



2003 Sensitive Plant Survey Results

Valencia Commerce Center



J U N E 2 0 0 4

PREPARED FOR:

The Newhall Land and Farming Company
23823 Valencia Blvd.
Valencia, CA 91355

NEWHALL LAND

PREPARED BY:

Dudek & Associates, Inc.
605 Third Street
Encinitas, CA 92024

DUDEK

2003 Sensitive Plant Survey Results

for the

Valencia Commerce Center Los Angeles County, California

Prepared for:

The Newhall Land and Farming Company

23823 Valencia Boulevard

Valencia, CA 91355

Contact: Glenn Adamick

Prepared by:



Professional Teams for Complex Projects

605 Third Street

Encinitas, CA 92024

Contact: Sherri L. Miller (760) 479-4244

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2003 Sensitive Plant Survey Results Valencia Commerce Center

TABLE OF CONTENTS

<u>Section</u>	<u>Page No.</u>
1.0 INTRODUCTION	1
2.0 SITE DESCRIPTION	1
2.1 Plant Communities and Land Covers	1
2.2 Geology and Soils	4
3.0 METHODS AND SURVEY LIMITATIONS	4
3.1 Literature Review	4
3.2 Field Reconnaissance Methods	5
3.2.1 Sensitive Plant Species	9
3.2.2 Survey Limitations	10
4.0 RESULTS OF SURVEYS	10
4.1 Botany - Floral Diversity	10
4.2 Sensitive Plant Species	10
4.2.1 San Fernando Valley spineflower (<i>Chorizanthe parryi</i> ssp. <i>fernandina</i>)	11
4.2.2 Slender mariposa lily (<i>Calochortus clavatus</i> var. <i>gracilis</i>)	24
4.2.3 Coulter's Goldfields (<i>Lasthenia glabrata</i> ssp. <i>coulteri</i>)	27
4.2.4 Pierson's Morning Glory (<i>Calystegia peirsonii</i>)	27
5.0 ACKNOWLEDGMENTS	27
6.0 LITERATURE CITED	28

2003 Sensitive Plant Survey Results Valencia Commerce Center

TABLE OF CONTENTS (*Continued*)

APPENDICES

- Appendix A Resumes - Survey Personnel
Appendix B Vascular Plant Species Observed on Valencia Commerce Center (2002 and 2003)
Appendix C California Natural Diversity Database Forms

LIST OF FIGURES

Page No.

Figure 1	Regional Map.....	2
Figure 2	Vicinity Map.....	3
Figure 3	2003 San Fernando Valley spineflower Results	12
Figure 4	2003 Rare Plant Index Map	13
Figure 5	2003 Rare Plant Survey Results - Western Area.....	14
Figure 6	2003 Rare Plant Survey Results - Northeastern Area	15

LIST OF TABLES

Table 1	Survey Schedule & Personnel	5
Table 2	Sensitive Plant Species Subject of Field Surveys	6
Table 3	Sensitive Plant Species Observed or Potentially Occurring at Valencia Commerce Center.....	16
Table 4	San Fernando Valley Spineflower – Summary of Occurrence Data.....	23
Table 5	Slender Mariposa Lily - Summary of Occurrence Data	25

2003 Sensitive Plant Survey Results

Valencia Commerce Center

1.0 INTRODUCTION

The purpose of this report is to document the results of surveys for sensitive plant species within the 532-acre Valencia Commerce Center Site (Commerce Center; VCC) for the 2003 field season. Surveys placed an equal emphasis on the identification of populations of the state-listed endangered San Fernando Valley spineflower (*Chorizanthe parryi* var. *Fernandina*; SFVS) and other sensitive plant species.

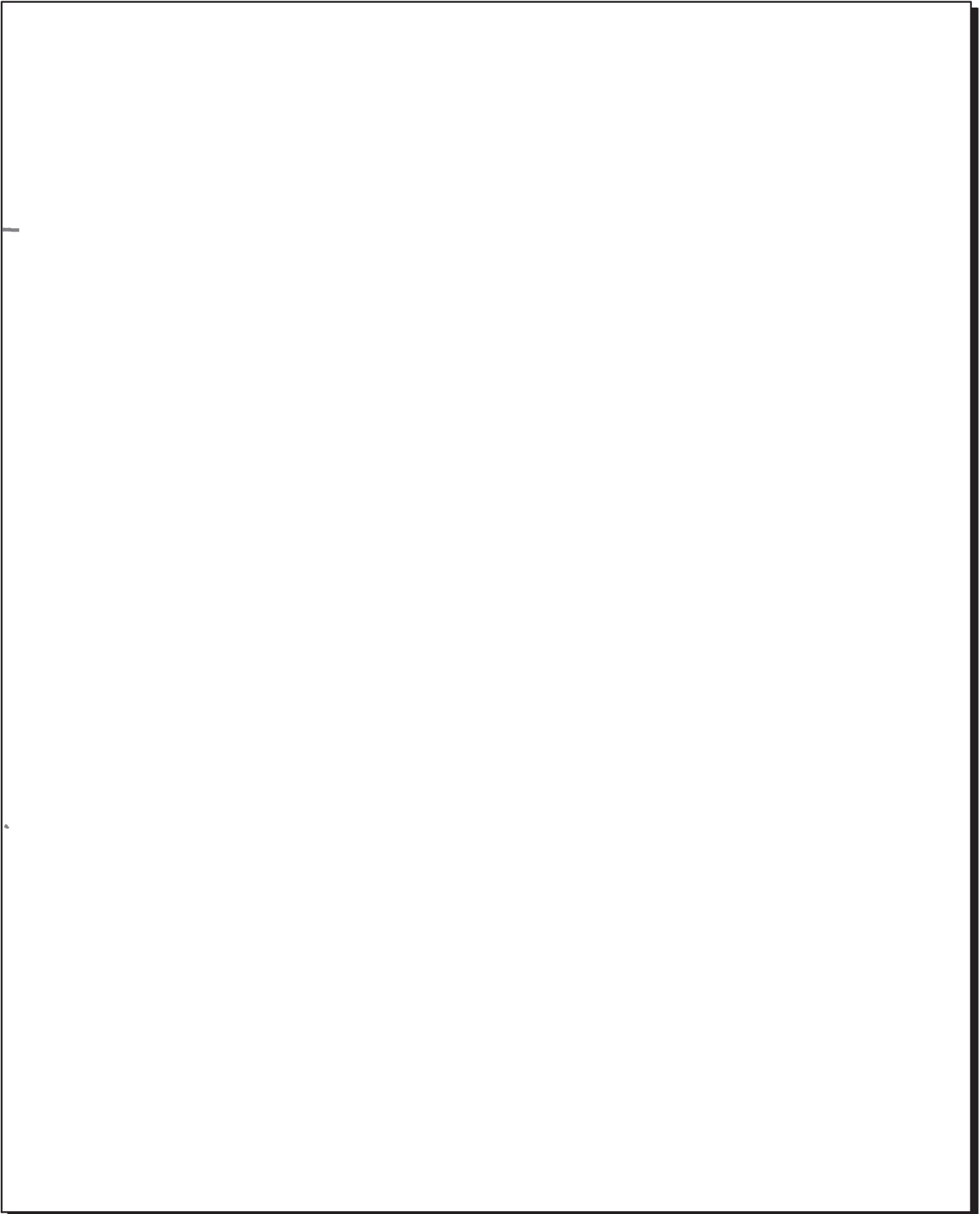
2.0 SITE DESCRIPTION

The study area within the 532-acre VCC is located in an unincorporated portion of the Santa Clara River Valley in northwestern Los Angeles County (*Figure 1*). The Commerce Center site lies roughly in the northwest corner of the junction of Interstate 5 (I-5) and State Route 126 (SR-126) (*Figure 2*). The northwestern edge of the City of Santa Clarita is located east of I-5 from the study area.

The Commerce Center site is dominated by north/south trending ridges that lie north of Castaic Creek, near the confluence with Hasley Canyon. Site elevations range from just under 1,000 feet above mean sea level (AMSL) in the Castaic Creek bottom to just over 1,500 feet AMSL at the top of the western ridge (*Figure 2*). In addition to the ridges, Castaic Creek and Hasley Canyon wash areas on the project site contain numerous benches and braided channels with associated riparian/wash scrub habitats. The ridges are generally rounded at the top with slopes that vary from steep to gentle.

2.1 Plant Communities and Land Covers

Dudek conducted a sensitive plant survey in the study area, however, vegetation was not mapped within the Commerce Center study area. Vegetation communities, when noted, were incidental. Native and naturalized habitats within the Commerce Center study area include representative examples of those plant communities found in the Santa Susana, Topatopa, and Liebre mountains and the Santa Clara River and Castaic Creek ecosystems. Upland habitats dominate the landscape within the study area (*e.g.*, California sagebrush, California buckwheat, valley oak woodlands, and native and non-native grasslands); however, Hasley Canyon does support a variety of riparian plant communities (*e.g.*, southern willow scrub, southern cottonwood-willow mulefat scrub).



Valencia Commerce Center
Regional Map

FIGURE
1

2003 Sensitive Plant Survey Results

Valencia Commerce Center

Historically, The Newhall Land and Farming Company leased out portions of the study area for sand and gravel production, cattle grazing, and agricultural operations; only agricultural operations are currently ongoing. All of these activities have had a noticeable effect on much of the natural habitat onsite (*i.e.*, scrub habitats have been displaced by non-native grasslands). Southern California Edison and Southern California Gas Company have distribution lines and access roads within easements onsite, as well.

2.2 Geology and Soils

Geologically, the study area is located within the Transverse Range geomorphic province of southern California in the eastern portion of the Ventura depositional basin. This basin was produced by tectonic downwarping in the geologic past to produce a large-scale synclinal structure in which a thick sequence of Cenozoic sediments has accumulated. These sediments have been lithified into a sequence of sedimentary rock that has subsequently been uplifted, tilted, and tectonically deformed. The Holser fault traverses the site (Allan E. Seward 2002).

3.0 METHODS AND SURVEY LIMITATIONS

Data regarding botanical resources present on the project site were obtained through a review of the pertinent literature, field reconnaissance, and focused surveys for sensitive species, all of which are described below.

3.1 Literature Review

General floristic and sensitive botanical resources present or potentially present at VCC were identified through a literature search using the following sources: the California Natural Diversity Database for the Newhall Santa Susana, Oat Mountain, Mint Canyon, San Fernando, Green Valley, Warm Springs Mountain, Whitaker Peak, Cobblestone Mountain, Piru, Simi, Thousand Oaks, and Val Verde quadrangle maps (CNDDB, September 2002; *Biological Resource Assessment of the Proposed Santa Susana Mountains/Simi Hills Significant Ecological Area* (PCR, November 2000); CalFlora (University of California, Berkeley, May 2002); U.S. Fish and Wildlife Service (USFWS 1999); California Department of Fish and Game (CDFG 2002); *Inventory of Rare and Endangered Plants of California* (CNPS 2001); *Vascular Flora of the Liebre Mountains, Western Transverse Ranges, California* (Boyd 1999); *Checklist of Rare Ventura County Plant Species* (Magney 2002); *A Flora of the Santa Barbara Region, California* (Smith 1976); *A Flora of the Santa Monica*

2003 Sensitive Plant Survey Results

Valencia Commerce Center

Mountains (Raven *et al.* 1986); *Biology of the San Fernando Valley Spineflower*, Ahmanson Ranch, Ventura County, California (Glenn Lukos Associates, Inc. and Sapphos Environmental, Inc. 2000); *Report to the Fish and Game Commission on the Status of San Fernando Valley Spineflower* (CDFG 2001); *Biota Report, Newhall Ranch Specific Plan* (RECON and Impact Sciences, Inc. 1996); *2002 Sensitive Plant Survey Results for the Valencia Commerce Center* (Dudek 2002); and herbarium specimens from Rancho Santa Ana Botanic Garden (RSA) and the University of California, Riverside Herbarium (UCR). General information regarding vegetation communities was obtained from Holland (1986) and Sawyer and Keeler-Wolf (1995). Plant species nomenclature follows Hickman (1993).

3.2 Field Reconnaissance Methods

Botanical surveys were conducted by Dudek staff biologists Mark A. Elvin, Cathleen M. Weigand, Michelle L. Balk, Kim Marsden, sub-consultants from FLX Anuja Parikah and Nathan Gale, and Andy Sanders from UCR. All surveys were conducted on-foot. Resumes for survey personnel are provided in *Appendix A*.

Botanical surveys of the site were conducted in April of 2003 in accordance with the schedule provided in *Table 1*. Approximately 140 person-hours (14 person-days) were spent conducting botanical surveys within the study area. Surveys were conducted in teams of two or more biologists, with at least one senior-level biologist included with each team. Biologists were able to observe reference populations of the state-listed endangered San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*; SFVS) and other sensitive species in order to develop a search-image prior to conducting surveys of the project site. Surveys focused on the identification and location of all federally- and state-listed (including SFVS), proposed for listing, and candidate species and California Native Plant Society (CNPS) List 1A, 1B, and 2 species (see the list of target species in *Table 2*).

TABLE 1
SURVEY SCHEDULE & PERSONNEL
VALENCIA COMMERCE CENTER PLAN AREA

DATE	BIOLOGISTS	PURPOSE
April 7, 2003	Cathleen Weigand, Mark Elvin, FLx	Focused surveys for SFVS and other sensitive plant species
April 8, 2003	Cathleen Weigand, Mark Elvin, FLx	Focused surveys for SFVS and other sensitive plant species
April 9, 2003	Cathleen Weigand, Mark Elvin, Michelle Balk, FLx	Focused surveys for SFVS and other sensitive plant species
April 10, 2003	Cathleen Weigand, Mark Elvin, Michelle Balk, FLx	Focused surveys for SFVS and other sensitive plant species

2003 Sensitive Plant Survey Results Valencia Commerce Center

TABLE 1
SURVEY SCHEDULE & PERSONNEL
VALENCIA COMMERCE CENTER PLAN AREA

DATE	BIOLOGISTS	PURPOSE
April 11, 2003	Michelle Balk, Kim Marsden	Focused surveys for SFVS and other sensitive plant species
April 12, 2003	Michelle Balk, Kim Marsden	Focused surveys for SFVS and other sensitive plant species
April 16, 2003	Mark Elvin, Andy Sanders, Michelle Balk	Check populations of <i>Lasthenia</i> , <i>Chorizanthe</i> and <i>Calochortus</i> species

TABLE 2
SENSITIVE PLANT SPECIES SUBJECT OF FIELD SURVEYS
VALENCIA COMMERCE CENTER PLAN AREA

Scientific Name	Common Name
<i>Arenaria paludicola</i>	marsh sandwort
<i>Astragalus brauntonii</i>	Braunton's milk-vetch
<i>Atriplex coulteri</i>	Coulter's saltbush
<i>Atriplex serenana</i> var. <i>dauidsonii</i>	Davidson's saltscale
<i>Baccharis malibuensis</i>	Malibu baccharis
<i>Berberis nevini</i>	Nevin's barberry
<i>Brodiaea filifolia</i>	thread-leaved brodiaea
<i>Calochortus clavatus</i> var. <i>gracilis</i>	slender mariposa lily
<i>Calochortus plummerae</i>	Plummer's mariposa lily
<i>Calochortus weedii</i> var. <i>vestus</i>	late-flowered mariposa lily
<i>Calystegia sepium</i> ssp. <i>Binghamiae</i>	Santa Barbara morning-glory
<i>Centromadia</i> [= <i>Hemizonia</i>] <i>parryi</i> ssp. <i>Australis</i>	southern tarplant
<i>Chorizanthe parryi</i> var. <i>fernandina</i>	San Fernando Valley spineflower
<i>Deinandra</i> [= <i>Hemizonia</i>] <i>minthornii</i>	Santa Susana tarplant
<i>Dodecahema leptoceras</i>	slender-horned spineflower

2003 Sensitive Plant Survey Results Valencia Commerce Center

TABLE 2
SENSITIVE PLANT SPECIES SUBJECT OF FIELD SURVEYS
VALENCIA COMMERCE CENTER PLAN AREA

Scientific Name	Common Name
<i>Dudleya blochmaniae</i> var. <i>blochmaniae</i>	Blochman's dudleya
<i>Dudleya cymosa</i> ssp. <i>Marcescens</i>	marcescent dudleya
<i>Dudleya cymosa</i> ssp. <i>Ovatifolia</i>	Santa Monica Mountains dudleya
<i>Dudleya multicaulis</i>	many-stemmed dudleya
<i>Dudleya parva</i>	Conejo Dudleya
<i>Erodium macrophyllum</i>	round-leaved filaree
<i>Helianthus nuttallii</i> ssp. <i>Parishii</i>	Los Angeles sunflower
<i>Horkelia cuneata</i> var. <i>puberula</i>	mesa horkelia
<i>Malacothamnus davidsonii</i>	Davidson's bush mallow
<i>Nama stenocarpum</i>	mud nama
<i>Nolina cismontane</i>	chaparral nolina
<i>Opuntia basilaris</i> var. <i>brachyclada</i>	short-joint beavertail
<i>Pentachaeta lyonii</i>	Lyon's pentachaeta
<i>Rorippa gambellii</i>	Gambel's water cress
<i>Senecio aphanactis</i>	rayless ragwort
<i>Sidalcea neomexicana</i>	salt spring checkerbloom
<i>Thelypteris puberula</i> var. <i>sonorensis</i>	Sonoran maiden fern

All plant species encountered during the field surveys were identified and recorded for inclusion in *Appendix B*. A majority of the species encountered was vouchered and will be repositied at the herbarium at the University of California, Riverside. Latin and common names of plants follow *The Jepson Manual* (Hickman 1993) or other recent published taxonomic treatments. Where not listed in Hickman (1993), common names were taken from Abrams (1923). Where not found in this reference, a variety of sources were used (e.g., Dale 1986, Roberts 1998).

2003 Sensitive Plant Survey Results

Valencia Commerce Center

Surveys for the sensitive plant species listed in *Table 2* were conducted based upon: **(1)** the habitat preference, habit, and phenology for each species; **(2)** professional experience; and **(3)** any other additional information gathered from those sources discussed in *Section 3.1* above. Surveys for SFVS were focused in open areas of California sage brush-purple sage series, California buckwheat and California annual grasslands (Sawyer and Keeler-Wolf 1995) on ridgelines, slopes, and escarpments with a southern, southwestern, or southeastern exposure based on information gathered during surveys for SFVS populations on the Newhall Ranch project site during 2002; information contained in the report prepared by Glenn Lukos Associates, Inc. and Sapphos Environmental, Inc. (2000); the status report prepared for the Fish and Game Commission (CDFG 2000); and conversations with Rick Reifner, the botanist who rediscovered SFVS at Ahmanson Ranch in 1999.

While surveying in the field and mapping SFVS, a four-meter (13.1 feet) rule was used to separate polygons for mapping purposes. This distance is a heuristic mapping tool based on the topography, vegetation, detectability of the plants, the general accuracy of the GPS, and time constraints. This heuristic criterion is not specifically tied to SFVS biology (*i.e.*, reproductive biology, seed dispersal) and thus is not intended to reflect reproductively isolated sub-populations, the total extent of the SFVS seed bank, or any other feature of the species life history.

The outer perimeter of each spineflower polygon was searched in one continuous direction until returning to the starting point, with plants being located within at least every one to four m along the boundary, and points were stored with a Trimble GPS (that has sub-meter accuracy) manually to form the boundaries of the polygon. GPS points were taken within at least every one to four m. The various spineflower polygons were given a unique identifier (*i.e.*, numbers and/or letters) in the field. Field data sheets were completed for each of the spineflower polygons that include data on site conditions (*i.e.*, plant number estimates, associated species) (*Appendix C*). Polygons were analyzed in the lab and delineated based on a four m minimum convex polygon rule (all polygons within four m of each other will be joined using GIS software (*e.g.*, ArcGIS, AutoCAD), then delineated as one polygon with the outer boundary represented by a minimum convex polygon.

A modified magnitude scale was used to arrive at an estimate of the number of spineflower individuals (or other sensitive species when observed) within each polygon. After mapping the boundaries of the polygon, the number of individuals were counted/

2003 Sensitive Plant Survey Results

Valencia Commerce Center

estimated in a rectangular “sample estimation area” (to account for the “clumped” nature of this species), which is a subset of the total polygon. The sample estimation area was between 200 cm² (10 by 20 cm) and two m² (one m by two m) depending on various factors regarding the polygon (*e.g.*, size of the polygon, plant densities, variations in plant densities within the polygon). The number of subsets within the total polygon was determined and added/multiplied, resulting in a total estimate of the number of individuals of the polygon (*e.g.*, 4x125=500, 8x12=96, 9x100=900). This number was then rounded to the nearest magnitude or multiple of a magnitude (*e.g.*, 500; 100; 1,000). This should provide accurate estimates of the number of plants within each polygon while eliminating a false sense of accuracy.

