



2005 Sensitive Plant Survey Report
Newhall Ranch



J U N E 2 0 0 6

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2005 Sensitive Plant Survey Results

for

Newhall Ranch Specific Plan Area Los Angeles County, California

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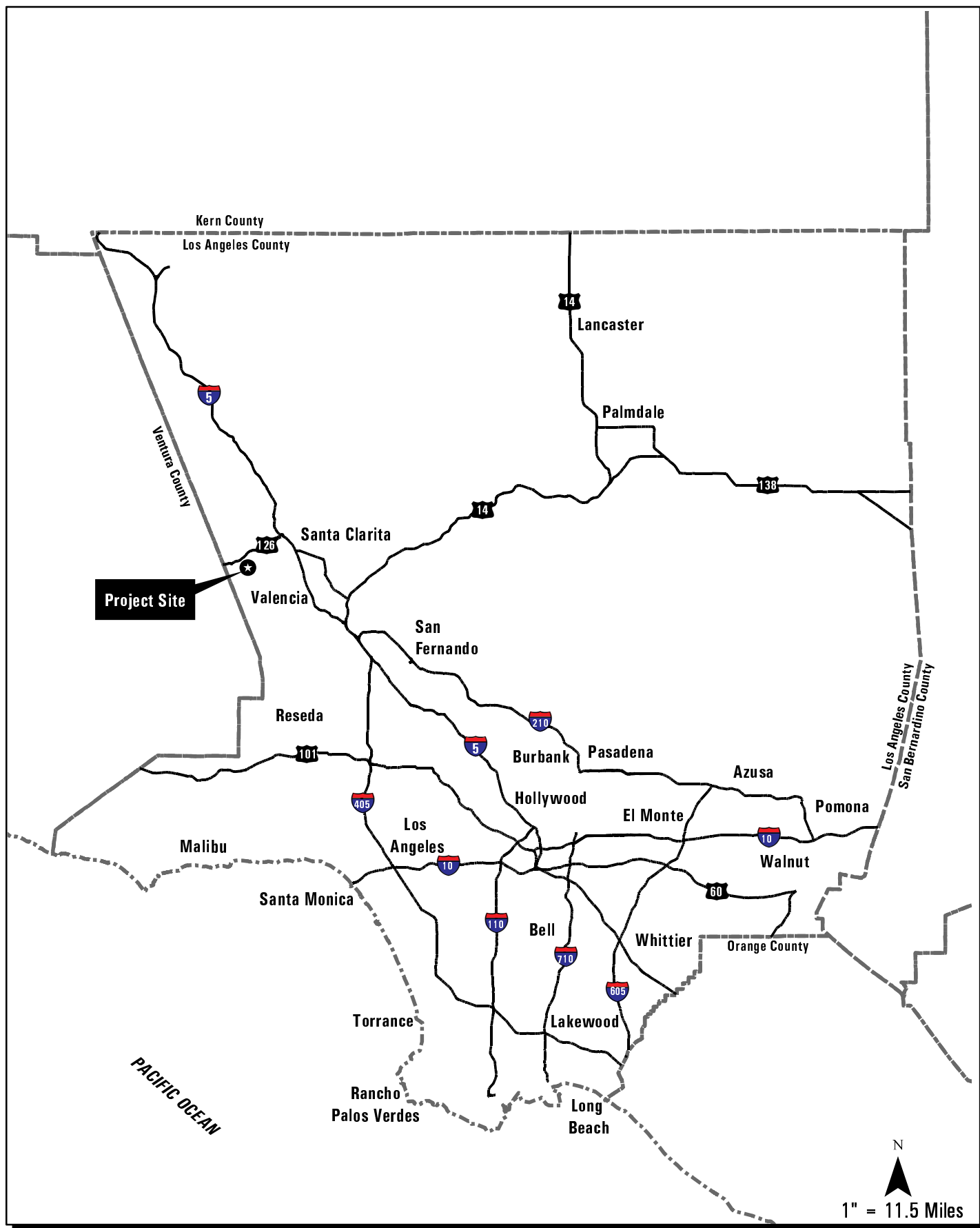
1.0 INTRODUCTION

The purpose of this report is to document the results of surveys for sensitive plant species within the approximately 7,778-acre study area, a subset of the 11,963-acre Newhall Ranch Specific Plan Area (NR SPA), for the 2005 field season. Surveys placed an emphasis on the identification of populations of the state-listed endangered San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*; SFVS). Other sensitive plant species were recorded if observed onsite.

2.0 SITE DESCRIPTION

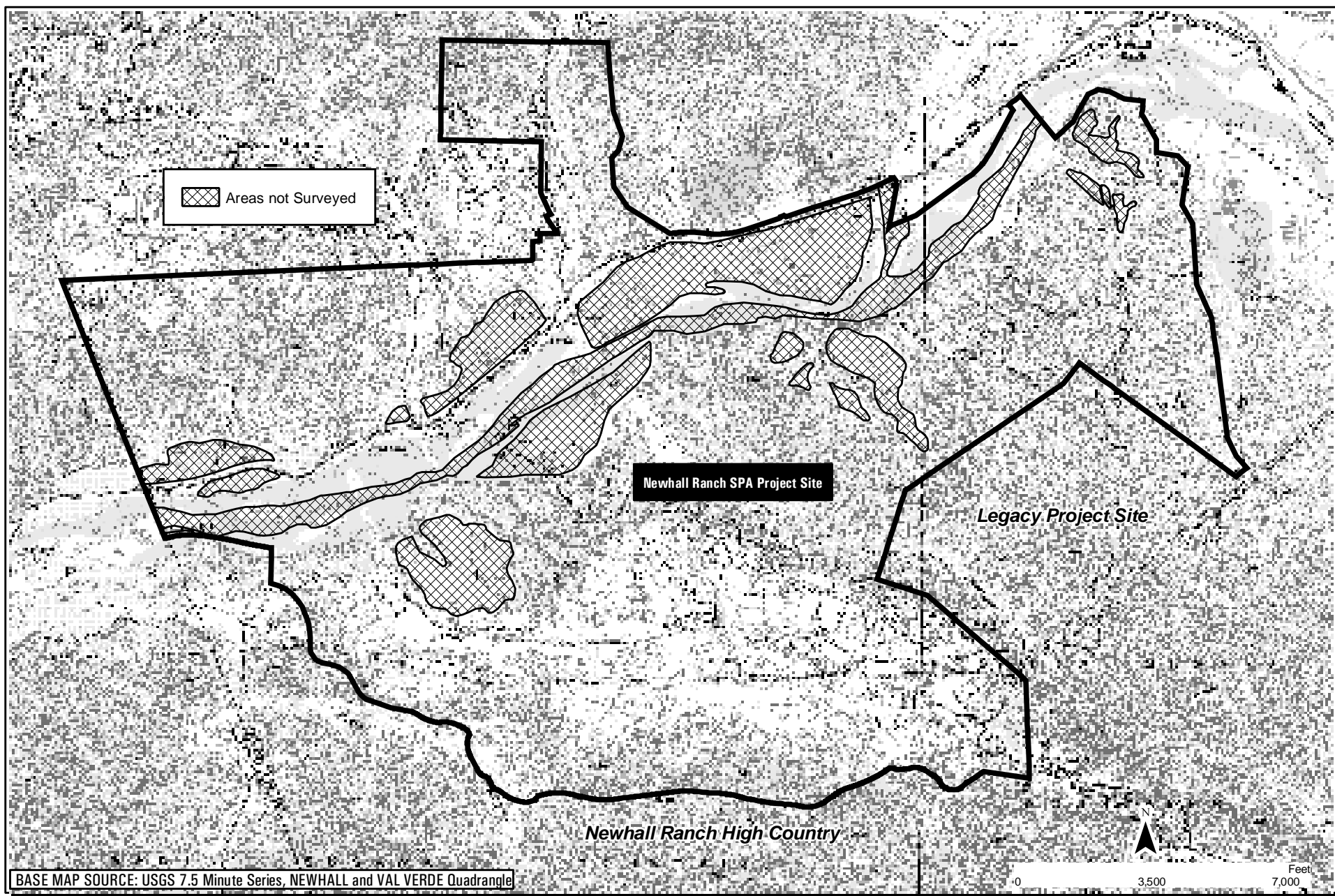
The NR SPA study area is located in an unincorporated portion of the Santa Clara River Valley in northwestern Los Angeles County (*Figure 1*). It lies roughly one-half mile west of Interstate 5 and largely southwest of the junction of I-5 and State Route 126 (SR-126), with portions of the Specific Plan site located in San Martinez Grande and Chiquito canyons north of SR-126. The City of Santa Clarita is located to the east of the study area and the Ventura County/Los Angeles County line lies along the western boundary. Site elevations range from 825 feet above mean sea level (AMSL) in the Santa Clara River bottom at the Ventura County/Los Angeles County line to approximately 3,200 feet AMSL on the ridgeline of the Santa Susana Mountains along the southern boundary (*Figure 2*).

Dudek & Associates, Inc. (Dudek) surveyed for sensitive plant species with varying levels of specificity within areas that are designated for development according to the approved Specific Plan. The NR SPA study area consists of approximately 7,778 acres, with the actual area surveyed containing approximately 6,644 acres. The study area includes areas north of SR-126 between Chiquito Canyon west to the Ventura County line; south of SR-126, it includes areas between the Airport Mesa and Potrero Canyon, including Middle, Dead-End, Lion, Humble, and Long canyons. However, the active channel in the Santa Clara River, agriculture fields (*e.g.*, Potrero Mesa) and areas currently proposed for conservation (most notably the “High Country” area) were excluded from the study area. This study area is dominated by east-, west-, and northwest-trending primary ridges, with north- and south-trending secondary ridges. Site elevations range from approximately 850 feet AMSL in the Santa Clara River floodplain to approximately 2,000 feet AMSL along the ridgeline, which separates Potrero Canyon from Salt Creek Canyon and Grave Canyon.



Newhall Ranch
Regional Map

FIGURE
1



Newhall Ranch
Vicinity Map

FIGURE
2

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Slope gradients range from moderate to very steep in the hillside areas to very gentle within the Santa Clara River floodplain, tributary canyons and associated mesas. Distinctive elevated geographic features include Sawtooth Ridge; Razorback Ridge; Windy Gap; Ayers Rock; and Potrero, Grapevine, and Airport Mesas.

2.1 Plant Communities and Land Covers

Native and naturalized habitats within the study area are representative of those found in this region and provide examples of those plant communities found in the Santa Susana Mountains and the Santa Clara River ecosystems. Upland habitats dominate the landscape within the study area both north and south of the Santa Clara River. The majority of the site consists of the following upland plant communities: California sagebrush, California buckwheat, chamise, chamise-mission manzanita-woollyleaf ceanothus, coast live oak, valley oak, and California annual grassland series. The Santa Clara River supports a variety of riparian plant communities. These include Fremont's cottonwood, arroyo willow, mulefat, and arrow weed series along with freshwater marsh and seeps. Intermittent and ephemeral drainages onsite also provide habitat for scalebroom and Great Basin series and alluvial scrubs.

Newhall Land (Newhall) leases out portions of the study area for oil and natural gas production, as well as for cattle grazing and agricultural operations (*e.g.*, food crop production, dryland farming, honey farming). All such operations are currently ongoing. Grazing activities and oil and natural gas production have had a noticeable effect on much of the natural habitat onsite. Scrub habitats have been displaced by non-native grasslands as a result of grazing. Southern California Edison and Southern California Gas Company have distribution lines within easements onsite as well.

2.2 Geology and Soils

Geologically, the study area is located within the Transverse Ranges 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 (Allan E. Seward 2002, 2004).” They are cut by segments of the Del Valle and Salt Creek faults. Bedrock formations found onsite include the Modelo, Towsley, Pico, Saugus, and Pacoima formations, as well as Quaternary Terrace deposits. Surficial deposits include Quaternary alluvium, slopewash, soil, and artificial fill (Allan E. Seward 2002, 2004).

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3.0 SURVEY METHODS

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, with varying levels of specificity; all of which are described below.

3.1 Literature Review

General floristic and sensitive botanical resources present or potentially present on the Entrada site 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 (CDFG 2004b); 2002 and 2003 Sensitive Plant Survey Results for Newhall Ranch Specific Plan Area (Dudek 2002, 2004a); 2003 Sensitive Plant Survey Results for Valencia Commerce Center, Castaic Mesa, Isola and Ventura Homestead Sites, Magic Mountain Entertainment Center (Entrada) Site, Castaic Junction Site, and Salt Creek (Dudek 2004b-g); 2004 Sensitive Plant Survey Results for Valencia Commerce Center, Entrada Site, Legacy, and Newhall Ranch Specific Plan Area (Dudek 2004h-k); *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 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); and herbarium specimens from Rancho Santa Ana Botanic Garden (RSA) and the University of California, Riverside (UCR) Herbarium. 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, with assistance provided by Anuja Parikh and Nathan Gale of FLx. All surveys were conducted on foot. Surveys were conducted

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in teams of two or more biologists, with at least one senior-level biologist included with each team. Resumes for survey personnel are provided in *Appendix A*.

Botanical surveys of the site were conducted between early May and mid-July of 2005 in accordance with the schedule provided in *Table 1*. A minimum of 880 person-hours (88 person-days) was spent conducting botanical surveys within the study area. Biologists were able to observe reference populations of the state-listed endangered San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*; SFVS) and other sensitive plant species in order to develop a search-image prior to conducting surveys of the project site. Surveys focused on the identification and location of SFVS. Additional sensitive plant species observed during SFVS surveys, including California Native Plant Society (CNPS) List 1B and 4 species, were also recorded.

