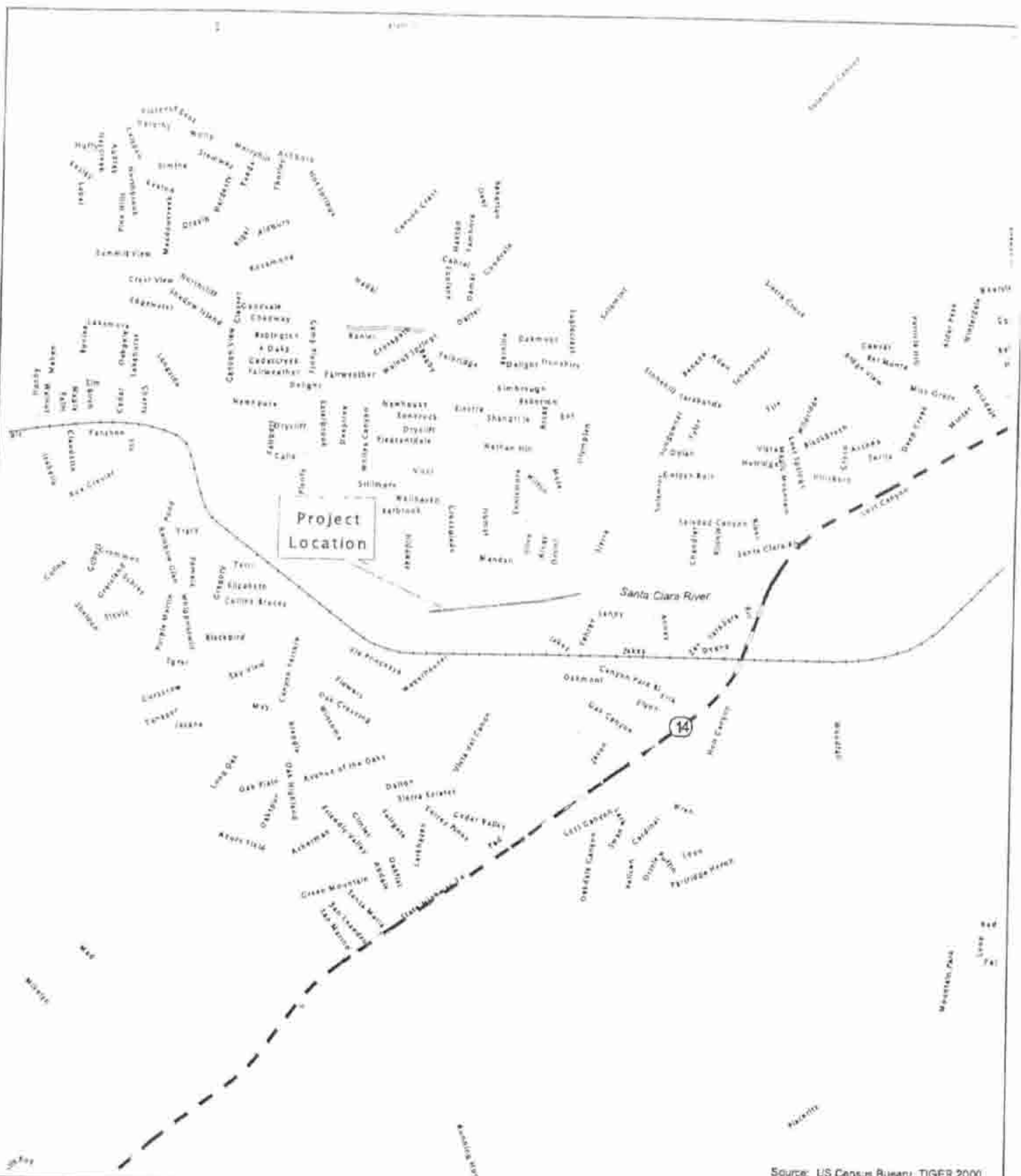
This reach consists primarily of open sandy wash with areas of early-successional alluvial scrub. In general, the areas where previous maintenance has occurred adjacent to flood control structures provide no suitable habitat for the slender-horned spineflower. However, suitable habitat for the slender-horned spineflower is present in the alluvial fan sage scrub vegetation along the flood control structures that have not been disturbed by previous vegetation maintenance. Suitable



Project Site Photos

Exhibit 3.4.3-2

Reach #47 - Santa Clara River Main Channel (PD 1733 Unit 1)



Source: US Census Bureau, TIGER 2000

Project Location

Exhibit 3.4.4-1

Reach #55 - Santa Clara River Main Channel (PD's 910, 832, 1758, & 1562 Unit 2)



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Project Site Photos

Exhibit 3.4.5-2

Reach #56 - Santa Clara River Main Channel (PD 1562 Unit 2)

Slender-horned Spineflower

This reach consists primarily of open sandy wash with areas of early-successional alluvial scrub. In general, the areas where previous maintenance has occurred adjacent to flood control structures provides no suitable habitat for the slender-horned spineflower. However, suitable habitat for the slender-horned spineflower is present in the undisturbed alluvial fan sage scrub vegetation along the flood control structures where vegetation maintenance has not occurred. Suitable habitat for the slender-horned spineflower is therefore present in Reach #56, and focused surveys were recommended following the 2002 habitat assessment.

No slender-horned spineflower was observed during the 2003 surveys.

3.4.6 Reach #58 – Santa Clara River Main Channel (PD 374)

3.4.6.1 Project Location

Reach #58, Santa Clara River Main Channel (PD 374), is located within the Santa Clara River Watershed in the City of Santa Clarita (Exhibit 3.4.6-1). The limits of Reach #58 are from a point approximately 2,114 feet upstream of old Soledad Canyon Road bridge to the upstream edge of Soledad Canyon Road bridge. Reach #58 is 2,064 feet in total length. The reach is found on the Mint Canyon USGS 7.5 x 15-minute quadrangle map. Refer to Thomas Guide, Los Angeles County, pages 4551-G3 to F3.

3.4.6.2 Survey Results

The Table below summarizes the type of surveys completed, survey dates, and surveying biologist for each survey within this reach. Photographs of this reach are shown in Exhibit 3.4.6-2.

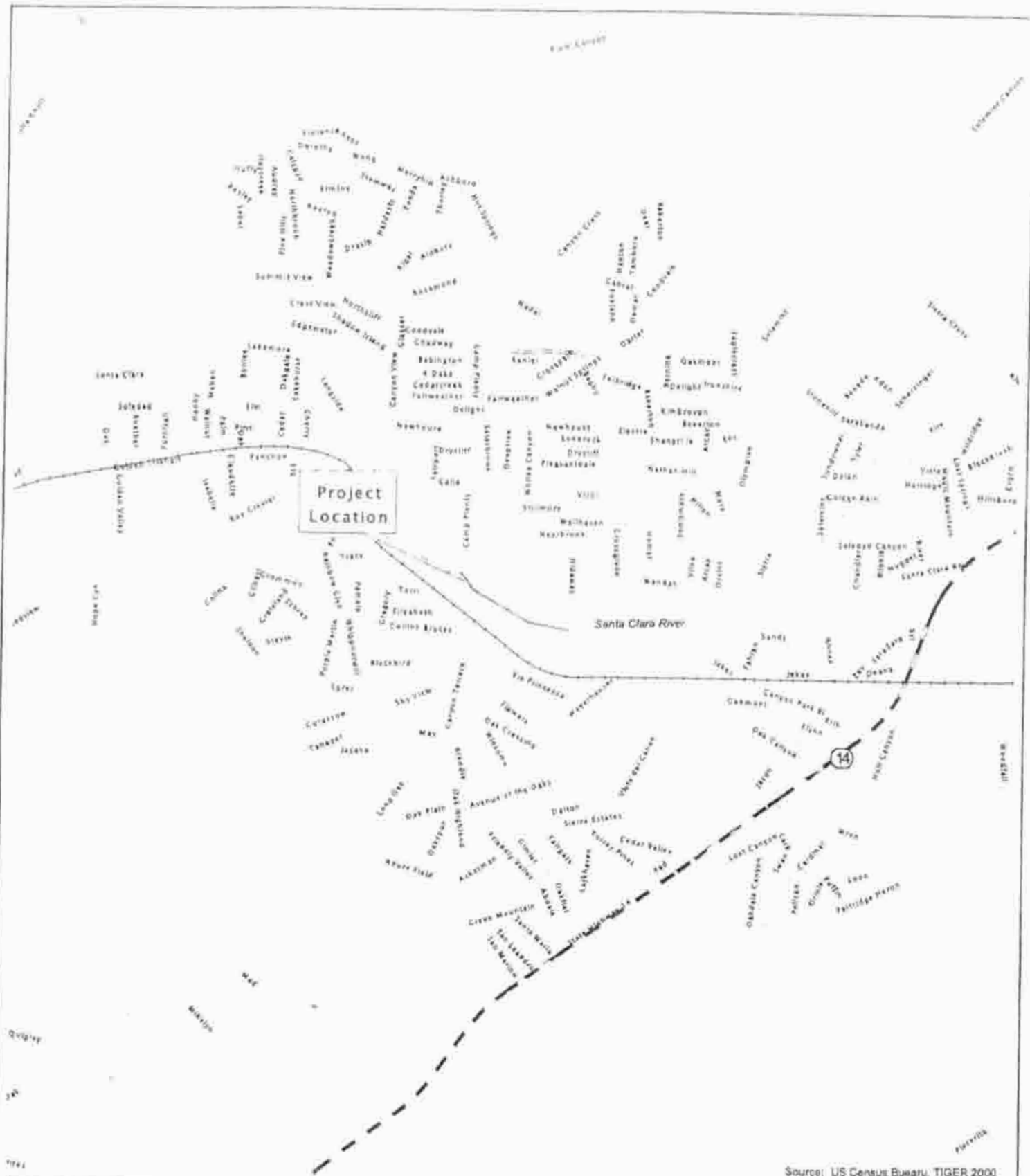
**TABLE 3.4.6
REACH #58 – SANTA CLARA RIVER MAIN CHANNEL (PD 374)**

Survey Type	Survey Dates	Surveying Biologist
Focused Survey for the Unarmored Three-spine Stickleback	July 20, 2003	Jonathan Baskin Ph.D. Thomas Haglund Ph.D.
Focused Survey for the Slender-horned Spineflower	July 16, 2003	Scott White, Michael Honer, Dylan Hannon

Unarmored Three-spine Stickleback

This reach was dry at the time of the habitat evaluation, except for the presence of some nuisance water. No vertebrates were found in the nuisance water. Therefore, no seining was conducted.

The Santa Clara River Channel in this reach contained very little vegetation in some areas but there were patches of vegetation including a few cottonwoods; there was no well-developed riparian corridor. The river channel in this reach is braided, and the primary low flow channel is poorly defined. The low flow channel has little substrate heterogeneity and is dominated by sand-sized particles. Although this reach was dry in 2003, it does have a low potential to hold fish in normal rainfall years if surface water is present. Fish are undoubtedly washed into or through this reach during periods of high rainfall. There is an upstream population of sticklebacks that would allow colonization of this reach when surface water is present. In years where appropriate rainfall conditions occur, it is recommended that this reach be monitored prior to any channel maintenance. However, in most years this reach will be dry.



Source: US Census Bureau, TIGER 2000

Project Location

Reach #58 - Santa Clara River Main Channel (PD 374)

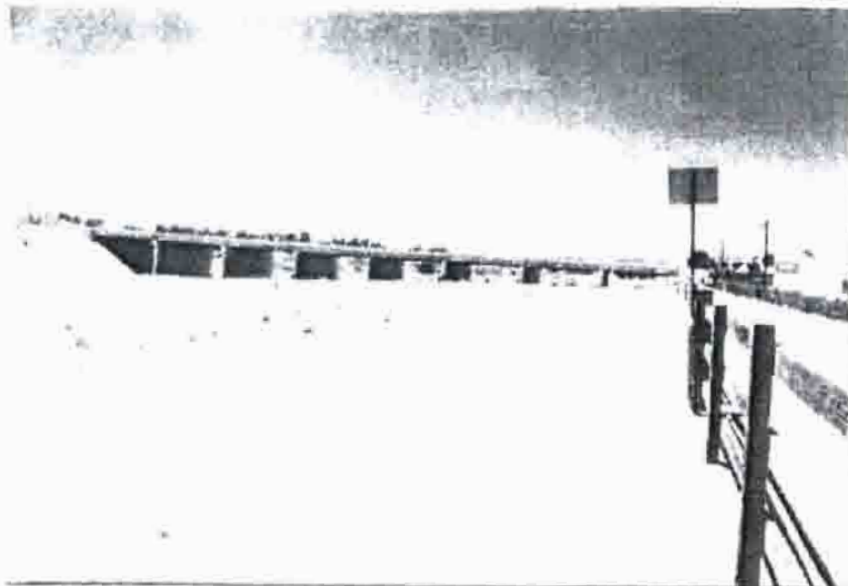
Exhibit 3.4.6-1



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Project Site Photos

Exhibit 3.4.6-2

Reach #58 - Santa Clara River Main Channel (PD 374)



Source: US Census Bureau, TIGER 2000

Project Location

Reach #59 - Santa Clara River Main Channel (PD 374)

Exhibit 3.4.7-1



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Project Site Photos

Exhibit 3.4.7-2

Reach #59 - Santa Clara River Main Channel (PD 374)

Slender-horned Spineflower

This reach consists primarily of open sandy wash with areas of early-successional alluvial scrub. The areas where previous maintenance has occurred adjacent to flood control structures generally provide no suitable habitat for the slender-horned spineflower. However, suitable habitat for the slender-horned spineflower is present in the undisturbed alluvial fan sage scrub vegetation along the flood control structures where vegetation maintenance has not occurred. In addition, moderate quality alluvial scrub is present on the right (east) bank downstream of the Soledad Canyon bridge. Suitable habitat for the slender-horned spineflower is therefore present in Reach #59, and focused surveys were recommended following the 2002 habitat assessment.

No slender-horned spineflower was observed during the 2003 surveys.