Polygons for other sensitive species were mapped with the GPS unit, by drawing polygons on 7.5-minute USGS quadrangle maps, or by a combination of the two. Professional judgment and experience were used to delineate these polygons based on the detectability of the species, topography, and vegetation. Perennial sensitive plants were mapped at a 10 to 20 m scale due to their population dynamics (including seed dispersal and pollination range), observability, habit, habitat limitations, and mapping accuracy. Information regarding the mapping for each sensitive species is included in the sections below (*Sections 4.2.1 through 4.2.6*).

3.2.1 Sensitive Plant Species

Sensitive plant species are those species that have been given special recognition by federal, state, or local conservation agencies and organizations due to limited, declining, or threatened population sizes. This designation includes those species listed by the state and federal government as threatened or endangered, those species proposed for state and/or federal listing or candidates, those plant species found on Lists 1A, 1B or 2 of the CNPS *Inventory of Rare and Endangered Plants of California* (CNPS 2001; *Inventory*), and those plant species which are found on the list of “Threatened and Endangered Species and Species of Concern, Los Angeles County” (<http://www.losangelesalmanac.com/topics/Environment/ev14b.htm>). CNPS List 3 or List 4 species, which have a lower level of sensitivity, were included in discussions only when encountered during the field surveys.

2003 Sensitive Plant Survey Results

Valencia Commerce Center

3.2.2 Survey Limitations

Surveys were conducted in the spring of 2003. Surveys were conducted during a year with a “normal” amount of rainfall providing ideal conditions to determine the diversity of species (including sensitive plants) onsite and to map their presence, abundance, and distributions more accurately (when necessary). The timing of the surveys was coincident with the blooming period for SFVS and other early blooming annual species. This maximized the potential for detection of SFVS during the survey effort.

Focused surveys were directed towards the detection of sensitive species, particularly those identified in *Table 2*, in all areas of the site except Castaic Creek (see *Figure 2*). Surveys for SFVS and other sensitive species were concentrated in areas of suitable habitat. Surveys for SFVS were concentrated on south-facing slopes, while surveys for slender mariposa lily (*Calochortus clavatus* var. *gracilis*) were concentrated on north-facing slopes. All surveys were conducted during daylight hours under weather conditions which did not preclude observation of sensitive plant species (*e.g.*, surveys were not conducted during heavy fog or rain).

4.0 RESULTS OF SURVEYS

4.1 Botany - Floral Diversity

The study area is situated at the nexus of the Transverse, Coast, and Sierra Nevada ranges; the Mojave Desert; and coastal plains (Hickman 1993). Ecotone areas such as this are often characterized by higher biological diversity than similar-sized areas within the core of a physiographic region (Boyd 1999). As such, a high diversity of plant species is expected during a year of at least average rainfall amounts for the area.

At least 90 plant species were identified within the Valencia Commerce Center study area. Of these, 74 species (82 percent) are native to the region and 16 species (18 percent) are non-native. The list of plant species identified on the site in 2002 and 2003 is provided as *Appendix B*.

4.2 Sensitive Plant Species

Sensitive plant species observed within the study area during the course of our 2003 surveys include: San Fernando Valley spineflower, slender mariposa lily, Coulter's

2003 Sensitive Plant Survey Results

Valencia Commerce Center

goldfields (*Lasthenia glabrata* ssp. *coulteri*), and Peirson's morning glory (*Calystegia peirsonii*). These and other sensitive species that have the potential to occur within the Commerce Center site, based on the presence of suitable habitat and soils, are listed in Table 3. The sensitive species listed in Table 3 are confined primarily to those species listed by the state and federal government as threatened or endangered, those species proposed for state and/or federal listing or candidates, those plant species found on Lists 1A, 1B, or 2 of the CNPS *Inventory of Rare and Endangered Plants of California* (CNPS 2001).

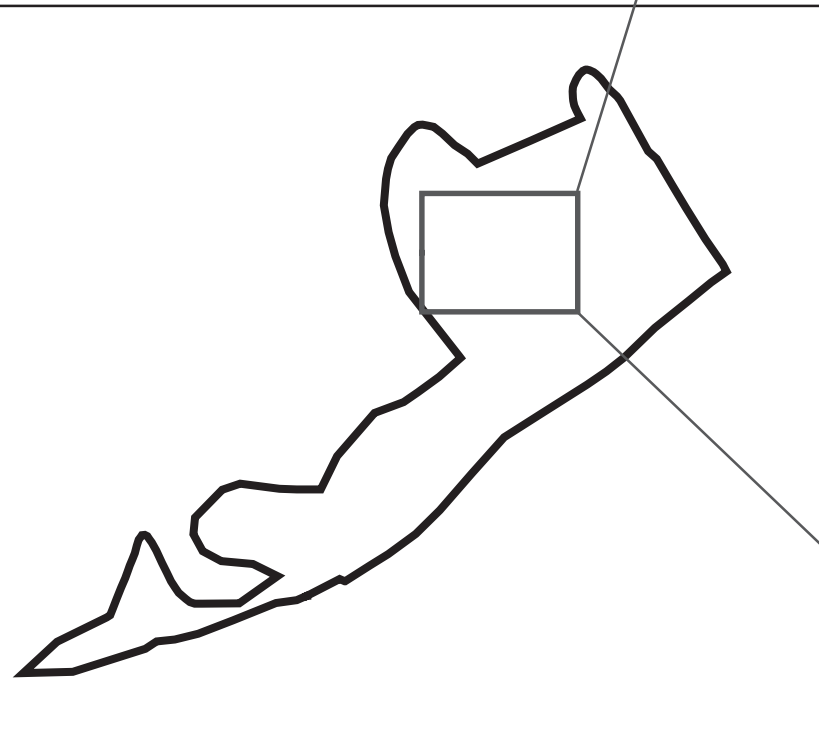
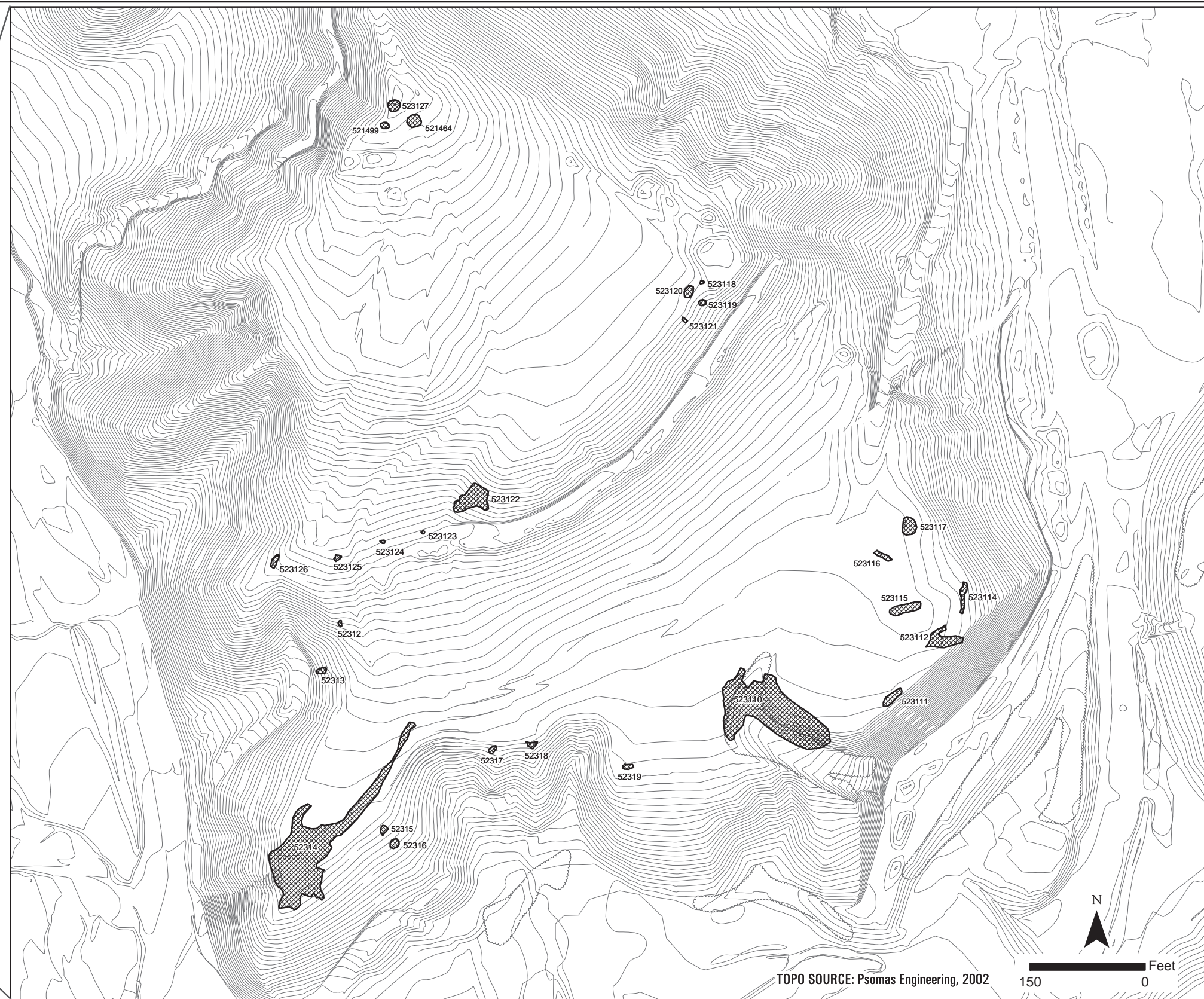
The species observed during the 2003 field surveys are discussed in greater detail below. A number of species found on CNPS Lists 3 or 4 also have the potential to occur onsite (e.g., *Acanthomintha obovata* ssp. *cordata*, *Calochortus catalinae*, *C. clavatus* var. *clavatus*, *Mucronea californica*); however, due to their relatively low sensitivity level, CNPS Lists 3 or 4 plants are only discussed in the following sections if they were observed in the study area.

Figure 3 depicts the locations of SFVS, Figure 4 is an index map for Figures 5 and 6, which indicate the locations of slender mariposa lily and Coulter's goldfields on the Commerce Center site during our surveys. Information regarding the mapping and recorded characteristics of the sensitive species is included in the sections below (Sections 4.2.1 through 4.2.4).

4.2.1 San Fernando Valley Spineflower (*Chorizanthe parryi* var. *Fernandina*)

San Fernando Valley spineflower is state-listed as endangered, a candidate for federal listing, and a CNPS List 1B species. Until its rediscovery in 1999 at Laskey Mesa on Ahmanson Ranch in Ventura County, it was thought to be extinct. A review of information of historic occurrence of SFVS in the CNDDDB indicate that it was previously thought to occur in sandy to gravelly soils of washes, riverbeds, and upland areas primarily on the margins of the San Fernando Valley at the base of the Santa Susana Mountains, San Gabriel Mountains, and the Simi Hills. Munz (1974) provides distribution information to include Orange and San Diego counties.

 San Fernando Valley spineflower -
Chorizanthe parryi var. *fernandina*



Valencia Commerce Center
2003 San Fernando Valley spineflower Results

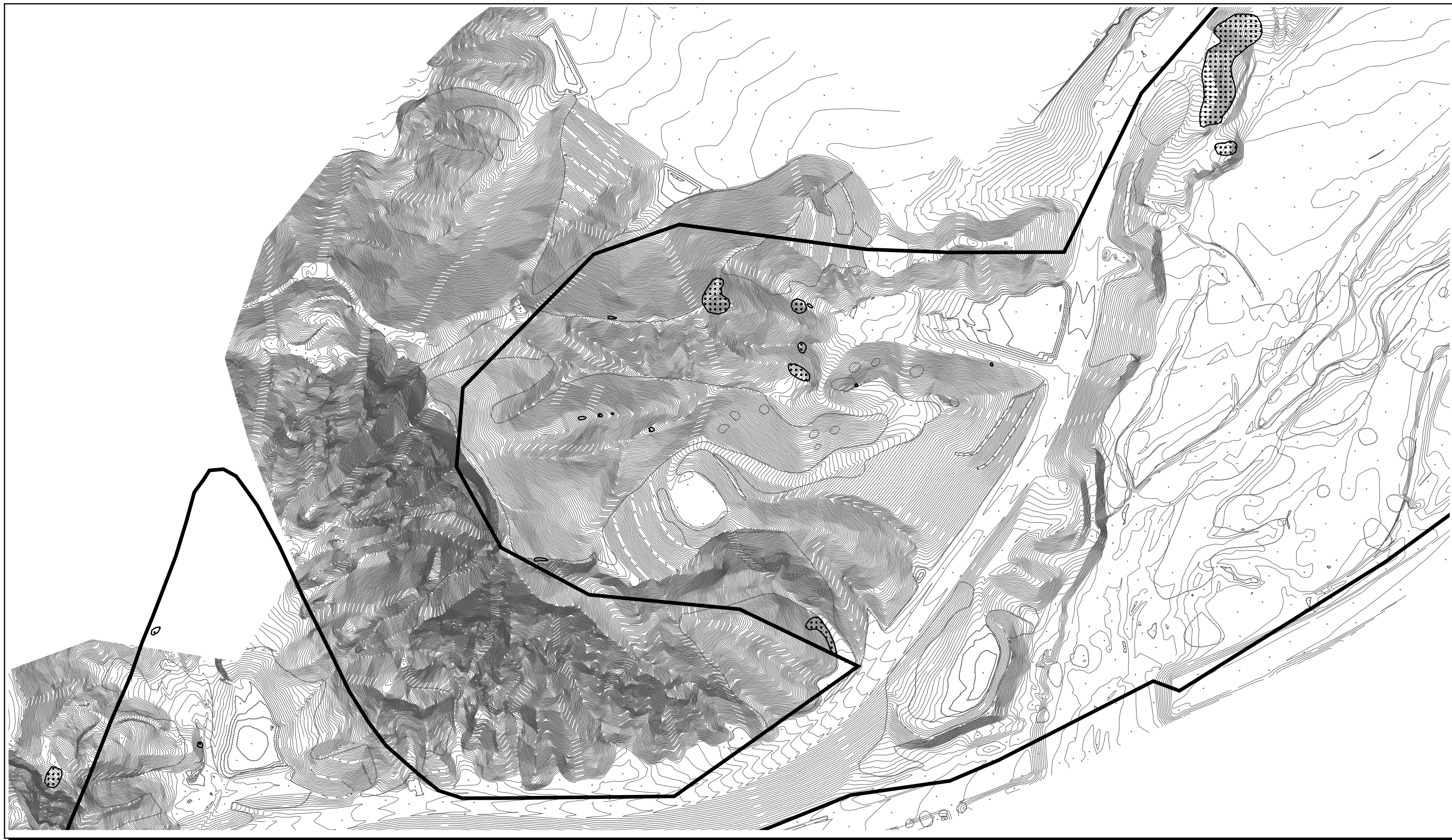


0 1,800 3,600 Feet

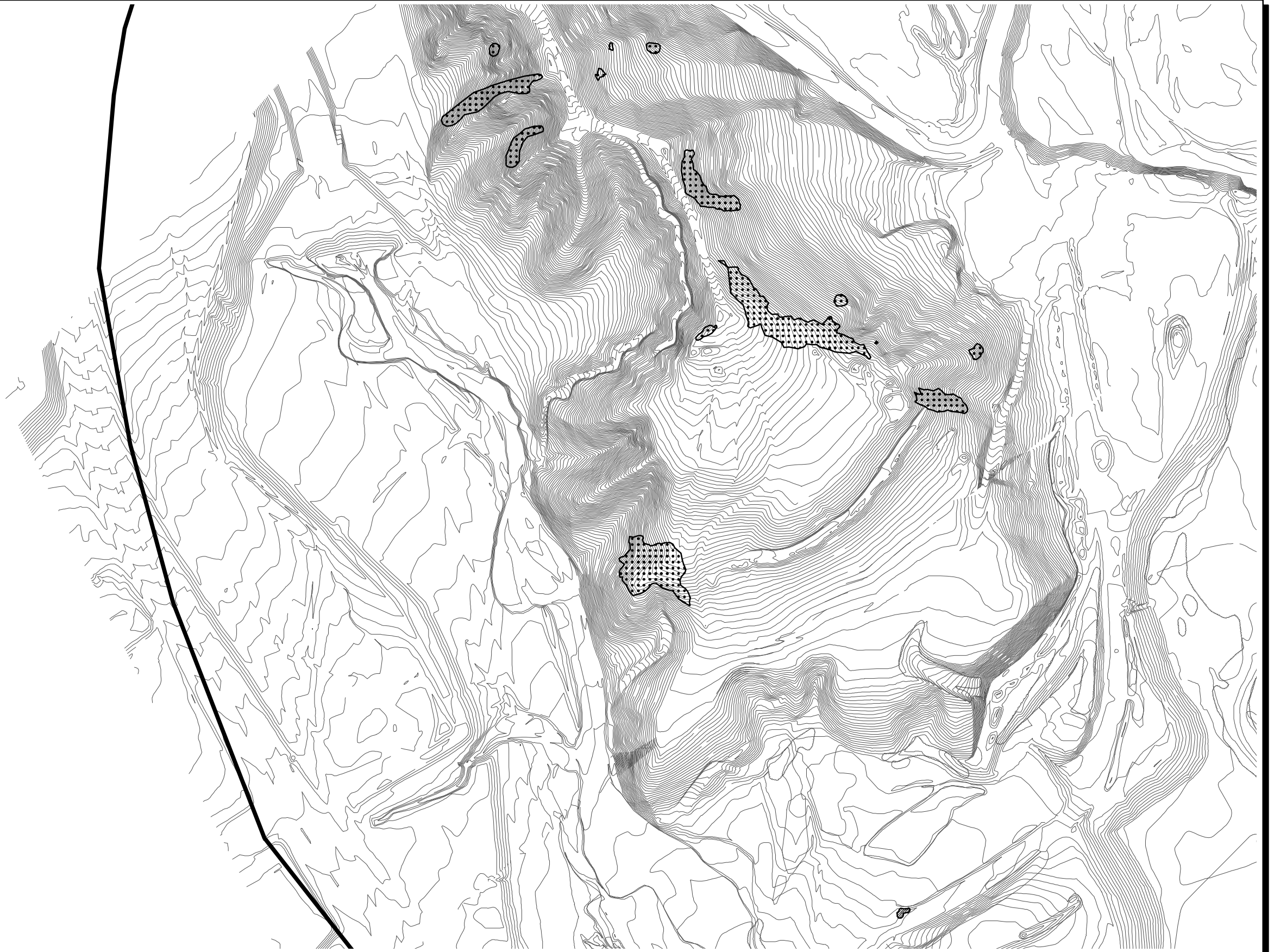
TOPO SOURCE: Psomas Engineering, 2002

Valencia Commerce Center Rare Plant Index Map

FIGURE
4



Valencia Commerce Center
2003 Rare Plant Survey Results



Valencia Commerce Center
2003 Rare Plant Survey Results

FIGURE
6

2003 Sensitive Plant Survey Results Valencia Commerce Center

TABLE 3
SENSITIVE PLANT SPECIES OBSERVED OR POTENTIALLY OCCURRING AT
THE VALENCIA COMMERCE CENTER

Scientific Name	Common Name	Status Federal/State	CNPS List	Primary Habitat Associations/ Life Form/Blooming Period	Presence or Likelihood of Occurrence Onsite
<i>Arenaria paludicola</i>	marsh sandwort	FE/SE	1B	dense freshwater marsh/perennial herb/May-August	Not observed during 2003 field season. No CNDDDB records exist for the Newhall or Val Verde quads; nearest occurrences are in the Santa Ana River and in Santa Barbara. Limited suitable habitat onsite in wash/riparian areas that were surveyed; very low likelihood of occurrence within the study area.
<i>Astragalus brauntonii</i>	Braunton's milk-vetch	FE/None	1B	chaparral, coastal sage scrub, grasslands; often on carbonate substrates/perennial herb/March-July	Not observed during 2003 field season. No CNDDDB records exist for the Newhall or Val Verde quads; nearest occurrence is in the Simi Hills. Suitable habitat exists onsite. Low to moderate likelihood of occurrence within study area.
<i>Atriplex coulteri</i>	Coulter's saltbush	None/None	1B	coastal sage scrub and grasslands on alkaline or clay substrate/perennial herb/March-October	Not observed during 2003 field season. No CNDDDB records exist for the Newhall or Val Verde quads. Suitable habitat exists onsite in wash/riparian areas that were surveyed. Moderate likelihood of occurrence within study area.
<i>Atriplex serenana</i> var. <i>davidsonii</i>	Davidson's saltscale	None/None	1B	coastal bluff scrub and coastal sage scrub on alkaline substrate/annual herb/May-October	Not observed during 2003 field season. No CNDDDB records exist for the Newhall or Val Verde quads. Suitable habitat exists onsite in wash/riparian areas that were surveyed. Low likelihood of occurrence within the study area.
<i>Baccharis malibuensis</i>	Malibu baccharis	None/None	1B	chaparral, coastal sage scrub, cismontane woodland/deciduous shrub/August	Not observed during 2003 field season. No CNDDDB records exist for the Newhall or Val Verde quads; closest known populations are in the western Santa Monica Mountains near Malibu. Not expected to occur within the study area.
<i>Berberis nevinii</i>	Nevin's barberry	FE/SE	1B	chaparral, coastal sage scrub, riparian scrub, cismontane woodland on sandy or gravelly substrate/evergreen shrub/March-April	Not observed during 2003 field season. CNDDDB records exist for San Francisquito Canyon at confluence with Santa Clara River; suitable habitat present onsite in wash/riparian areas that were surveyed. Moderate likelihood of occurrence within study area.