TABLE 1 Survey Schedule & Personnel Newhall Ranch Specific Plan Area			
DATE	BIOLOGISTS	PURPOSE	GENERAL GEOGRAPHIC AREA
5-9-05 to 5-11-05	Nathan Gale, Anuja Parikh	Focused surveys for SFVS; other sensitive plant species noted as observed.	Airport Mesa
5-14-05	Nathan Gale, Anuja Parikh	Focused surveys for SFVS; other sensitive plant species noted as observed.	Airport Mesa
5-16-05	Nathan Gale, Anuja Parikh	Focused surveys for SFVS; other sensitive plant species noted as observed.	Airport Mesa
5-21-05	Nathan Gale, Anuja Parikh	Focused surveys for SFVS; other sensitive plant species noted as observed.	Airport Mesa
5-24-05 to 5-27-05	Nathan Gale, Anuja Parikh	Focused surveys for SFVS; other sensitive plant species noted as observed.	Airport Mesa
5-27-05 to 5-29-05	Sherri Miller, Andy Thomson, Darren Smith, Vipul Joshi	Focused surveys for SFVS; other sensitive plant species noted as observed.	Grapevine Mesa, San Martinez Grande Canyon
5-28-05	Nathan Gale, Anuja Parikh	Focused surveys for SFVS; other sensitive plant species noted as observed.	Airport Mesa
5-31-05	Nathan Gale, Anuja Parikh	Focused surveys for SFVS; other sensitive plant species noted as observed.	Airport Mesa

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TABLE 1
Survey Schedule & Personnel Newhall Ranch Specific Plan Area

DATE	BIOLOGISTS	PURPOSE	GENERAL GEOGRAPHIC AREA
6-1-05	Nathan Gale, Anuja Parikh	Focused surveys for SFVS; other sensitive plant species noted as observed.	Airport Mesa
6-2-05 to 6-4-05	Nathan Gale, Anuja Parikh	Focused surveys for SFVS; other sensitive plant species noted as observed.	Airport Mesa
6-6-05 to 6-8-05	Nathan Gale, Anuja Parikh	Focused surveys for SFVS; other sensitive plant species noted as observed.	Potrero Canyon
6-6-05 to 6-9-05	David Flietner, Rebekah Krebs	Focused surveys for SFVS; other sensitive plant species noted as observed.	Grapevine Mesa, Exxon Canyon
6-9-05	Nathan Gale, Anuja Parikh	Focused surveys for SFVS; other sensitive plant species noted as observed.	Potrero Canyon
6-14-05	Nathan Gale, Anuja Parikh	Focused surveys for SFVS; other sensitive plant species noted as observed.	Potrero Canyon
6-14-05	Colin Khoury, Chris Oesch	Focused surveys for SFVS; other sensitive plant species noted as observed.	Exxon Canyon
6-15-05	Sherri Miller, Colin Khoury, Chris Oesch	Focused surveys for SFVS; other sensitive plant species noted as observed.	Exxon Canyon
6-16-05, 6-17-05	Colin Khoury, Chris Oesch	Focused surveys for SFVS; other sensitive plant species noted as observed.	Long Canyon
6-20-05, 6-21-05	Doug Gettinger, Galen Hagen, Kamarul Muri	Focused surveys for SFVS; other sensitive plant species noted as observed.	Long Canyon, Grapevine Mesa
6-22-05, 6-23-05	Doug Gettinger, Galen Hagen	Focused surveys for SFVS; other sensitive plant species noted as observed.	Grapevine Mesa
6-24-05 to 6-26-05	Sherri Miller, Andy Thomson, Darren Smith	Focused surveys for SFVS; other sensitive plant species noted as observed.	Lion Canyon, Long Canyon
6-27-05	Nathan Gale, Anuja Parikh	Focused surveys for SFVS; other sensitive plant species noted as observed.	Potrero Canyon
6-28-05 to 7-1-05	Colin Khoury, Galen Hagen, Megan Enright	Focused surveys for SFVS; other sensitive plant species noted as observed.	Long Canyon, Grapevine Mesa

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TABLE 1 Survey Schedule & Personnel Newhall Ranch Specific Plan Area			
DATE	BIOLOGISTS	PURPOSE	GENERAL GEOGRAPHIC AREA
6-29-05	Nathan Gale, Anuja Parikh	Focused surveys for SFVS; other sensitive plant species noted as observed.	Potrero Canyon
7-3-05	Nathan Gale, Anuja Parikh	Focused surveys for SFVS; other sensitive plant species noted as observed.	Potrero Canyon
7-5-05	Nathan Gale, Anuja Parikh	Focused surveys for SFVS; other sensitive plant species noted as observed.	Potrero Canyon
7-5-05 to 7-8-05	David Flietner, Galen Hagen, Michelle Balk	Focused surveys for SFVS; other sensitive plant species noted as observed.	Potrero Canyon, Chiquito Canyon
7-6-05	Nathan Gale, Anuja Parikh	Focused surveys for SFVS; other sensitive plant species noted as observed.	Santa Clara River
7-11-05 to 7-14-05	Colin Khoury, Galen Hagen, Marc Doalson	Focused surveys for SFVS; other sensitive plant species noted as observed.	Chiquito Canyon, San Martinez Grande Canyon, Off-Haul Canyon
7-13-05, 7-14-05	Nathan Gale, Anuja Parikh	Focused surveys for SFVS; other sensitive plant species noted as observed.	Potrero Canyon
7-18-05	Nathan Gale, Anuja Parikh	Focused surveys for SFVS; other sensitive plant species noted as observed.	Potrero Canyon
7-18-05 to 7-19-05	Tricia Wotipka, Doug Gettinger, Thomas Liddicoat	Focused surveys for SFVS; other sensitive plant species noted as observed.	Homestead Canyon, Off-Haul Canyons
7-20-05 to 7-22-05	Nathan Gale, Anuja Parikh	Focused surveys for SFVS; other sensitive plant species noted as observed.	Potrero Canyon

All plant species encountered during the field surveys were identified and recorded for inclusion in *Appendix B*. 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.*, Abrams 1923, Dale 1986, or Roberts 1998).

Surveys on the NR SPA during the 2005 field season focused on the observation of current year SFVS plants, with observations of other sensitive plant species noted when observed. Surveys

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for SFVS were focused in open areas of California sagebrush, California sagebrush-purple sage series, California buckwheat and California annual grassland series (Sawyer and Keeler-Wolf 1995) on ridgelines, slopes, and escarpments with a southern, southwestern, or southeastern exposure. This strategy was based on information gathered during the documentation of SFVS populations flagged by CDFG; information gathered during surveys by Dudek for SFVS populations on the Newhall Ranch project site during 2002, 2003 and 2004; 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 re-discovered SFVS at Ahmanson Ranch in 1999.

While surveying in the field and mapping SFVS, a four-meter (m) 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 every one to four meters. Each SFVS polygon was 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). 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/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 centimeter squared (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

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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.*, $4 \times 125 = 500$, $8 \times 12 = 96$, $9 \times 100 = 900$). This number was then rounded to the nearest magnitude or multiple of a magnitude (*e.g.*, 500; 100; 1,000).

Polygons for other sensitive species were mapped with the GPS unit, by drawing polygons on maps with aerial photography and topographic lines, 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 4.2.10*).

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 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*) or CNPS online inventory (<http://cnps.web.aplus.net/cgi-bin/inv/inventory.cgi>), 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 were included in discussions only when encountered during the field surveys.

3.2.2 Survey Limitations

Surveys were conducted in the late spring and early summer of 2005. The timing of the surveys was coincident with the blooming period for SFVS and other early blooming annual species. Surveys continued passed the peak bloom period for the SFVS into the summer when SFVS became a highly visible brick red while all of the other plants dried and faded to pale straw colors. Surveying during these two time periods maximized the potential for detection of SFVS during the survey effort.

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Surveys for SFVS were concentrated in areas of suitable habitat, which was generally in openings in vegetation and/or on south-facing slopes. Other sensitive species were recorded when observed.

The focused surveys for SFVS were conducted during daylight hours under weather conditions that 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 Ranges, Coast Ranges, Sierra Nevada, 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 average rainfall for the area.

At least 562 plant species were identified within the Newhall Ranch study area. Of these, 406 species (72 percent) are native to the region and 156 species (28 percent) are non-native. The cumulative list of plant species identified on the site in 2002, 2003, 2004, and 2005 is provided as *Appendix B*.

4.2 Sensitive Plant Species

A total of eight sensitive plant species were identified within the study area between 2002 and 2005. These and other sensitive species that have the potential to occur within the Newhall Ranch project area, based on the presence of suitable habitat and soils, are listed in *Table 2*. This list is 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). Those sensitive species that were observed during the 2005 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.*, *Calochortus catalinae*, *Acanthomintha obovata* ssp. *cordata*, *Mucronea californica*); however, due to their relatively low sensitivity level, they are only discussed in the following sections if observed onsite.

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TABLE 2
Sensitive Plant Species Observed or Potentially Occurring at Newhall Ranch

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 2005 field season. No CNDDDB records exist for the Newhall or Val Verde quads; nearest occurrence is in the Santa Ana River. Limited suitable habitat onsite; 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 2005 field season. No CNDDDB records exist for the Newhall or Val Verde quads; nearest occurrence is in the Simi Hills. Suitable habitat exists onsite. 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 2005 field season. No CNDDDB records exist for the Newhall or Val Verde quads; however, suitable habitat present onsite. 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 2005 field season. No CNDDDB records exist for the Newhall or Val Verde quads. <i>Atriplex serenana</i> var. <i>serenana</i> observed onsite. 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 2005 field season. No CNDDDB records exist for the Newhall or Val Verde quads; closest known populations in the western Santa Monica Mountains near Malibu. Not expected to occur within the study area.
<i>Berberis nevini</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 2005 field season. CNDDDB records exist for San Francisquito Canyon at confluence with Santa Clara River; suitable habitat present onsite. Moderate likelihood of occurrence within study area.
<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 2005 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>clavatus</i>	club-haired mariposa lily	None/None	4	chaparral and coastal sage scrub/ perennial herb (geophyte)/March-May	Not observed during 2005 field season. No CNDDDB records exist for Newhall and Val Verde quads. Very low likelihood of occurrence in study area.

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TABLE 2
Sensitive Plant Species Observed or Potentially Occurring at Newhall Ranch

Scientific Name	Common Name	Status Federal/State	CNPS List	Primary Habitat Associations/ Life Form/Blooming Period	Presence or Likelihood of Occurrence Onsite
<i>Calochortus clavatus</i> var. <i>gracilis</i>	slender mariposa lily	None/None	1B	chaparral and coastal sage scrub/perennial herb (geophyte)/March-May	Observed during the 2005 field season on north trending slopes throughout the study area. This species is locally abundant with a total of 180 polygons mapped, containing an estimated 3,093 individuals during the 2005 growing season. CNDDDB records also exist 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 observed during 2005 field season. 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. Moderate likelihood of occurrence within study area.
<i>Calochortus weedii</i> var. <i>vestus</i>	late-flowered mariposa lily	None/None	1B	chaparral, cismontane & riparian woodland/perennial herb (geophyte)/ June-August	Not observed during 2005 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. This species was observed at the head of the Salt Creek drainage in the Santa Susana Mountains to the southwest during the 2003 field season. 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	Observed in chaparral and California sagebrush throughout the survey area.
<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 2005 field season. No CNDDDB records exist for the Newhall or Val Verde quads; however, limited suitable habitat present onsite. 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 2005 field season. No CNDDDB records exist for the Newhall or Val Verde quads; however, suitable habitat present onsite. 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	Observed in mixed chaparral in the study area during the 2005 field season.

2004 Sensitive Plant Survey Results Newhall Ranch Specific Plan Area

TABLE 2
Sensitive Plant Species Observed or Potentially Occurring at Newhall Ranch

Scientific Name	Common Name	Status Federal/State	CNPS List	Primary Habitat Associations/ Life Form/Blooming Period	Presence or Likelihood of Occurrence Onsite
<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 onsite in five general areas within the survey area: Airport Mesa, Grapevine Mesa, Long Canyon, Potrero Canyon, and San Martinez Grande Canyon. A total of 301 polygons were mapped with an estimated 6,249,926 individuals during the 2005 growing season.
<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 2005 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. Moderate 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 2005 field season. No likelihood of occurrence.
<i>Dodecahema leptoceras</i>	slender-horned spineflower	FE/SE	1B	Alluvial scrub on sandy substrate/annual herb/April-June	Not observed during 2005 field season; however, Santa Clara River bottom excluded from survey area. Historic CNDDDB records exist for the Newhall or Val Verde quads in alluvial habitat similar to those present onsite. Moderate likelihood of occurrence within study area.
<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 2005 field season. No CNDDDB records exist for the Newhall or Val Verde quads. Suitable habitat present onsite. Low 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 2005 field season. No CNDDDB records exist for Newhall and Val Verde quads. Unidentified <i>Dudleya cymosa</i> observed on vertical sandstone cliffs and slopewash in 2002 are actually <i>D. lanceolata</i> , a common species. Low likelihood of occurrence within 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 2005 field season. No CNDDDB records exist for Newhall and Val Verde quads. Unidentified <i>Dudleya cymosa</i> observed on vertical sandstone cliffs and slopewash in 2002 are actually <i>D. lanceolata</i> , a common species. Low likelihood of occurrence within study area.

2004 Sensitive Plant Survey Results Newhall Ranch Specific Plan Area

TABLE 2
Sensitive Plant Species Observed or Potentially Occurring at Newhall Ranch

Scientific Name	Common Name	Status Federal/State	CNPS List	Primary Habitat Associations/ Life Form/Blooming Period	Presence or Likelihood of Occurrence Onsite
<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 2005 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. 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 2005 field season. No CNDDDB records exist for the Newhall or Val Verde quads. Suitable habitat exists onsite. Low likelihood of occurrence within study area.
<i>Erodium macrophyllum</i>	round-leaved filaree	None/None	2	cismontane woodland and grasslands on clay substrate/annual herb/March-May	Not observed during 2005 field season. No CNDDDB records exist for the Newhall or Val Verde quads; however records exist for Simi Valley, and this plant was observed in the hills east of Castaic Lake in 2003. 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 2005 field season. A <i>Helianthus</i> population, discovered in 2002 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, but determined by other experts not to be this species. Based on pollen electron microscopy and chromosome counts, it is likely that the Newhall <i>Helianthus</i> species is a hybrid between <i>H. nuttallii</i> and <i>H. californicus</i> or an intermediate evolutionary step between the two species (Porter and Fraga 2004). No suitable habitat observed in study area.
<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 2005 field season. No CNDDDB records exist for the Newhall or Val Verde quads. Suitable habitat present onsite. 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 onsite during 2005 field season. Observed in past years's surveys in California sagebrush and chaparral onsite. High likelihood of occurrence in study area.
<i>Juncus acutus</i> ssp. <i>leopoldii</i>	southwestern spiny rush	None/None	4	coastal dunes, meadows, seeps, marshes, and swamps/ perennial herb/May-June	Observed in mesic riparian areas onsite.

2004 Sensitive Plant Survey Results Newhall Ranch Specific Plan Area

TABLE 2
Sensitive Plant Species Observed or Potentially Occurring at Newhall Ranch

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 2005 field season. Nearest occurrences are in San Fernando and Sunland. 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 2005 field season. Moderate likelihood of occurrence on banks of Santa Clara River and other mesic areas onsite. No CNDDDB records exist for the Newhall or Val Verde quads. Limited suitable habitat present onsite. Low likelihood of occurrence within study area.
<i>Nemophila parviflora</i> var. <i>quercifolia</i>	oak-leaved nemophila	None/None	4	cismontane woodland, lower montane coniferous forest/annual herb/may-June	Not observed onsite during 2005 field season. Observed in past years's surveys in oak woodland east of Grapevine Mesa. High likelihood of occurrence in study area.
<i>Nolina cismontana</i>	chaparral nolina	None/None	1B	chaparral, coastal sage scrub on sandstone or gabbro substrate/ perennial shrub May- July	Not observed during 2005 field season. No CNDDDB records exist for the Newhall or Val Verde quads. 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	Not observed during 2005 field season. This plant was identified as onsite by Dudek in 2002; however, recent investigations indicate that the <i>Opuntia basilaris</i> plants on Newhall Ranch are not <i>O. basilaris</i> var. <i>brachyclada</i> , but are <i>O. basilaris</i> var. <i>ramosa</i> .
<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 2005 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.
<i>Rorippa gambelii</i>	Gambel's watercress	FE/ST	1B	Marsh and swamps (freshwater and brackish)/ perennial herb/April-June	Not observed during 2005 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>Senecio aphanactis</i>	rayless ragwort	None/None	2	chaparral, coastal sage scrub, cismontane woodland on alkaline substrate/annual herb/January-April	Not observed during 2005 field season. Historic CNDDDB record for Saugus, south of Santa Clara River. Suitable habitat onsite. Moderate 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 2005 field season. No CNDDDB records exist for the Newhall or Val Verde quads; suitable habitat present onsite. Moderate likelihood of occurrence within study area.