3.4.8 Reach #60 – Santa Clara River Main Channel (PD 1339 & 374)

3.4.8.1 Project Location

Reach #60, Santa Clara River Main Channel (PD 1339 & 374), is located within the Santa Clara River Watershed in the City of Santa Clarita (Exhibit 3.4.8-1). The limits of Reach #60 are the downstream side of new Soledad Canyon Road bridge to the confluence with PD 313, which is downstream of Newhouse Street, an approximate distance of 3,258 feet. The reach is found on the Mint Canyon USGS 7.5 x 15-minute quadrangle map. Refer to Thomas Guide, Los Angeles County, page 4551-F3 to E2.

3.4.8.2 Survey Results

The table below summarizes the type of surveys completed, survey dates, and surveying biologist for each survey within this reach. Photographs of this reach are shown in Exhibit 3.4.8-2.

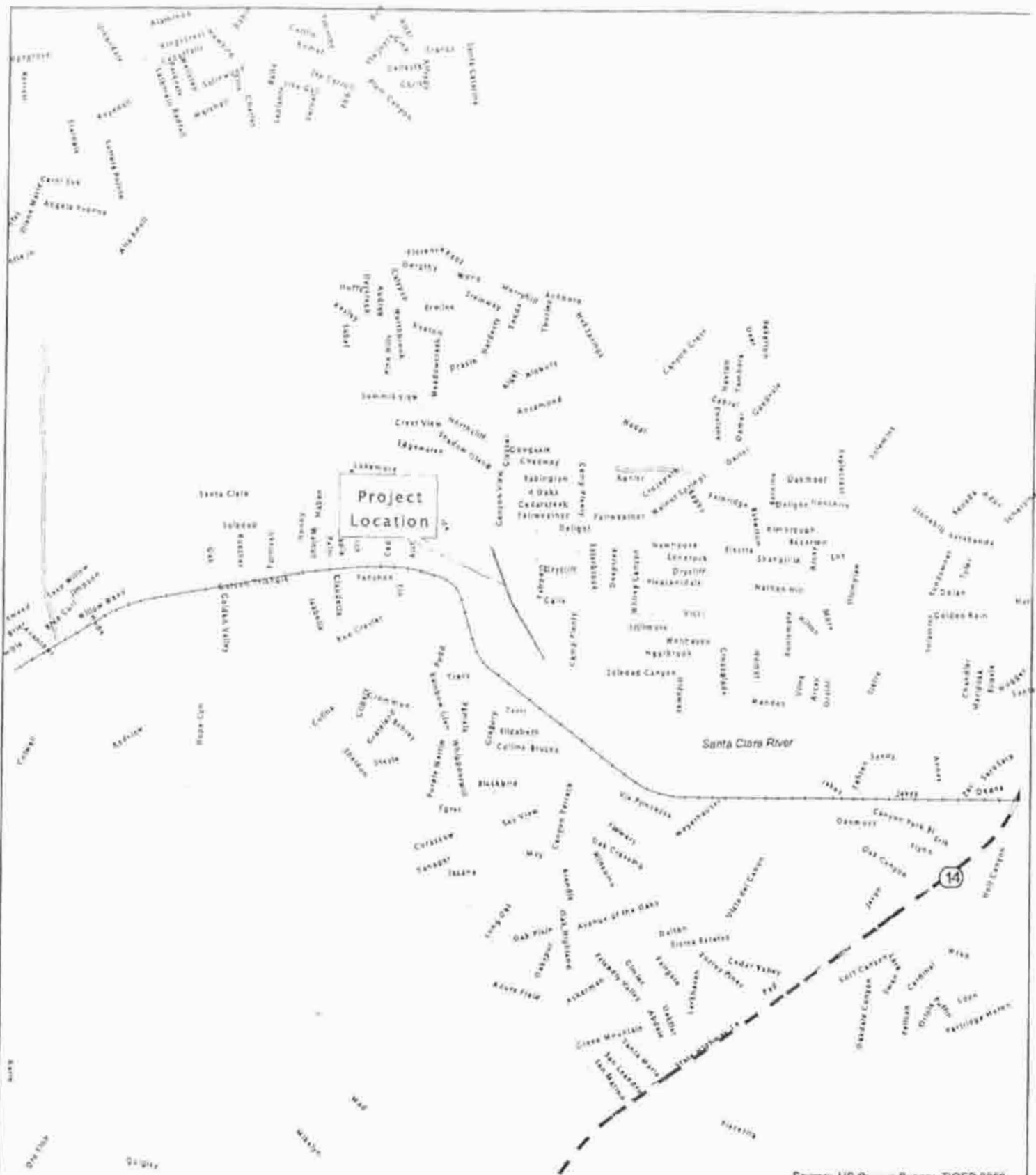
**TABLE 3.4.8
REACH #60 – SANTA CLARA RIVER MAIN CHANNEL (PD 1339 & 374)**

Survey Type	Survey Dates	Surveying Biologist
Focused Survey for the Unarmored Three-spine Stickleback	August 3, 2003	Jonathan Easkin Ph.D. Thomas Haglund Ph.D.
Focused Survey for the Slender-horned Spineflower	July 16, 2003	Scott White, Michael Honer, Dylan Hannon

Unarmored Three-spine Stickleback

This reach was dry at the time of the habitat evaluation, except for the presence of water at the most downstream end of the reach. Nuisance water, derived from a side channel, extends downstream (west) along the north edge of the riverbed into Reach #61. No vertebrates were found in the nuisance water. The outflow of the side channel was seined and no fish were located.

The Santa Clara River channel in this reach contained some scrub vegetation, although there was no well-developed riparian corridor. The river channel in this reach is braided, and the primary low flow channel is poorly defined. The low flow channel has little substrate heterogeneity and is dominated by sand-sized particles. Although this reach was dry in 2003 (except as discussed above), it does have a low potential to hold fish in normal rainfall years if surface water is present. Fish are undoubtedly washed into or through this reach during periods of high rainfall. If the flow from the side channel reaches the Santa Clara River during high flows, fish could colonize the side channel and due to the large amount of water present, this could serve as a refugium during the



Source: US Census Bureau, TIGER 2000

Project Location

Reach #60 - Santa Clara River Main Channel (PD 1339 & 374)

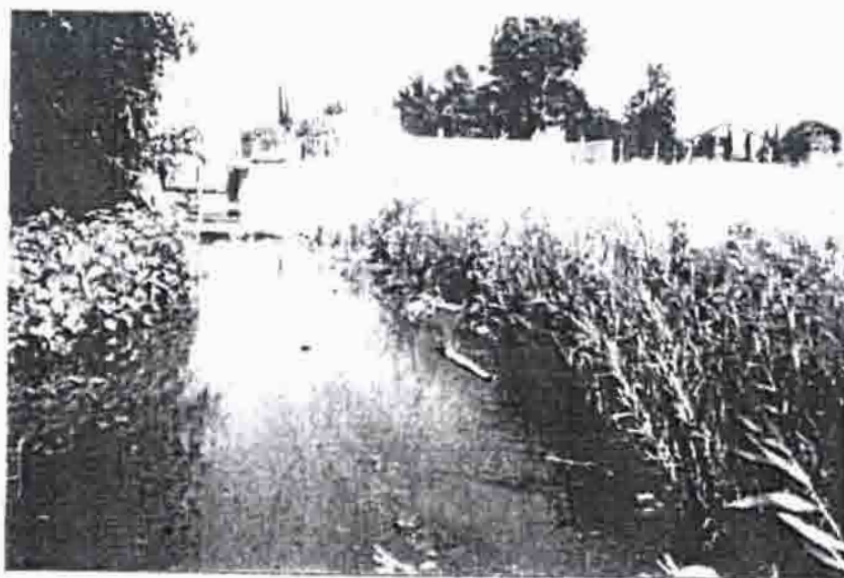
Exhibit 3.4.8-1



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Project Site Photos

Exhibit 3.4.8-2

Reach #60 - Santa Clara River Main Channel (PD 1339 & 374)

dry season. There is an upstream population of sticklebacks that would allow colonization of this reach when surface water is present. In years where appropriate conditions occur, it is recommended that this reach be monitored prior to any channel maintenance. However, in most years this reach will be dry.

Slender-horned Spineflower

This reach consists primarily of open sandy wash with areas of early-successional alluvial scrub. In general, the areas where previous maintenance has occurred adjacent to flood control structures provides no suitable habitat for the slender-horned spineflower. However, suitable habitat for the slender-horned spineflower is present in the undisturbed alluvial fan sage scrub vegetation along the flood control structures where vegetation maintenance has not occurred. Suitable habitat for the slender-horned spineflower is therefore present in Reach #60, and focused surveys were recommended following the 2002 habitat assessment.

No slender-horned spineflower was observed during the 2003 surveys.

3.4.9 Reach #61 – Santa Clara River Main Channel (PD 659)

3.4.9.1 Project Location

Reach #61, Santa Clara River Main Channel (PD 659), is located within the Santa Clara River Watershed in the City of Santa Clarita (Exhibit 3.4.9-1). The limits of Reach #61 are the downstream side of new Soledad Canyon Road bridge to a point approximately 1,634 feet further downstream. Reach #61 is 1,634 feet in total length. The reach is found on the Mint Canyon USGS 7.5 x 15-minute quadrangle map. Refer to Thomas Guide, Los Angeles County, pages 4551-E2.

3.4.9.2 Survey Results

The table below summarizes the type of surveys completed, survey dates, and surveying biologist for each survey within this reach. Photographs of this reach are shown in Exhibit 3.4.9-2.

**TABLE 3.4.9
REACH #61 – SANTA CLARA RIVER MAIN CHANNEL (PD 659)**

Survey Type	Survey Dates	Surveying Biologist
Focused Survey for the Unarmored Three-spine Stickleback	July 20, 2003	Jonathan Baskin Ph.D. Thomas Haglund Ph.D.
Focused Survey for the Slender-horned Spineflower	July 16, 2003	Scott White, Michael Honer, Dylan Hannon

Unarmored Three-spine Stickleback

This reach was dry at the time of the habitat evaluation, except for the presence of nuisance water flowing along the east bank from Reach #61. This water was seined, but no fishes were found.

The Santa Clara River Channel in this reach contained a moderate amount of scrub vegetation which becomes thicker downstream, but there was no well-developed riparian corridor. The river channel in this reach is braided, and the primary low flow channel is poorly defined. The low flow channel has little substrate heterogeneity and is dominated by sand-sized particles. Although this reach was dry in 2003, it does have a low potential to hold fish in normal rainfall years if surface water is present. Fish are undoubtedly washed into or through this reach during periods of high



Project Location

Reach #61 - Santa Clara River Main Channel (PD 659)

Exhibit 3.4.9-1



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Project Site Photos

Exhibit 3.4.9-2

Reach #61 - Santa Clara River Main Channel (PD 659)

rainfall. There is an upstream population of sticklebacks that would allow colonization of this reach when surface water is present. There are piles of sand in the channel bottom indicating some maintenance activity has occurred. In years where appropriate rainfall conditions occur, it is recommended that this reach be monitored prior to any channel maintenance. However, in most years this reach will be dry.

Slender-horned Spineflower

This reach consists primarily of open sandy wash with areas of early-successional alluvial scrub. In general, the areas where previous maintenance has occurred adjacent to flood control structures provides no suitable habitat for the slender-horned spineflower. However, suitable habitat for the slender-horned spineflower is present in the undisturbed alluvial fan sage scrub vegetation along the flood control structures where vegetation maintenance has not occurred. Suitable habitat for the slender-horned spineflower is therefore present in Reach #61, and focused surveys were recommended following the 2002 habitat assessment.

No slender-horned spineflower was observed during the 2003 surveys.

3.4.10 Reach #62 – Santa Clara River Main Channel (PD 659 & 754)

3.4.10.1 Project Location

Reach #62, Santa Clara River Main Channel (PD 659 & 754), is located within the Santa Clara Watershed in the City of Santa Clarita (Exhibit 3.4.10-1). The limits of Reach #62 are approximately 1,634 feet downstream of new Soledad Canyon Road bridge to Honby Avenue. Reach #62 is 3,032 feet in total length. The reach is found on the Newhall USGS 7.5 x 15-minute quadrangle map. Refer to Thomas Guide, Los Angeles County, pages 4551-E2 to D2.

3.4.10.2 Survey Results

The table below summarizes the type of surveys completed, survey dates, and surveying biologist for each survey within this reach. Photographs of this reach are shown in Exhibit 3.4.10-2.

**TABLE 3.4.10
REACH #62 – SANTA CLARA RIVER MAIN CHANNEL (PD 659 & 754)**

Survey Type	Survey Dates	Surveying Biologist
Focused Survey for the Unarmored Three-spine Stickleback	July 30, 2003	Jonathan Baskin Ph.D. Thomas Haglund Ph.D.
Focused Survey for the Slender-horned Spineflower	July 16, 2003	Scott White, Michael Honer Honer, Dylan Hannon

Unarmored Three-spine Stickleback

This reach was dry at the time of the habitat evaluation except for a large inflow of nuisance water at the downstream end of the reach. The nuisance water was examined visually and the quality was determined to be unsuitable for fish. Therefore, no seining was conducted.

The Santa Clara River Channel in this reach contained thick scrub vegetation with scattered cottonwoods, but there was no well-developed riparian corridor. The river channel in this reach is braided, and the primary low flow channel is poorly defined. The low flow channel has little substrate heterogeneity and is dominated by sand-sized particles. Although this reach was dry in 2003 (except as noted above), it does have a low potential to hold fish in normal rainfall years if



Project Location

Reach #62 - Santa Clara River Main Channel (PD 659 & 754)

Exhibit 3.4.10-1



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Project Site Photos

Exhibit 3.4.10-2

Reach #62 - Santa Clara River Main Channel (PD 659 & 754)

surface water is present. Fish are undoubtedly washed into or through this reach during periods of high rainfall. There is an upstream population of sticklebacks that would allow colonization of this reach when surface water is present. There are piles of sand in the channel bottom indicating some maintenance activity has occurred. In years where appropriate rainfall conditions occur, it is recommended that this reach be monitored prior to any channel maintenance. However, in most years this reach will be dry, except for nuisance water.