2003 Sensitive Plant Survey Results Valencia Commerce Center

TABLE 3
SENSITIVE PLANT SPECIES OBSERVED OR POTENTIALLY OCCURRING AT
THE VALENCIA COMMERCE CENTER

Scientific Name	Common Name	Status Federal/State	CNPS List	Primary Habitat Associations/ Life Form/Blooming Period	Presence or Likelihood of Occurrence Onsite
<i>Brodiaea filifolia</i>	Thread-leaved brodiaea	FT/SE	1B	clay substrate openings in chaparral, sage scrub, and grasslands/perennial herb (geophyte)/March-June	Not observed during 2003 field season. No CNDDDB records exist for the Newhall or Val Verde quads; nearest occurrence is in San Dimas. Suitable habitat present onsite. Low likelihood of occurrence within study area.
<i>Calochortus clavatus</i> var. <i>gracilis</i>	slender mariposa lily	None/None	1B	chaparral and coastal sage scrub/perennial herb (geophyte)/March-May	Identified in two general areas (predominantly steep, north-facing slopes in California sagebrush) within 33 polygons. Overall onsite population estimate is 995 individuals within occurrence polygons covering 2.9 acres of the site. CNDDDB records for mouth of Pico Canyon.
<i>Calochortus plummerae</i>	Plummer's mariposa lily	None/None	1B	chaparral, coastal sage scrub, cismontane woodland, grasslands on rocky granitic substrate/perennial herb (geophyte)/May-July	Not positively identified within study area during 2003 field season. Several <i>Calochortus</i> leaves resembling this species were observed during the spring 2003 surveys. These observations will require further survey work during the blooming period for this species. No CNDDDB records exist for the Newhall or Val Verde quads; however, records exist for the Santa Susana Mountains and Simi Hills. Suitable habitat exists onsite. High likelihood of occurrence within study area.
<i>Calochortus weedii</i> var. <i>vestus</i>	late-flowered mariposa lily	None/None	1B	chaparral, cismontane and riparian woodland/perennial herb (geophyte)/ June-August	Not observed during 2003 field season. No CNDDDB records exist for the Newhall or Val Verde quads; however, habitat similar to where species occurs in eastern Ventura County is present onsite. Moderate likelihood of occurrence within study area.
<i>Calystegia peirsonii</i>	Peirson's morning-glory	None/None	4	chaparral, coastal sage scrub, cismontane woodland, grassland/ perennial herb/May-June	Not observed within study area during 2003 field season. Occurrences documented from surrounding areas in chaparral and California sagebrush. High likelihood of occurrence within study area.

2003 Sensitive Plant Survey Results Valencia Commerce Center

TABLE 3
SENSITIVE PLANT SPECIES OBSERVED OR POTENTIALLY OCCURRING AT
THE VALENCIA COMMERCE CENTER

Scientific Name	Common Name	Status Federal/State	CNPS List	Primary Habitat Associations/ Life Form/Blooming Period	Presence or Likelihood of Occurrence Onsite
<i>Calystegia sepium</i> ssp. <i>Binghamiae</i>	Santa Barbara morning-glory	None/None	1A	marshes and swamps/perennial herb/ April-May	Not observed during 2003 field season. No CNDDDB records exist for the Newhall or Val Verde quads. Limited suitable habitat present onsite in wash/riparian areas that were surveyed. Low likelihood of occurrence within study area.
<i>Centromadia</i> [= <i>Hemizonia</i>] <i>parryi</i> ssp. <i>Australis</i>	southern tarplant	None/None	1B	mesic edges of marshes in grasslands/annual herb/May-November	Not observed during 2002 field season. No CNDDDB records exist for the Newhall or Val Verde quads. Suitable habitat exists onsite in wash/riparian areas that were surveyed. Low likelihood of occurrence within study area.
<i>Cercocarpus betuloides</i> var. <i>blancheae</i>	island mountain-mahogany	None/None	4	chaparral, closed-cone coniferous forest/evergreen shrub/February-May	Not observed within study area during 2003 field season. Occurrences documented from surrounding areas in mixed chaparral. Limited suitable habitat present onsite. Low likelihood of occurrence within study area.
<i>Chorizanthe parryi</i> var. <i>fernandina</i>	San Fernando Valley spineflower	FC/SE	1B	coastal sage scrub, sandy soils/annual herb/April-June	Observed in one general area with 27 polygons onsite. Total onsite population estimate is 170,081 individuals within occurrence polygons covering 0.46 acre of the site.
<i>Deinandra</i> [= <i>Hemizonia</i>] <i>minthornii</i>	Santa Susana tarplant	None/SR	1B	chaparral and coastal sage scrub on rocky substrate/deciduous shrub/July-November	Not observed during 2003 field season. No CNDDDB records exist for the Newhall or Val Verde quads; however, records exist for the Simi Hills and Oat Mountain. Suitable habitat exists onsite. Low likelihood of occurrence within study area.
<i>Delphinium parryi</i> ssp. <i>Blochmaniae</i>	dune larkspur	None/None	1B	maritime chaparral, coastal dunes/ perennial herb/ April-may	Not observed during 2003 field season although <i>Delphinium parryi</i> spp. <i>parryi</i> was observed within the study area. No likelihood of occurrence.

2003 Sensitive Plant Survey Results Valencia Commerce Center

TABLE 3
SENSITIVE PLANT SPECIES OBSERVED OR POTENTIALLY OCCURRING AT
THE VALENCIA COMMERCE CENTER

Scientific Name	Common Name	Status Federal/State	CNPS List	Primary Habitat Associations/ Life Form/Blooming Period	Presence or Likelihood of Occurrence Onsite
<i>Dodecahema leptoceras</i>	slender-horned spineflower	FE/SE	1B	alluvial scrub on sandy substrate/annual herb/April-June	Not observed during 2003 field season. Historic CNDDDB records exist for the Newhall or Val Verde quads in alluvial habitat similar to those present onsite in wash/riparian areas that were surveyed. Moderate likelihood of occurrence onsite.
<i>Dudleya blochmaniae</i> var. <i>blochmaniae</i>	Blochman's dudleya	None/None	1B	clay openings in chaparral and coastal sage scrub, grasslands/perennial herb/April-June	Not observed during 2003 field season. No CNDDDB records exist for the Newhall or Val Verde quads. Suitable habitat present onsite. Low to moderate likelihood of occurrence within study area.
<i>Dudleya cymosa</i> ssp. <i>Marcescens</i>	marcescent dudleya	FT/CR	1B	chaparral, often on volcanic substrate/perennial herb (geophyte)/ April-June	Not observed during 2003 field season. No CNDDDB records exist for Newhall and Val Verde quads. No suitable habitat observed in study area.
<i>Dudleya cymosa</i> ssp. <i>Ovatifolia</i>	Santa Monica Mountains dudleya	FT/None	1B	chaparral and coastal sage scrub, often on volcanic substrate/perennial herb (geophyte)/April-June	Not observed during 2003 field season. No CNDDDB records exist for Newhall and Val Verde quads. Suitable habitat present onsite. Low to moderate likelihood of occurrence within study area.
<i>Dudleya multicaulis</i>	many-stemmed dudleya	None/None	1B	coastal bluff scrub, coastal sage scrub, valley and foothill grassland, rocky, often clay substrate/perennial herb/ April-June	Not observed during 2003 field season. No CNDDDB records exist for the Newhall or Val Verde quads; closest known occurrences are in Calabasas and San Dimas. Suitable habitat exists onsite. Low to moderate likelihood of occurrence within study area.
<i>Dudleya parva</i>	Conejo dudleya	FT/None	1B	coastal sage scrub and grassland on rocky, gravelly clays/perennial herb/May-June	Not observed during 2003 field season. No CNDDDB records exist for the Newhall or Val Verde quads. Suitable habitat exists onsite. Low likelihood of occurrence within study area.

2003 Sensitive Plant Survey Results Valencia Commerce Center

TABLE 3
SENSITIVE PLANT SPECIES OBSERVED OR POTENTIALLY OCCURRING AT
THE VALENCIA COMMERCE CENTER

Scientific Name	Common Name	Status Federal/State	CNPS List	Primary Habitat Associations/ Life Form/Blooming Period	Presence or Likelihood of Occurrence Onsite
<i>Erodium macrophyllum</i>	round-leaved filaree	None/None	2	cismontane woodland and grasslands on clay substrate/annual herb/March-May	Not observed during 2003 field season. No CNDDDB records exist for the Newhall or Val Verde quads; however, records exist for Simi Valley. Suitable habitat present onsite; moderate likelihood of occurrence in study area.
<i>Helianthus nuttallii</i> ssp. <i>Parishii</i>	Los Angeles sunflower	None/None	1A	marshes and swamps/perennial herb/ August-October	Not observed within study area during 2003 field season. A <i>Helianthus</i> population, discovered in 2002 by Elvin and Sanders at Castaic Spring, on the south side of the Santa Clara River between Middle Canyon and San Jose Flats, was determined by some experts to be this species. The final determination of the identity of this species is still being worked on. No suitable habitat observed in wash/riparian areas that were surveyed.
<i>Horkelia cuneata</i> var. <i>puberula</i>	Mesa horkelia	None/None	1B	chaparral, cismontane woodland, coastal sage scrub on sandy or gravelly substrate/perennial herb/February-December	Not observed during 2003 field season. No CNDDDB records exist for the Newhall or Val Verde quads. Suitable habitat present onsite in wash/riparian areas that were surveyed. Low likelihood of occurrence within study area.
<i>Juglans californica</i>	southern California black walnut	None/None	4	chaparral, cismontane woodland, coastal sage scrub, alluvial scrub/ deciduous tree/March-May	Not observed within study area during 2003 field season. Observed offsite in California sagebrush and chaparral onsite. Suitable habitat present onsite. Low likelihood of occurrence within study area.
<i>Lasthenia glabrata</i> ssp. <i>Coulteri</i>	Coulter's goldfields	FSC/None	1B	Saltwater marsh and swamps, playas, vernal pools/annual herb/February-June	Observed in one location (approximately 430 square feet in size) within the study area during 2003 surveys. The occurrence contains approximately 100 individuals on a manufactured slope. No records of this subspecies are within Los Angeles or Ventura counties.

2003 Sensitive Plant Survey Results Valencia Commerce Center

TABLE 3
SENSITIVE PLANT SPECIES OBSERVED OR POTENTIALLY OCCURRING AT
THE VALENCIA COMMERCE CENTER

Scientific Name	Common Name	Status Federal/State	CNPS List	Primary Habitat Associations/ Life Form/Blooming Period	Presence or Likelihood of Occurrence Onsite
<i>Malacothamnus davidsonii</i>	Davidson's bush mallow	None/None	1B	chaparral, coastal sage scrub, riparian woodland/ deciduous scrub/June-January	Not observed during 2003 field season. Nearest occurrences are in Van Nuys and Sunland. quads. Suitable habitat present onsite. Moderate likelihood of occurrence within study area.
<i>Nama stenocarpum</i>	mud nama	None/None	2	edges of lakes, rivers, ponds, vernal pools/annual/January-July	Not observed during 2003 field season. Moderate likelihood of occurrence on banks of Castaic Creek and Hasley Canyon and other mesic areas onsite. No CNDDDB records exist for the Newhall or Val Verde quads. Limited suitable habitat present onsite in wash/riparian areas that were surveyed. Low likelihood of occurrence within study area.
<i>Nolina cismontane</i>	chaparral nolina	None/None	1B	chaparral, coastal sage scrub on sandstone or gabbro substrate/ perennial shrub/May-July	Not observed during 2003 field season. No CNDDDB records exist for the Newhall or Val Verde quads. Limited suitable habitat present onsite. Low likelihood of occurrence within study area.
<i>Opuntia basilaris</i> var. <i>brachyclada</i>	short-joint beavertail	None/None	1B	chaparral, Joshua tree woodland, Mojavean desert scrub/succulent shrub/ April-June	This variety was identified by Dudek in 2002 within coastal sage scrub at southwest portion of the ridge between Hasley Canyon and Castaic Creek; however, recent investigation indicates that the onsite population more closely matches variety <i>racemosa</i> . This species was not mapped in 2003.
<i>Pentachaeta lyonii</i>	Lyon's pentachaeta	FE/SE	1B	openings in chaparral and coastal sage scrub, grasslands/annual herb/March-August	Not observed during 2003 field season. No CNDDDB records exist for the Newhall or Val Verde quads; nearest occurrences are in the Simi Valley. Suitable habitat present onsite. Moderate likelihood of occurrence within study area.

2003 Sensitive Plant Survey Results Valencia Commerce Center

TABLE 3
SENSITIVE PLANT SPECIES OBSERVED OR POTENTIALLY OCCURRING AT
THE VALENCIA COMMERCE CENTER

Scientific Name	Common Name	Status Federal/State	CNPS List	Primary Habitat Associations/ Life Form/Blooming Period	Presence or Likelihood of Occurrence Onsite
<i>Rorippa gambellii</i>	Gambel's watercress	FE/ST	1B	marsh and swamps (freshwater and brackish)/ perennial herb/April-June	Not observed during 2003 field season. No CNDDDB records exist for the Newhall or Val Verde quads. Limited suitable habitat present onsite in wash/riparian areas that were not surveyed. Very low likelihood of occurrence within study area.
<i>Senecio aphanactis</i>	rayless ragwort	None/None	2	chaparral, coastal sage scrub, cismontane woodland on alkaline substrate/annual herb/January-April	Not observed during 2003 field season. Historic CNDDDB record for Saugus, south of Santa Clara River. Suitable habitat exists onsite. Low likelihood of occurrence within study area.
<i>Sidalcea neomexicana</i>	salt spring checkerbloom	None/None	2	chaparral, coastal sage scrub, and playas on alkaline substrate/perennial herb/March-June	Not observed during 2003 field season. No CNDDDB records exist for the Newhall or Val Verde quads; suitable habitat exists onsite. Moderate likelihood of occurrence within study area.
<i>Thelypteris puberula</i> var. <i>sonorensis</i>	Sonoran maiden fern	None/None	2	meadows and seeps/perennial herb/ fertile January- September	Not observed during 2003 field season. No CNDDDB records exist for the Newhall or Val Verde quads; nearest occurrence at Point Dume. Limited suitable habitat present onsite. Very low likelihood of occurrence within study area.

Legend

FE:	Federally-listed as endangered	SE:	State-listed as endangered
FT:	Federally-listed as threatened	ST:	State-listed as threatened
FC:	Federal candidate for listing	SR:	State-listed as rare
SC:	State candidate for listing		
CNPS List 1A:	Plants presumed extinct in California		
CNPS List 1B:	Plants rare, threatened, or endangered in California and elsewhere		
CNPS List 2:	Plants rare, threatened, or endangered in California but more common elsewhere		
CNPS List 3:	Plants about which we need more information – a review list		
CNPS List 4:	Plants of limited distribution – a watch list		

2003 Sensitive Plant Survey Results Valencia Commerce Center

Twenty-seven (27) SFVS polygons were identified in the northeastern portion of the survey area. These polygons are depicted in *Figure 3*. Labels for each of the polygons in *Figure 3* correlate with those in *Table 4*, which contain estimates for the numbers of individuals within each polygon.

TABLE 4
SAN FERNANDO VALLEY SPINEFLOWER
SUMMARY OF OCCURRENCE DATA FOR THE
COMMERCE CENTER SITE

Polygon Name	Polygon Size (square feet)	Estimated Number of Individuals
52312	25	50
52313	83	50
52314	8,157	15,100
52315	78	720
52316	113	6
52317	69	7
52318	76	420
52319	72	260
523110	7,519	139,240
523111	264	2
523112 (includes 523113)	667	3,710
523114	200	100
523115	429	1
523116	122	50
523117	348	30
523118	17	50
523119	60	100
523120	147	10
523121	28	100
523122	1,049	9710
523123	13	100
523124	20	50
523125	50	200

2003 Sensitive Plant Survey Results Valencia Commerce Center

TABLE 4
SAN FERNANDO VALLEY SPINEFLOWER
SUMMARY OF OCCURRENCE DATA FOR THE
COMMERCE CENTER SITE

Polygon Name	Polygon Size (square feet)	Estimated Number of Individuals
523126	103	50
523127	188	25
521464	238	30
521499	75	10
TOTAL	20,210	170,081

Most of the SFVS were found on slopes with a south-facing component in habitat ecotonal between California sagebrush and grasslands, and California buckwheat and grasslands. Elevations of the SFVS polygons on this site range from approximately 1,070 to 1,160 feet AMSL. Vegetative cover in the area of SFVS occurrences ranged from 50 to 100%, but was more commonly between 80 and 100%. The soil type for all mapped SFVS occurrences on the project site consisted of sandy loams. The size of the occurrence polygons ranges from 13 to approximately 8,000 square feet. The number of individuals within each polygon ranges from 1 individual to approximately 139,000 individuals. A CNDDB form is included in *Appendix C* for this occurrence.

4.2.2 Slender mariposa lily (*Calochortus clavatus* var. *gracilis*)

Slender mariposa lily has no state or federal status but is a CNPS List 1B plant. It is typically found in chaparral, coastal sage scrub, and grasslands, often on clay, and/or rocky soils. It has been documented to occur at the mouth of Pico Canyon and other canyons in the vicinity (Newhall Quad; CNDDB 2002). Other varieties of this species are documented from southern California: club-haired mariposa lily (*Calochortus clavatus* var. *clavatus*) and pale mariposa lily (*C. clavatus* var. *pallidus*). The club-haired mariposa lily differs in that it is virtually a serpentine endemic (restricted to serpentine soils) and a very robust species, generally attaining a height of one meter. Pale mariposa lily differs in that the petals are a paler yellow, the anthers are paler (yellow to pale purple), and the hairs on the petals are not as knobby or club shaped. Neither the club-haired mariposa lily nor pale

2003 Sensitive Plant Survey Results Valencia Commerce Center

mariposa lily are known to have a red line above the nectary on the petal as is the case with the slender mariposa lily.

Multiple polygons were mapped within the study area by drawing boundaries on aerial photograph field maps around the areas that contained the mariposa lily. The *Calochortus* plants were scattered within these polygons and estimates of the number of flowering individuals (not total number of individuals) were made based on visual estimations. Geophytes like *Calochortus* generally only have a percentage of the plants flower in any given year and the non-flowering individuals are not as visible.

Within the Commerce Center study area, the slender mariposa lily was found primarily on east, northeast, and southeast-facing ridges and slopes in California sagebrush, California buckwheat and grasslands (see *Figures 5 and 6*). The occurrences were generally mapped in areas of high vegetative cover and a variety of soil types (e.g., gravelly loam, sandy loam, rocky clay). The elevation of occurrences ranges from 1,000 to 1,330 feet AMSL. A total of 33 polygon occurrences were mapped with a polygon size ranging from 25 to 38,000 square feet. The estimated number of individuals within each polygon ranges from 1 to 300, with approximately 1,000 individuals within the project site. CNDDB forms were completed for each occurrence and are included in *Appendix C*.

**TABLE 5
SLENDER MARIPOSA LILY
SUMMARY OF OCCURRENCE DATA FOR THE COMMERCE CENTER SITE**

Polygon Name	Polygon Size (Square Feet)	Estimated Number of Individuals
51129	38,169	200 flowering; 75-100 vegetative
51151	2,610	5 flowering
51152	2,802	5 flowering; 4 vegetative
51153	260	1 flowering
51154	7,039	30 flowering; 30 vegetative
51156	171	2 vegetative
51157	211	1 flowering; 1 vegetative
51158	108	3 vegetative
51159	37	1 flowering

2003 Sensitive Plant Survey Results Valencia Commerce Center

TABLE 5
SLENDER MARIPOSA LILY
SUMMARY OF OCCURRENCE DATA FOR THE COMMERCE CENTER SITE

Polygon Name	Polygon Size (Square Feet)	Estimated Number of Individuals
511510	184	2 vegetative
511512	2,468	40 flowering or fruiting
511513	698	1 flowering
511515	60	1 vegetative
511516	3,628	25 flowering; 20 vegetative
51991	454	2 flowering
51992	124	1 flowering
51993	1,757	6 flowering; 10 vegetative
51994	374	3 flowering; 12 vegetative
51995	75	2 individuals counted
52121	696	3 flowering; 2 vegetative
52122	7,160	25 flowering
52123	121	2 flowering; 1 vegetative
52124	567	1 flowering; 2 vegetative
52125	8,060	14 flowering; 9 vegetative; 2 herbivory
52126	3,072	11 flowering; 34 vegetative; 1 fruiting
52127	761	3 flowering; 4 vegetative
52128	25	2 flowering; 2 vegetative
52141	4,844	50 flowering; 50 vegetative
52142	788	10 vegetative
52145	665	1
52146	339	10 flowering
52147 + 52144 (combined)	20,775	200 + 10 flowering
52311	16,662	40 flowering; 10 vegetative
TOTAL	125,764	995
AVERAGE	3,811	30

2003 Sensitive Plant Survey Results Valencia Commerce Center

4.2.3 Coulter's Goldfields (*Lasthenia glabrata* ssp. *coulteri*)

Coulter's goldfields is a CNPS List 1B plant which has not been documented to occur in the vicinity of the project (Hickman 1993; CNPS 2001). This variety is documented as being restricted to alkali playas, vernal pools, and some freshwater habitats in Riverside and San Diego counties (CNPS 2001). During the 2003 season, the species was observed in other portions of Newhall Land & Farm Company landholdings on recently manufactured slopes; apparently applied as part of an erosion control hydroseed mix.