2004 Sensitive Plant Survey Results Newhall Ranch Specific Plan Area

TABLE 2
Sensitive Plant Species Observed or Potentially Occurring at Newhall Ranch

Scientific Name	Common Name	Status Federal/State	CNPS List	Primary Habitat Associations/ Life Form/Blooming Period	Presence or Likelihood of Occurrence Onsite
<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 2005 field season. No CNDDB records exist for the Newhall or Val Verde quads; nearest occurrence at Point Dume. Limited suitable habitat present onsite. Low likelihood of occurrence within study area.

Legend

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

2005 Sensitive Plant Survey Results Newhall Ranch

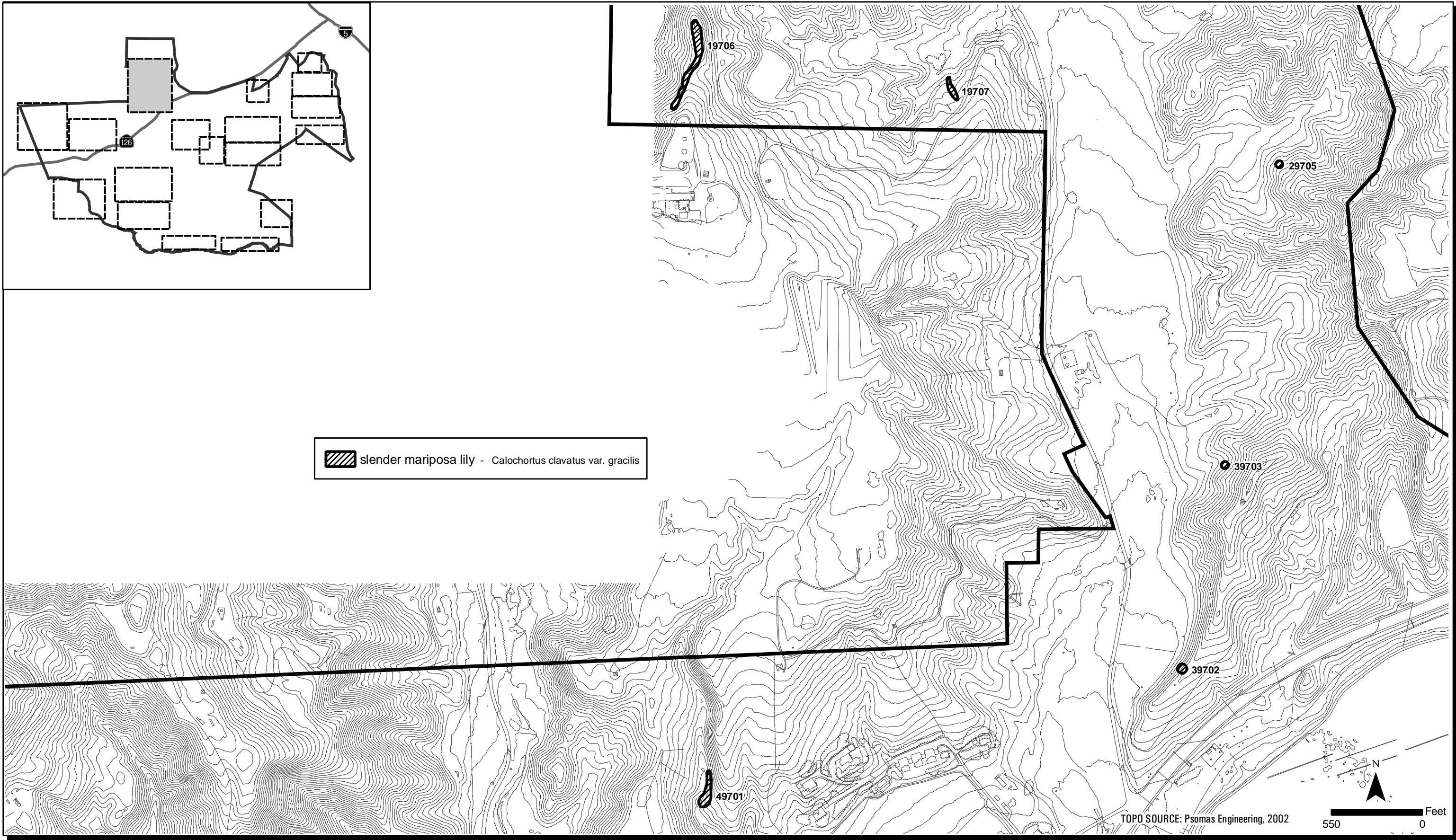
Figures 3 through 20 depict the locations of sensitive species, including SFVS, on the NR SPA. Labels for each of the polygons in the figures correlate with those in Tables 3 through 8, which contain estimates for the numbers of individuals within each polygon. Any additional information regarding the mapping for each sensitive species is included in the sections below (Sections 4.2.1 through 4.2.6).

4.2.1 *Calochortus clavatus* var. *gracilis* (slender mariposa lily)

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; CNDDDB 2002). Other varieties of this species documented from southern California include: 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 m. 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 mariposa have a prominent red line above the nectary on the petal, as is the case with the slender mariposa lily.

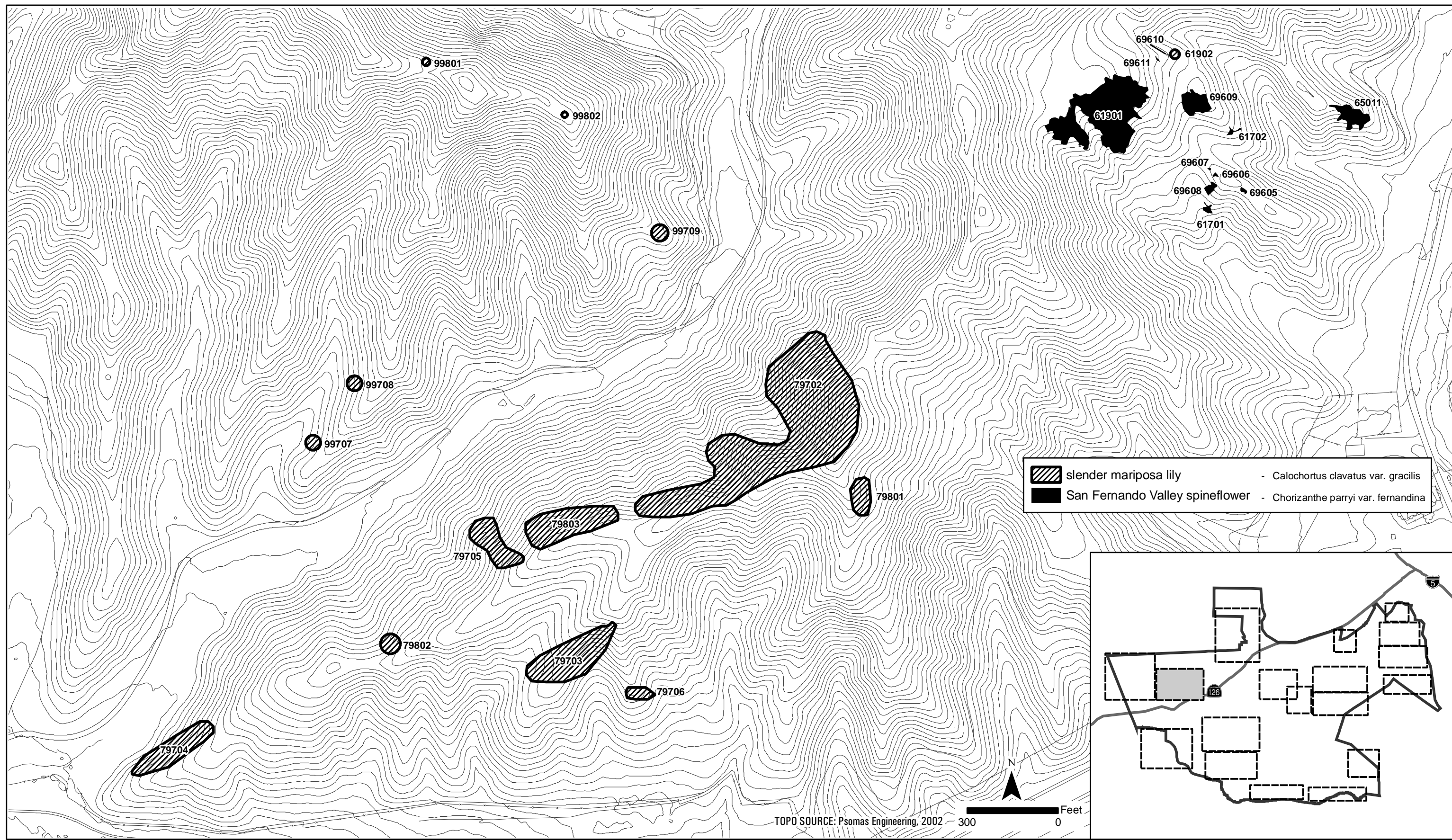
Multiple polygons of mariposa lily were mapped within the study area by drawing boundaries on aerial photograph field maps around the areas that contained the mariposa lily. Surveys within the study area were conducted during and after the blooming season for the slender mariposa lily; therefore, some estimates were made based on the number of fruiting individuals observed. The fruiting individuals were much more cryptic than the flowering plants; therefore, it is expected that only a portion of the plants that were in flower earlier were observed. It is not possible to estimate what portion was observed. Moreover, geophytes like *Calochortus* generally only have a percentage of the plants flower in any given year, and the non-flowering individuals are generally not as visible.

Within the NR SPA study area, the slender mariposa lily was found primarily on east, northeast, and southwest-facing ridges and slopes in California sagebrush, California buckwheat and California annual grassland series (Figures 3 through 15 and 17 through 20). The plants were generally mapped in areas of high vegetative cover and a variety of soil types (e.g., gravelly loam, sandy loam, rocky clay). This species is locally abundant within the NR SPA study area: a total of 180 polygons were mapped with a polygon size ranging from 58 to 158,058 square feet. The estimated number of individuals within each polygon ranges from 1 to 700, with a total



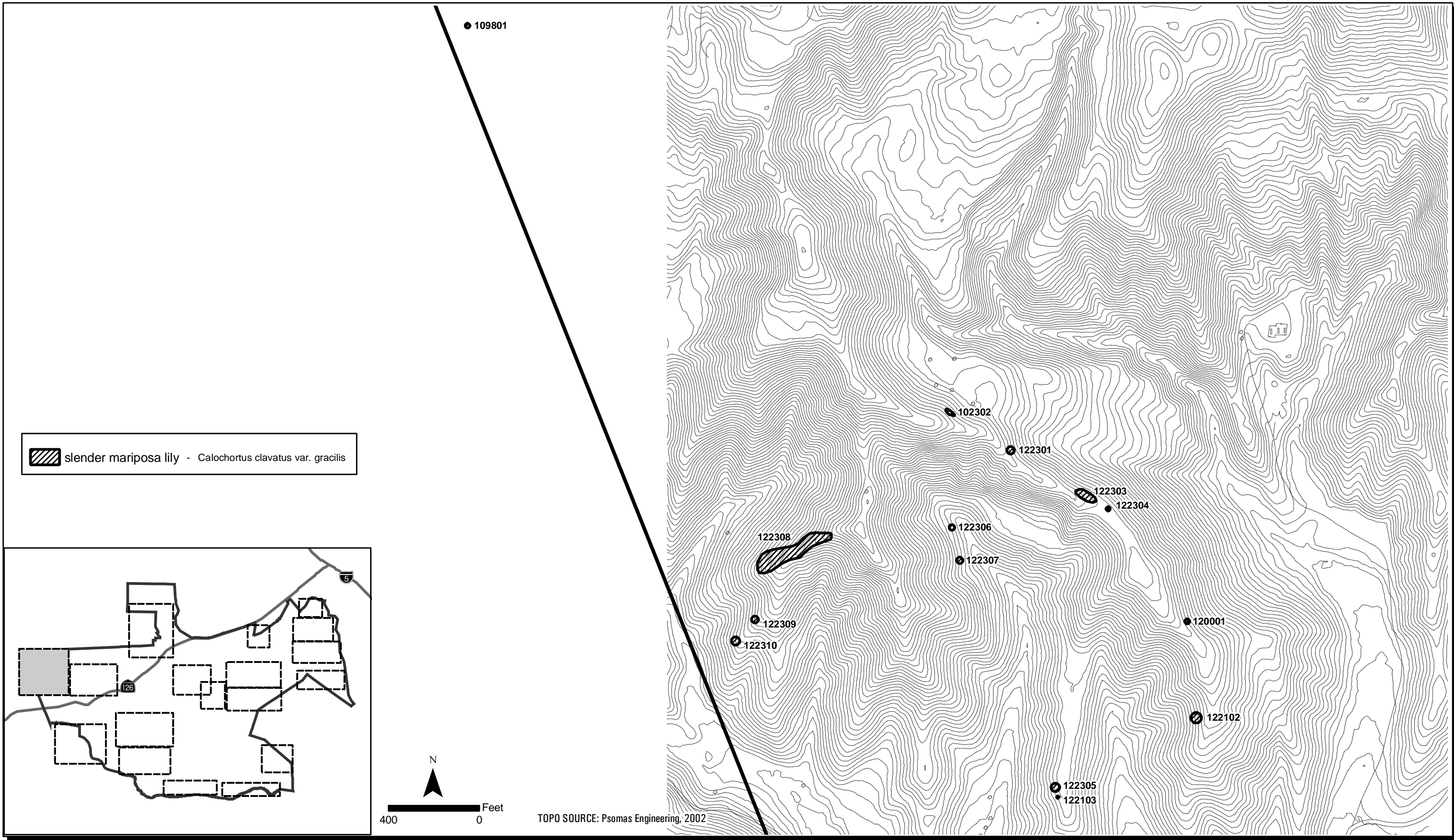
Newhall Ranch
2005 Sensitive Plant Survey Results