Slender-horned Spineflower

This reach consists primarily of open sandy wash with areas of early-successional alluvial scrub. In general, the areas where previous maintenance has occurred adjacent to flood control structures provides no suitable habitat for the slender-horned spineflower. However, suitable habitat for the slender-horned spineflower is present in the undisturbed alluvial fan sage scrub vegetation along the flood control structures where vegetation maintenance has not occurred. Suitable habitat for the slender-horned spineflower is, therefore, present in Reach #62, and focused surveys were recommended following the 2002 habitat assessment.

No slender-horned spineflower was observed during the 2003 surveys.

3.4.11 Reach #66 – Santa Clara River Main Channel (PD 1538)

3.4.11.1 Project Location

Reach #66, Santa Clara River Main Channel (PD 1358), is located within the Santa Clara River Watershed in the City of Santa Clarita (Exhibit 3.4.11-1). The limits of Reach #66 are approximately 706 feet upstream of Bouquet Canyon Road to approximately 1,417 feet upstream of Bouquet Canyon Road. Reach #66 is 711 feet in total length. The reach is found on the Newhall USGS 7.5 x 15-minute quadrangle map. Refer to Thomas Guide, Los Angeles County, pages 4550-H2.

3.4.11.2 Survey Results

The table below summarizes the type of surveys completed, survey dates, and surveying biologist for each survey within this reach. Photographs of this reach are shown in Exhibit 3.4.11-2).

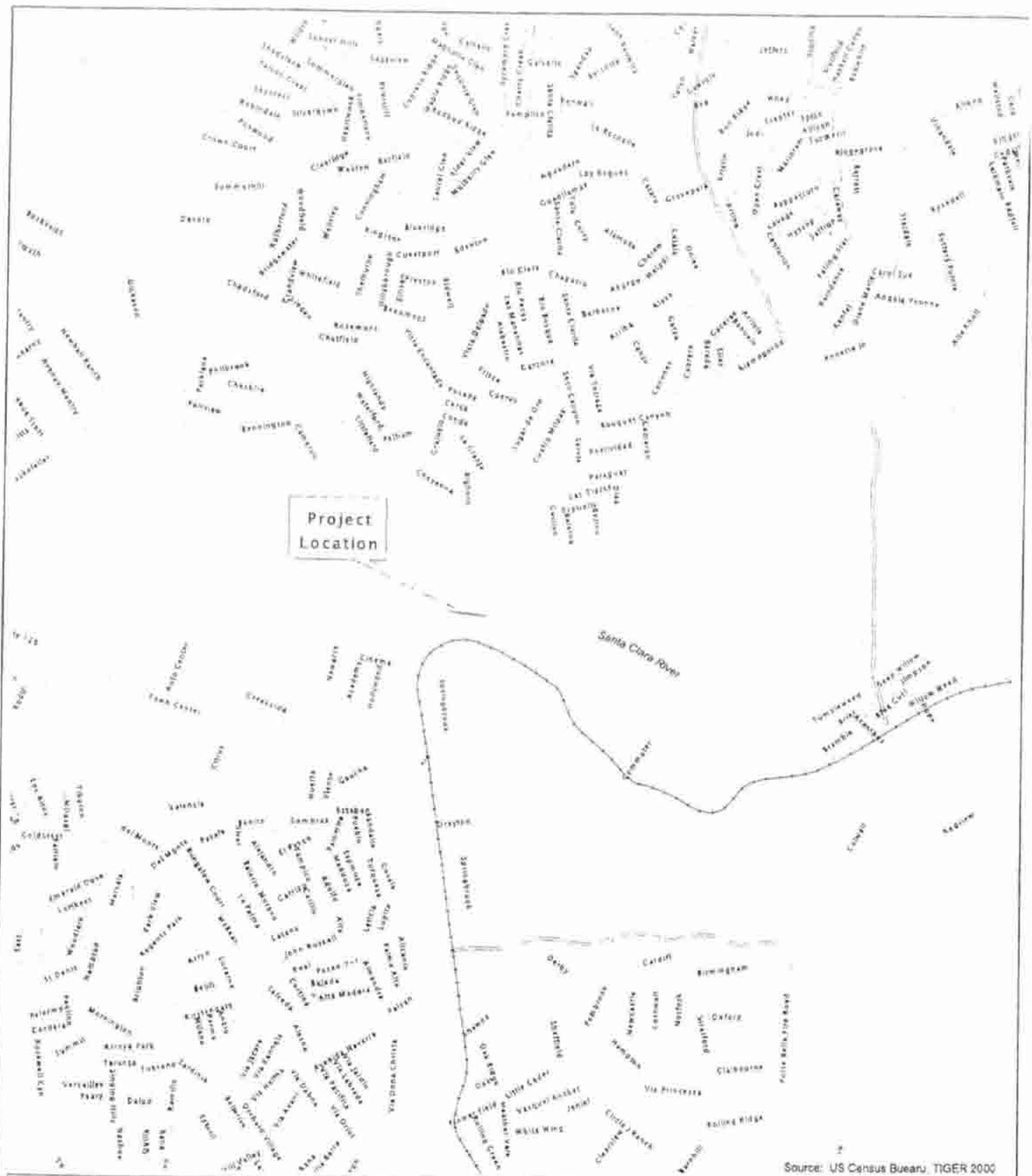
**TABLE 3.4.11
REACH #66 – SANTA CLARA RIVER MAIN CHANNEL (PD 1538)**

Survey Type	Survey Dates	Surveying Biologist
Focused Survey for the Unarmored Three-spine Stickleback	July 30, 2003	Jonathan Baskin Ph.D. Thomas Haglund Ph.D.
Focused Survey for the Slender-horned Spineflower	July 25, 2003	Scott White

Unarmored Three-spine Stickleback

This reach was dry at the time of the habitat assessment. Therefore, no seining was conducted.

The Santa Clara River Channel in this reach contained thick scrub vegetation, but there was no well-developed riparian corridor. The river channel in this reach is braided, and the primary low flow channel is poorly defined. The low flow channel has little substrate heterogeneity, and is dominated by sand-sized particles. Although this reach was dry in 2003, it does have a low potential to hold fish in normal rainfall years if surface water is present. Fish are undoubtedly



Project Location

Reach #66 - Santa Clara River Main Channel (PD 1538)

Exhibit 3.4.11-1



0.25 0 0.25 0.5 Miles

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Project Site Photos

Exhibit 3.4.11-2

Reach #66 - Santa Clara River Main Channel (PD 1538)

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Source: Bonterra Consulting

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washed into or through this reach during periods of high rainfall. There is an upstream population of sticklebacks that would allow colonization of this reach when surface is present. In years where appropriate rainfall conditions occur, it is recommended that this reach be monitored prior to any channel maintenance. However, in most years this reach will be dry.

Slender-horned Spineflower

This reach consists primarily of areas where previous maintenance has occurred adjacent to flood control structures. In general, these areas provide no habitat for the slender-horned spineflower. However, potential habitat for the slender-horned spineflower is present within mule fat scrub and great basin sagebrush (*Artemisia tridentata*) scrub vegetation along the flood control structures where maintenance has not occurred. Therefore, suitable habitat for the slender-horned spineflower is present in Reach #66, and focused surveys were recommended following the 2002 habitat assessment.

No slender-horned spineflower was observed during the 2003 surveys.

3.4.12 Reach #67 – Bouquet Canyon Upper (PDs 1201, 802, 700B, & 625B)

3.4.12.1 Project Location

Reach #67, Bouquet Canyon Upper (PDs 1201, 802, 700B & 625), is located within the Santa Clara River Watershed, in the City of Santa Clarita and the Bouquet Canyon community in unincorporated Los Angeles County (Exhibit 3.4.12-1). The limits of Reach #67 are approximately 63 feet downstream of Hob Avenue to approximately 153 feet upstream of Urbandale Avenue. Reach #67 is 6,176 feet in total length. The reach is found on the Newhall USGS 7.5 x 15-minute quadrangle map. Refer to Thomas Guide, Los Angeles County, page 4461-D1 to C6.

3.4.12.2 Survey Results

The table below summarizes the type of surveys completed, survey dates, and surveying biologist for each survey within this reach. Photographs of this reach are shown in Exhibit 3.4.12-2.

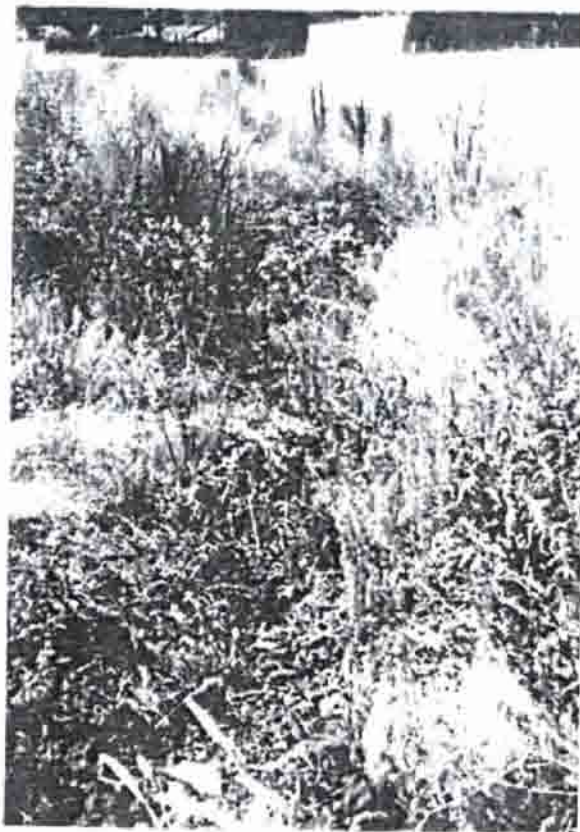
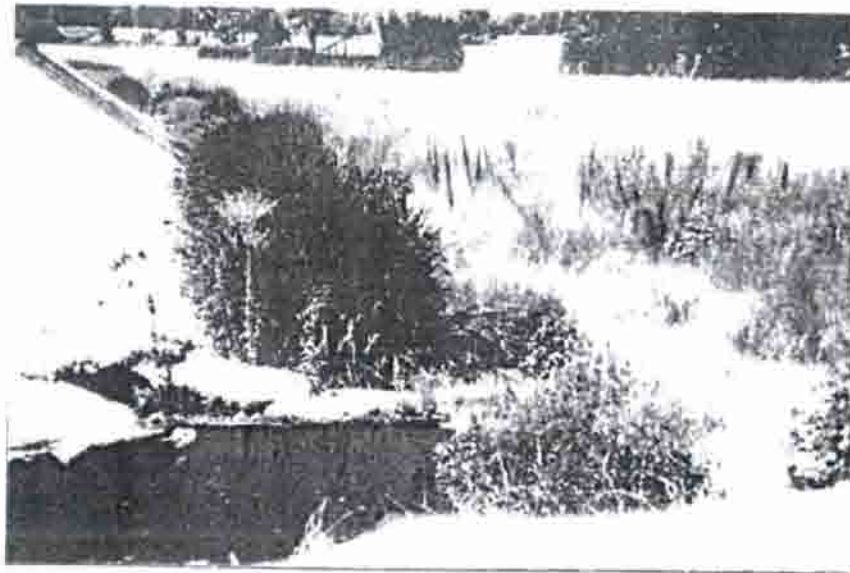
**TABLE 3.4.12
REACH #67 – BOUQUET CANYON UPPER (PDs 1201, 802, 700B, & 625B)**

Survey Type	Survey Dates	Surveying Biologist
Focused Survey for the Unarmored Three-spine Stickleback	August 3, 2003	Jonathan Baskin Ph.D. Thomas Haglund Ph.D.

Unarmored Three-spine Stickleback

This reach contained surface water sufficient to support fish, and therefore, this reach was seined. No fish were found during the seining. Although there was only limited habitat in the reach that could support sticklebacks this year, during wetter years there will be more appropriate fish habitat and a potential for colonization.

There is considerable emergent and aquatic vegetation. The substrate is dominated by sand-sized particles, and the primary flow channel is poorly defined. This reach is essentially contiguous with the unchannelized portion of Bouquet Canyon Creek, which contains a stickleback population. Therefore, there is a potential for sticklebacks to be washed into this reach during high flows. During wetter years, this lower portion of Bouquet Canyon Creek contains a population of the unarmored three-spine stickleback (Baskin and Haglund, personal observation). During dry years,



Project Site Photos

Exhibit 3.4.12-2

Reach #67 - Bouquet Canyon Upper (PD's 1201, 802, 700B, & 625B)

the more upstream portions of the canyon with perennial water maintain the stickleback population, which expands downstream when there is surface flow in the lower portion of the creek. It is likely that any stickleback population occupying the channelized reach requires the downstream movement of individuals from the unchannelized portion of the creek in order to maintain the population. However, this means that at least in some years this reach will be expected to support fish. In years where appropriate rainfall conditions occur, it is recommended that this reach be monitored prior to any channel maintenance.

3.4.13 Reach #69 – Bouquet Canyon Mid (PDs 772, 773, 1365, 1065, & 451)

3.4.13.1 Project Location

Reach #69, Bouquet Canyon Mid (PDs 722, 773, 1365, 1065 & 45), is located within the Santa Clara River Watershed in the City of Santa Clarita (Exhibit 3.4.13-1). The limits of Reach #69 are approximately 122 feet downstream of Urbandale Avenue to approximately 54 feet downstream of the middle crossing of Bouquet Canyon Road. Reach #69 is 6,812 feet in total length. The reach is found on the Newhall USGS 7.5 x 15-minute quadrangle map. Refer to Thomas Guide, Los Angeles County, page 4461-C6 to A7.

3.4.13.2 Survey Results

The table below summarizes the type of surveys completed, survey dates, and surveying biologist for each survey within this reach. Photographs of this reach are shown in Exhibit 3.4.13-2.