The particular occurrence (polygon 52148) of approximately 100 individuals (*Figure 6*) appears to be growing on a southeast-facing manufactured slope. The area does contain alkali habitat characteristics (silty clay, cracked soils with 15 to 20% vegetative cover), which are known to support this variety. These plants appear to be a non-native introduction; therefore CNDDDB data forms are not included.

4.2.4 Peirson's Morning Glory (*Calystegia peirsonii*)

Peirson's morning-glory has no state or federal status, but is found on List 4 of the CNPS *Inventory*. This morning-glory is rhizomatous perennial that typically is found in more desert-like areas (e.g., creosote bush scrub, Joshua tree woodland) at elevations which exceed 3,000 feet AMSL, although there are records in the CNDDDB for lower elevations in the local area. While never abundant, Peirson's morning-glory is widespread onsite and was observed on virtually all ridges and slopes, weakly climbing over mixed chaparral, California sagebrush, California buckwheat, and in grasslands throughout the 587-acre study area. Due to the widespread nature of Peirson's morning-glory on the Commerce Center site and its relatively low sensitivity level, it was not mapped. No CNDDDB forms were completed for this species because of these same reasons.

5.0 ACKNOWLEDGMENTS

Sherri L. Miller, Mark A. Elvin, Cathleen M. Weigand and Vipul R. Joshi prepared this report, with review by the staff at The Newhall Land and Farming Company. Mark McGinnis provided graphics and GIS mapping analyses. Tonette Foster provided word processing.

2003 Sensitive Plant Survey Results

Valencia Commerce Center

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APPENDIX A

RESUMES OF SURVEY PERSONNEL

MICHELLE L. BALK
Environmental Specialist

EDUCATION / REGISTRATION

University of Akron

M.S., Biology with emphasis Ecology and Evolution, 1999

Iowa State University

B.S., Zoology, 1997

PROFESSIONAL CERTIFICATIONS

Quino Checkerspot Butterfly 10a Survey Permit
(USFWS Federal Permit)

EXPERIENCE SUMMARY

Ms. Balk has over a year of experience in environmental document preparation and resource conservation planning. Project experience includes biological resource surveys, data collection and analysis, environmental assessments, wetland delineations, permitting, mitigation design and monitoring, and endangered species surveys. Ms. Balk has engaged in interagency coordination and public outreach efforts due to the complexities of each project. Ms. Balk has also participated in the development of habitat conservation plans pursuant to Section 10 of the Federal Endangered Species Act.

PROFESSIONAL ASSIGNMENTS

Residential Development. Irvine, California. Assisted in USFWS protocol surveys for the Coastal California Gnatcatcher.

Conservation Planning. Assisted in the development of the MSHCP for western Riverside County. Project involvement included reserve design, document preparation, interagency coordination and public outreach.

Residential Development. Riverside County, California. Conducted wetland delineation and prepared permit applications for 51-unit housing development.

Public University Student Housing Project. San Marcos, California. Conducted vegetation mapping and wetland delineation, prepared permit applications, and coordinated with resource agencies for student housing project.

Residential Development. Rancho Santa Fe, California. Performed environmental assessments and prepared encroachment permit applications for open space encroachments.

Creek Maintenance Project. Poway, California. Performed wetland delineation and vegetation mapping for creek maintenance project.

Sewer Realignment. Carlsbad, California. Assisted in the wetland delineation and vegetation mapping for sewer realignment project.

Residential Developments. Laguna Beach and Oxnard, California. Mapped vegetation, surveyed for sensitive plants, and wrote biological resources reports for residential developments.

Utility Pole Maintenance Project. San Bernardino Mountains, California. Conducted botanical surveys and surveyed for sensitive plants at pole replacement locations.

Salt Marsh Restoration Project. San Diego, California. Performed vegetation mapping and prepared biological resources report for marsh restoration project.

Focused Botanical Survey. Newhall Ranch, Los Angeles County, California. As team botanist, performed focused survey for San Fernando Valley spineflower on a 6,000-acre project site.

PUBLICATIONS

“Phenotypic effects of leptin in an ectotherm: a new tool to study the evolution of life histories and endothermy?”, with P.H. Niewiarowski and R.L. Londraville. *The Journal of Experimental Biology* 203:295-300, 2000.

“Sprint speed variation in hatchling fence lizards as a function of ontogenetic stage and population,” with P.H. Niewiarowski and J.M. Engelhardt. In preparation.

“Phylogenetic Analysis of Reaction Norm Evolution in North American Softshell Turtles,”
with F.J. Janzen. In preparation.

RELEVANT EXPERIENCE

Volunteer, Project Wildlife, San Diego, CA. Cared for injured wildlife and reared baby birds at wildlife rescue organization.

“Sunday Birds” field ornithology course with San Dieguito Adult School, Encinitas, CA.

MARK ELVIN
SENIOR BIOLOGIST/BOTANIST

EDUCATION

- University of California, Irvine
M.S. Ecology and Evolutionary Biology, 1992
- University of North Carolina, Chapel Hill
B.A. Biology and Philosophy, 1986

PROFESSIONAL CERTIFICATIONS

- California Department of Fish and Game State listed plants collecting permit

PROFESSIONAL AFFILIATIONS

- California Native Plant Society
- Southern California Botanists

EXPERIENCE SUMMARY

Mr. Elvin has 16 years experience as a biological resource specialist in southern California. As a Fish and Wildlife Biologist at the U.S. Fish and Wildlife Service (USFWS) he was responsible for conducting scientific reviews and analyses of species statuses for proposing and designating critical habitat within court ordered deadlines for listed fauna and flora; conducting scientific reviews and analyses of species statuses and developing recovery plans for listed species; and was the lead staff biologist for the USFWS for the implementation of the City of San Diego Multiple Species Conservation Plan (MSCP). In addition, he was the lead staff biologist at the USFWS for Quino checkerspot butterfly survey work conducted within San Diego County. Through his years of experience he has conducted sensitive species surveys in various habitat types throughout central and southern California including coastal strand, dune, coastal marsh, estuarine, coastal bluff scrub, coastal sage scrub, maritime succulent scrub, southern maritime chaparral, chaparral, valley grass lands, vernal pools, riparian scrub, riparian woodland, southern oak woodlands, alluvial fan sage scrub, montane coniferous forest, pebble plains, montane meadows, pinyon-juniper woodland, Joshua tree woodland, sagebrush scrub, creosote

bush scrub, alkali flats, desert mountains, creosote bush scrub, Mojavean desert scrub, and Sonoran desert scrub.

Mr. Elvin has also worked as a seed and conservation program coordinator, seed technologist, museum scientist, and conservation collection manager.

PROFESSIONAL ASSIGNMENTS

- Serves on the Dudek project team preparing the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) that covers approximately 1.2 million acres. Mr. Elvin provided input on the sensitive plants component of the plan that addresses 59 plants, including 13 that are state and/or federally listed, and species monitoring studies.
- Conducted onsite ecological and biological investigations and surveys of complex development proposals to determine their effects on flora and fauna throughout southern California.
- Conducted field surveys for state and federally listed and MSCP-covered plant species for the City of San Diego's, Multiple Species Conservation Program (MSCP).
- Conducted surveys for and collections of plants throughout Orange, San Diego, Riverside, San Bernardino, and Los Angeles counties and Baja California, Mexico.
- Conduct onsite ecological and biological investigations and surveys for threatened and endangered plant species throughout Los Angeles, Orange, San Diego, San Bernardino, Riverside, Imperial, Baja California (Mexico), Ventura, Monterey, San Benito, and San Luis Obispo counties.
- Participated in surveys for sensitive plants (including *Delphinium variegatum* ssp. *kinkiense* (San Clemente Island larkspur), *Lithophragma maximum* (San Clemente Island woodland star), *Lotus dendroideus* var. *traskiae* (San Clemente Island lotus), *Malacothamnus clementinus* (San Clemente Island bush mallow), *Sibara filifolia* (Santa Cruz Island rock cress) on San Clemente and Santa Catalina islands, Los Angeles County.

Monitoring Programs

- Conducted demographic and ecological data collection surveys for the federally-listed as threatened *Deinandra conjugens* (Otay tarplant) and the federally-proposed as endangered *Ambrosia pumila* (San Diego ambrosia) and focused surveys for the federally-listed as endangered Quino checkerspot butterfly (*Euphydryas editha quino*) in San Diego County for the MSCP.

Threatened and Endangered Species

- Conducted many surveys for state- and/or federally-listed plants in San Diego, Orange, Los Angeles, Riverside, and San Bernardino counties.

SELECTED PUBLICATIONS

Krofta, Douglas and Mark A. Elvin. 2002. Endangered and Threatened Wildlife and Plants; Final Designation of Critical Habitat for the San Bernardino Kangaroo Rat; Final Rule. 67 FR 19812.

Elvin, Mark A. 2002. Endangered and Threatened Wildlife and Plants; Proposed Designation of Critical Habitat for Five Carbonate Plants From the San Bernardino Mountains in Southern California. 67 FR 6577.

Elvin, Mark A. 2001. Endangered and Threatened Wildlife and Plants; Proposed Designation of Critical Habitat for *Deinandra conjugens* (Otay tarplant). 66 FR 32052.

Koopowitz, H., Mark A. Elvin, and L. Keenan. (1996). *In vivo* visualization of living flatworm neurons using Lucifer Yellow intracellular injections. *J. Neurosci. Meth.* 69: 83-89.

Koopowitz, H., Mark A. Elvin, and T. Bae. (1995). Comparison of the nervous system of the rhabdocoel, *Mesostoma ehrenbergii*, with that of the polyclad, *Notoplana acticola*. *Hydrobiologia*. 305: 127-133.

Elvin, Mark A. and H. Koopowitz (1994). Neuroanatomy of the rhabdocoel flatworm *Mesostoma ehrenbergii* (Focke, 1836) I: Neuronal diversity in the brain. *J. Comp. Neurol.* 343: 319-331.

NATHAN GALE

Principal Scientist, FLx

EDUCATION AND CERTIFICATIONS

Ph.D., Geography, University of California, Santa Barbara, 1985.

M.A., Geography, University of California, Santa Barbara, 1980.

PWS, Certified Professional Wetland Scientist #1216, Society of Wetland Scientists, 1999.

SUMMARY OF QUALIFICATIONS

Dr. Gale has 23 years of experience managing and conducting multidisciplinary projects ranging from methodology development to applied environmental impact assessments, planning studies, and restoration programs. His management experience includes proposal preparation; contract negotiation and client relations; cost control and schedule monitoring; document production supervision; and quality assurance review. His specific technical work has involved experimental and sampling design; photographic documentation; and mapping of natural vegetation, environmental constraints, and land use. He also has field experience in quantitative vegetation sampling, environmental data collection, and wetland delineation. Dr. Gale is skilled in qualitative and quantitative data analysis for numerous applications including ecological and environmental impact assessment as well as mitigation and monitoring planning. He has been responsible for the preparation of NEPA/CEQA environmental documents, planning studies, and technical reports for the Department of Defense (DOD), the Department of Energy (DOE), the Department of Interior (DOI), and for state and local agencies. In addition, he has published extensively in the fields of geography, ecology, planning, and environmental studies.

EXPERIENCE

Vegetation and Rare Plant Surveys and Wetlands Delineations, Ventura and Los Angeles Counties, CA. Impact Sciences, Inc. Vegetation surveys and mapping of plant communities, rare plant surveys, field wetland surveys, delineation of jurisdictional wetlands, and report preparation for more than 30 sites in various locations in Ventura and Los Angeles counties.

Ventura River Estuary Enhancement Project. California Department of Parks and Recreation. Design and implementation of a five-year vegetation monitoring

program for restoration efforts at Emma Wood State Beach, Ventura County, CA. The project involves monitoring four vegetation types: willow-cottonwood forest, saltbush scrub, dune scrub, and foredune vegetation. Activities include botanical surveys, survival and growth surveys, photodocumentation, data collection and comparative analysis of natural and revegetated areas, evaluation of exotics eradication, and recommendations for ongoing restoration.

Peacekeeper Rail Garrison Mitigation Program, San Antonio Terrace, Vandenberg AFB. U.S. Air Force and The Earth Technology Corporation. Technical advisor and senior data analyst for wetland creation, upland dune scrub habitat restoration, coast live oak revegetation, and vegetation monitoring for a five-year biological mitigation and monitoring program. Activities included initial planning, budgeting, methodology development, sampling design, vegetation sampling, data analysis, preparation and review of annual monitoring reports.

UCSB Campus Lagoon Wetland Restoration. The Herbarium, Museum of Systematics and Ecology, University of California, Santa Barbara. Design and implementation of a five-year vegetation monitoring program for wetland plant communities restored at the UCSB Campus Lagoon, Santa Barbara County, CA, as required by the Streambed Alteration Agreement of the California Department of Fish and Game. The project included plant species identification, vegetation sampling, data analysis, photo documentation, and report preparation.

Guadalupe Oil Field Restoration. California Department of Fish and Game and Hagler Bailly Consulting, Inc. Initial restoration planning, including background research, historical air photo assessment, and analysis of restoration alternatives at the Guadalupe Oil Field. Results from these tasks were used in the evaluation of potential restoration options, and to anticipate biological, hydrological, ecological, logistical, economic, and other issues associated with each restoration option.

Restoration of Coastal Dunes and Associated Wetlands in California. California Department of Fish and Game and Hagler Bailly Consulting, Inc. Principal scientist responsible for compiling and annotating a comprehensive bibliography of restoration and revegetation projects in coastal California, with an emphasis on coastal dune habitats and coastal wetlands.

Restoration Planning and Implementation, Former Guadalupe Oil Field, San Luis Obispo County, CA. Unocal Corporation. Preparation and implementation of site-

specific restoration plans, including the development of revegetation specifications, monitoring methods, performance criteria, and performance evaluation.

Controlled Burn Monitoring, Vandenberg AFB. U.S. Air Force and Museum of Systematics and Ecology, University of California, Santa Barbara. Pre-burn monitoring of vegetation and plant species in coastal sage scrub and chaparral at two prescribed burn sites, South Vandenberg AFB.

Natural Resources Surveys and Environmental Assessments, Vandenberg AFB. U.S. Air Force and Tetra Tech, Inc. Principal environmental scientist responsible for conducting field surveys and preparing report sections for vegetation, wildlife, and wetland resources for 17 environmental assessments of facility and infrastructure development projects, and for an EIS on San Antonio Creek.

Integrated Natural Resources Management Plan, Vandenberg AFB. U.S. Air Force and Tetra Tech, Inc. Principal scientist responsible for preparing sections on existing conditions, issues of concern, and management objectives for vegetation, wildlife, and wetland resources for a basewide five-year plan.

EIS and Environmental Assessments. U.S. Air Force. Program manager and contract administrator, under a contract with the Strategic Air Command (SAC), for eight environmental assessments and one EIS for proposed USAF real estate, facility construction, and training actions. Impact analyses were conducted for the full range of environmental and socioeconomic issues; major areas of focus involved endangered species' habitats, cultural and historical resources, and hazardous waste sites.

Rare Plant Census. All American Pipeline, L.P. Rare plant monitoring census for Gaviota tarplant (*Hemizonia increscens* ssp. *villosa*) in permanent plots established at Gaviota, CA.

Vernal Pool Restoration Monitoring, Isla Vista, CA. Isla Vista Recreation and Park District. Vegetation monitoring, data analysis, and publication preparation for a 10-year assessment of restored and created vernal pools at the Del Sol Open Space and Vernal Pool Reserve.

Plant Surveys and Wetland Delineations for Five Land Parcels, Isla Vista, CA. County of Santa Barbara Planning and Development. Field surveys and report preparation for botanical and wetland resources, including jurisdictional wetland

delineations and mapping, in coastal mesa vernal pool habitat along Del Playa Drive, Isla Vista.

Santa Barbara County Oak Restoration Program. University of California, Santa Barbara. Vegetation monitoring in savanna and woodland habitats of blue oak, valley oak, and coast live oak, for the long-term assessment of cattle grazing impacts on oak seedling recruitment at Sedgwick Ranch, Santa Barbara County, CA.

Goleta Revitalization EIR/EIS. County of Santa Barbara Planning and Development. Wetland delineations at sixteen creek crossings and plant surveys for street extensions, bikepaths and a multipurpose trail.

Oil and Gas Exploration and Facilities Development EIRs/EISs. Santa Barbara County and California State Lands Commission. Environmental analyst for EIRs/EISs of oil and gas development projects located offshore California.

Supplemental Environmental Impact Report for the 1990 Long Range Development Plan. University of California, Santa Barbara. Program manager for a supplemental EIR focussed on growth-related impacts to local school districts, and potential secondary environmental impacts to sensitive wetland habitats that could be caused by needed school facility expansion.

Recovery Plan for Two Federally Endangered Plant Species. U.S. Fish and Wildlife Service. Technical advisor responsible for developing strategy and task recommendations for the recovery plan for marsh sandwort (*Arenaria paludicola*) and Gambel's watercress (*Rorippa gambelii*). Key aspects of the plan included an outline of steps for habitat protection, species and habitat monitoring, biological and ecological research, and the establishment of new populations.

Implementation of Recovery Activities for Two Federally Endangered Plant Species. California Department of Fish and Game and University of California. Research on species biology and ecology, plant propagation, experimental establishment of new populations, and monitoring of existing and new populations of marsh sandwort (*Arenaria paludicola*) and Gambel's watercress (*Rorippa gambelii*). Reporting of species and habitat status and progress of recovery activities.

Restoration Plans for Installation of VTS Fiber-Optic Cable System, Honda Ridge Road Repair, and El Rancho Road Bridge Project, Vandenberg AFB. U.S. Air Force and Tetra Tech, Inc. Preparation of restoration plans including sections on ecological background, revegetation measures, monitoring and maintenance methods, performance criteria for assessing success, and restoration schedule for sites at North and South Vandenberg AFB.

Implementation of Restoration Plans, South Base and VTS Fiber-Optic Cable Systems, Vandenberg AFB. U.S. Air Force and Foster Wheeler Environmental Corp. Native plant species restoration, long-term monitoring, and restoration evaluation at four sites at Vandenberg AFB, CA.

Biological Monitoring for Installation of CITS, VTS, South Base, and Tranquillon Mountain Fiber-Optic Cable Systems, Vandenberg AFB. U.S. Air Force, Tetra Tech, Inc., and Foster Wheeler Environmental Corporation. Onsite biological monitoring for cable installation activities to ensure avoidance of adverse impacts to sensitive biological and wetland resources.

Biological Surveys and Monitoring for Installation of Building 3000 Fiber-Optic Cable System, Vandenberg AFB. U.S. Air Force and System Technology Associates. Field surveys and onsite biological monitoring for cable installation activities to ensure avoidance of adverse impacts to sensitive biological and wetland resources.

Biological Monitoring for Honda Ridge Road Repair and Point Sal Road Repair, Vandenberg AFB. U.S. Air Force, Tetra Tech, Inc., and Ace Engineering, Inc. Onsite biological monitoring for road repair activities to ensure avoidance of adverse impacts to sensitive biological and wetland resources.

MEMBERSHIPS

California Botanical Society; California Exotic Pest Plant Council; Society of Wetland Scientists; Society of Ecological Restoration; The International Mountain Society.

SELECTED PUBLICATIONS

Dr. Gale has been an author and collaborator on numerous academic publications, government research grant reports, and presentations at national and international professional conferences. In addition, he has contributed to environmental and planning documents.

A summarized count of his work includes: Refereed Journal Articles - 28; Book Chapters - 5; Papers in Conference Proceedings - 3; Government Research Reports - 13; Contributions to Planning Studies - 44; Contributions to Environmental Documents - 55.

Journal Articles

"Coast Live Oak Revegetation on the Central Coast of California," (with A. Parikh), *Madroño*, 45(4), 1998, 301-309.

"Vegetation Monitoring of Created Dune Swale Wetlands, Vandenberg Air Force Base, California," (with A. Parikh), *Restoration Ecology*, 6(1), 1998, 83-93.

"The Analysis of Class Dispersion Patterns Using Matrix Comparisons," (with L.E. Harvey and F.W. Davis), *Ecology*, 69(2), 1988, 537-542.

"Tests of Randomness: Unidimensional and Multidimensional," (with L.J. Hubert, R.G. Golledge, and C.M. Costanzo), *Environment and Planning A*, 17, 1985, 373-385.