FIGURE
3



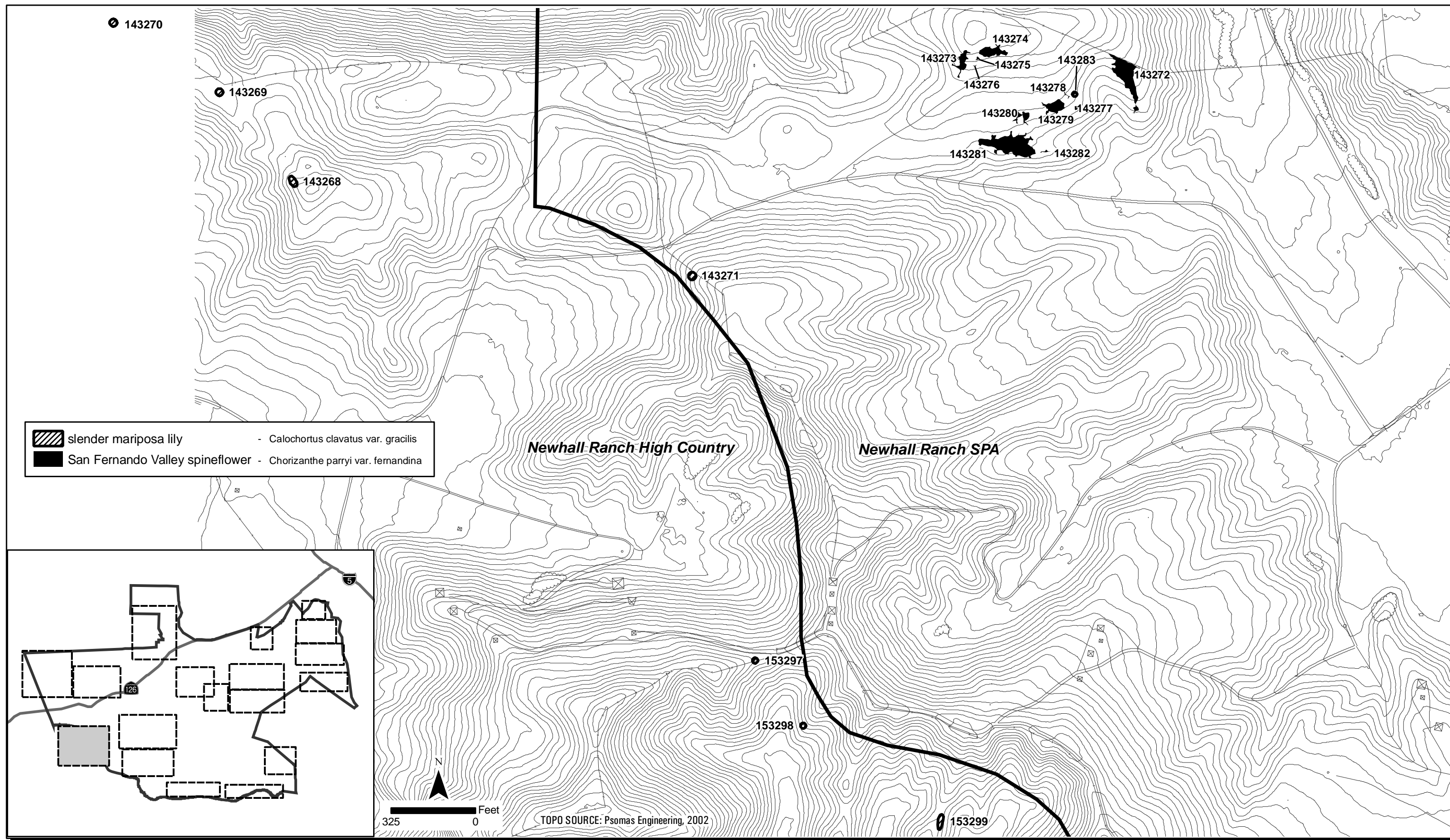
Newhall Ranch
2005 Sensitive Plant Survey Results