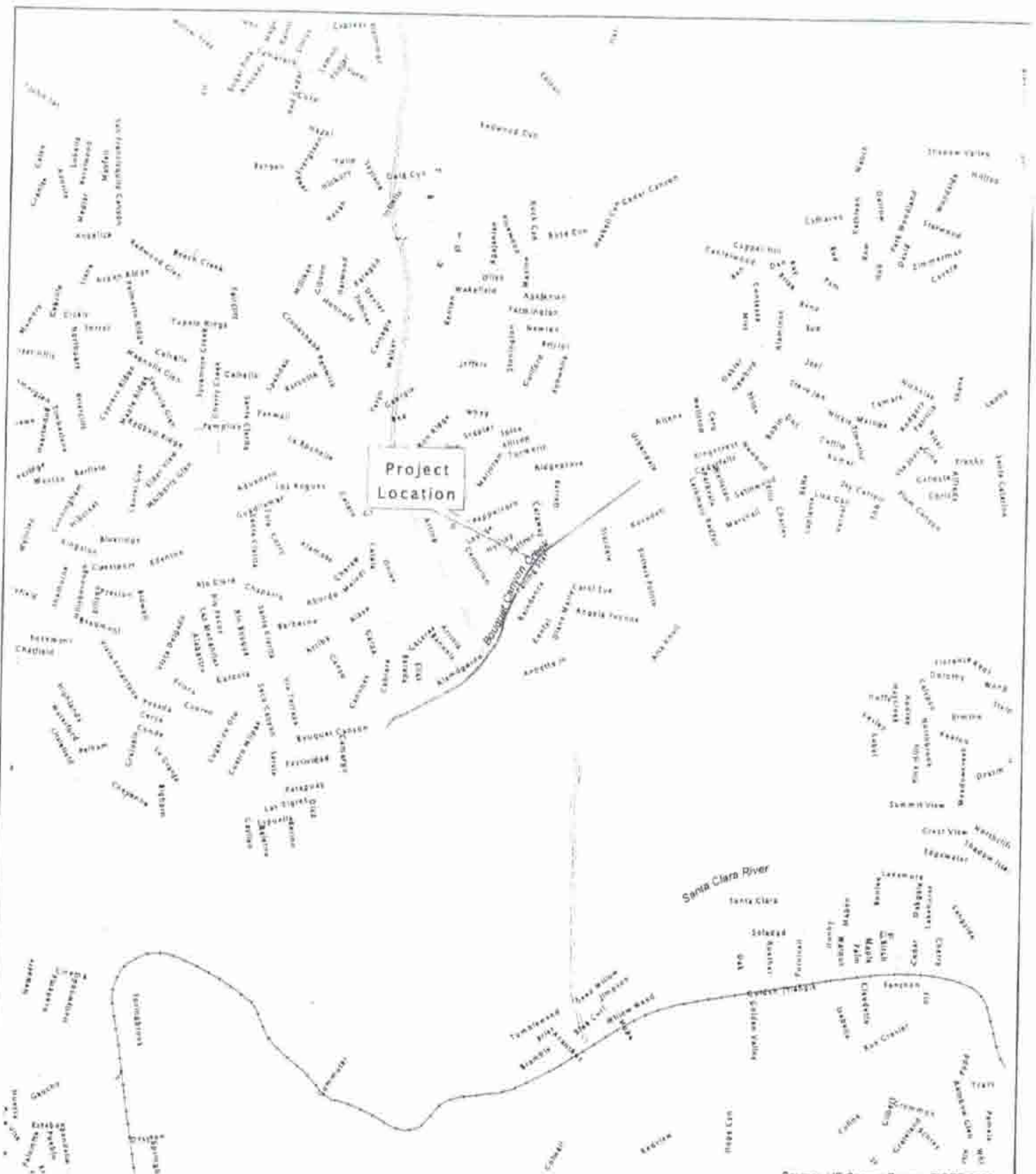
TABLE 3.4.13
REACH #69 – BOUQUET CANYON MID (PDs 772, 773, 1365, 1065, & 451)

Survey Type	Survey Dates	Surveying Biologist
Focused Survey for the Unarmored Three-spine Stickleback	August 3, 2003	Jonathan Baskin Ph.D. Thomas Haglund Ph.D.

Unarmored Three-spine Stickleback

This reach was dry in 2003 except for some nuisance water that did not provide any fish habitat. Therefore, no seining was conducted.

There is patchy vegetation in this reach. The substrate is dominated by sand-sized particles, and the primary flow channel is poorly defined. This reach is contiguous with Reach #67, Bouquet Canyon Upper. Reach #67 is essentially contiguous with the unchannelized portion of Bouquet Canyon Creek, which contains a stickleback population. Therefore, there is a potential for sticklebacks to be washed into this reach during high flows. During wetter years, this lower portion of Bouquet Canyon Creek contains a population of the unarmored three-spine stickleback (Baskin and Haglund, personal observation). During dry years, the more upstream portions of the canyon with perennial water maintain the stickleback population, which expands downstream when there is surface flow in the lower portion of the creek. It is likely that any stickleback population occupying the channelized reach requires the downstream movement of individuals from the unchannelized portion of the creek in order to maintain the population. However, this means that at least in some years this reach will be expected to support fish. In years where appropriate rainfall conditions occur, it is recommended that this reach be monitored prior to any channel maintenance.



Source: US Census Bureau, TIGER 2000

Project Location

Reach #69 - Bouquet Canyon Mid (PD's 772, 773, 1365, 1065, & 451)

Exhibit 3.4.13-1



0.25 0 0.25 0.5 Miles

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Project Site Photos

Exhibit 3.4.13-2

Reach #69 - Bouquet Canyon Mid (PD's 772, 773, 1365, 1065, & 451)

3.4.14 Reach #70 – Bouquet Canyon Lower (PDs 544 & 345)

3.4.14.1 Project Location

Reach #70, Bouquet Canyon Lower (PDs 544 & 345) is located within the Santa Clara River Watershed in the City of Santa Clarita (Exhibit 3.4.14-1). The limits of Reach #70 are 2,866 feet upstream of the lower crossing with Bouquet Canyon Road to the downstream side of the lower crossing with Bouquet Canyon Road. Reach #70 is 2,954 feet in total length. The reach is found on the Newhall USGS 7.5 x 15-minute quadrangle map. Refer to Thomas Guide, Los Angeles County, page 4550-J1 to H1.

3.4.14.2 Survey Results

The table below summarizes the type of surveys completed, survey dates, and surveying biologist for each survey within this reach. Photographs of this reach are shown in Exhibit 3.4.14-2.

TABLE 3.4.14
REACH #70 – BOUQUET CANYON LOWER (PDs 544 & 345)

Survey Type	Survey Dates	Surveying Biologist
Focused Survey for the Unarmored Three-spine Stickleback	August 3, 2003	Jonathan Baskin Ph.D. Thomas Haglund Ph.D.

Unarmored Three-spine Stickleback

This reach was dry in 2003 except for nuisance water. However, near the lower end of this reach there was an area with sufficient nuisance flow that did create habitat that would support fish. Therefore, seining was conducted. No fish were found.

There is no vegetation except for the emergent and aquatic vegetation associated with the aforementioned nuisance flow. The substrate is dominated by sand-sized particles, and the primary flow channel is poorly defined except in the area of the nuisance flow. This reach is contiguous with Reaches #67 and 69, Bouquet Canyon Upper and Middle, respectively. Reach #67 is essentially contiguous with the unchannelized portion of Bouquet Canyon Creek, which contains a stickleback population. Therefore, there is a potential for sticklebacks to be washed into this reach during high flows. During wetter years, this lower portion of Bouquet Canyon Creek contains a population of the unarmored three-spine stickleback (Baskin and Haglund, personal observation). During dry years, the more upstream portions of the canyon with perennial water maintain the stickleback population, which expands downstream when there is surface flow in the lower portion of the creek. It is likely that any stickleback population occupying the channelized reach requires the downstream movement of individuals from the unchannelized portion of the creek in order to maintain the population. However, this means that at least in some years this reach will be expected to support fish. In years where appropriate rainfall conditions occur, it is recommended that this reach be monitored prior to any channel maintenance.

3.4.15 Reach #71 – Santa Clara River Main Channel (PD 1946)

3.4.15.1 Project Location

Reach #71, Santa Clara River Main Channel (PD 1946), is located within the Santa Clara River-South Fork Watershed in the City of Santa Clarita (Exhibit 3.4.15-1). The limits of Reach #71 are approximately 276 feet upstream of McBean Parkway (at the confluence with the South Fork of the Santa Clara River) to the downstream edge of McBean. Reach #71 is 346 feet in total length. The



Project Site Photos

Exhibit 3.4.14-2

Reach #70 - Bouquet Canyon Lower (PD's 544 & 345)



Project Site Photos

Exhibit 3.4.15-2

Reach #71 - Santa Clara River Main Channel (PD 1946)

reach is found on the Newhall USGS 7.5 x 15-minute quadrangle map. Refer to Thomas Guide, Los Angeles County, pages 4550-E2.

3.4.15.2 Survey Results

The table below summarizes the type of surveys completed, survey dates, and surveying biologist for each survey within this reach. Photographs of this reach are shown in Exhibit 3.4.15-2.

TABLE 3.4.15
REACH #71 – SANTA CLARA RIVER MAIN CHANNEL (PD 1946)

Survey Type	Survey Dates	Surveying Biologist
Focused Survey for the Unarmored Three-spine Stickleback	August 3, 2003	Jonathan Baskin Ph.D. Thomas Haglund Ph.D.
Focused Survey for the Arroyo Toad	April 15, 25, May 6, 15, June 10, and 19, 2003	Ruben Ramirez

Unarmored Three-spine Stickleback

This reach contained sufficient surface water to support fish and was therefore seined. The flow extended from approximately 165 feet downstream of the bridge and extended upstream along the south bank of the main stem into Reach #80. The orientation of the flow upstream was in the middle of the riverbed, away from the south bank, which was dry. While observing the flowing stream just upstream of the bridge, it was noted that the channel had the appearance of only recently having continuous flow. The edges of the flowing water had no emergent vegetation developed, although there were well-developed willows and giant reed (*Arundo donax*) nearby. Mosquitofish (*Gambusia affinis*) were the only fish observed in this reach in 2003. No unarmored three-spine stickleback or Santa Ana sucker were observed.

There is well-developed emergent and aquatic vegetation throughout the reach, and some young, relatively thick riparian vegetation exists in a portion of the reach. The structure of the stream is appropriate to support all three native fishes typically found in this area of the Santa Clara River: the unarmored three-spine stickleback, Santa Ana sucker, and arroyo chub. The stream within this reach provides appropriate habitat for the fishes, and this reach was continuously occupied by the three native fish species during the 1990s (Baskin and Haglund, personal observation). In years where appropriate rainfall conditions occur, this reach should be monitored prior to any channel maintenance.

Arroyo Toad

The arroyo toad was not observed within Reach #71 during focused surveys. However, two arroyo toads were documented approximately 2,953 feet (0.56 mile) downstream from Mc Bean Parkway adjacent to the active channel in Reach #82 of the Santa Clara River during the 2003 focused surveys.

According to the USFWS protocol for this species, "areas within 1 km [0.62 mile] of arroyo toad sites (documented by the presence of eggs, larvae, juveniles, or adults) that have suitable habitat shall be presumed to have arroyo toads" (USFWS 1999). There are documented occurrences of the arroyo toad within 0.62 mile of Reach #71. Therefore, according to the protocol, this reach is considered occupied.

3.4.16 Reach #75 – South Fork-Santa Clara River (PDs 725, 916, 1041, 1300)

3.4.16.1 Project Location

Reach #75, South Fork - Santa Clara River (PDs 725, 916, 1041, 1300), is located within the Santa Clara River-South Fork Watershed in the City of Santa Clarita (Exhibit 3.4.16-1). The limits of Reach #75 are approximately 255 feet downstream of Lyons Avenue to the downstream edge of Magic Mountain Parkway. Reach #75 is 13,965 feet in total length. The reach is found on the Newhall USGS 7.5 x 15-minute quadrangle map. Refer to Thomas Gulde, Los Angeles County, pages 4640-F1 to 4550-G2.

3.4.16.2 Survey Results

The table below summarizes the type of surveys completed, survey dates, and surveying biologist for each survey within this reach. Photographs of this reach are shown in Exhibit 3.4.16-2).

Unarmored Three-spine Stickleback

From Magic Mountain Parkway upstream to Orchard Village Boulevard there is some nuisance water. However, the nuisance water is limited and does not provide habitat expected to support fish. This portion of the reach has riparian vegetation and a well-defined low flow channel. Although the substrate is sand dominated there is some particle size heterogeneity, it was unnecessary to seine this portion of the reach.

TABLE 3.4.16
REACH #75 – SOUTH FORK-SANTA CLARA RIVER (PDs 725, 916, 1041, 1300)

Survey Type	Survey Dates	Surveying Biologist
Focused Survey for the Unarmored Three-spine Stickleback	July 30, 2003	Jonathan Baskin Ph.D. Thomas Haglund Ph.D.
Focused Survey for the Arroyo Toad	April 17, 24, May 13, 22, June 17, and 26, 2003	Ruben Ramirez
Focused Survey for the Least Bell's Vireo and Southwestern Willow Flycatcher	April 12, 23, May 5, 17, 27, June 7, 16, 26, July 3, and 10, 2003	Dharm Pelligrini, Jim Pike, Brian Daniels
Focused Survey for the Slender-horned Spineflower	May 7, June 23, 2003	Scott White, Michael Honer

The portion of the reach upstream of Orchard Village Boulevard to Lyons Avenue has more surface water, and there are areas that have sufficient flow and depth to support fish. This reach lacks the riparian vegetation of the more downstream portion of the reach, but it does have well-developed emergent and aquatic vegetation. Therefore, this portion of the reach was seined. No fish were found.

Despite the fact that the upper portion of the reach has sufficient water to provide habitat and the lower portion of the reach has the potential to develop habitat in a wetter year, future occupation of this reach by the unarmored three-spine stickleback is not expected. Although fish habitat may be present, this reach cannot be colonized from downstream due to the presence of the Valencia



Project Site Photos

Exhibit 3.4.16-2

Reach #75 - South Fork Santa Clara River (PD's 725, 916, 1041, 1300)

Boulevard Bridge Stabilizer and there is no upstream source population of sticklebacks. Therefore, no further surveys would be necessary even in years when rainfall conditions are appropriate.