"Measuring Association Between Spatially Defined Variables: An Alternative Procedure," (with L.J. Hubert, R.G. Golledge, and C.M. Costanzo), *Geographical Analysis*, 17, 1985, 36-46.

"Unclassed Matrix Shading and Optimal Ordering in Hierarchical Cluster Analysis," (with W.C. Halperin and C.M. Costanzo), *Journal of Classification*, 1, 1984, 775-92.

Conference Proceedings

"Review of Ten Years of Vernal Pool Restoration and Creation in Santa Barbara, California," (with W.R. Ferren Jr., D.M. Hubbard, S. Wiseman, and A. Parikh), in C.W. Witham, E.T. Bauder, D. Belk, W.R. Ferren Jr., and R. Ornduff (Eds.) *Ecology, Conservation, and Management of Vernal Pool Ecosystems*, Proceedings from a 1996 Conference, California Native Plant Society, Sacramento, CA, 1998, 206-216.

"Vegetation Monitoring of Created Wetland Sites on the San Antonio Terrace, Vandenberg Air Force Base, California," (with A. Parikh), in M.C. Landin (Ed.) *Proceedings of the National Interagency Workshop on Wetlands: Technology Advances for Wetlands Science*, Technical Report, Wetlands Research and

Technology Center, U.S. Army Engineers Waterways Experiment Station, Vicksburg, MS, 1995, 153-55.

"Wetland Creation and Vegetation Monitoring in a Stabilized Sand Dune Ecosystem, San Antonio Terrace, Vandenberg Air Force Base, California," (with A. Parikh and T. Waddell), in M.C. Landin (Ed.) Proceedings of the 13th Annual Meeting of the Society of Wetland Scientists (SWS), New Orleans, LA, 1993, 368-76.

"First-Year Vegetation Monitoring of Created Wetlands on the San Antonio Terrace, Vandenberg Air Force Base, California," (with A. Parikh and T. Waddell), in A.E. Leviton and M.L. Aldrich (Eds.) Proceedings of the Pacific Division, American Association for the Advancement of Science, University of California, Santa Barbara, June 1992, p. 46.

KIM L. MARSDEN

Botanist/Biologist

As a biologist with ten years of experience, Ms. Marsden has successfully conducted a diverse range of botanical and zoological surveys, including focused searches for rare and endangered species in coastal, mountain and desert plant communities. She has developed excellent botanical skills from not only a broad range of field identification experiences throughout the southwestern United States and northwestern Mexico, but training in botanical laboratory techniques used for plant identification, as well. Ms. Marsden has extensive experience in the analyses of potential impacts to species and habitats from proposed development projects. She prepares and reviews technical reports, which provide alternatives recommendations to mitigate these impacts. She has a thorough working knowledge of regulatory issues and applicable laws including the California Environmental Quality Act (CEQA), National Environmental Policy Act (NEPA), Federal Endangered Species Act (FESA), California Endangered Species Act (CESA), and the Clean Water Act as part of her resource agency experience working as a Botanist/Biologist for the California Department of Fish and Game, U.S. Fish and Wildlife Service, and through her project manager experience in the regulatory branch of the U. S. Army Corps of Engineers. Ms. Marsden has reviewed and commented on numerous proposed mitigation and monitoring plans for sensitive species. She is knowledgeable of, and skilled in, vegetation mapping, mitigation monitoring, and the design of habitat restoration plans. She also has extensive experience in conducting rare, threatened, and endangered animal surveys.

EDUCATION

- Completed all required coursework for the Master's Program in Systematic Botany, San Diego State University, 1992-1994. Master's Research Topic: Systematics, ecology and natural history of Northwest American *Eryngium* species (Apiaceae).
- Bachelor of Science, Biology, San Diego State University, 1992.
- Associate of Science, Medical Laboratory Technology, San Diego Mesa College, 1988.

PUBLICATIONS

Marsden, Kim L. and Michael G. Simpson. 1999. *Eryngium pendletonensis* (Apiaceae), A New Species from Southern California. *Madrono*, 46:1, 61-64.

EXPERIENCE

- 1/01-present Associate Resource Ecologist, California Department of Parks and Recreation, Southern Service Center, San Diego.
- Design long-term monitoring studies to assess the status and condition of vegetation communities, exotic species infestations, and rare plant populations. Conduct vegetation and rare plant inventories within State Parks in southern California. Assess the impacts of maintenance and development projects on biological resources within state park units. Provide technical botanical expertise to Service Center staff when requested. Assist in project environmental clearance under CEQA, ESA, and CESA. Assist other resources section staff in biological survey work and data analysis when necessary.
- 1/00 –1/01 Associate Biologist in Botany, California Department of Fish and Game, Region 5, San Diego Office.
- Provided technical assistance in developing Habitat Conservation Plans to applicants/jurisdictions seeking take authorization under Section 2835 of the Fish and Game Code (Natural Community Conservation Program). Coordinated with the U.S. Fish and Wildlife Service Habitat Conservation Program staff to ensure HCP conformity with the Federal Endangered Species Act and the California Fish and Game code and other state and federal laws.
- 9/97-1/00 Fish and Wildlife Biologist/Botanist-U.S. Fish and Wildlife Service, Branch of Habitat Conservation Planning, Ecological Services, Carlsbad Field Office.
- Provided technical assistance in developing Habitat Conservation Plans to applicants/jurisdictions seeking take authorization under section 10 of the Endangered Species Act. Coordinated with California Department of Fish and Game Natural Community Conservation Program (NCCP) staff to ensure HCP conformity with the Endangered Species Act and the Fish and Game code.

Evaluated and commented on projects impacting U.S. Army Corps of Engineers' jurisdictional Waters of the United States pursuant to the Fish and Wildlife Coordination Act. Consulted and conferred with other federal agencies under section 7 of the Endangered Species Act (Act) to analyze effects of federal actions on species proposed for listing or listed as endangered, threatened under the Act.

Provided technical expertise to Field Office staff in evaluation of revegetation, restoration and enhancement projects of upland, riparian, and wetland habitats. Provided general botanical expertise to Field Office staff biologists when needed.

7/96-9/97

Botanist-U.S. Fish and Wildlife Service-Branch of Federal Projects, Ecological Services, Carlsbad Field Office.

Conducted complete biological surveys for plants and wildlife for impact assessments of proposed land and water development projects. Prepared biological technical reports, including analyses of project alternatives developed from the results of directed sensitive species and community surveys. Developed sampling protocols for vegetation communities; provided botanical expertise to staff biologists and made recommendations for resource protection and enhancement. Surveyed for, and monitored the status of, federal candidate, proposed, and listed plant and animal taxa. Assisted in amphibian and reptile pit-fall trapping survey efforts. Provided technical expertise to Field Office staff biologists for evaluation of revegetation, restoration and enhancement efforts of upland, riparian, and wetland habitats.

11/95-7/96

Biologist/Project Manager, U. S. Army Corps of Engineers, Regulatory Branch, San Diego Field Office.

Project management, including evaluation of impacts to jurisdictional Waters of the United States, including wetlands, associated with permit requests pursuant to section 404 of the Clean Water Act, section 10 of the Rivers and Harbors Act, and section 103 of the Marine Sanctuaries Act. Processed permit applications, composed letters to applicants, evaluated compliance with permit

conditions and coordinated with other agencies regarding proposed permit activities affecting biological, historical and water resources.

3/95-10/97

Botanist (Seasonal), Lake Cuyamaca Recreation and Park District, Julian, CA.

Project Manager of the Lake Cuyamaca downingia, Lake Cuyamaca larkspur, and Parish's meadowfoam monitoring program. Developed sampling and monitoring protocols for sensitive plant species. Coordinated rare plant monitoring activities in accordance with interagency Memorandum of Understanding guidelines, including mapping of rare plant populations using Geographic Information System (GIS) technology to assess annual boundary changes of plant subpopulations; prepared annual biological technical reports. Supervised and trained field personnel in established survey methodology; ensured thorough documentation of survey and monitoring activities through complete field notes.

ANUJA K. PARIKH
Principal Ecologist, FLx

EDUCATION AND CERTIFICATIONS

Ph.D., Plant Geography, University of California, Santa Barbara, 1989.

M.S., Geography, University of Bombay, India, 1981.

B.S., Zoology and Geology, University of Bombay, India, 1979.

PWS, Certified Professional Wetland Scientist #841, Society of Wetland Scientists, 1995.

SUMMARY OF QUALIFICATIONS

Dr. Parikh has 19 years of field and research experience in the areas of botany, plant ecology, wetlands, biogeography, and earth resources. Her work has included environmental baseline inventories and impact assessments, rare and endangered plant species surveys, revegetation and mitigation plans, restoration and monitoring of native upland and wetland habitats, and coast live oak revegetation studies. She has expertise in field vegetation sampling, plant species identification, wetland delineation, and the collection of physical environmental data. Using aerial photography and field surveys, she has prepared vegetation maps based on classification and quantification of plant communities in a variety of habitats; she also has mapped environmental constraints, incorporating data on sensitive species, natural habitats, and physiographic and man-made features. Dr. Parikh is experienced with experimental design as well as processing and analyzing ecological data using statistical and graphics software.

EXPERIENCE

Vegetation and Rare Plant Surveys and Wetlands Delineations, Ventura and Los Angeles Counties, CA. Impact Sciences, Inc. Vegetation surveys and mapping of plant communities, rare plant surveys, field wetland surveys, delineation of jurisdictional wetlands, and report preparation for more than 30 sites in various locations in Ventura and Los Angeles counties.

Peacekeeper Rail Garrison Mitigation Program, San Antonio Terrace, Vandenberg AFB, CA. U.S. Air Force and The Earth Technology Corporation. Project biologist responsible for directing, planning, and implementing biological field activities related to wetlands creation, upland habitat restoration, coast live oak revegetation, and vegetation monitoring for all mitigation and restoration sites.

Vegetation Mapping and Plant Species Surveys. Santa Barbara County, CA.

Vegetation mapping using aerial photographs of riparian communities along the Santa Ynez River, Santa Barbara County; field vegetation and topographical data collection from transects, species identification, rare and endangered plant species surveys, and report preparation for the County Flood Control District.

Rare and Endangered Plant Species Surveys. California Department of Water Resources.

Rare and endangered plant species identification and mapping along a proposed aqueduct route in the Lompoc and Lake Cachuma areas in Santa Barbara County, and near Santa Margarita, San Luis Obispo County; field verification, ground truthing and mapping of vegetation communities along the Santa Ynez River, CA.

Rare and Endangered Plant Species Surveys. Metropolitan Water District and ERC Environmental and Energy Services Co.

Plant species identification and sensitive plant species surveys at proposed reservoir and mitigation sites (Potrero Creek, Harford Springs, Crown/Rawson Valleys, Motte Rimrock Reserve, Domenigoni Valley, Santa Rosa Plateau Preserve, Lake Skinner, and Vail Lake) for the Metropolitan Water District's Eastside Reservoir Project, Riverside County, CA.

Floristic and Vegetation Surveys. U.S. Department of Agriculture, Forest Service.

Preparation of floras and vegetation surveys in the Los Padres National Forest at Mt. Pinos, a lower subalpine community in Ventura and Kern counties, and at Alder Creek Botanical Area, Monterey County, CA. Identification of plant species and collection of vegetation and site data in permanent plots established in blue oak woodland in San Luis Obispo County, CA, as part of a Forest Service project on vegetation and habitat inventory and classification.

Wetland Vegetation Surveys, Mapping, and Monitoring. Dames & Moore.

Vegetation mapping using aerial photographs, calculations of riparian habitat acreages, and field botanical surveys for a land development project along the Santa Clara River, Los Angeles County, CA. Biological construction monitoring for an archaeological site investigation in the Los Carneros wetlands, Goleta, CA. Field surveys and mapping of wetlands and vernal pools at Beale AFB, CA.

Rare and Endangered Plant Species Surveys and Vegetation Mapping. Jones and Stokes Associates, Inc.

Field surveys for rare and endangered plant species at the proposed Los Vaqueros Reservoir site near Livermore, Contra Costa and Alameda counties, CA, and along ephemeral drainages near Taft in the Central Valley, Kern County, CA, for a project involving clean-up of oil and brea deposits. Habitat mapping

and field surveys of riparian vegetation and plant species on transects along the Lower Ventura River, for an aquatic biology survey.

Ecological Survey Reports for Candidate Research Natural Areas. U.S. Department of Agriculture, Forest Service. Field work, literature reviews, and document preparation for the San Emigdio Mesa and Sawmill Mountain Candidate Research Natural Areas, Los Padres National Forest, Ventura County, CA.

Santa Barbara County Oak Restoration Program. University of California, Santa Barbara. Plant identification and vegetation monitoring in savanna and woodland habitats of blue oak, valley oak, and coast live oak, for the long-term assessment of cattle grazing impacts on oak seedling recruitment at Sedgwick Ranch, Santa Barbara County, CA.

Controlled Burn Monitoring, Vandenberg AFB. U.S. Air Force and Museum of Systematics and Ecology, University of California, Santa Barbara. Pre-burn monitoring of vegetation and plant species in coastal sage scrub and chaparral at two prescribed burn sites, South Vandenberg AFB.

Rare Plant Census. All American Pipeline, L.P. Rare plant monitoring census for Gaviota tarplant (*Hemizonia increscens* ssp. *villosa*) in permanent plots established at Gaviota, CA.

Ventura River Estuary Enhancement Project. California Department of Parks and Recreation. Design and implementation of a five-year vegetation monitoring program for restoration efforts at Emma Wood State Beach, Ventura County, CA. The project involves monitoring four vegetation types: willow-cottonwood forest, saltbush scrub, dune scrub, and foredune vegetation. Activities include botanical surveys, survival and growth surveys, photo documentation, data collection and comparative analysis of natural and revegetated areas, evaluation of exotics eradication, and recommendations for ongoing restoration.

Restoration Planning and Implementation, Former Guadalupe Oil Field, San Luis Obispo County, CA. Unocal Corporation. Preparation and implementation of site-specific restoration plans, including the development of revegetation specifications, monitoring methods, performance criteria, and performance evaluation.

Restoration Plans for Installation of VTS Fiber-Optic Cable System, Honda Ridge Road Repair, and El Rancho Road Bridge Project, Vandenberg AFB. U.S. Air Force and Tetra Tech, Inc. Preparation of restoration plans including sections on ecological background, revegetation measures, monitoring and maintenance methods, performance criteria for assessing success, and restoration schedule for sites at North and South Vandenberg AFB.

Implementation of Restoration Plans, South Base and VTS Fiber-Optic Cable Systems, Vandenberg AFB. U.S. Air Force and Foster Wheeler Environmental Corp. Native plant species restoration, long-term monitoring, and restoration evaluation at four sites at Vandenberg AFB, CA.

Vernal Pool Restoration Monitoring, Isla Vista, CA. Isla Vista Recreation and Park District. Vegetation monitoring, data analysis, and publication preparation for a 10-year assessment of restored and created vernal pools at the Del Sol Open Space and Vernal Pool Reserve.

UCSB Campus Lagoon Wetland Restoration. The Herbarium, Museum of Systematics and Ecology, University of California, Santa Barbara. Design of a five-year vegetation monitoring program for wetland plant communities restored at the UCSB Campus Lagoon, Santa Barbara County, CA, as required by the Streambed Alteration Agreement of the California Department of Fish and Game. The monitoring project included plant species identification, vegetation sampling, data analysis, photo documentation, and report preparation.

Integrated Natural Resources Management Plan, Vandenberg AFB. U.S. Air Force and Tetra Tech, Inc. Principal ecologist responsible for preparing sections on existing conditions, issues of concern, and management objectives for vegetation, wildlife, and wetland resources for a basewide five-year plan.

Natural Resources Surveys and Environmental Assessments, Vandenberg AFB. U.S. Air Force and Tetra Tech, Inc. Principal environmental scientist responsible for conducting field surveys and preparing report sections for vegetation, wildlife, and wetland resources for 17 environmental assessments of facility and infrastructure development projects, and for an EIS on San Antonio Creek.

Natural Resources Management Plans. U.S. Air Force and Higginbotham/Briggs & Associates. Participation in data collection, field visits, agency coordination,

document preparation and review for Natural Resources Management Plans prepared for Kaena Point Satellite Tracking Station, HI, and Onizuka AFB, CA.

Recovery Plan for Two Federally Endangered Plant Species. U.S. Fish and Wildlife Service. Ecologist and principal author responsible for background research and all botanical elements of the recovery plan for marsh sandwort (*Arenaria paludicola*) and Gambel's watercress (*Rorippa gambelii*).

Implementation of Recovery Activities for Two Federally Endangered Plant Species. California Department of Fish and Game and University of California. Research on species biology and ecology, plant propagation, experimental establishment of new populations, and monitoring of existing and new populations of marsh sandwort (*Arenaria paludicola*) and Gambel's watercress (*Rorippa gambelii*). Reporting of species and habitat status and progress of recovery activities.

Wetlands Management Plan. Department of Geography and Campus Wetlands Committee, University of California, Santa Barbara. Field and literature surveys of hydrology and sedimentation of the campus-owned wetland resources in Devereux Slough and the Storke Campus wetlands.

Goleta Revitalization EIR/EIS. County of Santa Barbara Planning and Development. Wetland delineations at sixteen creek crossings and plant surveys for street extensions, bikepaths and a multipurpose trail.

Plant Surveys and Wetland Delineations for Five Land Parcels, Isla Vista, CA. County of Santa Barbara Planning and Development. Field surveys and report preparation for botanical and wetland resources, including jurisdictional wetland delineations and mapping, in coastal mesa vernal pool habitat along Del Playa Drive, Isla Vista.

Biological Monitoring, Environmental Quality Assurance Program (EQAP), Santa Barbara County, CA. Storrer Environmental Services. Biological monitoring for the Level (3) fiber-optic cable installation project, and for the All-American Pipeline relocation at Gaviota Creek.

Watershed Surveys. U.S. Department of Agriculture, Forest Service. Geomorphological, botanical, and hydrological field work in preliminary watershed surveys in Santa Barbara and Ventura counties, CA.

Vegetation Surveys and Analysis. The Herbarium, Department of Biological Sciences, University of California, Santa Barbara. Plant species identification and vegetation sampling in upland and wetland areas for baseline data inventory of botanical resources and rare plants at Fish Slough, Inyo and Mono counties, CA. Project design and field surveys of topography, riparian vegetation, and plant species in the Ventura River estuary, Ventura County, CA; computer graphics, analysis, and document preparation of environmental relationships and distribution of species and vegetation communities. Computer analysis for a project on the botanical wetland resources of the Carpinteria salt marsh, Santa Barbara County, CA.

Research Activities. Department of Geography, University of California, Santa Barbara. Sampling and monitoring regeneration of tree and herbaceous species in the riparian zone of a chaparral watershed recovering from wildfire (N. Fork Matilija Creek, Ventura County); topographic channel surveys, computer plotting, ecological and botanical field, laboratory and greenhouse experiments, literature review, and data analysis. Vegetation sampling, inventory and analysis, and topographical surveys in chaparral ecosystems and oak woodlands in Burton Mesa chaparral, Santa Barbara County. Field sampling in coniferous forests of the Mendocino National Forest Reserve, CA.

MEMBERSHIPS

California Native Plant Society; Society of Wetland Scientists; Society of Ecological Restoration; California Botanical Society.

SELECTED PUBLICATIONS AND REPORTS

"Coast Live Oak Revegetation on the Central Coast of California," (with N. Gale), *Madroño*, 45(4), 1998, 301-309.

"Vegetation Monitoring of Created Dune Swale Wetlands, Vandenberg Air Force Base, California," (with N. Gale), *Restoration Ecology*, 6(1), 1998, 83-93.

"Review of Ten Years of Vernal Pool Restoration and Creation in Santa Barbara, California," (with W.R. Ferren Jr., D.M. Hubbard, S. Wiseman, and N. Gale), in C.W. Witham, E.T. Bauder, D. Belk, W.R. Ferren Jr., and R. Ornduff (Eds.) *Ecology, Conservation, and Management of Vernal Pool Ecosystems*, Proceedings from a 1996 Conference, California Native Plant Society, Sacramento, CA, 1998, 206-216.