FIGURE
4

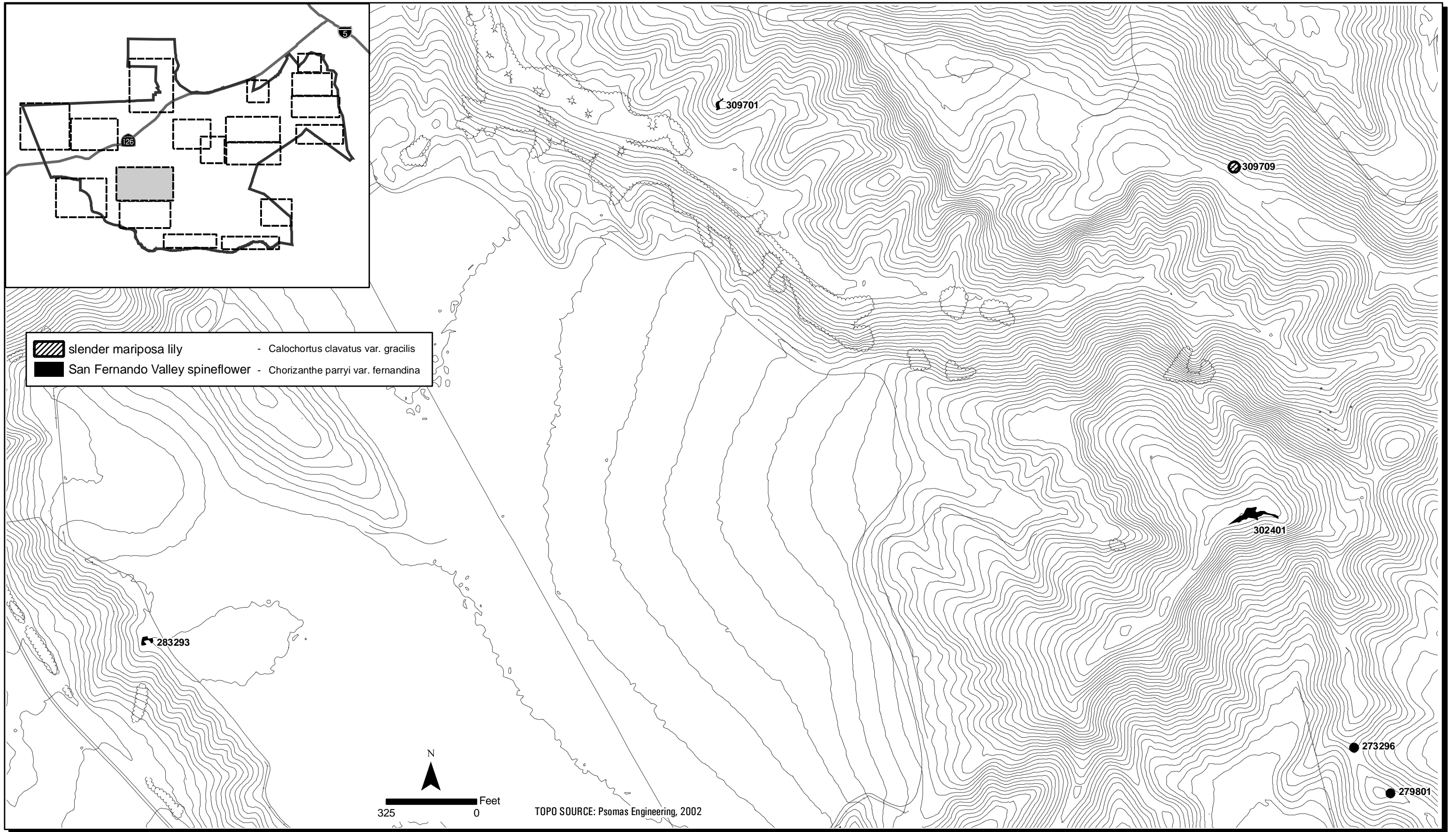


Newhall Ranch
2005 Sensitive Plant Survey Results

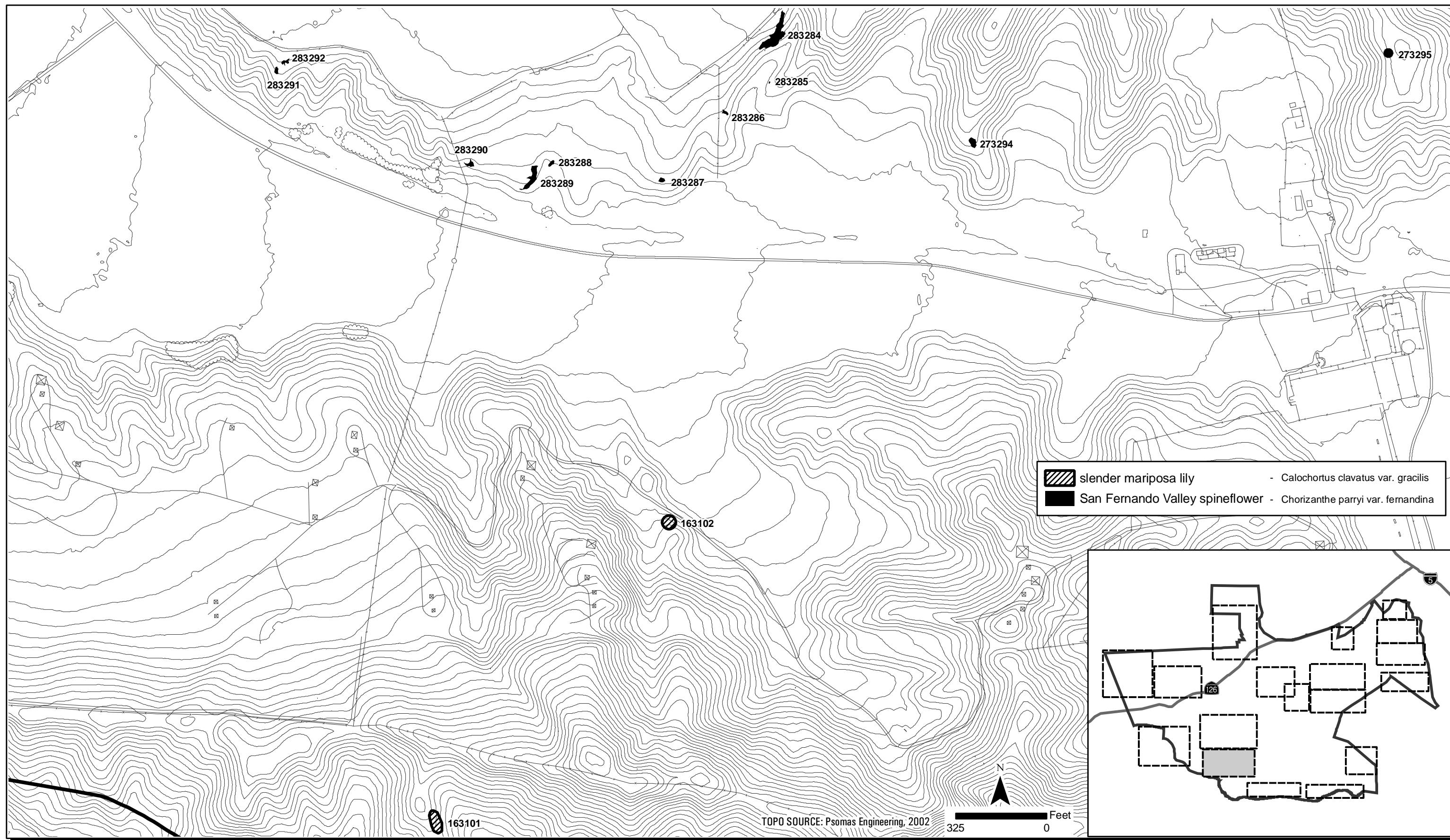
FIGURE
5



Newhall Ranch
2005 Sensitive Plant Survey Results

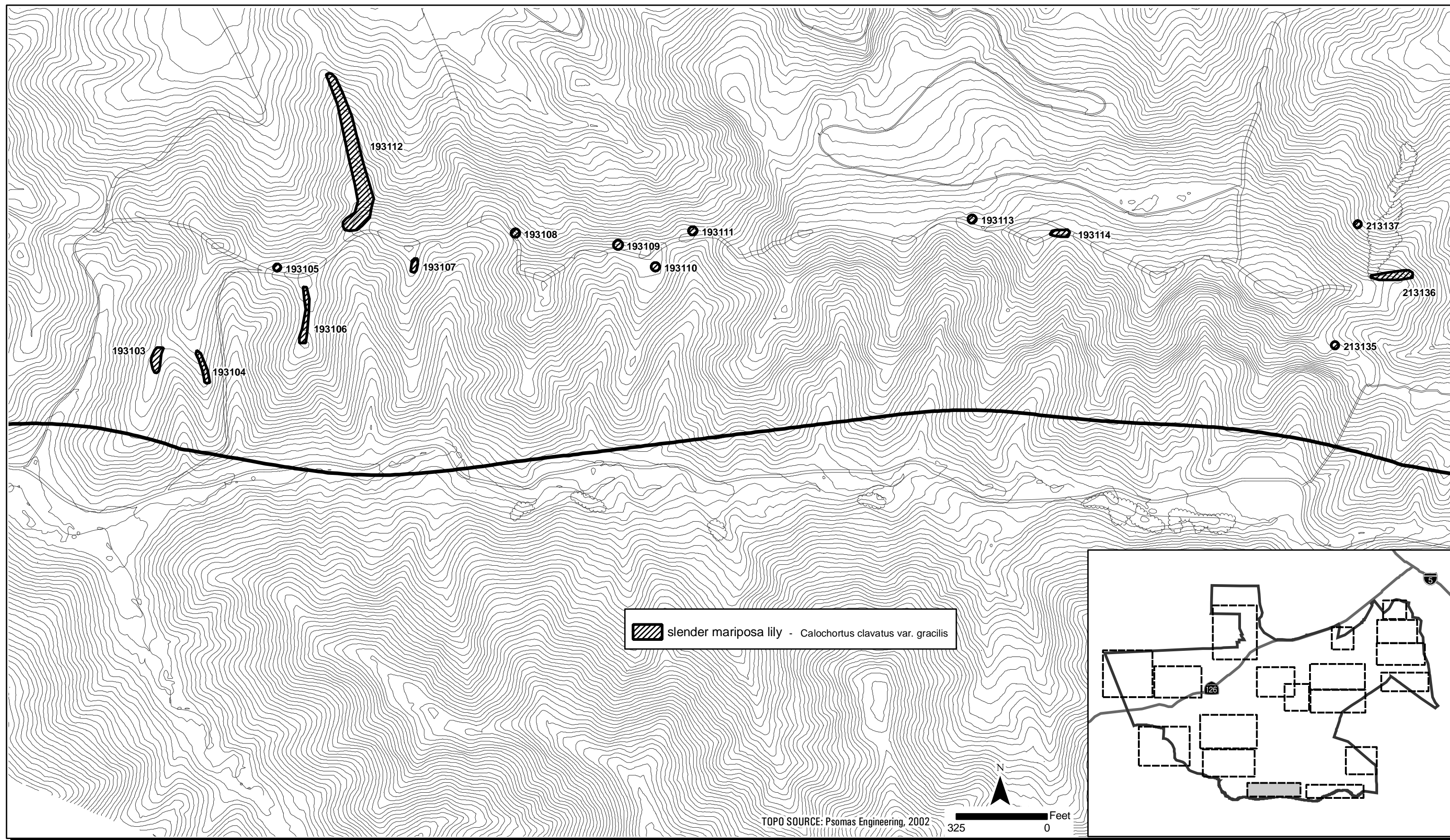


Newhall Ranch
2005 Sensitive Plant Survey Results

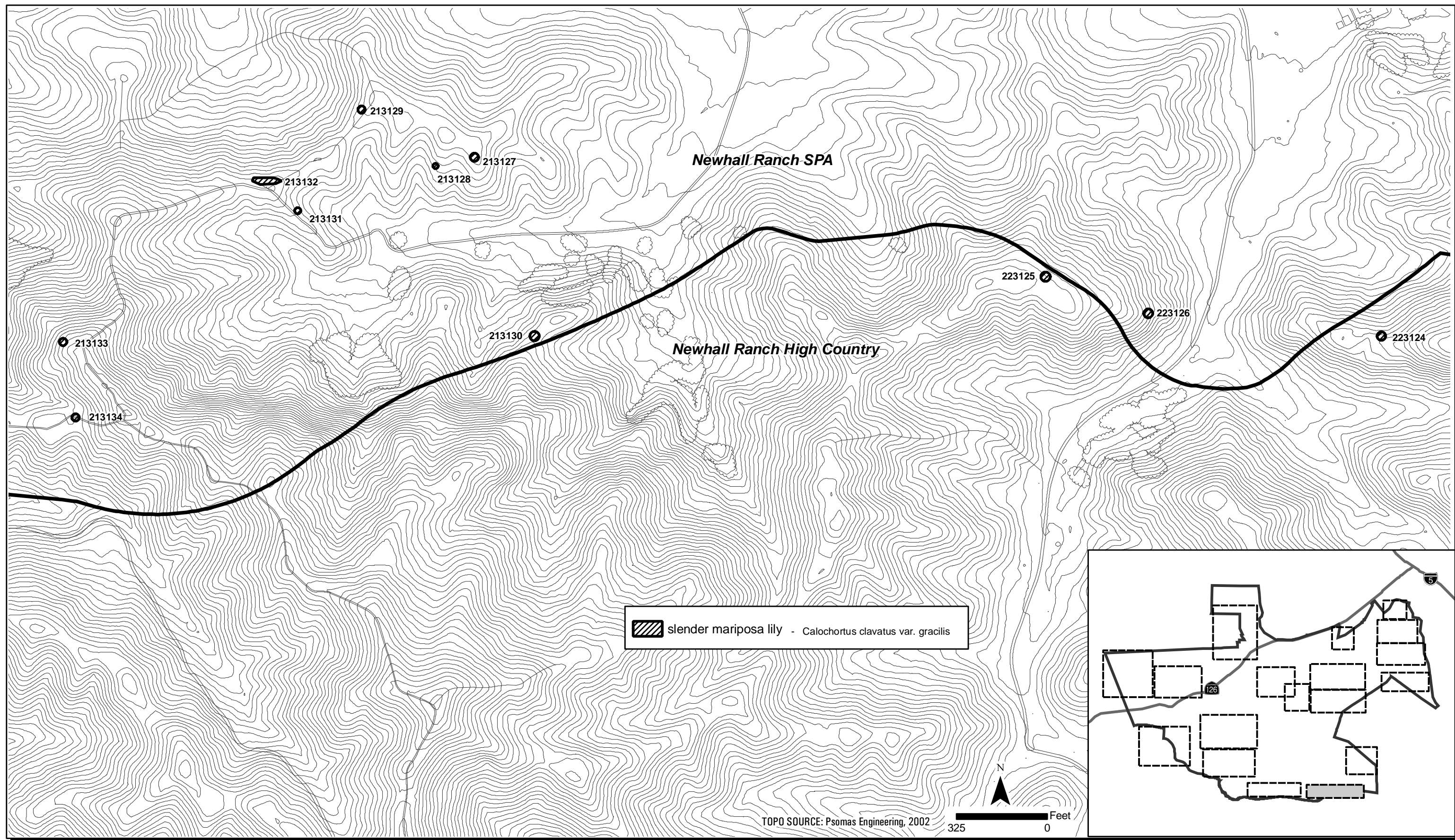


Newhall Ranch