Arroyo Toad

The arroyo toad was not observed within Reach #75 during focused surveys. With the exception of the immediate downstream reach of the South Fork Santa Clara extending from Lyons Avenue to Orchard Village Road, this reach is generally dry except for those areas where point-source run-off supports localized areas of inundation. Several African clawed frogs (*Xenopus laevis*), an invasive non-native species, were documented within the reach between Lyons Avenue and Orchard Village Road. Although the active channel within this upper reach is generally inundated or characterized by having saturated soils, no suitable breeding habitat for the arroyo toad is present.

Least Bell's Vireo

The least Bell's vireo was not present in Reach #75 during these surveys.

Southwestern Willow Flycatcher

The southwestern willow flycatcher was not present in Reach #75 during these surveys.

Slender-horned Spineflower

This reach consists primarily of an area where previous maintenance has occurred adjacent to flood control structures (levees, drop structures, bridge abutments, etc.). In general, this area provides no habitat for the slender-horned spineflower. However, marginally suitable habitat for the slender-horned spineflower is present on the right bank adjacent to the Via Princesa bridge and pedestrian bridge just upstream. Therefore, suitable habitat for the slender-horned spineflower is present in Reach #75, and focused surveys were recommended following the 2002 habitat assessment.

No slender-horned spineflower was observed during the 2003 surveys.

3.4.17 Reach #77 – Newhall Creek Outlet

3.4.17.1 Project Location

Reach #77, Newhall Creek Outlet, is located within the Santa Clara River-South Fork Watershed in the City of Santa Clarita (Exhibit 3.4.17-1). The limits of Reach #77 are approximately 1,040 feet downstream of 15th Street to the confluence with South Fork of the Santa Clara River. Reach #77 is 2,136 feet in total length. The reach is found on the Newhall USGS 7.5 x 15-minute quadrangle map. Refer to Thomas Guide, Los Angeles County, pages 4640-F1 to 4550-G2.

3.4.17.2 Survey Results

The table below summarizes the type of surveys completed, survey dates, and surveying biologist for each survey within this reach. Photographs of this reach are shown in Exhibit 3.4.17-2.



Project Site Photos

Exhibit 3.4.17-2

Reach #77 - Newhall Creek Outlet

**TABLE 3.4.17
REACH #77 – NEWHALL CREEK OUTLET**

Survey Type	Survey Dates	Surveying Biologist
Focused Survey for the Slender-horned Spineflower	May 7, and June 23, 2003	Scott White, Michael Honer

Slender-horned Spineflower

This reach consists primarily of an unvegetated channel where previous maintenance has occurred. In general, this area provides no habitat for the slender-horned spineflower. However, early successional alluvial scrub is present above the railroad crossing of Placerita Creek. Therefore, suitable habitat for the slender-horned spineflower is present in Reach #77, and focused surveys were recommended following the 2002 habitat assessment.

No slender-horned spineflower was observed during the 2003 surveys.

3.4.18 Reach #78 – Placerita Creek

3.4.18.1 Project Location

Reach #78, Placerita Creek, is located within the Santa Clara River-South Fork Watershed in the Newhall community in the City of Santa Clarita (Exhibit 3.4.18-1). The limits of Reach #78 are the downstream edge of San Fernando Road to the confluence with Newhall Creek. Reach #78 is 440 feet in total length. The reach is found on the Newhall USGS 7.5 x 15-minute quadrangle map. Refer to Thomas Guide, Los Angeles County, pages 4550-H6.

3.4.18.2 Survey Results

The table below summarizes the type of surveys completed, survey dates, and surveying biologist for each survey within this reach. Photographs of this reach are shown in Exhibit 3.4.18-2.

**TABLE 3.4.18
REACH #78 - PLACERITA CREEK**

Survey Type	Survey Dates	Surveying Biologist
Focused Survey for the Slender-horned Spineflower	May 7, and June 23, 2003	Scott White, Michael Honer

Slender-horned Spineflower

This reach consists primarily of an unvegetated channel where previous maintenance has occurred along Newhall Creek and adjacent to the groin at the confluence with the Santa Clara River. In general, this area provides no habitat for the slender-horned spineflower. However, early successional alluvial scrub is present on the banks above the central part of the maintained channel and adjacent to the maintained corridor adjacent to the groin. Therefore, suitable habitat for the slender-horned spineflower is present in Reach #78 and focused surveys were recommended following the 2002 habitat assessment.

No slender-horned spineflower was observed during the 2003 surveys.



Source: US Census Bureau, TIGER 2000

Project Location

Reach #78 - Placerita Creek

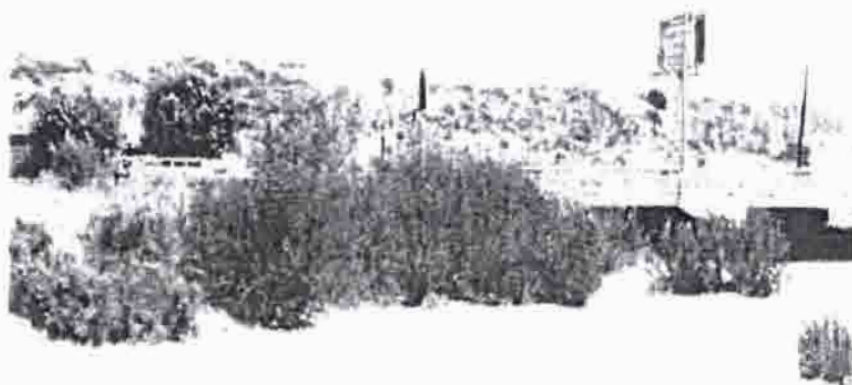
Exhibit 3.4.18-1



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Project Site Photos

Reach #78 - Placerita Creek

Exhibit 3.4.18-2

3.4.19 Reach #79 – South Fork-Santa Clara River (Valencia Boulevard Bridge Stabilizer)

3.4.19.1 Project Location

Reach #79, South Fork-Santa Clara River (Valencia Boulevard Bridge Stabilizer), is located within the Santa Clara River-South Fork Watershed (Exhibit 3.4-19-1). The limits of Reach #79 are the downstream edge of Valencia Boulevard to approximately 167 feet downstream of Valencia Boulevard. Reach #79 is 167 feet in total length. The reach is found on the Newhall USGS 7.5 x 15-minute quadrangle map. Refer to Thomas Guide, Los Angeles County, pages 4550-G3.

3.4.19.2 Survey Results

The table below summarizes the type of surveys completed, survey dates, and surveying biologist for each survey within this reach. Photographs of this reach are shown in Exhibit 3.4.19-2.

Arroyo Toad

The arroyo toad was not observed within Reach #79 during focused surveys.

Least Bell's Vireo

The least Bell's vireo was not present in Reach #79 during these surveys.

**TABLE 3.4.19
REACH #79 – SOUTH FORK-SANTA CLARA RIVER
(VALENCIA BOULEVARD BRIDGE STABILIZER)**

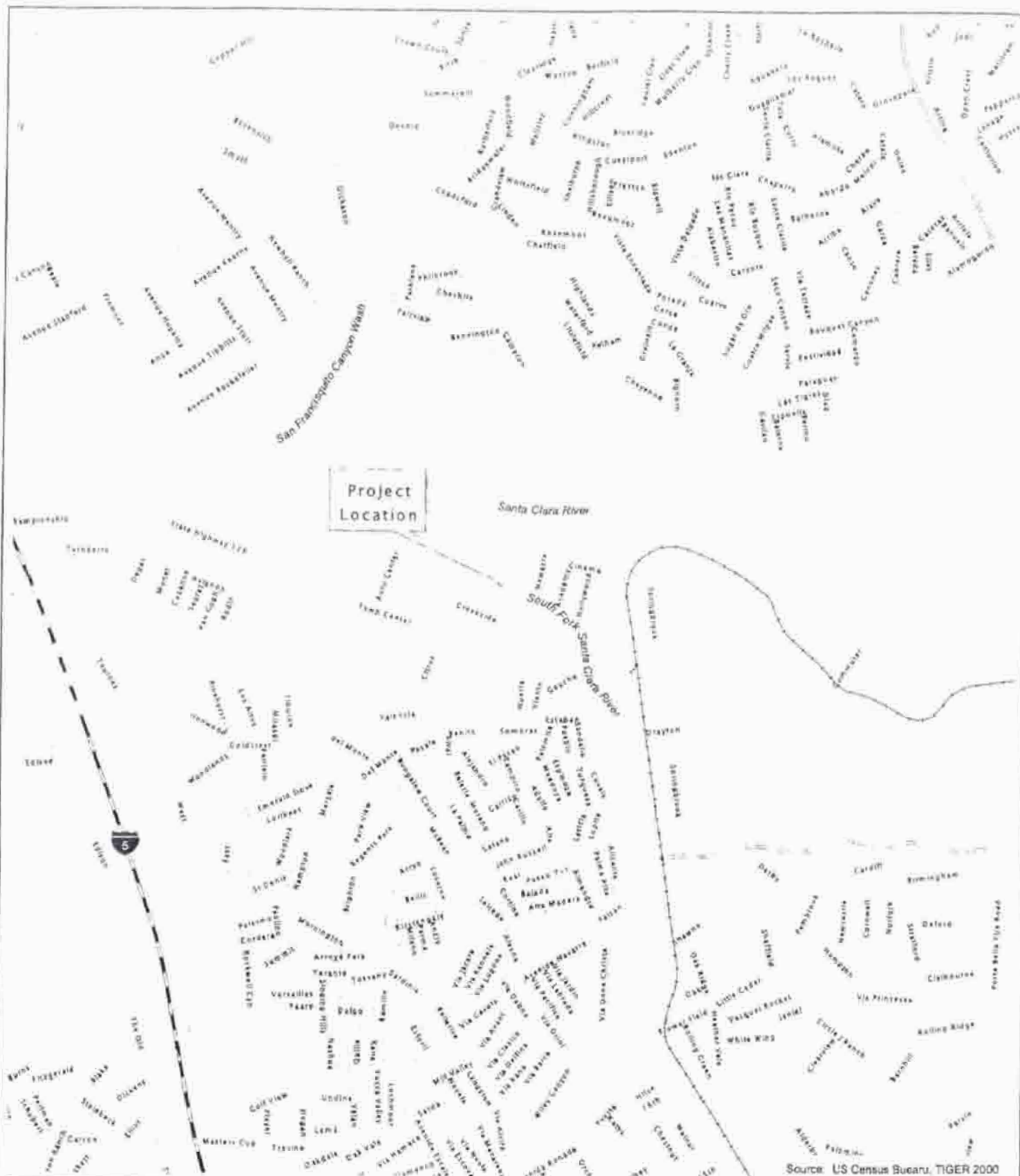
Survey Type	Survey Dates	Surveying Biologist
Focused Survey for the Arroyo Toad	April 15, 25, May 6, 15, June 10, and 19, 2003	Ruben Ramirez
Focused Survey for the Least Bell's Vireo and Southwestern Willow Flycatcher	April 12, 23, May 5, 17, 27, June 7, 18, 26, July 3, and 10, 2003	Dharm Palligrini, Jim Pike, Brian Daniels
Focused Survey for the Slender-horned Spineflower	May 7, and June 23, 2003	Scott White, Michael Honer

Southwestern Willow Flycatcher

The southwestern willow flycatcher was not present in Reach #79 during these surveys.

Slender-horned Spineflower

This reach consists primarily of the areas where previous maintenance has occurred adjacent to flood control structures (levees, drop structures, bridge abutments, etc.). In general, this area provides no habitat for the slender-horned spineflower. However, marginally suitable habitat for the slender-horned spineflower is present on the right bank adjacent to the Via Princessa bridge and pedestrian bridge just upstream. Therefore, suitable habitat is present in Reach #79, and focused surveys were recommended following the 2002 habitat assessment.



Source: US Census Bureau, TIGER 2000

Project Location

Exhibit 3.4.19-1

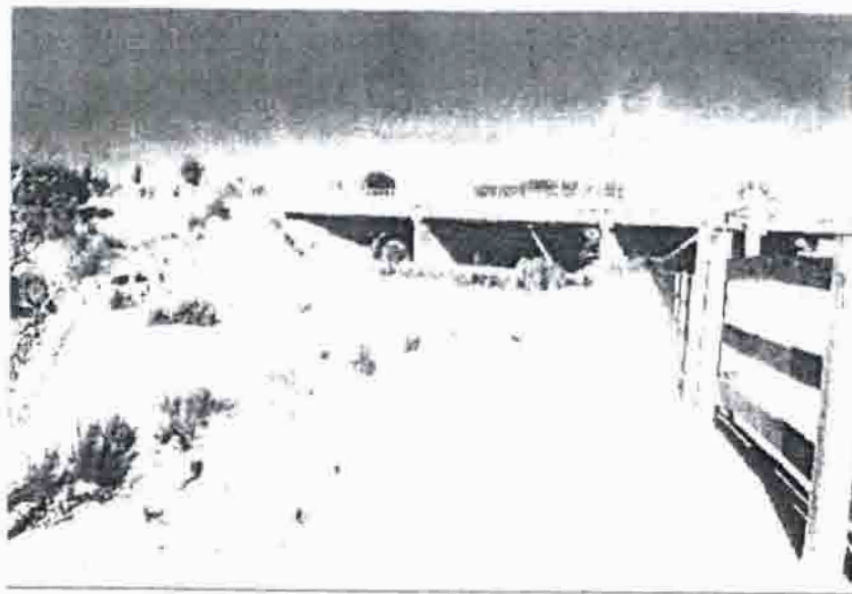
Reach #79 - South Fork Santa Clara River (Valencia Boulevard Bridge Stabilizer)



0.25 0 0.25 0.5 Miles

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Project Site Photos

Exhibit 3.4.19-2

Reach #79 - South Fork Santa Clara River (Valencia Boulevard Bridge Stabilizer)

No slender-horned spineflower was observed during the 2003 surveys.