- "Peacekeeper Rail Garrison and Small ICBM Mitigation Program, San Antonio Terrace, Vandenberg AFB, California Annual Wetlands Monitoring Report, Annual Upland Monitoring Report, Year 5," Prepared for the U.S. Department of the Air Force, Detachment 10, Space and Missile Systems Center, San Bernardino, CA, February 1996.
- "Vegetation Monitoring of Created Wetland Sites on the San Antonio Terrace, Vandenberg Air Force Base, California," (with N. Gale), in M.C. Landin (Ed.) Proceedings of the National Interagency Workshop on Wetlands: Technology Advances for Wetlands Science, Technical Report, Wetlands Research and Technology Center, U.S. Army Engineers Waterways Experiment Station, Vicksburg, MS, 1995, 153-55.
- "Recovery Plan for Marsh Sandwort (*Arenaria paludicola*) and Gambel's Watercress (*Rorippa gambelii*)," (with N. Gale), U.S. Fish and Wildlife Service, Ventura, CA, August 1994.
- "Wetland Creation and Vegetation Monitoring in a Stabilized Sand Dune Ecosystem, San Antonio Terrace, Vandenberg Air Force Base, California," (with N. Gale and T. Waddell), in M.C. Landin (Ed.) Proceedings of the 13th Annual Meeting of the Society of Wetland Scientists (SWS), New Orleans, LA, 1993, 368-76.
- "First-Year Vegetation Monitoring of Created Wetlands on the San Antonio Terrace, Vandenberg Air Force Base, California," (with N. Gale and T. Waddell), in A.E. Leviton and M.L. Aldrich (Eds.) Proceedings of the Pacific Division, American Association for the Advancement of Science, University of California, Santa Barbara, June 1992, p. 46.
- "Biotic Inventory and Ecosystem Characterization for Fish Slough, Inyo and Mono Counties, California," (with the Fish Slough Research Team), Report to State of California, The Resources Agency, Department of Fish and Game, by the Departments of Biological Sciences, Geography, and Geological Sciences, University of California, Santa Barbara, June 1991.
- "Ecology of a Mediterranean-Climate Estuarine Wetland at Carpinteria, California: Plant Distributions and Soil Salinity in the Upper Marsh," (with R. Callaway, S. Jones, W. Ferren), *Canadian Journal of Botany*, 68, 1990, 1139-1146.

- "Botanical Resources at Emma Wood State Beach and the Ventura River Estuary, California: Inventory and Management," (with W. Ferren, M. Capelli, D. Magney, K. Clark, and J. Haller), Report to the State of California Department of Parks and Recreation, Environmental Report No. 15, The Herbarium, Department of Biological Sciences, University of California, Santa Barbara, August 1990.
- "UCSB Campus Wetlands Management Plan, Part II Technical Report CHydrology, Water Quality, and Sedimentation of West and Storke Campus Wetlands," (with F. Davis, D. Theobald, and R. Harrington), Report to the California Coastal Conservancy and Campus Wetlands Committee, University of California, Santa Barbara, CA, 1990.
- "Recovery of the Chaparral Riparian Zone After Wildfire," (with F. Davis, E. Keller, and J. Florsheim), Proceedings of the California Riparian Systems Conference, September 22-24, 1988, Davis, CA, Protection, Management, and Restoration for the 1990s, Gen. Tech. Rep. PSW-110, U.S. Department of Agriculture, Forest Service, Pacific Southwest Forest and Range Experiment Station, 1989, 194-203.
- "Plant Communities and Flora of the Proposed Botanical Reserve on Mt. Pinos, Ventura and Kern counties, CA," (with D. Capralis), Survey Report, U.S. Department of Agriculture, Forest Service, Los Padres National Forest Headquarters, Goleta, CA, August 1988.
- "Terrestrial Vegetation of Rattlesnake Canyon," (with F. Davis), Proceedings of the Chaparral Ecosystems Research Conference, Santa Barbara, CA, Report No. 62, California Water Resources Center, University of California, Davis, CA, 1986, 13-17.

ANDREW C. SANDERS

Herbarium Curator

Department of Botany & Plant Sciences
University of California
Riverside, CA 92521-0124
(909) 787-3601

Home: 422 Campus View Dr.
Riverside, CA 92507
(909) 787-0168

Education

B.Sc. in Biology, specializing in Botany;
University of California, Riverside. June 1975.

Employment

1. **U.S. Department of the Interior, Bureau of Land Management (Riverside and Bakersfield Districts and California Desert Plan Staff).** Aug. 1975 to Apr. 1978 During this period I held positions as a Wildlife Biologist, Natural Resource Technician, and Range Conservationist and worked on the following projects:

California Desert Plan
Geothermal Energy Leasing Environmental Impact Statements
 East Mesa
 N. Salton Sea
 Red Mountain
 Yuha Basin
McCain Valley Habitat Management Plan
Owens Valley Range Program
Sun Desert Transmission Line E.I.S.

In the course of these projects I conducted extensive field surveys of vegetation and wildlife in the desert of southern California and in the Owens Valley.

2. **University of California, Riverside. Dept. of Biology.** Staff Research Associate and resident biologist at the James Reserve in the San Jacinto Mountains of Riverside County California. April 1978 to Sept. 1979. While at the James Reserve I surveyed the flora and fauna of the San Jacinto Mtns. and began the

compilation of a list of the plants of the reserve, which was later completed in cooperation with Ken Berg, my successor.

3. **University of California, Riverside. Dept. of Botany & Plant Sciences.** Since September 1979 I have been Museum Scientist and curator of the Herbarium. This has involved extensive work with the flora of the southwestern U.S. and adjacent areas. I have identified literally tens of thousands of plant specimens and have enlarged the UCR collection to ten times its former size. I have personally collected over 24,000 plant specimens in western North America. As a result of my work at the herbarium, I have come to be extremely familiar with the flora of southern California and can identify the overwhelming majority of plant species from this area on sight.

Additional Experience

I have contributed botanical/biological inventories for the following projects in California. This list is not comprehensive, but is representative.

Imperial Co.

Botanical Survey for U.S. Navy, Chocolate Mtns. Aerial Gunnery Range. 1988-1991.

Kern Co.

Biological Survey for a parcel near Rosamond, prepared for Land Concepts, Inc. 1988.

Botanical Survey for Silver Peak Mine Expansion, prepared for Weber & Weber Mining Consultants. 1989.

Botanical Survey of the Wind Wolves Preserve (San Emigdio Ranch), prepared for the Wildlands Conservancy. In progress.

Los Angeles Co.

Botanical Survey for Portuguese Bend Land Use Plan, prepared for England and Nelson Environmental Consultants. 1976.

Botanical survey of El Segundo Dunes, for L.A. International Airport, through Agresearch, Inc. 1987-1988.

Botanical surveys for several projects in the Lancaster vegetation management zone, prepared for the Dept. of Community Development, City of Lancaster. 1988-1989.

Orange Co.

Botanical survey for Land Use Plan for the Silverado-Santiago area of the Santa Ana Mtns., prepared for England & Nelson Environmental Consultants. 1976.

Riverside Co.

Botanical survey for the Riverside Co. Southwest Territory General Plan, for Riverside Co. Planning Dept. 1977.

Botanical survey for the Army Corps of Engineers Whitewater Flood Control Project. 1980.

Botanical Survey for Kacor Realty Wolf Valley Development, prepared through L. LaPré, consultant. 1981.

Botanical survey of the U. C. Motte Reserve near Perris. 1982.

Botanical survey of 500 ac. property near Murrieta, prepared for P. Principe, consultant. 1988.

Botanical survey of the Nature Conservancy Oasis de Los Osos Preserve. 1985-1988.

Biological Survey for Proposed Sanderson Ave. Bridge and Realignment, near San Jacinto, prepared for Myra L. Frank and Associates. 1990.

Rare plant Survey for the Coachella Valley Multi-Species Habitat Conservation Plan, prepared through Thomas Olson & Associates. 1995.

Botanical Survey of a pipeline route along the San Jacinto River, prepared through KDJ and Associates. 1996.

Botanical Survey of the Shipley Multi-species Reserve at Lake Skinner. In progress.

San Bernardino Co.

Biological survey for Big River Development, Colorado River near Parker. 1980.

Botanical Survey for Cactus Hill Mine, Ivanpah Mtns, prepared for J. McMains, consultant. 1985.

Biological survey of 640 ac. parcel near Pioneertown prepared for The Nature Conservancy. 1986.

Botanical Survey for Don Brown Racing Facility, Cajon Pass area. 1986.

Botanical Survey for Hart Mine expansion, Mojave Desert, prepared for J. McMains, consultant. 1986.

Scoping Report for Santa Ana River Resource Management Plan, prepared for the County of San Bernardino Dept. of Environmental Public Works. 1987.

Biological survey for Devil Canyon Powerplant expansion, prepared for the California Dept. of Water Resources. 1987.

Botanical survey for Glen Helen Sheriff's Academy expansion, prepared for the San Bernardino County Sheriff's Dept. 1987.

Biological Survey for the Daley Transit Mix Property near Ft. Irwin, Mojave Desert. 1988

Botanical Survey for proposed Davis Ranch Mine, Cajon Pass, prepared for Weber & Weber Mining Consultants. 1989.

Botanical Survey for Silver Peak Mine Expansion, prepared for Weber & Weber Mining Consultants. 1990.

Botanical Survey for Cajon East (Cleghorn) Mine Expansion, prepared for Weber & Weber Mining Consultants. 1990.

Botanical Survey for National Can Parcel, Verdemont, prepared for McClelland Associates. 1990.

Biological Survey of Birmingham Ranch, prepared for the City of Yucaipa. 1992.

Biological Survey of Porter Ranch, prepared for the City of Yucaipa. 1993.

Biological Survey of the Yount/Mitchell property near Yucaipa, prepared for Robin Isakson & Associates. 1993.

Biological Survey of 100 acre property in Yucaipa, prepared for George Polycrates and Associates. 1996.

Botanical Survey of the central Avawatz Mtns., Mojave Desert, prepared for Gordon F. Pratt, consulting entomologist. 1997.

Outside of California I have done extensive field work and made numerous plant collections throughout the southwestern U.S., but particularly in Nevada and Arizona. I have also worked extensively in Mexico and am presently involved in three floristic projects in that country. I spent 12 weeks doing botanical survey work in Costa Rica during 1995 and 1996.

In addition to the above, I regularly make plant identifications (including fossils) for professional biological consultants, for scientific researchers, and for the general public. I commonly make plant identifications for biological consultants, and over the years have literally made thousands of such determinations. I have identified plants on one or more occasions for the following Riverside County Qualified Environmental Consulting Firms and have done so regularly for several of them (*):

AMEC Earth & Envir., Inc.*
Beaman Biological Consulting
Biological Resource Specialists
Campbell Biological Consulting
CH2M Hill*
David E. Bramlet
Glen Lukos Assoc.
Harmsworth Assoc.
James Cornett Ecol. Cons
Joan R. Callahan
Kelly Volansky*
Ken Osborne
LSA Assoc.*
Natural Resource Assessment, Inc.*
P. & D. Environmental*
PCR Inc.
Principe and Assoc.
San Bernardino Co., Museum
Statistical Research Inc.
Ted Rado

TeraCor Resource Mgmt.*
TetraTech
Thomas Olsen & Assoc.*
Tierra Madre Consultants*
Tom Dodson & Assoc.*
VHBC Consulting
W.D. Wagner
White & Leatherman*

I am generally recognized as one of the foremost authorities on the flora of Southern California and am regularly contacted by the US Fish & Wildlife Service and California Dept. of Fish and Game for information on the status and distribution of threatened and endangered plant species. In particular, I was queried regularly about species covered by the Riverside County MSHCP. I am regularly called upon to identify plant fragments which represent evidence in criminal cases.

Publications

- Boyd, S. and A.C. Sanders. 1999. "Noteworthy Collections, California – *Dicentra chrysantha*, *Euphorbia anramsiana*, *Holocarpa heermannii*, Madroño 46 (2): 112.
- Costea, M., A.C. Sanders & J. G. Waines. 2001. Preliminary results toward a revision of the *Amaranthus hybridus* species complex (Amaranthaceae) Sida 19 (4): 931-974
- Costea, M., A.C. Sanders & J. G. Waines. 2001 Notes on some little known *Amaranthus* taxa (Amaranthaceae) in the United States Sida 19 (4): 975-992.
- Costea, M., A.C. Sanders & J. G. Waines. 2002? *Amaranthus* Aliso In press
- Cudney, D., C. Bell & A. C. Sanders. 1997. Weedy spurges in California, U. C. Extension Circular. Revised 2002.
- Friedman, S. L., T. R. Van Devender, V. W. Steinmann, A. C. Sanders, P. D. Jenkins, S. A. Meyer, A. L. Reina Guerrero, D. A. Yetman, R. S. Felger & R. A. Lopez Estudillo. 1996. "Noteworthy Collections, Sonora, Mexico -- *Brickellia brandegei*, *Cordia globosa*, *Bromelia alsodes*, *Selenicereus vagans*, *Capparis flexuosa*, *Ipomoea imperati*, *Operculina pennatifida*, *Doyera emetocathartica*, *Momordica charantia*, *Bergia texana*, *Caesalpinia sclerocarpa*, *Mimosa asperata*, *Pholisma culiacanum*, *Nesaea longipes*, *Malpighia glabra*, *Bastardia viscosa*, *Okenia hypogea*, *Oenothera*

- drummondii var. thalassaphila, Ophioglossum nudicaule, Luziola gracillima, Panicum antidotale, Tridens eragrostoides, Amyris balsamifera, Capraria biflora, Solanum azureum, Citharexylum scabrum, Lippia graveolens", Madroño 43(4):532-538.
- Hrusa, F., B. Ertter, A. Sanders, G. Leppig, E. Dean. 2002?. Catalogue of non-native vascular plants occurring spontaneously in California beyond those addressed in The Jepson Manual, Part 1. Madroño, in press.
- Jones, C. E., A. C. Sanders, et al. 1979. "Noteworthy Collections, California -- Physalis lobata, Madroño 29 (2): 101.
- Krantz, T. P., R. F. Thorne & A. C. Sanders. 2003?, A Flora of the San Bernardino Mountains, California, nearing completion.
- Minnich, R. A. and A. C. Sanders, 2000, Sahara Mustard (Brassica tournefortii), in California's Wildland Weeds: Identification and Control, C. Bossard, J. Randall, & M. Hoshovsky, eds, University of California Press
- Sanders, A. C., 1996. "Noteworthy Collections, California -- Acrachne racemosa, Aegilops cylindrica, Atriplex mulleri, Baileya multiradiata, Bromus secalinus, Cenchrus ciliaris, Centaurea diffusa, Centaurea maculosa, Ceratonia siliqua, Chloris truncata, Cynanchum louiseae, Ephedra funerea, Eragrostis curvula var. conferta, Fatoua villosa, Linanthus orcuttii, Matricaria globifera, Melica californica, Melissa officinalis, Panicum antidotale, Panicum maximum, Pistacia atlantica, Schinus polygamus, Schoenus nigricans, Scribneria bolanderi, Senna obtusifolia, Solanum mauritianum, Tritelia hyacinthina", Madroño 43(4):524-532.
- Sanders, A. C., 1997. "Noteworthy Collections, California -- Gaura parviflora, Crepis tectorum", Madroño 44 (3) 306-307.
- Sanders, A.C. 1998. Polygonaceae in Martin, P., et al (revised & ed.). 1998. Gentry's Río Mayo Plants: the tropical deciduous forest & environs of northwest Mexico, University of Arizona Press.
- Sanders, A.C. 1999. Invasive Exotics in California: a Perspective from Inland Southern California. In: M. Kelly, E. Wagner, and P. Warner (eds.). Proceedings of the California Exotic Pest Plant Council Symposium. Vol 4: 1998. Pp. 7-10.

- Sanders, A. C. 2003?, "A Flora of the Box Springs Mountains and Vicinity, Riverside and San Bernardino Counties, California", Crossosoma, in preparation.
- Sanders, A. C., 2003?. "Noteworthy Collections, California --Allium vineale, Celtis sinensis, Cestrum nocturnum, Colutea arborescens, Crepis nana, Cynosurus echinatus, Desmodium tortuosum, Eruca vesicaria var. sativa, Gilia maculata, Gnaphalium purpureum, Gypsophila elegans, Horkelia cuneata ssp. puberula, Leonotus nepetifolia, Nerium oleander, Phaseolus filiformis, Pinus attenuata, Pinus jeffreyi, Rhamnus alaternus, Salvia reflexa, Ziziphus obtusifolia", Madroño, submitted.
- Sanders, A. C., D. L. Banks & S. Boyd , 1997 "Rediscovery of Hemizonia mohavensis Keck (Asteraceae) and addition of two new localities", Madroño 44 (2): 203-210.
- Sanders, A. C. and S. Boyd, 1996. "Noteworthy Collections, California, -- Brassica fruticulosa", Madroño 43(4):523-524.
- Sanders, A.C. and S. Boyd. 1999. "Noteworthy Collections, California, -- Chloris truncata, Galium parisiense, Ranunculus testiculatus", Madroño 46(2):113.
- Sanders, A. C. and D. Cudney, 1991. "Key to the Families of Weeds of the West", in Weeds of the West, T. D. Whitson, ed., Western Society of Weed Science.
- Sanders, A. C. and D. Koutnik, 1997. "Noteworthy Collections, California, -- Euphorbia dendroides, E. esula, E. hirta, E. nutans, E. oblongata, E. revoluta, E. terracina", Madroño 44(2): 203-210.
- Skinner, M. W., D. P. Tibor, R. L. Bittman, B. Ertter, T. S. Ross, S. Boyd, A. C. Sanders, J. R. Shevock & D. W. Taylor, 1995. "Research Needs for Conserving California's Rare Plants", Madroño 42(2): 211-241.
- Van Devender, T. R., A. C. Sanders, R. K. Wilson, & S. A. Meyer. "Vegetation, Flora, and Seasons of the Rio Cuchujaqui, A Tropical Deciduous Forest near Alamos, Sonora, Mexico", in The Tropical Deciduous Forest of the Alamos, Sonora, Region: Ecology and Conservation of a Threatened Ecosystem, ed. by R. H. Robichaux.
- Van Devender, T. R., A. C. Sanders, V. W. Steinmann, R. K. Van Devender, S. A. Meyer, S. L. Friedman, J. F. Wiens, D. A. Yetman, P. D. Jenkins, E. Lopez-Saavedra, R. A. Lopez-Estudillo & J. D. Freeh, 1995. "Noteworthy Collections, Sonora, Mexico --

Blechum pyramidatum, Begonia palmeri, Acmella oppositifolia, Blumea viscosa, Elephantopus spicatus, Eupatorium odoratum, Pectis uniaristata, Cuscuta boldinghii, C. potosina, Ipomoea meyeri, Merremia quinquefolia, Cyperus difformis, Euphorbia ocymoidea, Bothriochloa pertusa, Bouteloua alamosana, Desmodium scopulorum, D. scorpiurus, Mimosa diplotricha, Phaseolus lunatus, Polypremum procumbens, Passiflora suberosa, Piper jaliscanum, Crusea coronata, C. psyllioides, Diodia sarmentosa, Hedyotis vegrans, Anemia affinis, Nicotiana plumbaginifolia, Phylla strigulosa", Madroño 42 (3): 411-418.

Vasek, F. C. & A. C. Sanders, 1983. "Distribution of Polygala acanthoclada", Madroño 30 (3): 193-194.

White, S. and A. C. Sanders, 1997. "Clarification of Three Camissonia Boothii Subspecies' Distributions in California", Madroño 44 (1): 106-112

White, S., A. C. Sanders & M. Wilcox 1996. "Noteworthy Collections, California, -- Androstaphyllum breviflorum, Claytonia lanceolata, Nicotiana acuminata, Ranunculus scleratus, Madroño 43 (2): 334-335.

CATHLEEN M. WEIGAND
Botanist / Biologist

EDUCATION/REGISTRATION

Humboldt State University
B.S., Botany and Biology, 2000

New Dawn Center (Finca Alba Nueva), San Isidro, Costa Rica
Senior Thesis Study, 1997

PROFESSIONAL CERTIFICATIONS

Certified Wetland Delineator (#2133) - Army Corps of Engineers Wetland Delineation & Management
Training Program - 2002
U.S.F.S. Wildland Firefighter Red Card Certified

EXPERIENCE SUMMARY

Ms. Weigand is a botanist/biologist with over three years experience in field studies, environmental document preparation, and habitat restoration and conservation. Project experience includes biological resource surveys, data collection and analysis, environmental assessments, wetland delineations, permitting, mitigation design, implementation and monitoring, and endangered and sensitive plant species surveys. Projects include issues relative to the California Coastal Act, the California Department of Fish and Game Code (Sections 1601 and 1603), and the federal Clean Water Act (Sections 401 and 404). Ms. Weigand has engaged in interagency coordination and public outreach efforts due to the complexities of each project. Her current role at Dudek & Associates includes biological resources assessment and impact analysis, wetland delineations and permitting, and habitat restoration and monitoring.

PROFESSIONAL ASSIGNMENTS

Experience with seed and plant propagation.

Greenhouse work (Humboldt State University- volunteer): watering, caring and maintenance of plants, re-potting/propagation, nomenclature of species housed in

greenhouse, and preparation of species used for classroom and experimental purposes.

Horticulture and nursery experience: watering, fertilizing, caring and maintenance of plants, propagation (plant cuttings, roots, and seeds), re-potting, installation and design of irrigation systems.

Experience with growth chambers, preparation and implementation of fertilizers and composts, and the irrigation of greenhouses and farm properties.

Riparian and wetland revegetation implementation.

Seed and pollen collection.

Supervising of farm and revegetation crews.

Implementation of farm crops, community and personal gardens using sustainable agricultural practices.

Revegetation and landscape design and implementation, monitoring, maintenance, and data collection.

Focused rare plant surveys, Newhall Ranch, Los Angeles County, California. Conducted focused surveys for the state-listed endangered San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*).