2005 Sensitive Plant Survey Results

FIGURE
8

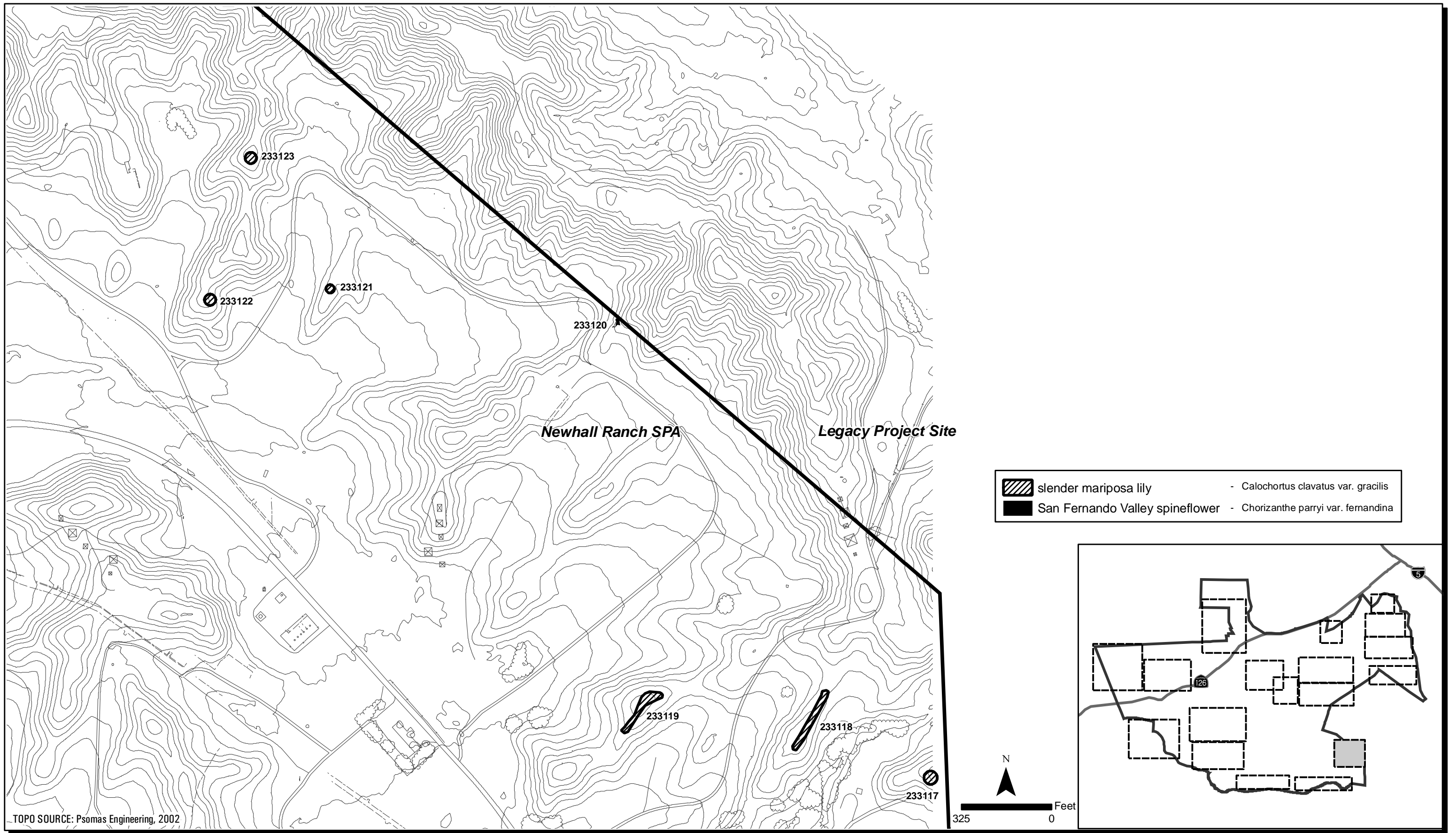


Newhall Ranch
2005 Sensitive Plant Survey Results

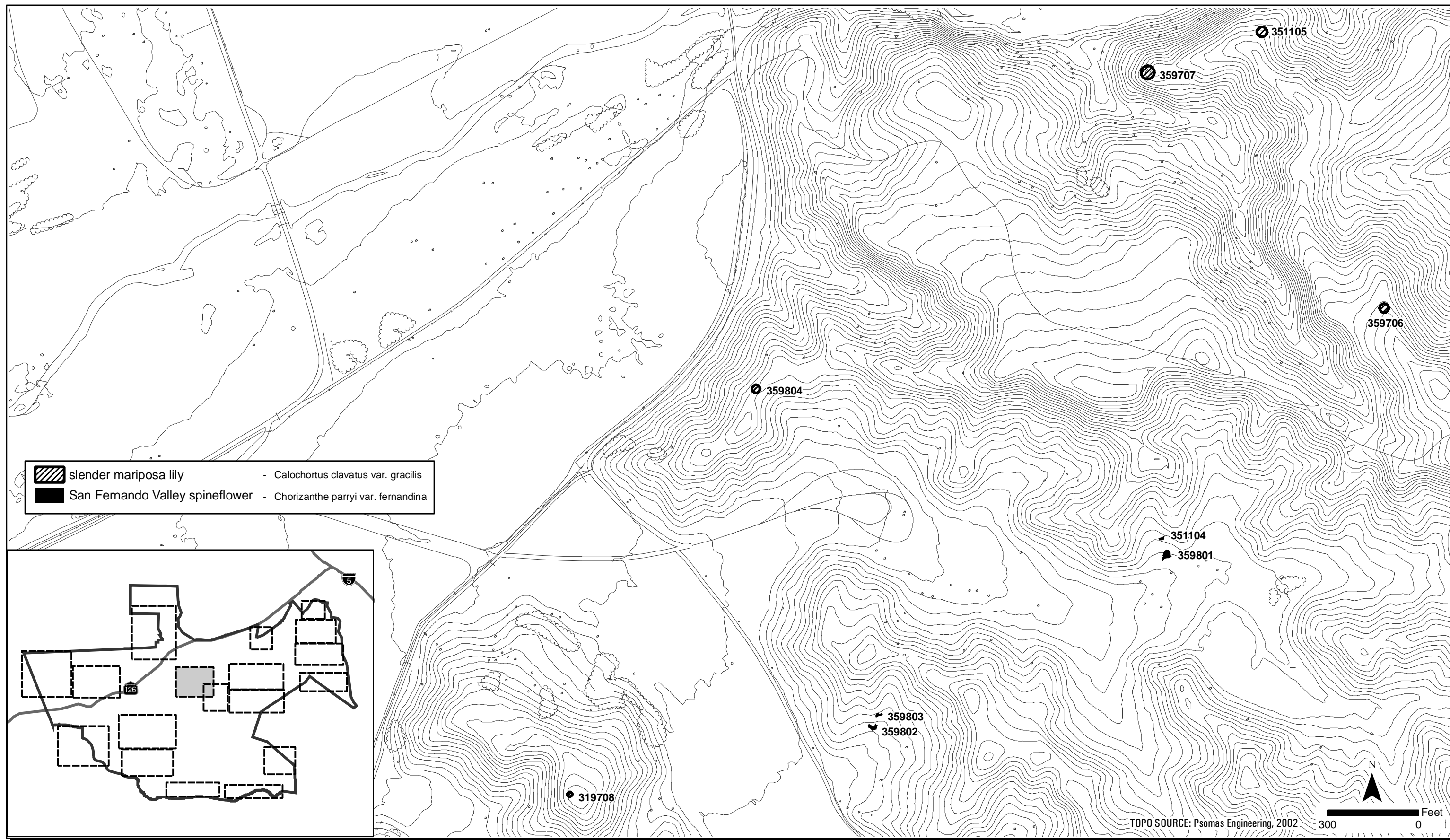


Newhall Ranch
2005 Sensitive Plant Survey Results

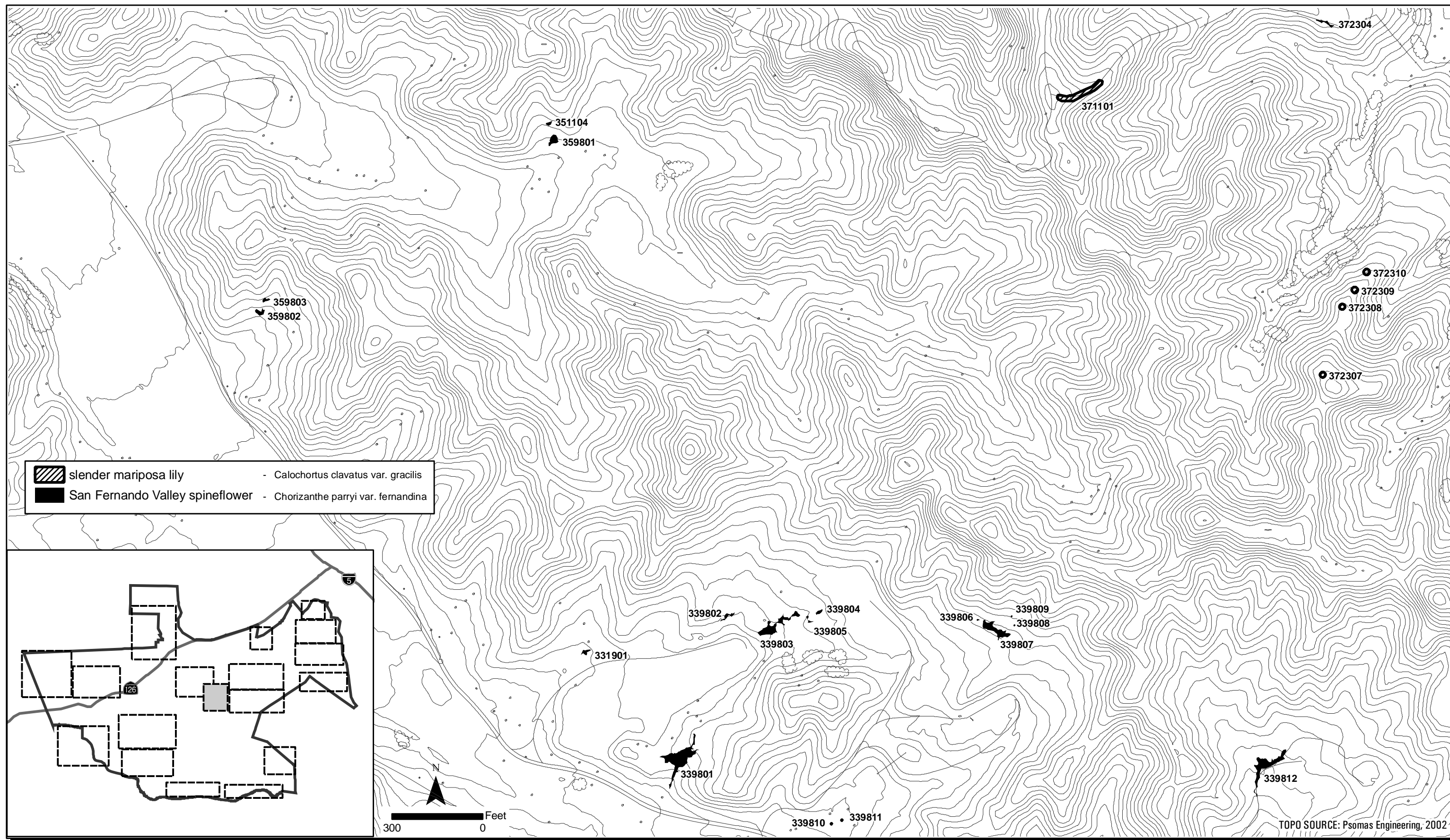
FIGURE
10



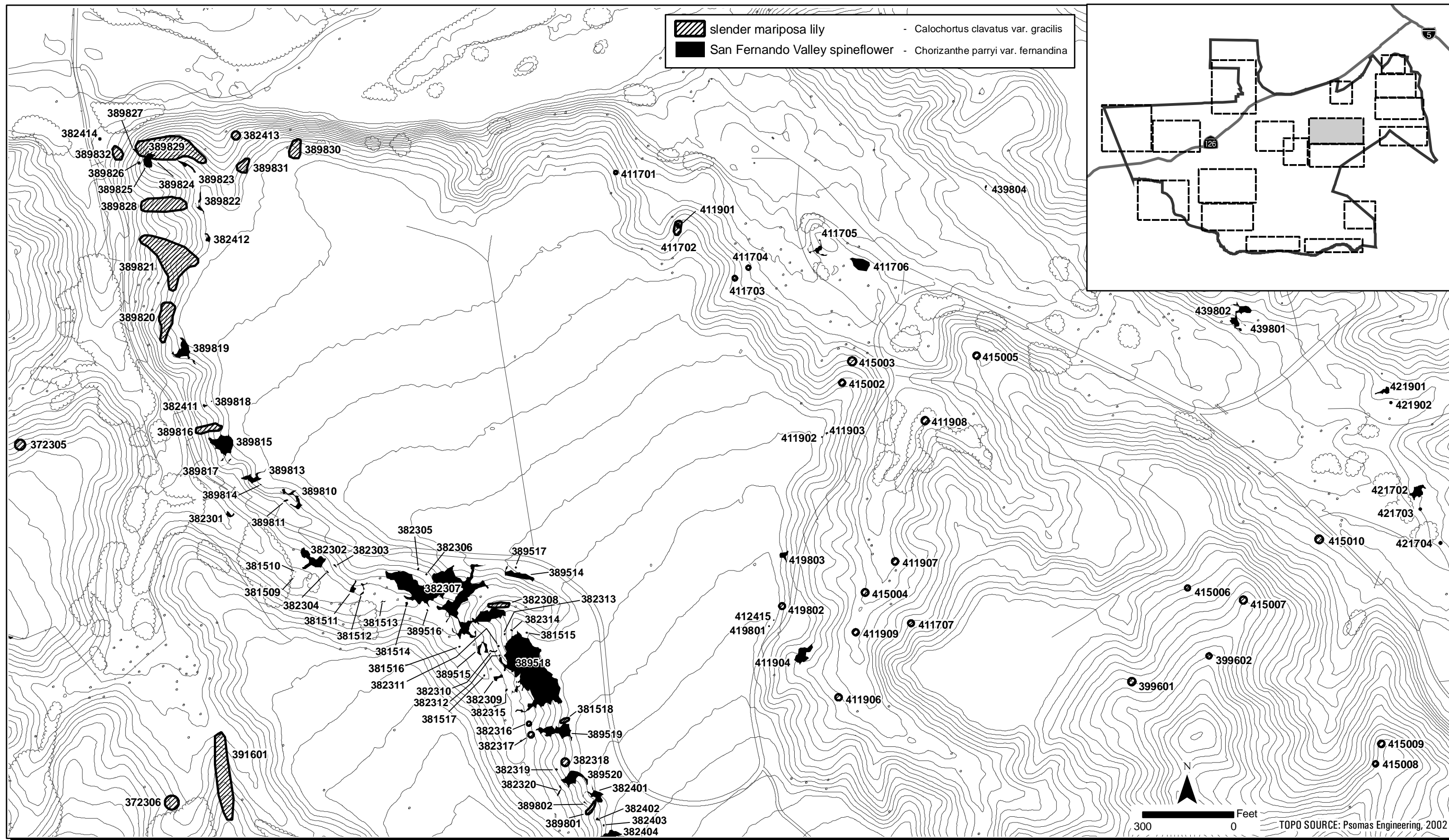
Newhall Ranch
2005 Sensitive Plant Survey Results