3.4.20 Reach #80 – South Fork-Santa Clara River (PDs 1947 & 1946)

3.4.20.1 Project Location

Reach #80, South Fork-Santa Clara River (PDs 1947 & 1946), is located within the Santa Clara River-South Fork Watershed (Exhibit 3.4.20-1). The limits of Reach #80 are approximately 3,080 feet upstream of McBean Parkway to approximately 276 feet upstream of McBean Parkway and the confluence with Santa Clara River. Reach #80 is 2,804 feet in total length. The reach is found on the Newhall USGS 7.5 x 15-minute quadrangle map. Refer to Thomas Guide, Los Angeles County, pages 4550-F2.

3.4.20.2 Survey Results

The table below summarizes the type of surveys completed, survey dates, and surveying biologist for each survey within this reach. Photographs of this reach are shown in Exhibit 3.4.20-2.

**TABLE 3.4.20
REACH #80 – SOUTH FORK-SANTA CLARA RIVER (PDs 1947 & 1946)**

Survey Type	Survey Dates	Surveying Biologist
Focused Survey for the Unarmored Three-spine Stickleback and Santa Ana Sucker	August 3, 2003	Jonathan Baskin Ph.D. Thomas Haglund Ph.D.
Focused Survey for the Arroyo Toad	April 15, 25, May 6, 15, June 10, and 19, 2003	Ruben Ramirez
Focused Survey for the Least Bell's Vireo and Southwestern Willow Flycatcher	April 12, 23, May 5, 17, 27, June 7, 16, 26, July 3, and 10, 2003	Dharm Pelligrini, Jim Pike, Brian Daniels

Unarmored Three-spine Stickleback/Santa Ana Sucker

This reach contained sufficient surface water to support fish and was therefore seined. Only a short portion of the reach had flowing water along the south bank at its downstream end. The orientation of the flow was in the middle of the riverbed, away from the south bank, which was dry. While observing the flowing stream just upstream of the bridge, it was noted that the channel had the appearance of only recently having continuous flow (as described above for Reach #71). The edges of the flowing water had no emergent vegetation developed, although there were well-developed willows and giant reed nearby. Mosquitofish were the only fish observed in this reach. No unarmored three-spine stickleback or Santa Ana sucker were observed.

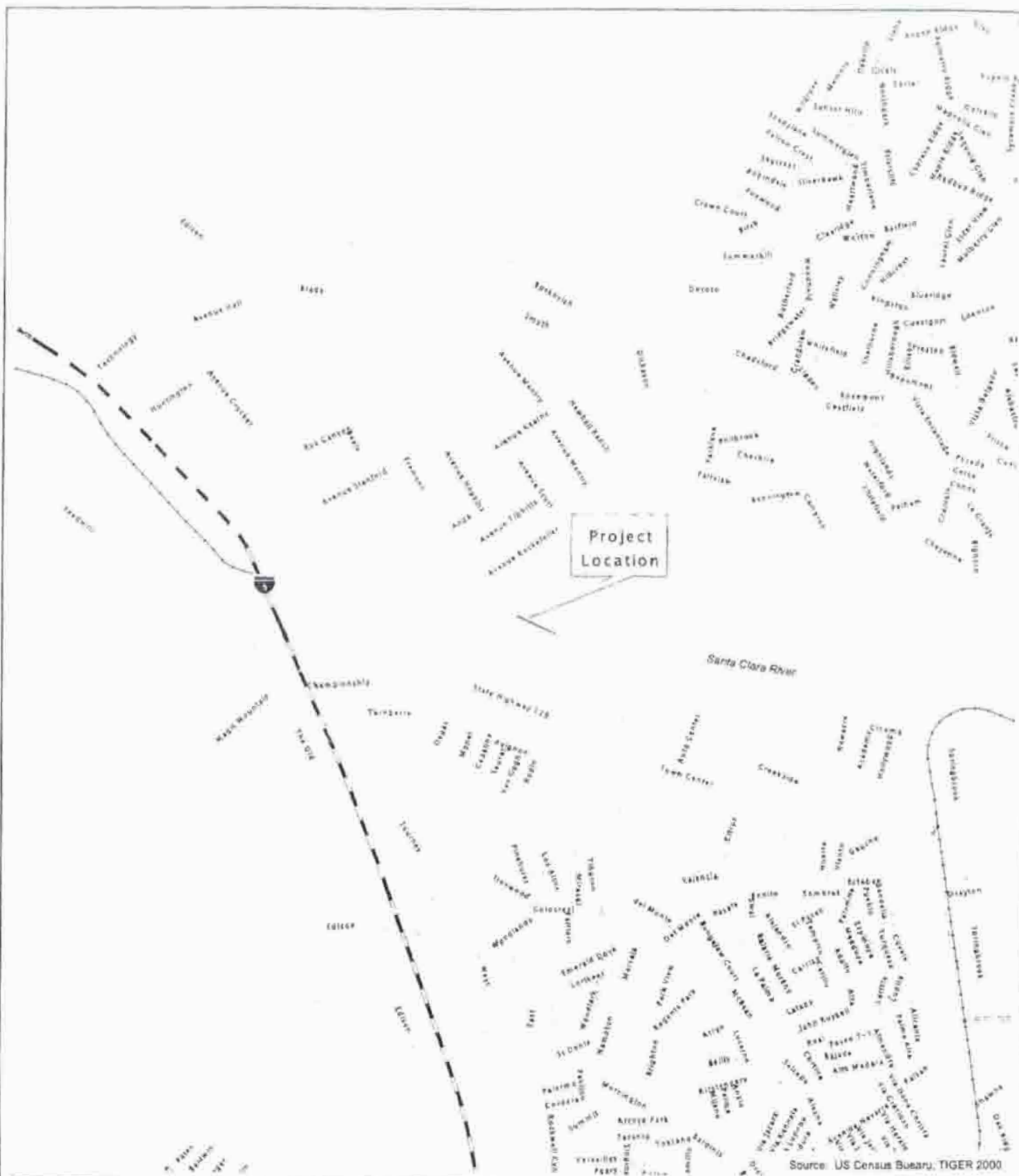
There is well-developed emergent and aquatic vegetation throughout the reach, and some young, relatively thick riparian vegetation exists in a portion of the reach. The structure of the stream is appropriate to support all three native fishes typically found in this area of the Santa Clara River: the unarmored three-spine stickleback, Santa Ana sucker, and arroyo chub. The stream within this reach provides appropriate habitat for the fishes, and this reach was continuously occupied by the three native fish species during the 1990s (Baskin and Haglund, personal observation). In years where appropriate rainfall conditions occur, this reach should be monitored prior to any channel maintenance.



Project Site Photos

Exhibit 3.4.20-2

Reach #80 - South Fork Santa Clara River (PD's 1947 & 1946)



Project Location

Reach #82 - Santa Clara River Main Channel (PD 2278)

Exhibit 3.4.21-1



0.25 0 0.25 0.5 Miles

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Project Site Photos

Exhibit 3.4.21-2

Reach #82 - Santa Clara River Main Channel (PD 2278)

Bonterra
CONSULTING

Source: Bonterra Consulting

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Unarmored Three-spine Stickleback/Santa Ana Sucker

Most of this reach is dry, except for a pool and small flow created by nuisance water at the westernmost portion of the reach. The pool is in the previously cleared maintenance area, and the creek flows toward the Santa Clara River. There is sufficient water to provide fish habitat, but the surface flow does not currently reach the Santa Clara River. All three native fishes of the upper Santa Clara River, the unarmored three-spine stickleback, Santa Ana sucker, and arroyo chub, have been found historically in this reach of the Santa Clara River. Therefore, seining was conducted. No fish were observed.

There is thick riparian vegetation adjacent to the Santa Clara River and riparian vegetation in San Francisquito Creek separated from the embankment by the cleared area. There is a defined flow channel associated with the area of nuisance flow and the substrate is sandy. The stream within this reach provides appropriate habitat for the fishes, and this reach was continuously occupied by the three native fish species during the 1990s (Baskin and Haglund, personal observation). In years where appropriate rainfall conditions occur, it is recommended that this reach be monitored prior to any channel maintenance.

Arroyo Toad

Two adult male arroyo toads were observed within a sandy bench north of the Santa Clara River active channel approximately 1,148 feet and 1,247 feet upstream from the Interstate 5 overpass. Although no breeding was documented, suitable pools occurred throughout this reach of the Santa Clara River. In addition, three southwestern pond turtles (*Clemmys marmorata pallida*) were observed submerged within this reach of the Santa Clara River. Several breeding western toads (*Bufo boreas*) and Pacific tree frogs were also documented.

Least Bell's Vireo

The least Bell's vireo was not present in Reach #82 during these surveys.

Southwestern Willow Flycatcher

The southwestern willow flycatcher was not present in Reach #82 during these surveys.

3.4.22 Reach #86 – Violin Canyon Main Channel Outlet

3.4.22.1 Project Location

Reach #86, Violin Canyon Main Channel Outlet, is located within the Castaic Creek Watershed in the community of Castaic in unincorporated Los Angeles County, approximately 0.5 mile southeast of the Interstate-5 and Lake Hughes Road intersection (Exhibit 3.4.22-1). The limits of Reach #86 are approximately 1,021 feet downstream of Ridge Route Road to the confluence with Castaic Creek. Reach #86 is 946 feet in total length. The reach is found on the Newhall USGS 7.5 x 15-minute quadrangle map. Refer to Thomas Guide, Los Angeles County, pages 4369-J7.

3.4.22.2 Survey Results

The table below summarizes the type of surveys completed, survey dates, and surveying biologist for each survey within this reach. Photographs of this reach are shown in Exhibit 3.4.22-2.



Project Site Photos

Exhibit 3.4.22-2

Reach #86 - Violin Canyon Main Channel Outlet

Unarmored Three-spine Stickleback

This reach contains sufficient flow to maintain fish. Therefore, seining was conducted. No fish were found.

TABLE 3.4.22
REACH #86 – VIOLIN CANYON MAIN CHANNEL OUTLET

Survey Type	Survey Dates	Surveying Biologist
Focused Survey for the Unarmored Three-spine Stickleback	August 3, 2003	Jonathan Baskin Ph.D. Thomas Haglund Ph.D.
Focused Survey for the Arroyo Toad	April 22, 29, May 8, 20, June 5, and 24, 2003	Ruben Ramirez

There is considerable emergent and aquatic vegetation immediately downstream of the cement-lined channel, and downstream toward the confluence with Castaic Creek there is a well-developed riparian corridor. The stream provides excellent structure to support native fishes. There is a well-defined channel with substrate heterogeneity, and vegetation that creates appropriate habitat. Western toad neonates and metamorphosing tadpoles were common in this reach. Castaic Creek has historically provided habitat for the unarmored three-spine stickleback (Baskin and Haglund, personal observation). In years where appropriate rainfall conditions occur, it is recommended that this reach be monitored prior to any channel maintenance.

Arroyo Toad

The arroyo toad was not observed within Reach #86 during focused surveys. Several Pacific tree frogs and two western toads were documented within this reach.

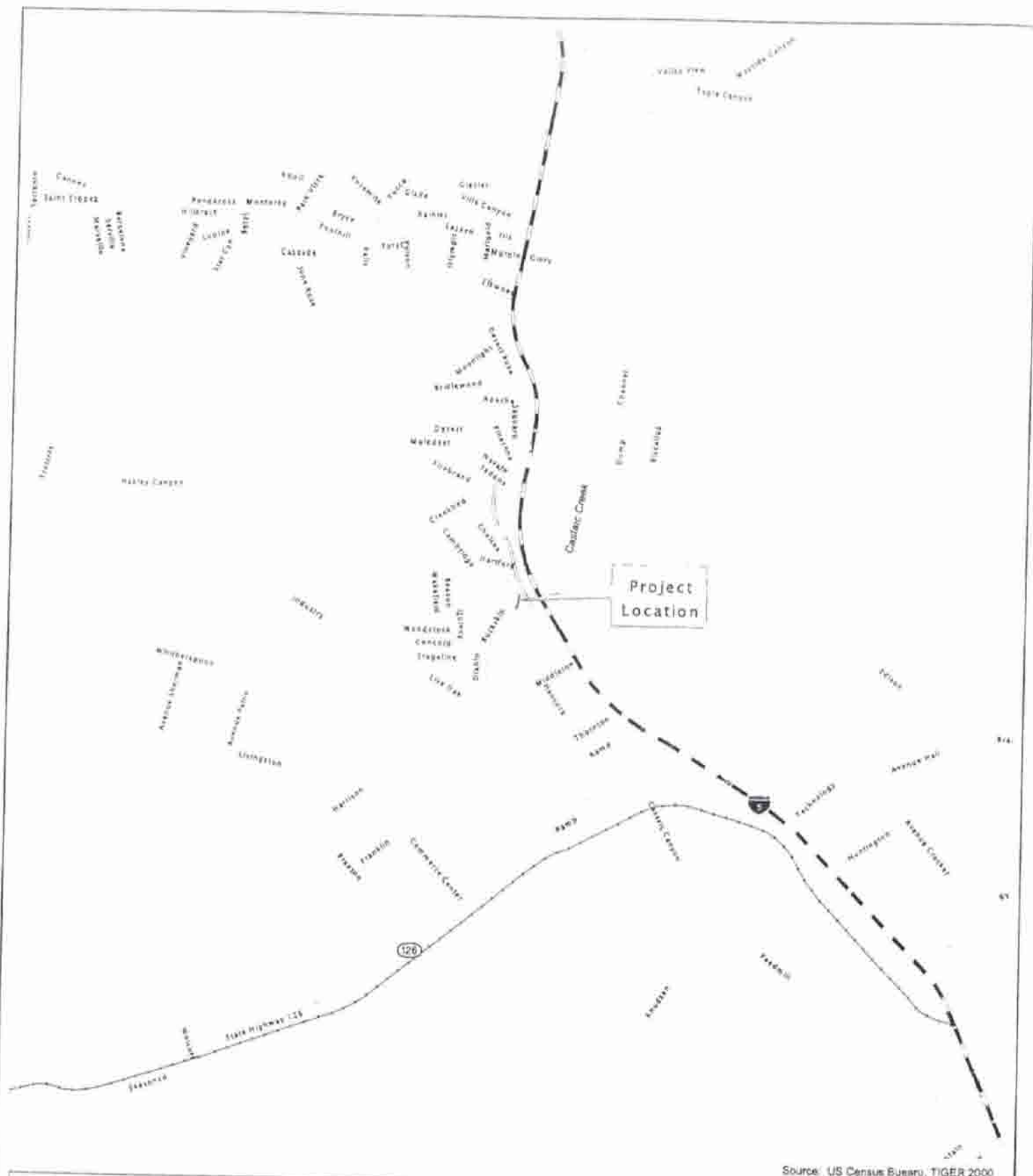
3.4.23 Reach #87 – Castaic-Old Road Drain (CDR 525.021D) Outlet

3.4.23.1 Project Location

Reach #87, Castaic - Old Road Drain (CDR 525.021D) Outlet, is located within the Castaic Creek Watershed, approximately one mile northwest of the Interstate-5 and Henry Mayo Drive (Highway 126) in the Castaic Junction community of unincorporated Los Angeles County (Exhibit 3.4.23-1). The limits of Reach #87 are approximately 610 feet downstream of the intersection of Hasley Canyon Road and Old Road to the confluence with Castaic Creek. Reach #87 is 240 feet in total length. The reach is found on the Newhall USGS 7.5 x 15-minute quadrangle map. Refer to Thomas Guide, Los Angeles County, pages 4459-H5.