Monitored upland and wetlands vegetation including coastal sage scrub during construction activities for installation of a new pipeline and sewer line, Otay Ranch, San Diego County, California.

Currently assisting in the development of the Natural Community Conservation Planning (NCCP) program. Project includes research on potentially covered plant and wildlife species, conservation of coastal sage scrub habitat and biological resources in southern California.

APPENDIX B
VASCULAR PLANT SPECIES OBSERVED
VALENCIA COMMERCE CENTER SITE
(2002 and 2003)

2003 Sensitive Plant Survey Results Valencia Commerce Center

APPENDIX B

VASCULAR PLANT SPECIES – VALENCIA COMMERCE CENTER

LYCOPODIAE

SELAGINELLACEAE - SPIKE-MOSS FAMILY

Selaginella bigelovii - Bigelow's spike-moss

FILACEAE

PTERIDACEAE - BRAKE FAMILY

Pellaea andromedifolia var. *andromedifolia* - coffee fern

Pentagramma triangularis ssp. *viscosa* - silverback fern

CONIFERAE

PINACEAE - PINE FAMILY

Pinus sp.- pine

ANGIOSPERMAE (DICOTYLEDONES)

AIZOACEAE - CARPET-WEED FAMILY

* *Mesembryanthemum nodiflorum* - small-flowered ice plant

AMARANTHACEAE - AMARANTH FAMILY

Amaranthus blitoides - prostrate amaranth

* *Amaranthus retroflexus* - rough pigweed

ANACARDIACEAE - SUMAC FAMILY

Rhus ovata - sugar-bush

Rhus trilobata - squaw bush

APIACEAE - CARROT FAMILY

Apiastrum angustifolium - wild celery

Bowlesia incana – bowlesia

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- * *Conium maculatum* - poison-hemlock
- * *Foeniculum vulgare* - sweet fennel

APOCYNACEAE - DOGBANE FAMILY

Nerium oleander – oleander

ASCLEPIADACEAE - MILKWEED FAMILY

Asclepias eriocarpa - Indian milkweed

ASTERACEAE - SUNFLOWER FAMILY

- Achillea millefolium* var. *californica* - yarrow
- Agoseris grandiflora* - mountain dandelion
- Ambrosia acanthicarpa* - annual burweed
- Ambrosia confertifolia* - weak-leaved burweed
- Artemisia californica* - coastal sagebrush
- Artemisia tridentata* ssp. *tridentata* – big sagebrush
- * *Arctotis hisuta* – African daisy
- Artemisia dracunculus* - tarragon
- Artemisia douglasiana* - California mugwort
- Baccharis pilularis* - coyote brush
- Baccharis salicifolia* - mule fat
- Baccharis sarothroides* - chaparral broom
- Brickellia californica* - California brickellbush
- Brickellia nevinii* - Nevin's brickellbush
- * *Centaurea melitensis* - tocalote
- * *Centaurea solstitialis* – yellow star thistle
- Chaenactis glabriuscula* - yellow pincushion
- Chamomilla suaveolens* - pineapple weed
- Chrysothamnus nauseosus* – rabbit brush
- Cirsium occidentale* var. *californicum* - California thistle
- * *Cnicus benedictus* - blessed thistle
- Conyza canadensis* – horseweed
- * *Dimorphotheca sinuata* – Cape-marigold
- Encelia californica* - California bush sunflower
- Encelia farinosa* - brittlebush, incensio
- Ericameria palmeri* var. *pachylepis* – Goldenbush
- Erigeron foliosus* var. *stenophyllus* - leafy daisy

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- Eriophyllum confertiflorum* - long-stem golden yarrow
- Filago californica* - California fluffweed
- * *Filago gallica* - narrow-leaf filago
- * *Gazania linearis* - African daisy
- Gnaphalium californicum* - California everlasting
- Hazardia* sp. - goldenbush
- Helianthus annuus* - common sunflower
- Hemizonia fasciculata* - fascicled tarweed
- Heterotheca grandiflora* - telegraph weed
- Heterotheca sessiliflora* - golden aster
- * *Hypochaeris glabra* - smooth car's-ear
- Isocoma menziesii* ssp. *veneta* - coastal Goldenbush
- * *Lactuca serriola* - prickly lettuce
- Lasthenia californica* - coast goldfields
- Lasthenia glabrata* ssp. *coulteri* - Coulter's goldfields
- Lepidospartum squamatum* - scale-broom
- Lessingia filaginifolia* - virgate cudweed aster
- Malacothrix saxatilis* - cliff malacothrix
- * *Matricaria matricarioides* - pineapple weed
- Micropus californicus* - slender cottonweed
- Microseris douglasii* - Douglas' microseris
- Microseris lindleyi* - Lindley's microseris
- Pluchea odorata* - marsh-fleabane
- Pluchea sericea* - arrow weed
- * *Pulicaria paludosa* - Spanish sunflower
- Rafinesquia californica* - California chicory
- Senecio californica* - California groundsel
- Senecio flaccidus* var. *douglasii* - butterweed
- Solidago californica* - California goldenrod
- * *Sonchus asper* - prickly sow-thistle
- * *Sonchus oleraceus* - common sow-thistle
- Stephanomeria* sp. - wreathplant
- Stylocline gnaphalioides* - everlasting nest-straw
- Tetradyma comosa* - hairy horsebrush
- Uropappus lindleyi* - silver puffs
- Xanthium strumarium* - cocklebur

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BORAGINACEAE - BORAGE FAMILY

Amsinckia menziesii - yellow fiddleneck
Amsinckia sp. - fiddleneck
Cryptantha intermedia – common forget-me-not
Cryptantha micrsthachys – Tejon cryptantha
Cryptantha spp. - forget-me-not
Heliotropium curassavicum - wild heliotrope
Pectocarya linearis - slender pectocarya
Pectocarya recurvata - pectocarya
Plagiobothrys canescens- rusty popcorn flower
Plagiobothrys nothofulvus – popcorn flower
Plagiobothrys fulvus – popcorn flower
Plagiobothrys sp.- popcorn flower

BRASSICACEAE - MUSTARD FAMILY

* *Brassica nigra* - black mustard
Brassica tournefortii – mustard
Erysimum capitatum - western wallflower
* *Hirschfeldia incana* - short-podded mustard
* *Sisymbrium altissimum* - tumble mustard
* *Sisymbrium irio* - London rocket
* *Sisymbrium orientale* - Oriental mustard
Stanleya pinnata var. *pinata* – prince's plume
Thysanocarpus curvipes - hairy fringe-pod
Thysanocarpus laciniatus - narrow-leaved fringe-pod

CACTACEAE - CACTUS FAMILY

Opuntia basilaris var. *ramosa* – beavertail cactus
Opuntia littoralis - coastal prickly-pear
Opuntia parryi - valley cholla

CAPPARACEAE – CAPER FAMILY

Isomeris arborea - bladderpod

CAPRIFOLIACEAE - HONEYSUCKLE FAMILY

Lonicera subspicata - southern honeysuckle
Sambucus mexicana - Mexican elderberry

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CARYOPHYLLACEAE - PINK FAMILY

- * *Silene gallica* - common catchfly
- * *Stellaria media* - common chickweed

CHENOPODIACEAE - GOOSEFOOT FAMILY

- Atriplex canescens* - four-winged saltbush
- * *Atriplex semibaccata* - Australian saltbush
- Chenopodium californicum* - California goosefoot
- * *Chenopodium murale* - nettle-leaved goosefoot
- * *Salsola tragus* - Russian-thistle

CRASSULACEAE - STONECROP FAMILY

- Crassula connata* - dwarf stonecrop
- Dudleya lanceolata* - lanceleaf dudleya

CONVOLVULACEAE - MORNING-GLORY FAMILY

- Calystegia macrostegia* - western bindweed
- Calystegia peirsonii* – Peirsons morning-glory

CUCURBITACEAE - GOURD FAMILY

- Cucurbita foetidissima* - coyote-melon, calabazilla
- Marah fabaceus*- cucumber
- Marah macrocarpus* - wild cucumber

CUSCUTACEAE - DODDER FAMILY

- Cuscuta californica* - California dodder

EUPHORBIACEAE - SPURGE FAMILY

- Chamaesyce albomarginata* - rattlesnake spurge
- Chamaesyce polycarpa* - small-seed sand mat
- Croton californicus* - California croton
- Eremocarpus setigerus* – doveweed
- Euphorbia spathulata* - reticulate-seeded spurge
- Stillingia linearifolia* - linear-leaved stillingia

FABACEAE - PEA FAMILY

- Astragalus trichopodus* - Santa Barbara locoweed

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Valencia Commerce Center

- Lotus hamatus* - grab lotus
- Lotus purshianus* - Spanish-clover
- Lotus salsuginosus* - coastal lotus
- Lotus scoparius* - deerweed
- Lotus strigosus* - strigose deerweed
- Lupinus bicolor* - Lindley's annual lupine
- Lupinus hirsutissimus* - stinging lupine
- Lupinus excubitus* var. *hallii* – grape soda lupine
- Lupinus microcarpus* var. *densiflorus* – chick lupine
- Lupinus microcarpus* var. *microcarpus* – chick lupine
- Lupinus succulentis* - arroyo lupine
- Lupinus truncatus* - collar lupine
- * *Medicago sativa* - alfalfa
- * *Medicago polymorpha* - California burclover
- * *Melilotus alba* - white sweet-clover
- * *Melilotus indica* - yellow sweet-clover
- Trifolium albopurpureum* - Indian clover
- Trifolium ciliolatum* - tree clover
- Trifolium gracilentum* – clover
- Trifolium willdenovii* – wildcat clover
- * *Vicia benghalensis* – purple vetch
- Vicia hassei* - slender vetch
- * *Vicia villosa* var. *varia* – hairy vetch

FAGACEAE - BEECH FAMILY

- Quercus* sp. - scrub oak
- Quercus agrifolia* - coast live oak
- Quercus lobata* - valley oak

GERANIACEAE - GERANIUM FAMILY

- * *Erodium cicutarium* - red-stemmed filaree
- * *Erodium moschatum* - white-stemmed filaree

HYDROPHYLLACEAE - WATERLEAF FAMILY

- Emmenanthe penduliflora* - whispering bells
- Eriodictyon crassifolium* var. *nigrescens* - yerba santa
- Eucrypta chrysanthemifolia* - common eucrypta

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Phacelia cicutaria var. *hispida* – caterpillar phacelia

Phacelia distans - phacelia

Phacelia parryi - Parry's phacelia

Phacelia ramosissima - shrubby phacelia

Phacelia tanacetifolia - phacelia

LAMIACEAE - MINT FAMILY

* *Lamium amplexicaule* – dead nettle

* *Marrubium vulgare* - horehound

Salvia apiana - white sage

Salvia columbariae - chia

Salvia leucophylla - purple sage

Salvia mellifera - black sage

Trichostema lanceolatum - vinegar weed

MALVACEAE - MALLOW FAMILY

Malacothamnus fasciculatus - mesa bushmallow

* *Malva parviflora* - cheeseweed

NYCTAGINACEAE - FOUR O'CLOCK FAMILY

Mirabilis californica - California wishbone-bush

ONAGRACEAE - EVENING-PRIMROSE FAMILY

Camissonia bistorta - California sun cup

Camissonia boothii – sun cup

Camissonia californica - mustard primrose

Camissonia cheiranthifolia – beach evening primrose

Camissonia micrantha – sun cup

Camissonia strigulosa – sun cup

Clarkia purpurea - winecup clarkia

Clarkia unguiculata - elegant clarkia

Epilobium ciliatum - California cottonweed

Oenothera californica - California evening primrose

Oenothera elata - evening primrose

PAPAVERACEAE - POPPY FAMILY

Eschscholzia californica - California poppy

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Platystemon californicus var. *crinitus* - cream cups

Stylomecon heterophylla – wind poppy

PLANTAGINACEAE - PLANTAIN FAMILY

Plantago erecta - dot-seed plantain

Plantago sp. - plantain

POLEMONIACEAE - PHLOX FAMILY

Eriastrum densifolium ssp. *densifolium* – woolly star

Eriastrum sapphirinum - sapphire eriastrum

Gilia angelensis - angel gilia

Gilia capitata – ball gilia

Leptodactylon californicum - prickly phlox

Linanthus pygmaeus - linanthus

POLYGONACEAE - BUCKWHEAT FAMILY

Brachyanthum sp.

Chorizanthe parryi var. *Fernandina* - San Fernando Valley spineflower

Chorizanthe staticoides - turkish rugging

Eriogonum baileyi - buckwheat

Eriogonum elongatum - long-stemmed buckwheat

Eriogonum fasciculatum ssp. *foliolosum* - California buckwheat

Eriogonum gracile - slender woolly buckwheat

Lastarriaea coriacea - lastarriaea

Pterostegia drymarioides - California threadstem

* *Rumex crispus* - curly dock

Rumex hymenosepalus – wild rhubarb

PORTULACACEAE - PURSLANE FAMILY

Calandrinia ciliata var. *menziesii* - redmaids

Calyptridium monandrum - common calyptridium

Claytonia perfoliata var. *perfoliata* - miner's-lettuce

* *Portulaca oleracea* - common purslane

RANUNCULACEAE - CROWFOOT FAMILY

Delphinium parryi ssp. *parryi* - Parry's larkspur

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RHAMNACEAE - BUCKTHORN FAMILY

Ceanothus megacarpus - big-podded Ceanothus
Rhamnus ilicifolia - holly-leaf redberry

ROSACEAE – ROSE FAMILY

Adenostoma fasciculatum - chamise
Heteromeles arbutifolia – toyon
Physanocarpus alteranus - ninebark
Prunus ilicifolia – holly-leaf cherry
Rubus ursinus – California blackberry

RUBIACEAE - MADDER FAMILY

Galium angustifolium - narrow-leaved bedstraw
* *Galium aparine* - goose grass
Galium nuttallii - Nuttall's bedstraw

SALICACEAE - WILLOW FAMILY

Populus fremontii - Fremont's cottonwood
Salix exigua - narrow-leaved willow
Salix laevigata – red willow
Salix lasiolepis - arroyo willow

SCROPHULARIACEAE - FIGWORT FAMILY

Antirrhinum coulterianum - white snapdragon
Antirrhinum kelloggii - climbing snapdragon
Castilleja affinis - coast paintbrush
Castilleja exserta - common owl's-clover
Castilleja foliolosa – wooly Indian paintbrush
Collinsia heterophylla - Chinese houses
Mimulus aurantiacus - bush monkeyflower
Mimulus brevipes - wide-throat monkeyflower
Penstemon centranthifolius - scarlet bugler
Scrophularia californica var. *floribunda* - coast figwort

SOLANACEAE - NIGHTSHADE FAMILY

Datura wrightii - western jimsonweed
* *Nicotiana glauca* - tree tobacco

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Nicotiana quadrivalvis - Wallace's tobacco
Solanum americanum - small-flowered nightshade
Solanum umbelliferum - blue witch

TAMARICACEAE - TAMARISK FAMILY

- * *Tamarix* sp. - tamarisk
- * *Tamarix gallica* - French tamarisk

URTICACEAE - NETTLE FAMILY

- * *Urtica urens* - dwarf nettle

VISCACEAE - MISTLETOE FAMILY

Phoradendron macrophyllum - big leaf mistletoe

ZYGOPHYLLACEAE - CALTROP FAMILY

- * *Tribulus terrestris* - puncture vine

ANGIOSPERMAE (MONOCOTYLEDONES)

ARECACEAE - PALM FAMILY

- * *Washingtonia robusta* - Mexican fan palm

CYPERACEAE - SEDGE FAMILY

Cyperus esculentus - yellow nut-grass

LILIACEAE - LILY FAMILY

Calochortus clavatus var. *gracilis* - mariposa lily
Chlorogalum pomeridianum - soap plant
Dichelostemma capitatum - blue dicks
Yucca whipplei - Our Lord's candle

POACEAE - GRASS FAMILY

- Achnatherum coronatum* - giant needlegrass
- * *Arundo donax* - giant reed
- * *Avena barbata* - slender oat
- Bromus carinatus* - California brome
- * *Bromus diandrus* - ripgut grass

2003 Sensitive Plant Survey Results

Valencia Commerce Center

- * *Bromus hordeaceus* - soft chess
- * *Bromus madritensis* ssp. *rubens* - foxtail chess
- * *Bromus tectorum* - cheat grass
- * *Cortaderia selloana* - pampas grass
- Distichlis spicata* - salt grass
- Elymus glaucus* - western wild rye
- * *Hordeum murinum* - glaucous foxtail barley
- Leymus condensatus* - giant ryegrass
- Leymus triticoides* – beardless wild rye
- Melica imperfecta* - California melic
- Melica subulata* - Alaska onion grass
- Muhlenbergia microsperma* - littleseed muhly
- Nassella cernua* - nodding needlegrass
- Nassella lepida* - foothill needlegrass
- Nassella pulchra* – purple needlegrass
- * *Phalaris minor* - Mediterranean canary grass
- * *Piptatherum miliaceum* - smilo grass
- * *Polypogon monspeliensis* - rabbit's-foot grass
- * *Schismus barbatus* - abumashi
- * *Vulpia myuros* – rattail fescue

TYPHACEAE - CATTAIL FAMILY

Typha latifolia - broad-leaved cattail

- * signifies introduced (non-native) species

APPENDIX C
CALIFORNIA NATURAL DIVERSITY
DATA BASE FORMS

CALIFORNIA NATIVE SPECIES FIELD SURVEY FORM

OFFICE USE ONLY

PLEASE ENTER ALL INFORMATION AVAILABLE TO YOU.
USE THE BACK FOR COMMENTS IF NECESSARY. **PLEASE ATTACH OR DRAW A MAP ON BACK.**

Document Code _____ Quad Code _____
Index Code _____ Occurrence # _____

Scientific name (no codes): *Chorizanthe parryi* var. *fernandina*

Reporter: Mark A. Elvin

Phone: (760) 942-5147

Address: DUDEK & Associates, 605 Third Street, Encinitas, CA 92024

Date of Field Work: April 2003

County: Los Angeles

Collection: yes

If yes, #

Mus./Herb:

Location: Santa Clarita Valley, north of Castaic Creek, southern portions of ridge between Hasley Canyon and Castaic Creek

Quad Name: Newhall

X 7 1/2' 15' Elevation: 1000-1300' T 4N R 16W W 1/4 of 1/4 Sec

Landowner/Manager: The Newhall Land and Farming Company, 23823 Valencia Boulevard, Valencia, CA 91355

Species Found? X Yes ___ No ___ If not, reason:

Is this a new location record? ___ Yes ___ No X Unknown

Total # of Individuals = ~16,500 Is this a subsequent visit? ___ Yes X No Compared to your last visit: ___ more ___ same ___ fewer

Phenology (plants): ___ % vegetative 100 % flowering* ___ % fruiting

Population Age Structure (animals): ___ # adults ___ # juveniles ___ # others

Site Function for Species (animals): ___ breeding ___ foraging ___ wintering ___ roosting ___ denning ___ other

Habitat Description (plant communities, dominants, associates, other rare spp., substrate/soils, aspect/slope):

The substrate is undisturbed for the most part. Vegetation adjacent to the *Chorizanthe* consists of grassland on the mesa portions and open California sage brush on the slopes. The close associates include: *Artemisia californica*, *Eriogonum fasciculatum*, *E. elongatum*, *Lotus salsuginosus*, *Trifolium albopurpureum*, *Bromus* spp. *Erodium cicutarium*, *Medicago polymorpha*.

Current Land Use/Visible Disturbances/Possible Threats: Current Land Use: vacant, utility lines access roads; Visible Disturbances: grading/clearing for utility access roads; Possible Threats: proposed residential/commercial development, off-road vehicles, dumping, weeds, utility access road maintenance.

Overall Site Quality: ___ Excellent X Good ___ Fair ___ Poor

Comments: Plants were densely to sparsely distributed within about twenty-five polygons.

Should/Could this site be protected? How?