Newhall Ranch
2005 Sensitive Plant Survey Results

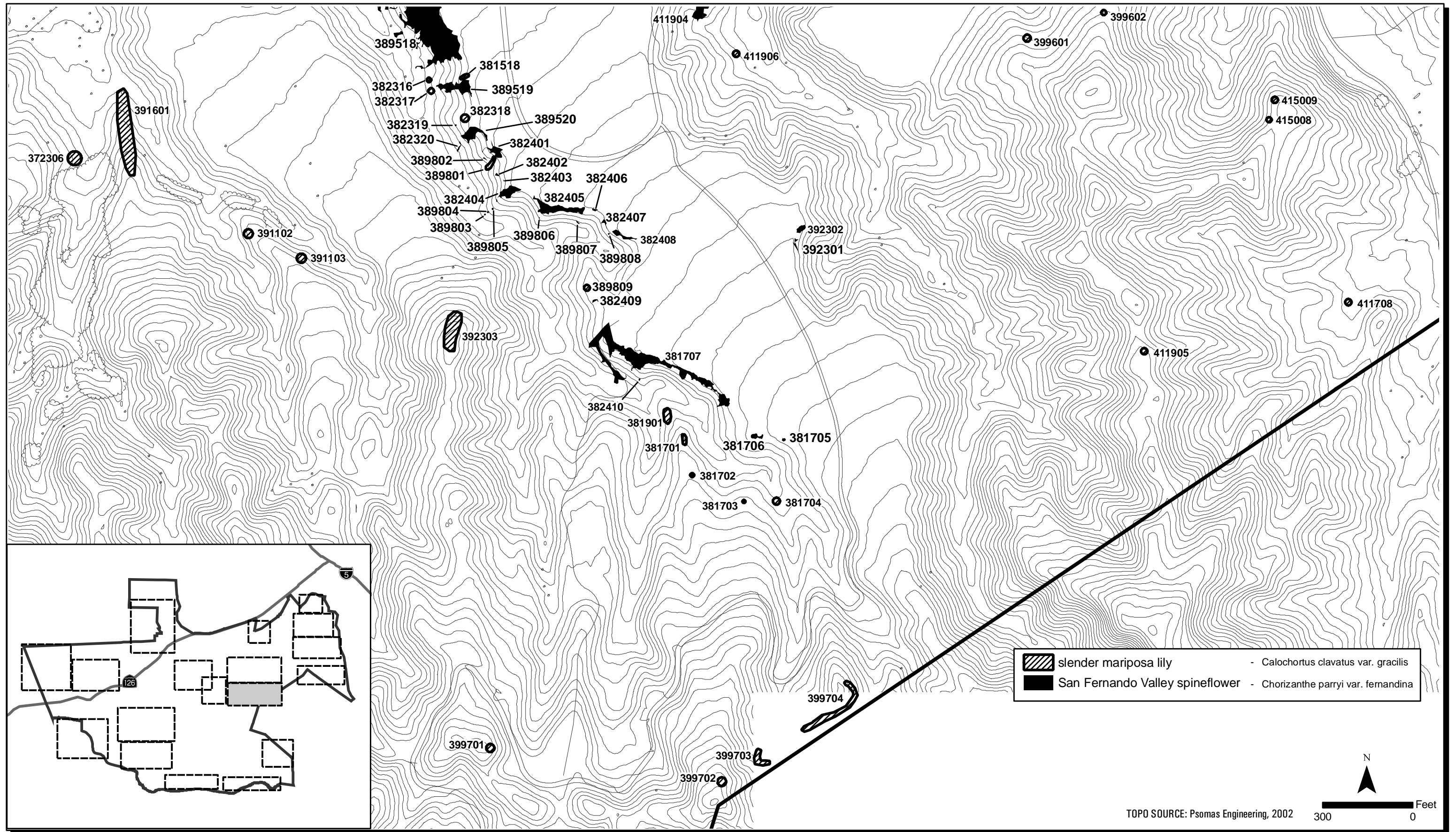


Newhall Ranch
2005 Sensitive Plant Survey Results

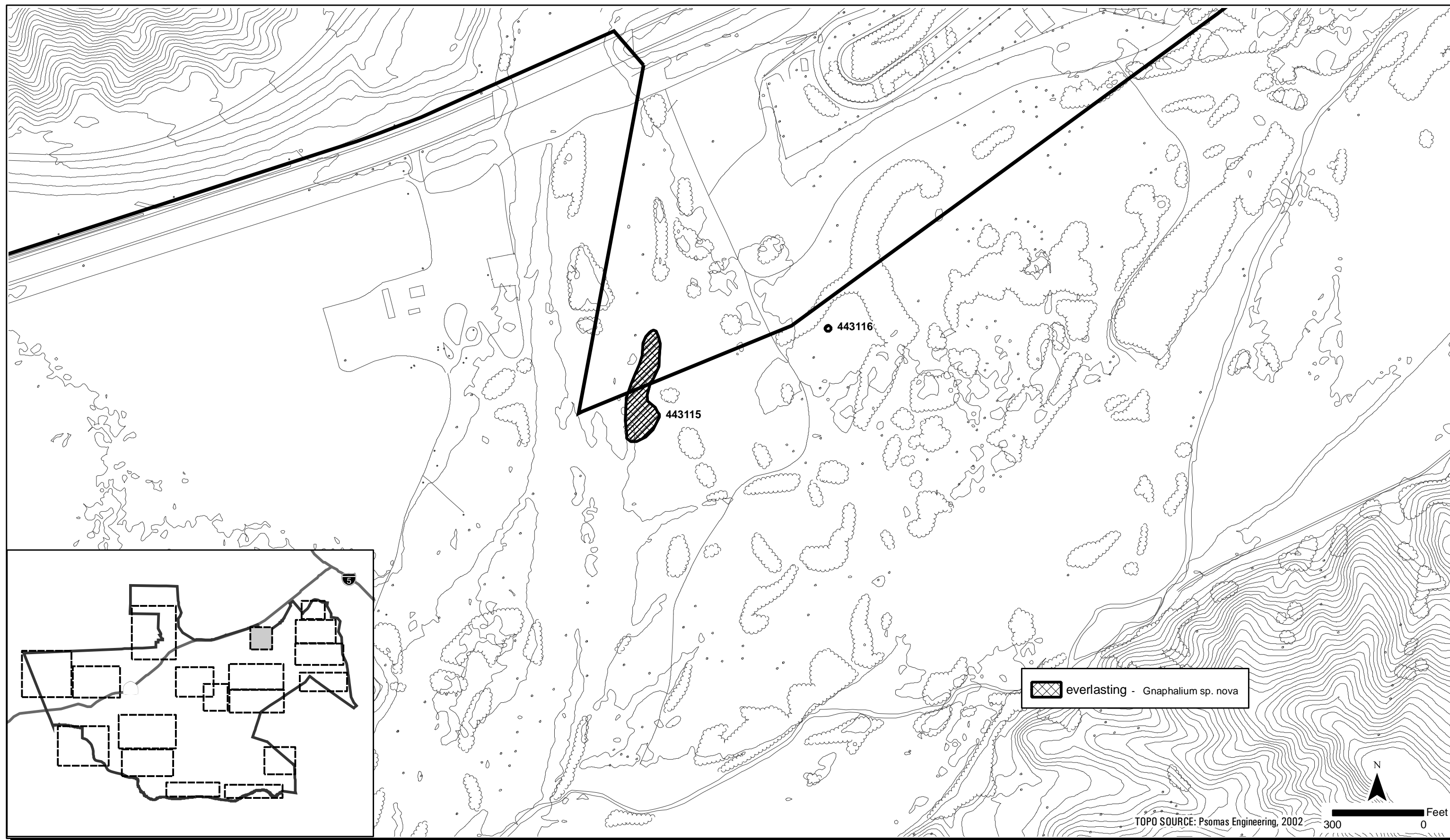


Newhall Ranch
2005 Sensitive Plant Survey Results

FIGURE 14

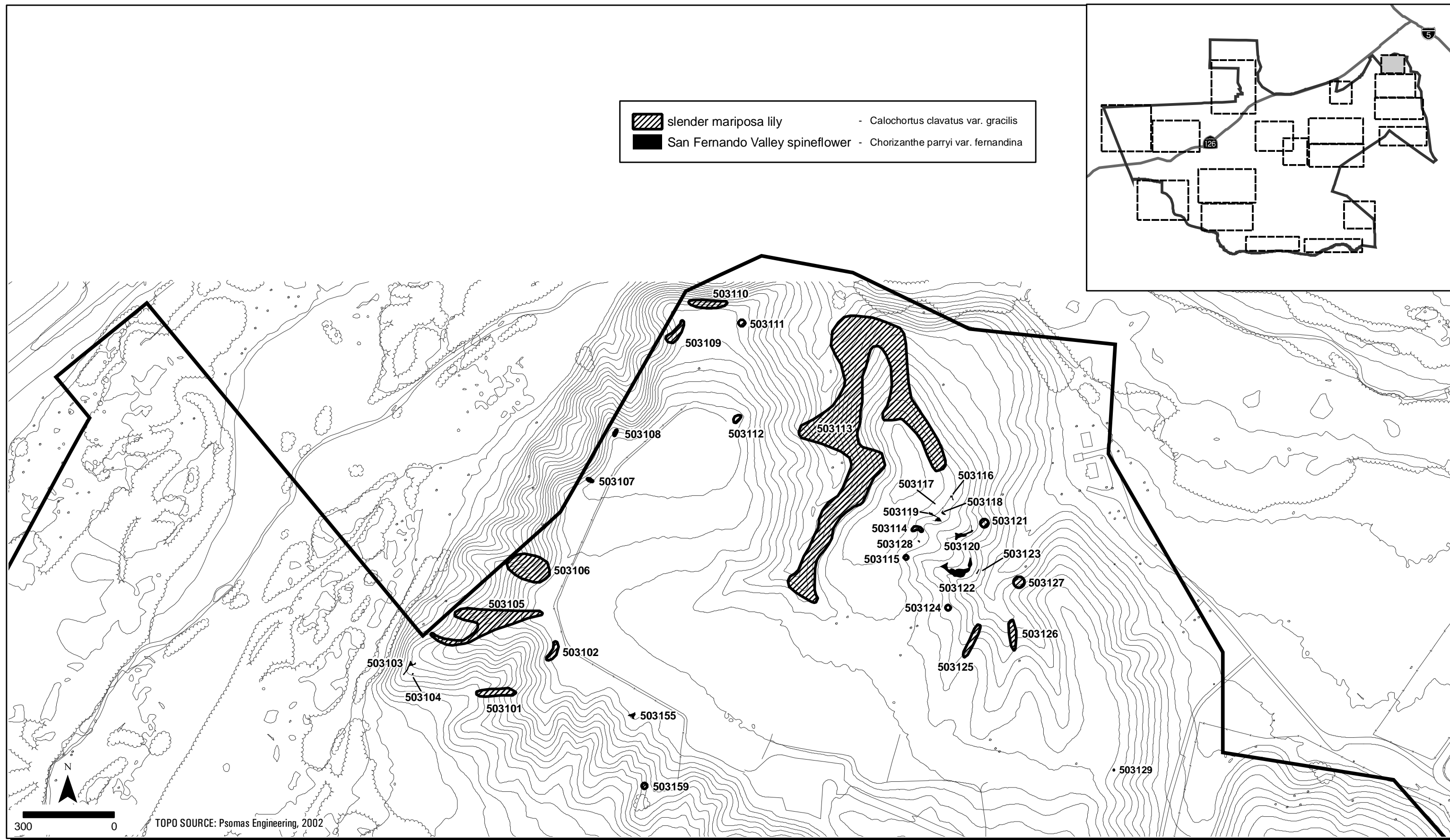


Newhall Ranch
2005 Sensitive Plant Survey Results

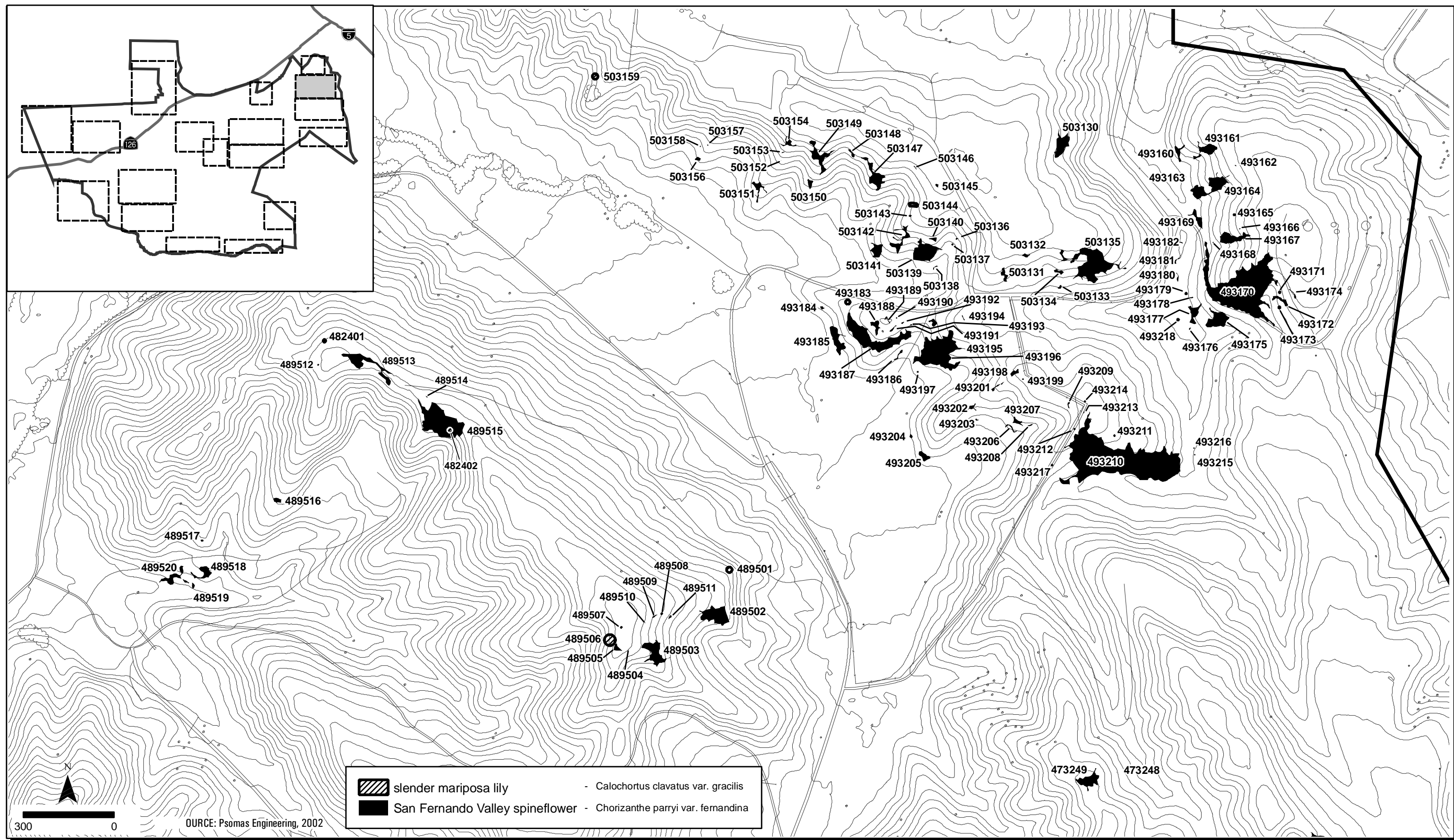


Newhall Ranch
2005 Sensitive Plant Survey Results

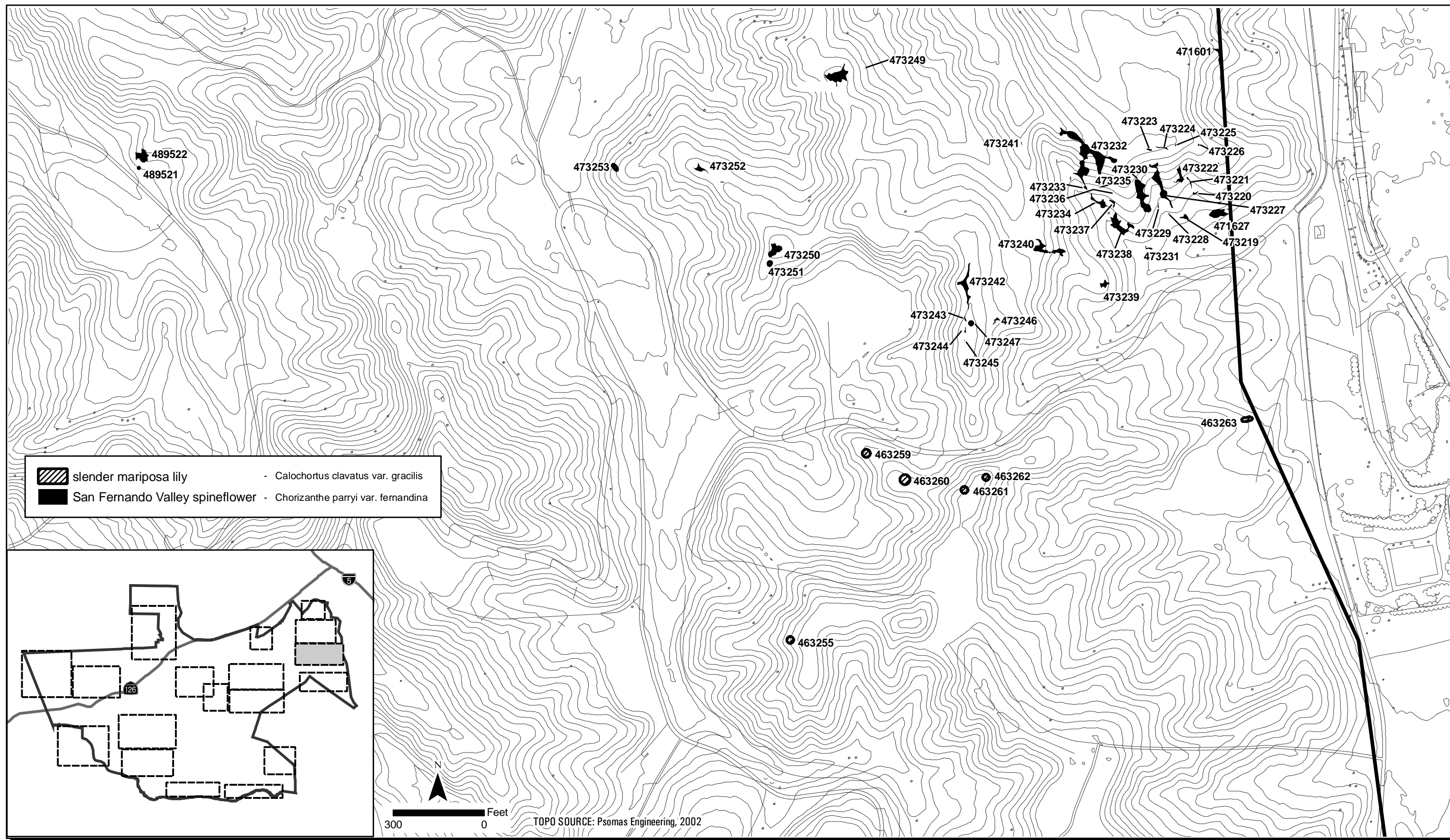
FIGURE
16



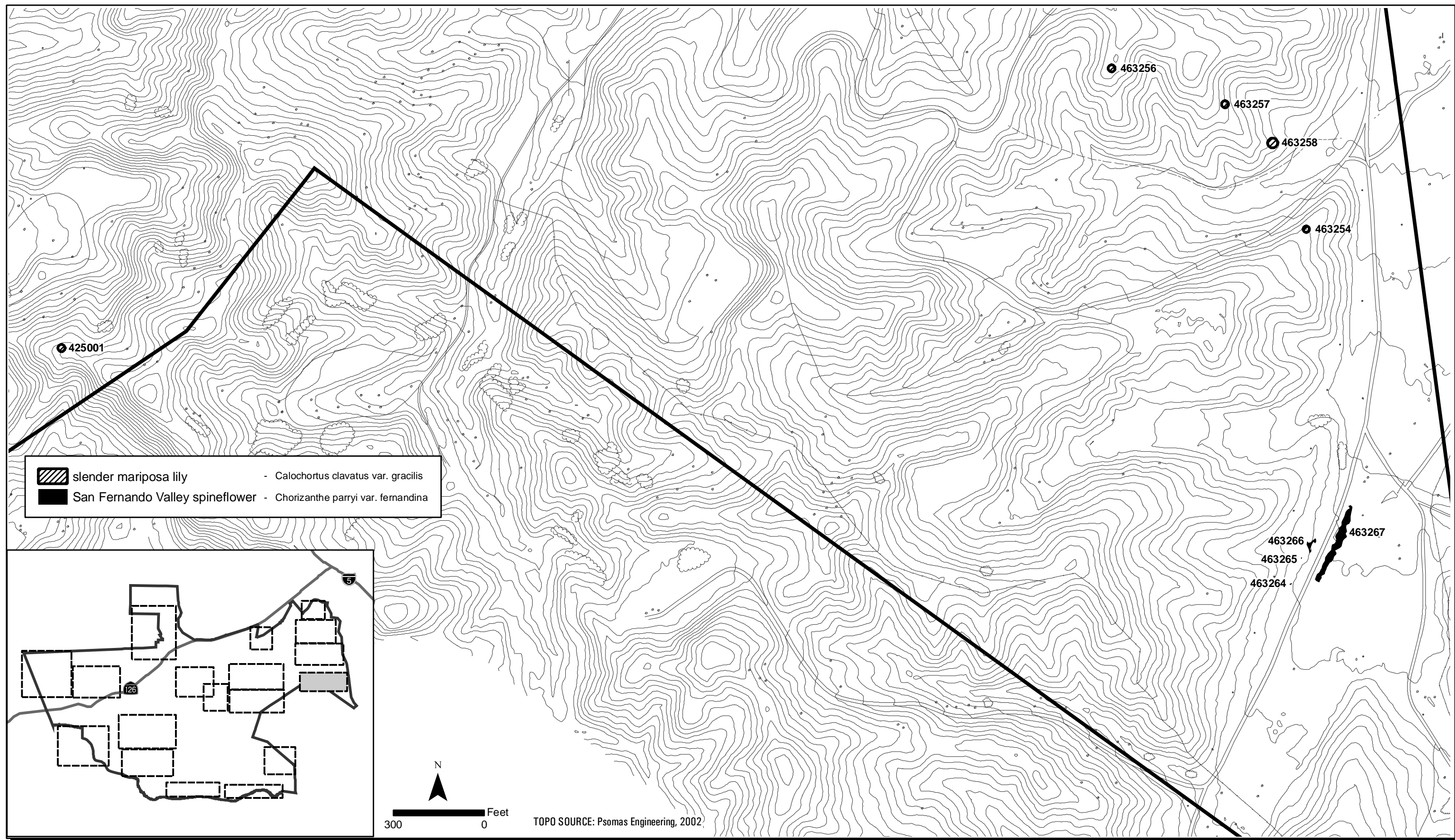
Newhall Ranch
2005 Sensitive Plant Survey Results



Newhall Ranch 2005 Sensitive Plant Survey Results



Newhall Ranch
2005 Sensitive Plant Survey Results



Newhall Ranch
2005 Sensitive Plant Survey Results

2005 Sensitive Plant Survey Results Newhall Ranch

of approximately 3,071 individuals observed within the project site during the 2005 field season (see *Table 3*). CNDDDB forms for each occurrence on this site are included in *Appendix C*.

TABLE 3 Slender Mariposa Lily Summary of Occurrence Data for the Newhall Ranch SPA		
Polygon Name	Polygon area (sq. ft.)	Estimated Number of Individuals
19706	19,572	26
19707	3,652	25
29705	1,489	1
39702	2,504	3
39703	1,489	4
49701	8,449	17
61902	702	1
79702	158,058	192
79703	29,363	12
79704	18,484	78
79705	14,079	73
79706	3,065	4
79801	6,591	5
79802	3,345	4
79803	26,000	40
99707	1,922	1
99708	1,922	1
99709	2,345	4
99801	503	2
99802	283	20
102302	548	700
109801	324	4
120001	367	6
122102	1,689	1
122103	83	1
122301	855	6
122303	2,940	32
122304	263	3
122305	1,079	1
122306	480	5
122307	609	22
122308	20,761	50
122309	715	2

2005 Sensitive Plant Survey Results Newhall Ranch

TABLE 3
Slender Mariposa Lily Summary of
Occurrence Data for the Newhall Ranch SPA

Polygon Name	Polygon area (sq. ft.)	Estimated Number of Individuals
122310	1,043	10
143268	842	123
143269	611	6
143270	651	4
143271	688	12
143283	263	4
153297	361	1
153298	361	1
153299	946	5
163101	2,510	28
163102	1,839	7
193103	2,538	30
193104	1,973	3
193105	541	4
193106	3,506	10
193107	961	5
193108	736	2
193109	865	2
193110	736	1
193111	736	2
193112	26,929	50
193113	692	1
193114	1,426	4
213127	692	1
213128	281	1
213129	541	1
213130	887	1
213131	389	2
213132	1,873	4
213133	563	1
213134	563	1
213135	541	2
213136	3,764	10
213137	541	1
223124	736	1
223125	887	2

2005 Sensitive Plant Survey Results Newhall Ranch

TABLE 3
Slender Mariposa Lily Summary of
Occurrence Data for the Newhall Ranch SPA

Polygon Name	Polygon area (sq. ft.)	Estimated Number of Individuals
223126	801	1
233117	1,839	1
233118	5,076	22
233119	4,714	25
233121	736	1
233122	1,320	0
233123	1,320	2
309709	1,137	2
319708	196	1
351105	836	2
359706	693	3
359707	1,499	7
359804	533	10
371101	2,607	4
372305	888	1
372306	1,672	4
372307	250	1
372308	260	1
372309	305	8
372310	305	1
382316	170	1
382317	274	1
382318	501	11
381518	292	7
381701	439	28
381702	141	2
381703	86	2
381704	430	5
381901	1,023	6
382308	924	6
382413	577	32
389801	530	3
389809	303	1
389816	1,753	10
389820	4,329	50
389821	14,628	200

2005 Sensitive Plant Survey Results Newhall Ranch

TABLE 3
Slender Mariposa Lily Summary of
Occurrence Data for the Newhall Ranch SPA

Polygon Name	Polygon area (sq. ft.)	Estimated Number of Individuals
389828	6,101	30
389829	13,065	125
389830	1,915	10
389831	1,301	10
389832	1,156	20
391102	699	1
391103	743	1
391601	11,233	13
392303	5,239	9
399601	456	1
399602	228	1
399701	583	5
399702	655	6
399703	1,403	4
399704	4,252	34
411701	102	5
411702	925	20
411703	182	3
411704	150	5
411707	297	2
411708	351	1
411905	346	1
411906	351	1
411907	351	1
411908	438	1
411909	316	1
415002	316	1
415003	561	3
415004	383	20
415005	351	10
415006	228	1
415007	438	3
415008	228	1
415009	351	1
415010	509	1
419802	303	4

2005 Sensitive Plant Survey Results Newhall Ranch

TABLE 3
Slender Mariposa Lily Summary of
Occurrence Data for the Newhall Ranch SPA

Polygon Name	Polygon area (sq. ft.)	Estimated Number of Individuals
425001	434	1
463254	357	2
463255	410	1
463256	419	1
463257	430	6
463258	839	3
463259	557	1
463260	868	3
463261	426	1
463262	362	8
463263	412	3
473247	104	1
473251	114	15
473253	201	3
482401	58	10
482402	261	1
489501	261	1
489506	1,046	3
493183	170	1
503101	2,701	40
503102	1,197	15
503105	15,692	100
503106	9,718	40
503107	147	3
503108	159	3
503109	1,835	15
503110	2,653	25
503111	366	7
503112	421	4
503113	125,514	200
503114	401	6
503115	169	1
503121	572	12
503124	239	1
503125	1,909	15
503126	1,782	15

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TABLE 3 Slender Mariposa Lily Summary of Occurrence Data for the Newhall Ranch SPA		
Polygon Name	Polygon area (sq. ft.)	Estimated Number of Individuals
503127	1,056	10
503144	260	5
503159	276	4
Total	683,231	3,093

4.2.2 *Calystegia peirsonii* (Peirson's morning-glory)

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, Joshua tree series) at elevations which exceed 3,000 feet AMSL, although there are records in the CNDDDB for lower elevations in the local area. It was RECON's opinion (1996) that chaparral morning-glory (*Calystegia macrostegia* ssp. *cyclostegia*) was the more common species; however, after reviewing the floral bracts, leaf shape, and its glabrous nature, it is Dudek's opinion that the morning-glory observed in the study area is Peirson's morning-glory. This species was also recorded onsite during limited focused surveys for sensitive plant species conducted in 1992 (Dames and Moore 1993).