3.4.23.2 Survey Results

The table below summarizes the type of surveys completed, survey dates, and surveying biologist for each survey within this reach. Photographs of this reach are shown in Exhibit 3.4.23-2.



Source: US Census Bureau, TIGER 2000

Project Location

Reach #87 - Castaic-Old Road Drain (CDR 525.021D) Outlet

Exhibit 3.4.23-1



0.25 0 0.25 0.5 Miles

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Project Site Photos

Exhibit 3.4.23-2

Reach #87 - Castaic-Old Road Drain (CDR 525.021D) Outlet

TABLE 3.4.23
REACH #87 – CASTAIC-OLD ROAD DRAIN (CDR 525.021D) OUTLET

Survey Type	Survey Dates	Surveying Biologist
Focused Survey for the Unarmored Three-spine Stickleback	August 3, 2003	Jonathan Baskin Ph.D. Thomas Haglund Ph.D.
Focused Survey for the Arroyo Toad	April 22, 29, May 8, 20, June 5, and 24, 2003	Ruben Ramirez

Unarmored Three-spine Stickleback

Flow from the drain and lateral nuisance flow create a sufficient volume of surface flow to support fish. Therefore, seining was conducted in this reach. No fish were found.

There is riparian vegetation and good emergent vegetation lining the surface flow. The substrate is sandy with limited substrate heterogeneity, but the emergent vegetation creates the flow heterogeneity preferred by the fish. Castaic Creek is historical habitat for the unarmored three-spine stickleback and arroyo chub. Castaic Creek or portions of it dry regularly, but data over the period from the mid-1970s onward demonstrate the serial recolonization of Castaic Creek by fishes (Baskin and Haglund, personal observation). In years where appropriate rainfall conditions occur, it is recommended that this reach be monitored prior to any channel maintenance.

Arroyo Toad

The arroyo toad was not observed within Reach #87 during focused surveys.

3.4.24 Reach #88 – Hasley Canyon Upper (PD T1496)

3.4.24.1 Project Location

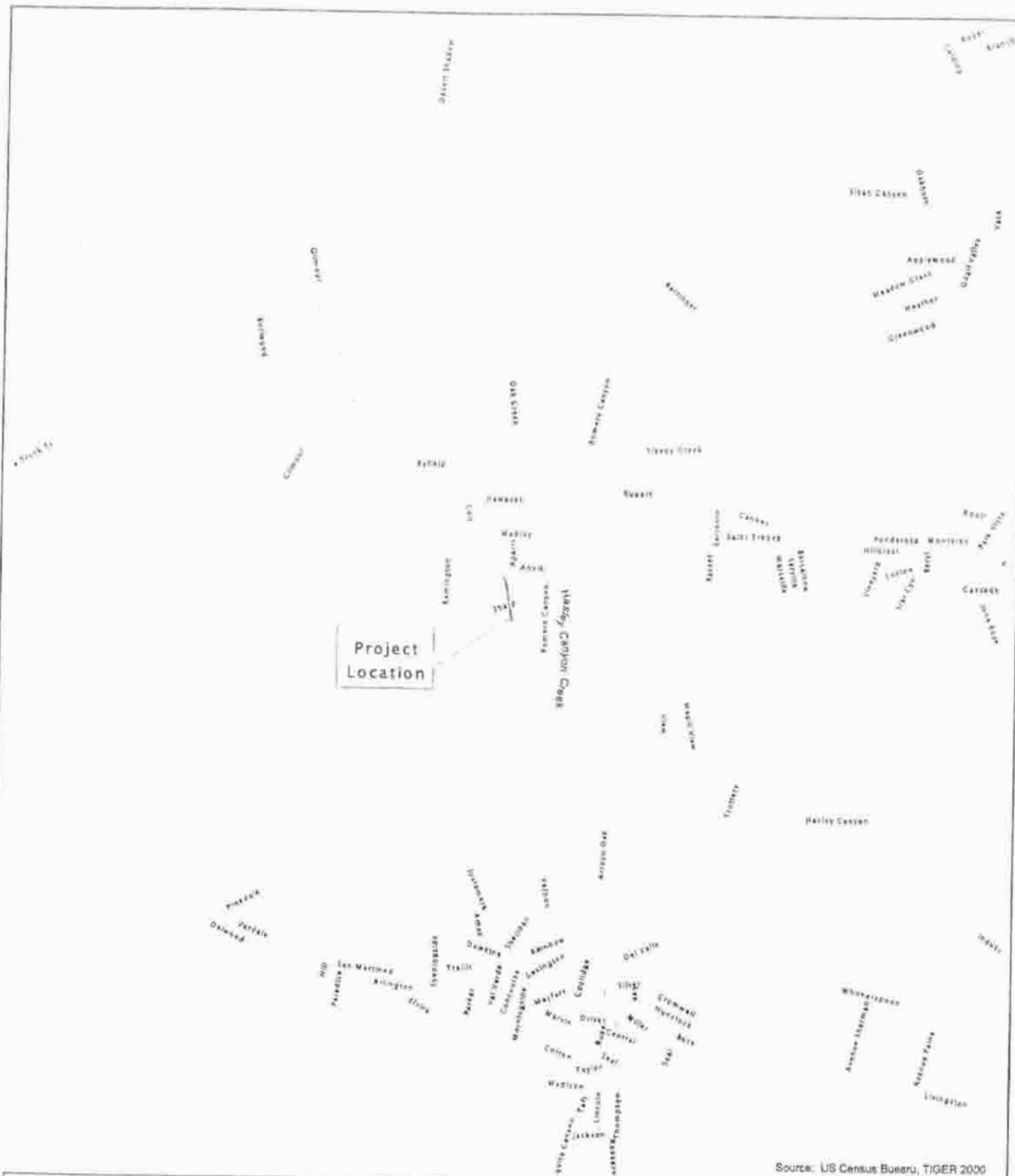
Reach #88, Hasley Canyon Upper (PD T1496), is located within the Castaic Creek Watershed, approximately 0.3 mile north of the Hasley Canyon Road and Romero Canyon Road intersection in unincorporated Los Angeles County (Exhibit 3.4.24-1). The limits of Reach #88 are approximately 755 feet upstream of Sharp Road to approximately 330 feet downstream of Sharp Road. Reach #88 is 1,085 feet in total length. The reach is found on the Val Verde USGS 7.5 x 15-minute quadrangle map. Refer to Thomas Guide, Los Angeles County, pages 4459-C3.

3.4.24.2 Survey Results

The table below summarizes the type of surveys completed, survey dates, and surveying biologist for each survey within this reach. Photographs of this reach are shown in Exhibit 3.4.24-2.

TABLE 3.4.24
REACH #88 – HASLEY CANYON UPPER (PD T1496)

Survey Type	Survey Dates	Surveying Biologist
Focused Survey for the Slender-horned Spineflower	July 25, 2003	Scott White



Source: US Census Bureau, TIGER 2000

Project Location

Reach #88 - Hasley Canyon Upper (PD T1496)

Exhibit 3.4.24-1



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Project Site Photos

Exhibit 3.4.24-2

Reach #88 - Hasley Canyon Upper (PD T1496)

Slender-horned Spineflower

The upper portion of this reach, upstream of Sharp Road, consists of early-successional alluvial scrub. Therefore, suitable habitat for the slender-horned spineflower is present in Reach #88, and focused surveys were recommended following the 2002 habitat assessment.

No slender-horned spineflower was observed during the 2003 surveys.

3.4.25 Reach #89 – Hasley Canyon South Fork (PD T1496)

3.4.25.1 Project Location

Reach #89, Hasley Canyon South Fork (PD T1496), is located within the Castaic Creek Watershed, approximately 0.1 mile north of the Hasley Canyon Road and Romero Canyon Road intersection in unincorporated Los Angeles County (Exhibit 3.4.25-1). The limits of Reach #89 are approximately 331 feet upstream of Romero Canyon Road along the South Fork of the Santa Clara River to approximately 160 feet upstream of Romero Canyon Road. Reach #89 is 341 feet in length. The reach is found on the Val Verde USGS 7.5 x 15-minute quadrangle map. Refer to Thomas Guide, Los Angeles County, pages 4459-C3.

3.4.25.2 Survey Results

The table below summarizes the type of surveys completed, survey dates, and surveying biologist for each survey within this reach. Photographs of this reach are shown in Exhibit 3.4.25-2.

**TABLE 3.4.25
REACH #89 – HASLEY CANYON SOUTH FORK (PD T1496)**

Survey Type	Survey Dates	Surveying Biologist
Focused Survey for the Slender-horned Spineflower	July 25, 2003	Scott White

Slender-horned Spineflower

Reach #89 consists of weedy vegetation and degraded alluvial scrub at the base of a flood wall. Good alluvial scrub is located at the upper end of the flood control structure outside this reach; therefore, there is no suitable habitat for the slender-horned spineflower in Reach #89. Although this habitat is located outside of the reach where maintenance activities occur, focused surveys were recommended following the 2002 habitat assessment due to its close proximity to the reach.

No slender-horned spineflower was observed during the 2003 surveys.

3.4.26 Reach #90 – Hasley Canyon Lower (North Fork PD T1496)

3.4.26.1 Project Location

Reach #90, Hasley Canyon Lower (North Fork PD T1496), is located within the Castaic Creek Watershed, approximately 0.25 mile north of the Hasley Canyon Road and Romero Canyon Road intersection in unincorporated Los Angeles County. The limits of Reach #90 are approximately 1,089 feet upstream of Romero Canyon Road along the Main Line to approximately 100 feet downstream of Romero Canyon Road. Reach #90 is 1,189 feet in total length. The reach is found on the Val Verde USGS 7.5 x 15-minute quadrangle map. Refer to Thomas Guide, Los Angeles County, pages 4459-C3.



Project Site Photos

Exhibit 3.4.25-2

Reach #89 - Hasley Canyon South Fork (PD T1496)

BonTerra
CONSULTING

Source: BonTerra Consulting

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No surveys were required at this reach in 2003. Survey results for 2002 are provided in the 2002 focused survey results report (BonTerra Consulting 2002).

3.4.27 Reach #91 – San Martinez Chiquito Canyon Channel, Upstream of Kensington Road

3.4.27.1 Project Location

Reach #91, San Martinez Chiquito Canyon Channel, Upstream of Kensington Road, is located within the Santa Clara River Watershed, approximately 0.9 mile west of the San Martinez Road and Chiquito Canyon Road/Coolidge Avenue intersection in the Val Verde Park community of unincorporated Los Angeles County. The limits of Reach #91 are approximately 530 feet upstream of the intersection of San Martinez Road and Borton Street to Kensington Road. Reach #91 is 530 feet in total length. The reach is found on the Val Verde USGS 7.5 x 15-minute quadrangle map. Refer to Thomas Guide, Los Angeles County, pages 4459-A6 to B6.

No surveys were required at this reach in 2003. Survey results for 2002 are provided in the 2002 focused survey results report (BonTerra Consulting 2002).

3.4.28 Reach #92 – San Martinez Chiquito Canyon Channel, Upstream of Kensington Road (North Fork) Un-named

3.4.28.1 Project Location

Reach #92, San Martinez Chiquito Canyon Channel, Upstream of Kensington Road (North Fork) Un-named, is located within the Santa Clara River watershed, approximately one mile west of the San Martinez Road and Chiquito Canyon Road/Coolidge Avenue intersection in the Val Verde Park community of unincorporated Los Angeles County (Exhibit 3.4.28-1). The limits of Reach #92 are approximately 920 feet upstream of San Martinez Road to the confluence with San Martinez Chiquito Canyon Channel, a distance of approximately 637 feet. The reach is found on the Val Verde USGS 7.5 x 15-minute quadrangle map. Refer to Thomas Guide, Los Angeles County, pages 4459-A6.