Other comments:

DETERMINATION (Check one or more, fill in blanks)

X Keyed in a site reference: Hickman 1993, Munz 1974

X Compared with specimen housed at: RSA, UCR

___ Compared with photo/drawing in:

X By another person (name): Anuja parihk and Nathan Gale

X Other: personal knowledge

PHOTOGRAPHS (Check one or more)

Subject

Type

X Plant/Animal

X Slide

X Habitat

___ Print


X Diagnostic Feature

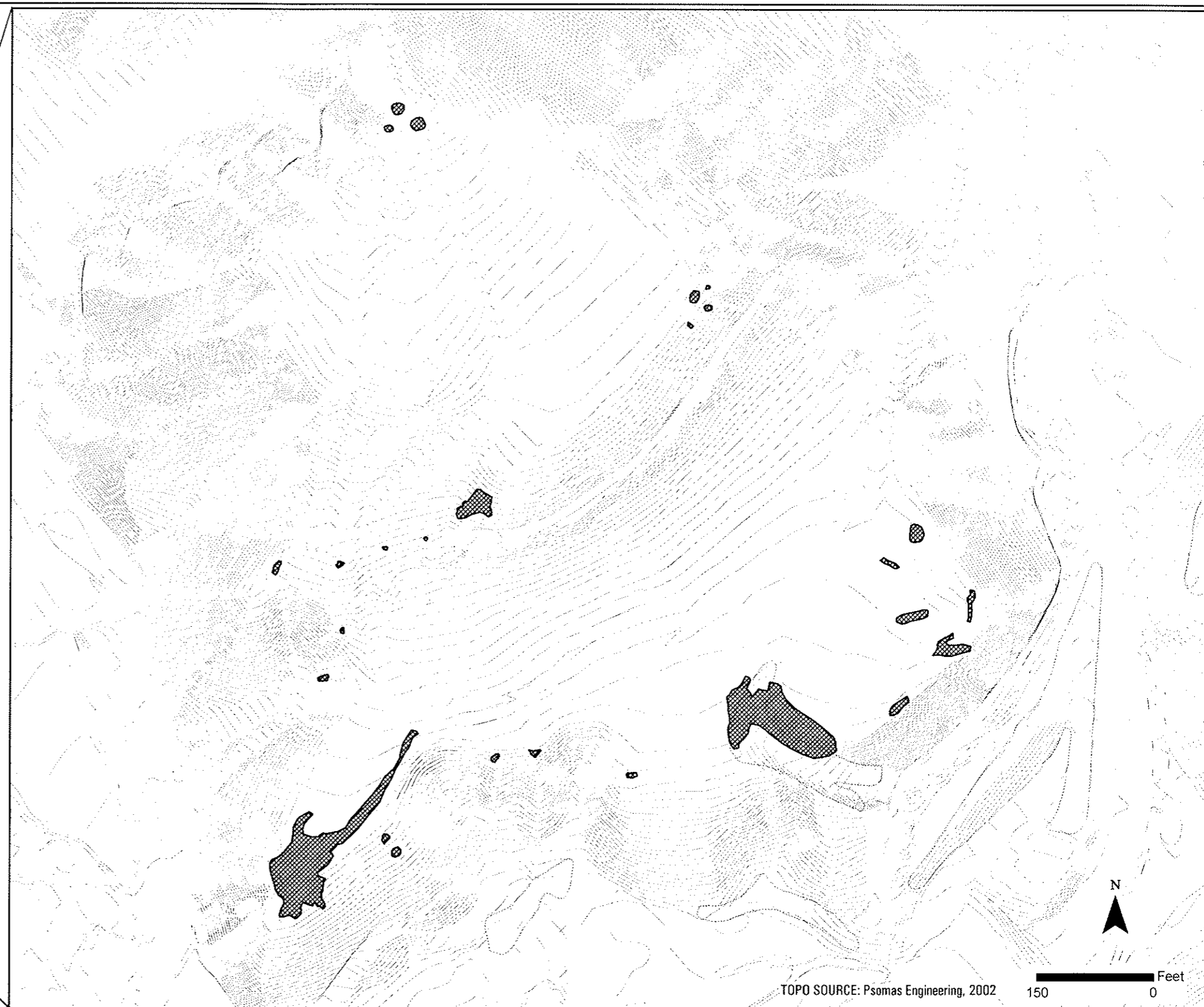
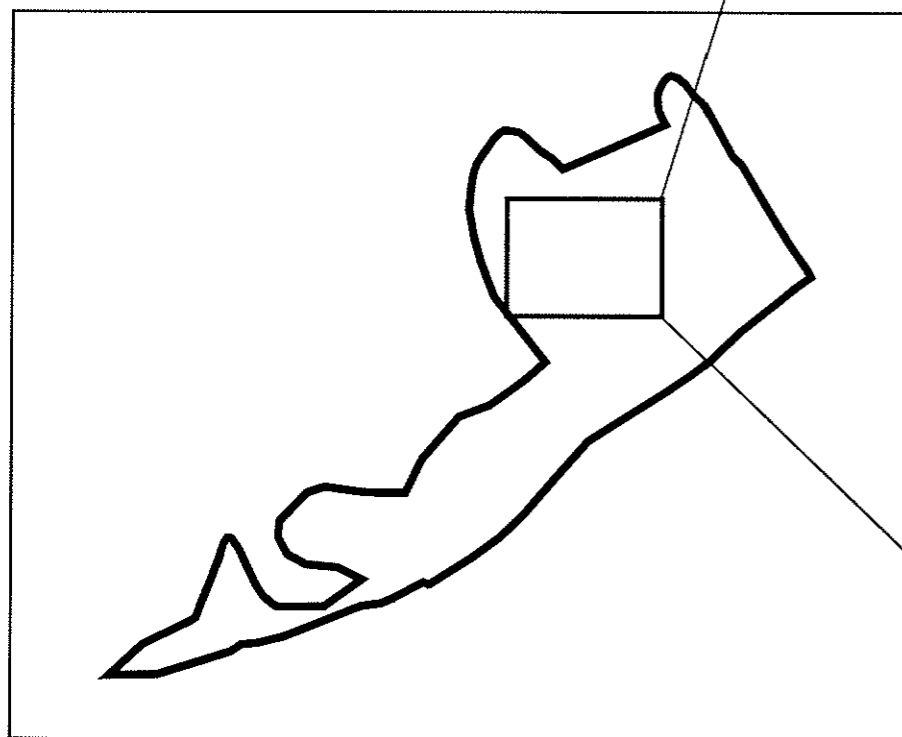
___ Other

OTHER KNOWLEDGEABLE INDIVIDUALS (Name/Address/Phone) Nathan Gale, Anuja May we obtain duplicates at our cost?

Parihk

X Yes ___ No

 San Fernando Valley spineflower -
Chorizanthe parryi var. *fernandina*



Valencia Commerce Center
2003 San Fernando Valley spineflower Results

FIGURE
1

CALIFORNIA NATIVE SPECIES FIELD SURVEY FORM

OFFICE USE ONLY

PLEASE ENTER ALL INFORMATION AVAILABLE TO YOU.
USE THE BACK FOR COMMENTS IF NECESSARY. **PLEASE
ATTACH OR DRAW A MAP ON BACK.**

Document Code _____ Quad Code _____
Index Code _____ Occurrence # _____

Scientific name (no codes): *Calochortus clavatus* var. *gracilis*

Reporter: Mark A. Elvin

Phone: (760) 942-5147

Address: DUDEK & Associates, 605 Third Street, Encinitas, CA 92024

Date of Field Work: 08-12 April 2003

County: Los Angeles

Collection: yes

If yes, #

Mus./Herb:

Location: Santa Clarita Valley, north of Castaic Creek, ridge between Hasley Canyon and Castaic Creek

Quad Name: Newhall

X 7 1/2' 15' Elevation: 1,100-1,200' T 4N R 17W W 1/4 of 1/4 Sec

Landowner/Manager: The Newhall Land and Farming Company, 23823 Valencia Boulevard, Valencia, CA 91355

Species Found? X Yes No If not, reason:

Is this a new location record? X Yes No Unknown

Total # of Individuals = ~500 ind. Is this a subsequent visit? Yes X No Compared to your last visit: more same fewer

Phenology (plants): % vegetative ?? % flowering* % fruiting (unable to determine, vegetative inds. cryptic)

Population Age Structure (animals): # adults # juveniles # others

Site Function for Species (animals): breeding foraging wintering roosting denning other

Habitat Description (plant communities, dominants, associates, other rare spp., substrate/soils, aspect/slope):

California sagebrush-purple sage with *Artemisia californica*, *Eriogonum fasciculatum*, *Salvia leucophylla*, *Ericameria palmeri* var. *pachypus*, *Pterostegia drymerioides*; E, N, W slopes 0 to 50°; soils rocky sandy loam

Current Land Use/Visible Disturbances/Possible Threats: Current Land Use: vacant, utility access roads, off road vehicles; Visible Disturbances: grading/clearing for access roads, off-road vehicles, weeds; Possible Threats: proposed residential/commercial development, utility maintenance.

Overall Site Quality: Excellent X Good Fair Poor

Comments: Plants were sparsely distributed within several polygons.

Should/Could this site be protected? How?

Other comments:

DETERMINATION (Check one or more, fill in blanks)

 X Keyed in a site reference: Hickman 1993, Munz 1974

 X Compared with specimen housed at: RSA, UCR

 Compared with photo/drawing in:

 By another person (name):

 X Other: personal knowledge

OTHER KNOWLEDGEABLE INDIVIDUALS (Name/Address/Phone) Nathan Gale,
Mickelle Balk

PHOTOGRAPHS (Check one or more)

Subject _____ Type _____

 X Plant/Animal X Slide

 X Habitat Print

 X Diagnostic Feature

 Other

May we obtain duplicates **at our cost?**

 X Yes No



Valencia Commerce Center
2003 Rare Plant Survey Results

FIGURE
1

CALIFORNIA NATIVE SPECIES FIELD SURVEY FORM

OFFICE USE ONLY

PLEASE ENTER ALL INFORMATION AVAILABLE TO YOU.
USE THE BACK FOR COMMENTS IF NECESSARY. **PLEASE
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Document Code _____ Quad Code _____
Index Code _____ Occurrence # _____

Scientific name (no codes): *Calochortus clavatus* var. *gracilis*

Reporter: Mark Elvin

Phone: (760) 942-5147

Address: DUDEK & Associates, 605 Third Street, Encinitas, CA 92024

Date of Field Work: 11 April 2003

County: Los Angeles

Collection: yes If yes, #

Mus./Herb:

Location: Santa Clarita Valley, S facing canyon N of the jctn of Commerce Center Drive and SR 126.

Quad Name: Val Verde

X 7 1/2' 15' Elevation: 1000-1100' T 4N R 17W W 1/4 of 1/4 Sec

Landowner/Manager: The Newhall Land and Farming Company, 23823 Valencia Boulevard, Valencia, CA 91355

Species Found? X Yes ___ No ___ If not, reason:

Is this a new location record? X Yes ___ No ___ Unknown

Total # of Individuals = ~12 flowering ind. Is this a subsequent visit? ___ Yes X No Compared to your last visit: ___ more ___ same ___ fewer

Phenology (plants): ___ % vegetative ___ % flowering* ___ % fruiting (only flowering individuals counted)

Population Age Structure (animals): ___ # adults ___ # juveniles ___ # others

Site Function for Species (animals): ___ breeding ___ foraging ___ wintering ___ roosting ___ denning ___ other

Habitat Description (plant communities, dominants, associates, other rare spp., substrate/soils, aspect/slope):

California sagebrush with *Artemisia californica*, *Eriogonum fasciculatum*, *Salvia mellifera*, *Ericameria palmeri* var. *pachypus*, *Encelia californica*; E 20-60° slope, soils rocky sandy loam

Current Land Use/Visible Disturbances/Possible Threats: Current Land Use: vacant; Visible Disturbances: detention basin at base of slope; Possible Threats: proposed residential/commercial development.

Overall Site Quality: ___ Excellent X Good ___ Fair ___ Poor

Comments: Plants were sparsely distributed within several polygons.

Should/Could this site be protected? How?

Other comments:

DETERMINATION (Check one or more, fill in blanks)

X Keyed in a site reference: Hickman 1993, Munz 1974

X Compared with specimen housed at: RSA, UCR

___ Compared with photo/drawing in:

___ By another person (name):

X Other: personal knowledge

OTHER KNOWLEDGEABLE INDIVIDUALS (Name/Address/Phone) Kim Marsden,
Michelle Balk

PHOTOGRAPHS (Check one or more)

Subject _____ Type _____

X Plant/Animal X Slide

X Habitat ___ Print

X Diagnostic Feature

___ Other

May we obtain duplicates at our cost?

X Yes ___ No



Valencia Commerce Center
2003 Rare Plant Survey Results

FIGURE
1

CALIFORNIA NATIVE SPECIES FIELD SURVEY FORM

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ATTACH OR DRAW A MAP ON BACK.**

Document Code _____ Quad Code _____
Index Code _____ Occurrence # _____

Scientific name (no codes): *Calochortus clavatus* var. *gracilis*

Reporter: Mark A. Elvin

Phone: (760) 942-5147

Address: DUDEK & Associates, 605 Third Street, Encinitas, CA 92024

Date of Field Work: 12 April 2003

County: Los Angeles

Collection: yes

If yes, #

Mus./Herb:

Location: Santa Clarita Valley, E facing canyon W of the Commerce Center Drive.

Quad Name: Val Verde

X 7 1/2' 15' Elevation: 1,000-1,500' T 4N R 17W W 1/4 of 1/4 Sec

Landowner/Manager: The Newhall Land and Farming Company, 23823 Valencia Boulevard, Valencia, CA 91355

Species Found? X Yes No If not, reason:

Is this a new location record? X Yes No Unknown

Total # of Individuals = ~200 Is this a subsequent visit? Yes X No Compared to your last visit: more same fewer

Phenology (plants): % vegetative ?? % flowering* % fruiting (unable to determine, vegetative inds. cryptic)

Population Age Structure (animals): # adults # juveniles # others

Site Function for Species (animals): breeding foraging wintering roosting denning other

Habitat Description (plant communities, dominants, associates, other rare spp., substrate/soils, aspect/slope):

California sagebrush-purple sage with *Artemisia californica*, *Eriogonum fasciculatum*, *Salvia leucophylla*, *Ericameria palmeri* var. *pachypus*, *Delphinium* sp., *Pterostegia drymerioides*; N, E, S 20-60° slope, soils rocky sandy loam

Current Land Use/Visible Disturbances/Possible Threats: Current Land Use: vacant, water storage tank, detention basin; Visible Disturbances: access road to water tank, detention basin; Possible Threats: proposed residential/commercial development.

Overall Site Quality: Excellent X Good Fair Poor

Comments: Plants were sparsely distributed within multiple polygons.

Should/Could this site be protected? How?

Other comments:

DETERMINATION (Check one or more, fill in blanks)

 X Keyed in a site reference: Hickman 1993, Munz 1974

 X Compared with specimen housed at: RSA, UCR

 Compared with photo/drawing in:

 By another person (name):

 X Other: personal knowledge

PHOTOGRAPHS (Check one or more)

Subject _____ Type _____

 X Plant/Animal X Slide

 X Habitat Print

 X Diagnostic Feature

 Other

OTHER KNOWLEDGEABLE INDIVIDUALS (Name/Address/Phone) Andy Sanders, Kim May we obtain duplicates **at our cost?**

Marsden, Michelle Balk, Daryl Koutnik

 X Yes No



Valencia Commerce Center
2003 Rare Plant Survey Results

FIGURE
1

CALIFORNIA NATIVE SPECIES FIELD SURVEY FORM

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USE THE BACK FOR COMMENTS IF NECESSARY. **PLEASE
ATTACH OR DRAW A MAP ON BACK.**

Document Code _____ Quad Code _____
Index Code _____ Occurrence # _____

Scientific name (no codes): *Calochortus clavatus* var. *gracilis*

Reporter: Mark A. Elvin

Phone: (760) 942-5147

Address: DUDEK & Associates, 605 Third Street, Encinitas, CA 92024

Date of Field Work: 10 April 2003

County: Los Angeles

Collection: yes If yes, #

Mus./Herb:

Location: Santa Clarita Valley, edge of the floodplain N of Castaic Creek and its junction with the Santa Clara River.

Quad Name: Val Verde

X 7 1/2' 15' Elevation: ~1,000 T 4N R 17W W 1/4 of 1/4 Sec

Landowner/Manager: The Newhall Land and Farming Company, 23823 Valencia Boulevard, Valencia, CA 91355

Species Found? X Yes ___ No If not, reason:

Is this a new location record? X Yes ___ No ___ Unknown

Total # of Individuals = ~300 ind. Is this a subsequent visit? ___ Yes X No Compared to your last visit: ___ more ___ same ___ fewer

Phenology (plants): ___ % vegetative ?? % flowering* ___ % fruiting (unable to determine, vegetative inds. cryptic)

Population Age Structure (animals): ___ # adults ___ # juveniles ___ # others

Site Function for Species (animals): ___ breeding ___ foraging ___ wintering ___ roosting ___ denning ___ other

Habitat Description (plant communities, dominants, associates, other rare spp., substrate/soils, aspect/slope):

California sagebrush with *Artemisia californica*, *Eriogonum fasciculatum*, *Gilia capitata*, *Cryptantha intermedia*, *Lupinus bicolor*; SE 20-60° slope, soils rocky sandy loam

Current Land Use/Visible Disturbances/Possible Threats: Current Land Use: vacant, flood management; Visible Disturbances: farming, grading/clearing for fire and flood control, utility poles; Possible Threats: proposed residential/commercial development, flood control activities, utility poles maintenance .

Overall Site Quality: ___ Excellent X Good ___ Fair ___ Poor

Comments: Plants were sparsely distributed within several polygons.

Should/Could this site be protected? How?

Other comments:

DETERMINATION (Check one or more, fill in blanks)

X Keyed in a site reference: Hickman 1993, Munz 1974

X Compared with specimen housed at: RSA, UCR

___ Compared with photo/drawing in:

___ By another person (name):

X Other: personal knowledge

OTHER KNOWLEDGEABLE INDIVIDUALS (Name/Address/Phone) Kim Marsden,
Michelle Balk

PHOTOGRAPHS (Check one or more)

Subject _____ Type _____

X Plant/Animal X Slide

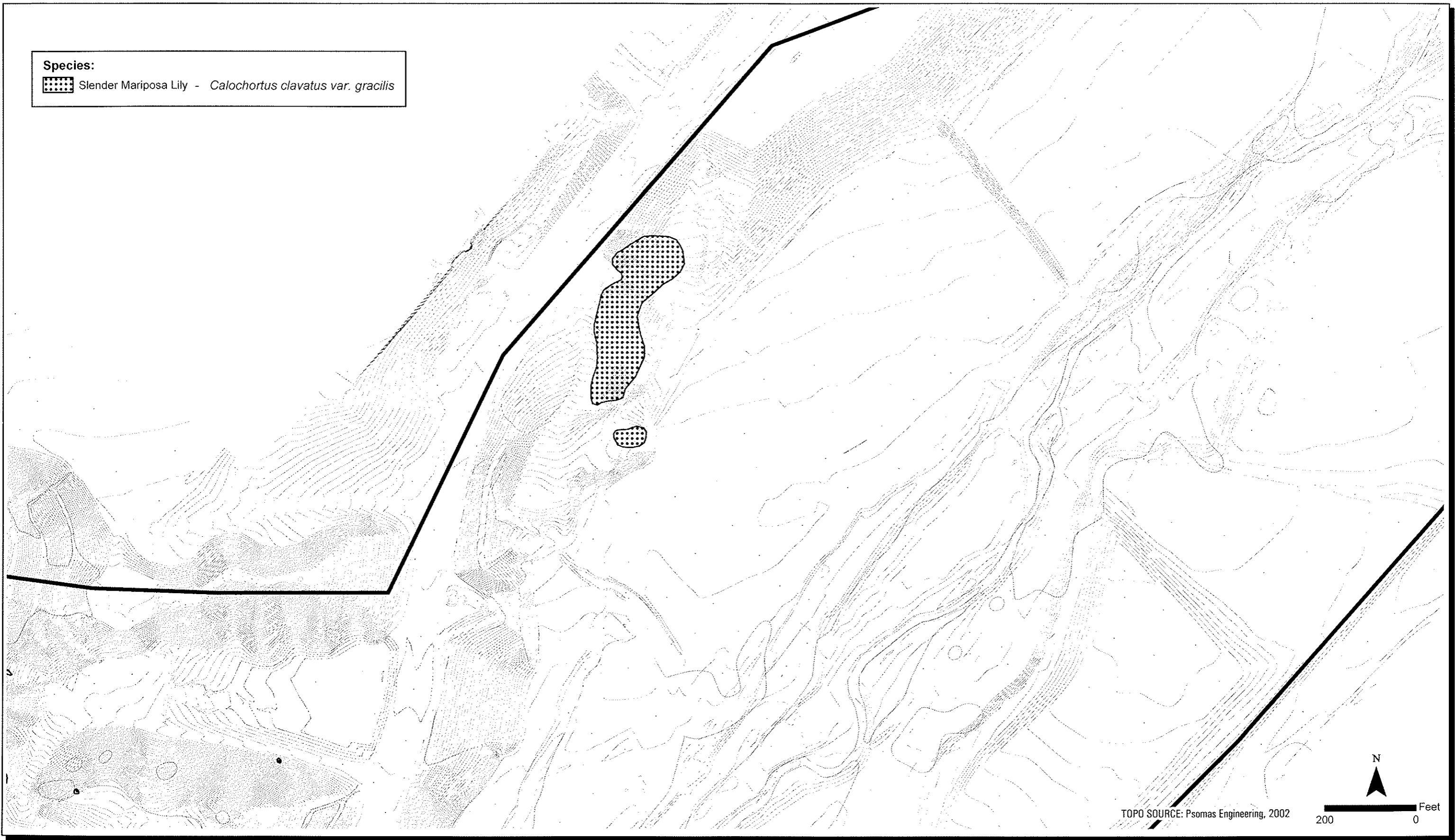
X Habitat ___ Print

X Diagnostic Feature

___ Other

May we obtain duplicates at our cost?

X Yes ___ No



Valencia Commerce Center
2003 Rare Plant Survey Results

FIGURE
1