3.4.28.2 Survey Results

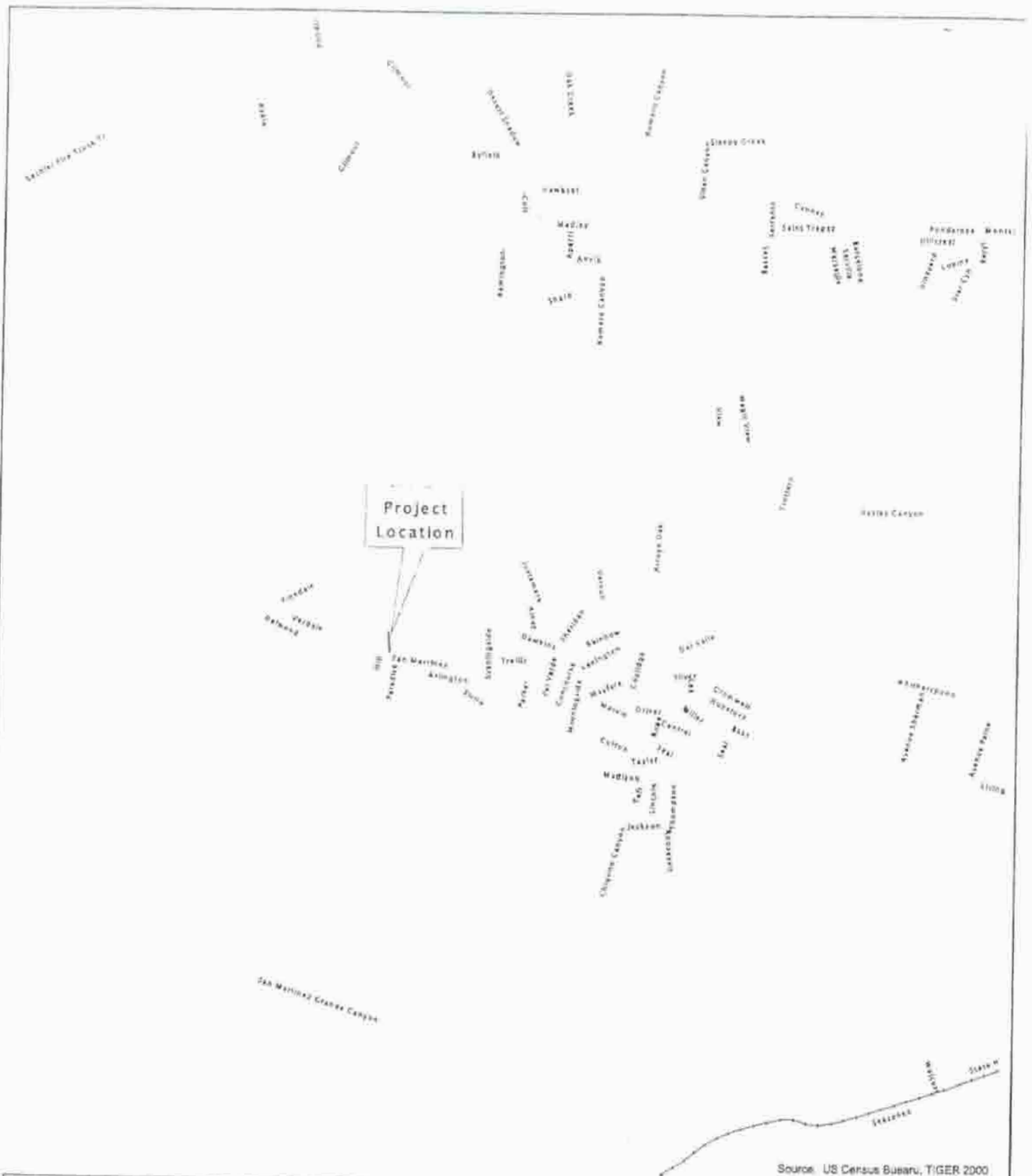
The table below summarizes the type of surveys completed, survey dates, and surveying biologist for each survey within this reach. Photographs of this reach are shown in Exhibit 3.4.28-2.

TABLE 3.4.28
REACH #92 – SAN MARTINEZ CHIQUITO CANYON CHANNEL,
UPSTREAM OF KENSINGTON ROAD (NORTH FORK) UNAMED

Survey Type	Survey Dates	Surveying Biologist
Focused Survey for the Slender-horned Spineflower	July 25, 2003	Scott White

Slender-horned Spineflower

Reach #92 consists of an incised channel protected by wire revetment structures. Some alluvial scrub is present within the channel and good quality alluvial scrub with scalebroom and Great Basin sagebrush is present on the adjacent benches. Suitable habitat for the slender-horned spineflower is therefore present in Reach #92, and focused surveys were recommended following the 2002 habitat assessment.



Source: US Census Bureau, TIGER 2000

Project Location

Reach #92 - San Martinez Chiquito Canyon Channel,
Upstream of Kensington Road (North Fork) Unamed

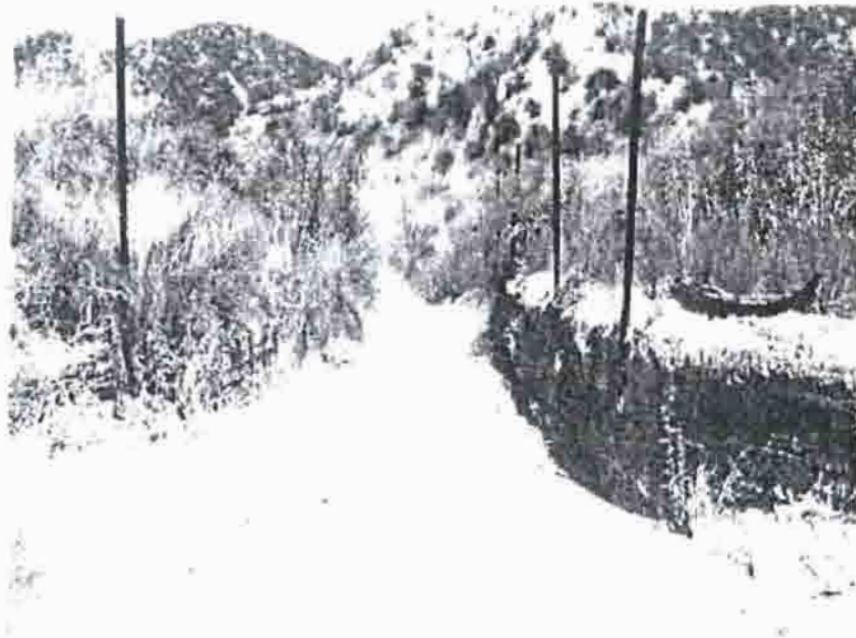


0.25 0 0.25 0.5 Miles

Exhibit 3.4.28-1

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Project Site Photos

Exhibit 3.4.28-2

Reach #92 - San Martinez Chiquito Canyon Channel, Upstream of Kensington Road
(North Fork) Unnamed

Focused surveys were only conducted within the channel bottom of this reach. No slender-horned spineflower was observed during the 2003 surveys.

Potential habitat for the slender-horned spineflower also occurs on adjacent benches above the channel, but these areas were not surveyed because they were posted as private property. Although maintenance work in the existing channel would not affect the slender-horned spineflower, access for such work should occur only via the Borton Road crossing at the channel. Equipment staging or improvements, including widening or armoring the channel, should not be done without further surveys for slender-horned spineflower adjacent to the reach.

3.4.29 Reach #93 – San Martinez Chiquito Canyon Channel, Between Kensington Road and Val Verde Park

3.4.29.1 Project Location

Reach #93, San Martinez Chiquito Canyon Channel between Kensington Road and Val Verde Park, is located within the Santa Clara River Watershed, approximately 0.9 mile west of the San Martinez Road and Chiquito Canyon Road/Coolidge Avenue intersection in the Val Verde Park community of unincorporated Los Angeles County. The limits of Reach #93 are approximately 400 feet downstream of Kensington Road to approximately 1,054 feet downstream of Kensington Road. Reach #93 is 654 feet in total length. The reach is found on the Val Verde USGS 7.5 x 15-minute quadrangle map. Refer to Thomas Guide, Los Angeles County, page 4459-B6.

No surveys were required at this reach in 2003. Survey results for 2002 are provided in the 2002 focused survey results report (BonTerra Consulting 2002).

3.4.30 Reach #94 – San Martinez Chiquito Canyon Channel, Between Val Verde Park to Downstream of Madison Street

3.4.30.1 Project Location

Reach #94, San Martinez Chiquito Canyon Channel between Val Verde Park to downstream of Madison Street, is located within the Santa Clara River Watershed, approximately 0.1 mile southwest of the San Martinez Road and Chiquito Canyon Road/Coolidge Avenue intersection in the Val Verde Park community of unincorporated Los Angeles County. The limits of Reach #94 are approximately 1,092 feet downstream of Chiquito Canyon Road to approximately 268 feet downstream of Madison Street, a distance of approximately 2,445 feet. The reach is found on the Val Verde USGS 7.5 x 15-minute quadrangle map. Refer to Thomas Guide, Los Angeles County, pages 4459-C6 to D7.

No surveys were required at this reach in 2003. Survey results for 2002 are provided in the 2002 focused survey results report (BonTerra Consulting 2002).

3.4.31 New Reach – Violin Canyon

3.4.31.1 Project Location

The New Reach, Violin Canyon Main Channel Inlet, is located within the Castaic Creek Watershed in the community of Castaic of unincorporated Los Angeles County, approximately 0.25 mile northeast of the Interstate-5 and Lake Hughes Road intersection (Exhibit 3.4.31-1). The New Reach is approximately 750 feet in length. The reach is found on the Newhall USGS 7.5 x 15-minute quadrangle map. Refer to Thomas Guide, Los Angeles County, page 4369-G6.

3.4.31.2 Survey Results

The table below summarizes the type of surveys completed, survey dates, and surveying biologist for each survey within this reach. Photographs of this reach are shown in Exhibit 3.4.31-2.

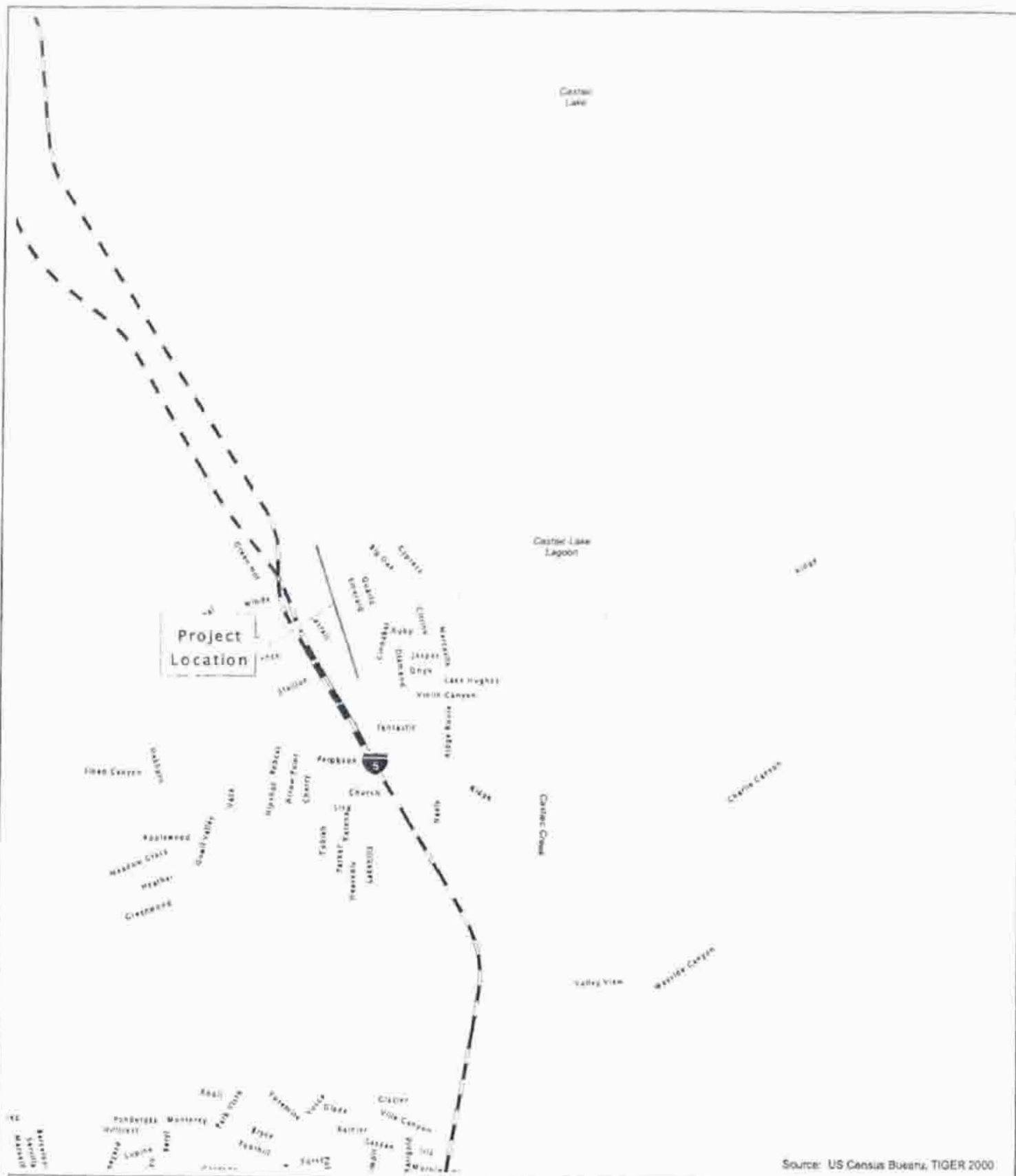
**TABLE 3.4.31
NEW REACH – VIOLIN CANYON**

Survey Type	Survey Dates	Surveying Biologist
Focused Survey for the Slender-horned Spineflower	July 25, 2003	Scott White

Slender-horned Spineflower

The New Reach Violin Canyon consists of open alluvial scrub at the upper end of a flood wall area in the broad channel between flood walls. In some areas this alluvial scrub extends to the base of these flood walls. This habitat is good quality with a low percentage of weedy species. Suitable habitat for the slender-horned spineflower is therefore present in the New Reach, and focused surveys were recommended following the 2002 habitat assessment.

No slender-horned spineflower was observed during the 2003 surveys.



Source: US Census Bureau, TIGER 2000

Project Location

New Reach - Violin Canyon

Exhibit 3.4.31-1



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Project Site Photos

New Reach - Violin Canyon

Exhibit 3.4.31-2

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Source: Bonterra Consulting

5/1/2015 Exhibit-COLADPWj028_spNewReach_690402.pdf

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