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 California annual grassland series throughout the study area. CNDDDB forms were not completed for this species because of its relatively low sensitivity.

4.2.3 *Cercocarpus betuloides* var. *blancheae* (island mountain-mahogany)

Island mountain-mahogany has no state or federal status, but is found on List 4 of the CNPS *Inventory*. It is an evergreen shrub that occurs as part of the chaparral in Los Angeles and Ventura counties, as well as on several of the Channel Islands (CNPS 2001). This species was not observed during limited focused surveys for sensitive plant species conducted in 1992 (Dames and Moore 1993) or general botany surveys conducted in 1995 (RECON and Impact Sciences 1996).

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Onsite, island mountain-mahogany occurs as an occasional component of chaparral series at the base of north-facing slopes. CNDDDB forms were not completed for this species because of the relatively low sensitivity of this species.

4.2.4 *Chorizanthe parryi* var. *fernandina* (San Fernando Valley spineflower)

San Fernando Valley spineflower is state-listed as endangered, a candidate for federal listing, and found on List 1B of the *CNPS Inventory*. 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. SFVS was not observed onsite during limited focused surveys for sensitive plant species conducted in 1992 (Dames and Moore 1993) or general botany surveys conducted in 1995 (RECON and Impact Sciences 1996).

SFVS polygons were identified in several general locations of the study area for the Newhall Ranch Specific Plan including areas around Airport Mesa (including Dead-End Canyon), Grapevine Mesa (including Lion Canyon and Long Canyon), Potrero Canyon, and San Martinez Canyon. The polygons for these occurrences are depicted in *Figures 4, 6 through 8, 12 through 15, and 17 through 20*. Labels for each of the polygons in these figures correlate with those in *Tables 4 through 8*, which contain estimates for the numbers of individuals within each polygon.

**TABLE 4. SAN FERNANDO VALLEY SPINEFLOWER
SUMMARY OF OCCURRENCE DATA FOR THE AIRPORT MESA VICINITY**

Polygon Name	Polygon Area (sq. ft.)	Estimated Number of Individuals
463264	26	50
463265	14	10
463266	550	1,500
463267	5,901	75,000
471601	522	18,310
471627	1,350	7,300
473219	253	200
473220	98	100
473221	131	35
473222	659	4,000
473223	86	30

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**TABLE 4. SAN FERNANDO VALLEY SPINEFLOWER
SUMMARY OF OCCURRENCE DATA FOR THE AIRPORT MESA VICINITY**

Polygon Name	Polygon Area (sq. ft.)	Estimated Number of Individuals
473224	123	120
473225	18	30
473226	35	100
473227	2,216	5,000
473228	17	20
473229	47	50
473230	2,712	10,000
473231	99	50
473232	6,680	40,000
473233	99	35
473234	702	1,000
473235	10	3
473236	1	1
473237	176	100
473238	1,944	15,000
473239	432	5,000
473240	1,689	5,000
473241	22	30
473242	1,449	6,000
473243	61	100
473244	68	100
473245	5	1
473246	175	400
473248	3	1
473249	2,123	5,000
473250	1,167	2,500
473252	463	1,000
489502	3,897	38,000
489503	3,128	31,000
489504	1	1
489505	333	300
489507	6	38
489508	16	47
489509	58	59
489510	2	1
489511	71	69
489512	3	12

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**TABLE 4. SAN FERNANDO VALLEY SPINEFLOWER
SUMMARY OF OCCURRENCE DATA FOR THE AIRPORT MESA VICINITY**

Polygon Name	Polygon Area (sq. ft.)	Estimated Number of Individuals
489513	3,490	5,200
489514	14	20
489515	10,028	33,000
489516	325	300
489517	52	150
489518	1,156	3,600
489519	123	30
489520	1,443	600
489521	11	70
489522	1,209	21,000
493160	614	500
493161	1,629	3,000
493162	12	30
493163	4	5
493164	3,841	10,000
493165	82	1
493166	14	25
493167	2,125	30,000
493168	8	10
493169	841	500
493170	25,600	500,000
493171	107	1
493172	576	2,000
493173	125	1
493174	121	500
493175	2,714	5,000
493176	27	50
493177	1,187	3,000
493178	38	150
493179	93	1
493180	90	30
493181	81	50
493182	33	50
493184	93	15
493185	2,161	2,000
493186	161	500
493187	8,069	20,000

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**TABLE 4. SAN FERNANDO VALLEY SPINEFLOWER
SUMMARY OF OCCURRENCE DATA FOR THE AIRPORT MESA VICINITY**

Polygon Name	Polygon Area (sq. ft.)	Estimated Number of Individuals
493188	713	750
493189	92	50
493190	9	40
493191	119	100
493192	31	50
493193	7	25
493194	41	100
493195	351	500
493196	10,562	15,000
493197	30	10
493198	329	300
493199	8	25
493201	188	300
493202	230	300
493203	47	50
493204	88	50
493205	625	1,500
493206	189	100
493207	350	500
493208	47	100
493209	94	200
493210	37,772	500,000
493211	19	50
493212	7	100
493213	17	50
493214	4	50
493215	15	1
493216	15	40
493217	43	3
493218	107	2
503103	370	750
503104	12	50
503116	80	200
503117	1	2
503118	116	1,000
503119	401	500
503120	734	1,000

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**TABLE 4. SAN FERNANDO VALLEY SPINEFLOWER
SUMMARY OF OCCURRENCE DATA FOR THE AIRPORT MESA VICINITY**

Polygon Name	Polygon Area (sq. ft.)	Estimated Number of Individuals
503122	2,315	5,000
503123	71	30
503128	50	100
503129	16	50
503130	2,328	25,000
503131	515	5,000
503132	179	500
503133	93	300
503134	288	500
503135	8,830	80,000
503136	16	100
503137	11	50
503138	60	50
503139	3,876	75,000
503140	176	500
503141	1,244	10,000
503142	1,477	20,000
503143	11	4
503145	72	500
503146	29	50
503147	2,369	7,000
503148	190	500
503149	2,213	35,000
503150	367	1,000
503151	783	1,000
503152	1	1
503153	22	25
503154	458	500
503155	279	300
503156	166	300
503157	15	25
503158	10	10
Total	190,331	1,706,335

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TABLE 5
San Fernando Valley Spineflower Summary of
Occurrence Data for the Grapevine Mesa Vicinity

Polygon Name	Polygon Area (sq. ft.)	Estimated Number of Individuals
331901	291	93
339801	4,769	18,000
339802	341	6,500
339803	2,468	60,000
339804	192	1,800
339805	124	200
339806	21	30
339807	1,969	21,000
339808	15	50
339809	1	1
339810	23	40
339811	42	30
339812	3,005	10,500
351104	172	180
359801	720	1,700
359802	438	980
359803	204	20
372304	353	420
381509	7	1
381510	6	1
381511	394	1,860
381512	203	440
381513	56	42
381514	106	152
381515	11	26
381516	6	1
381517	9	5
381705	104	35
381706	474	400
381707	16,022	168,250
382301	289	2,475
382302	2,473	26,710
382303	63	100
382304	40	110
382305	44	40
382306	15	8

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TABLE 5
San Fernando Valley Spineflower Summary of
Occurrence Data for the Grapevine Mesa Vicinity

Polygon Name	Polygon Area (sq. ft.)	Estimated Number of Individuals
382307	26,639	1,765,570
382309	333	40,010
382310	104	27
382311	4	3
382312	7	1
382313	3	2
382314	37	6
382315	36	3
382319	14	17
382320	150	150
382401	1,147	2,500
382402	85	4
382403	13	100
382404	1,678	121,823
382405	3,451	3,000
382406	107	160
382407	196	4,200
382408	748	500
382409	118	70
382410	2	1
382411	110	50
382412	289	800
382414	131	1
389514	1,625	475
389515	675	690
389516	29	21
389517	7	1
389518	25,180	1,407,143
389519	3,160	88,609
389520	2,038	196,947
389802	48	17
389803	2	3
389804	10	1
389805	18	1
389806	13	1
389807	49	7

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TABLE 5
San Fernando Valley Spineflower Summary of
Occurrence Data for the Grapevine Mesa Vicinity

Polygon Name	Polygon Area (sq. ft.)	Estimated Number of Individuals
389808	9	1
389810	1,037	200
389811	73	2
389813	1,030	560
389814	14	75
389815	3,389	14,000
389817	70	30
389818	1	3
389819	2,032	17,000
389822	411	2,000
389823	480	7,830
389824	3	23
389825	1,218	5,000
389826	6	14
389827	137	486
392301	50	50
392302	504	10,040
411705	666	1,545
411706	1,891	880
411901	276	500
411902	5	4
411903	58	300
411904	1,946	4,580
412415	7	60
419801	16	50
419803	517	1,700
421702	1,300	2,500
421703	107	1
421704	1	70
421901	549	180
421902	93	1
439801	31	60
439802	1,863	68,000
439803	5	1
439804	77	50
Total	123,598	4,092,910

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TABLE 6
**San Fernando Valley Spineflower Summary of
Occurrence Data for the Potrero Canyon Vicinity**

Polygon Name	Polygon Area (sq. ft.)	Estimated Number of Individuals
143272	8,520	75,000
143273	2,109	7,500
143274	2,943	25,000
143275	103	25
143276	27	7
143277	149	300
143278	125	50
143279	2,740	5,000
143280	1,175	5,000
143281	11,741	125,000
143282	130	750
233120	436	500
273294	692	2,000
273295	982	500
273296	982	3,000
279801	982	2
283284	4,211	7,000
283285	39	15
283286	228	500
283287	301	500
283288	284	200
283289	1,810	5,500
283290	439	1,500
283291	273	35
283292	317	100
283293	721	500
302401	3,463	48,480
309701	471	13,190
Total	46,393	327,154

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TABLE 7
San Fernando Valley Spineflower Summary of Occurrence Data for the San Martinez Grande Canyon Vicinity

Polygon Name	Polygon Area (sq. ft.)	Estimated Number of Individuals
61701	631	400
61702	427	50
61901	46,151	120,036
65011	5,738	600
69605	299	277
69606	180	200
69607	58	127
69608	990	919
69609	5,832	900
69610	15	3
69611	100	15
Total	60,421	123,527

TABLE 8
San Fernando Valley Spineflower Summary of Occurrence Data for the Newhall Ranch SPA

Polygon Name	Estimated Number of Individuals
Airport Mesa	1,706,335
Grapevine Mesa	4,092,910
Potrero Canyon	327,154
San Martinez Grande Canyon	123,527
Totals for the Newhall Ranch SPA	6,249,926

Most of the SFVS were found on slopes with a south-facing component in habitat that was open California sagebrush, California buckwheat, ecotonal California sagebrush/California buckwheat and California annual grassland series, or at the edge of agricultural fields on mesas. Most of the observed SFVS were found on soils mapped by the USDA (1969) as slightly eroded to eroded Castaic-Balcom silty clay loam (30-50 percent slopes) or Terrace Escarpments. Plants in the vicinities of Grapevine and Airport mesas were observed down slope of terrace surfaces capped by Zamora clay loam (2-9 percent slopes). Elevations at SFVS locations onsite range from approximately 1,000 to 1,300 feet AMSL.

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Vegetative cover in the area of SFVS occurrences ranged from five to 100 percent, but was more commonly between 60 and 80 percent. The soil type for all mapped SFVS occurrences on the project site consisted of sandy loams.

A total of 300 SFVS polygons were mapped ranging in size from less than one to 46,151 square feet. The number of individuals within each polygon ranges from one (1) to approximately 1,765,570. At Airport Mesa there were an estimated 1,706,335 individuals in 154 polygons (Table 5). At Grapevine Mesa there were an estimated 4,092,910 individuals in 107 polygons (Table 5). At Potrero Canyon there were 327,154 individuals in 28 polygons (Table 6) and at San Martinez Grande Canyon there were 123,527 individuals in 11 different polygons (Table 7). The entire Newhall Ranch SPA contained an estimated 6,249,926 SFVS individuals for the 2005 field season (Table 8). CNDDDB forms are included in Appendix C for each of the four occurrences onsite.

4.2.5 *Gnaphalium* sp. *nova* (everlasting)

The undescribed species of *Gnaphalium* documented within the study area during the 2004 field season was observed again during the 2005 field season. Plants of this unnamed everlasting were previously ascribed to the species *Gnaphalium leucocephalum*, which is not thought to occur west of the Peninsular and Transverse Ranges in California. These specimens, rather, are thought by UC Riverside (UCR) and Rancho Santa Ana Botanic Garden (RSA) botanists to be an undescribed taxon (*Gnaphalium* species *nova*). The *Gnaphalium* plants on the Newhall Ranch SPA differ from *Gnaphalium leucocephalum* in stature, pubescence, and phyllary characters.

A search of three herbaria (UCR, RSA, and the San Diego Natural History Museum) by Dudek biologist Marc Doalson revealed that 14 collections of this plant have been made in Ventura, Orange, Riverside, Los Angeles, and San Diego Counties. Eight collections date from 1901 to 1987 (1901, 1918, 1922, 1928, 1931, 1959, 1985 and 1987). There are six more recent collections dating from 1994 to 2003 (1994, two from 1995, 1997 and two from 2003). Many are from somewhat vague localities, such as "San Fernando Valley" and "Pasadena." Modern collections have come mostly from the Santa Ana Mountains region and especially Temescal Wash in western Riverside County, with several collections from adjacent San Diego County. In addition to the herbaria specimens, the *G. sp. nova* has been observed in 2003 and 2004 along Castaic Creek and the Santa Clara River in Los Angeles County (Dudek 2004). Plants are almost always associated with alluvial soils, often being found on the benches along major washes.

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In 2005, the two occurrences on the Newhall Ranch SPA consist of approximately 800 individuals and five individuals (*Figure 16*). These occurrences are primarily on secondary alluvial benches. The vegetation around these plants consists of open alluvial sage scrub habitats that are sparsely vegetated. CNDDDB forms were completed for these occurrences and are included in *Appendix C*.

4.2.6 *Juncus acutus* var. *leopoldii* (southwestern spiny rush)

Southwestern spiny rush has no state or federal status, but is found on List 4 of the *CNPS Inventory*. It is a perennial herb that grows in mesic areas such as meadows, marshes, and seeps. It is widespread occurring from San Louis Obispo to Baja California, Mexico (CNPS 2001). Southwestern spiny rush was occasional in mesic riparian areas such as along the Santa Clara River. CNDDDB forms were not completed for this species because of its relatively low sensitivity.

4.2.7 Bryophytes and Lichens

Bryophytes (non-vascular plants including mosses, liverworts, and hornworts) are plants which lack true vascular tissues (specialized water and nutrient conducting vessicles) found in angiosperms (*i.e.* flowering plants) and gymnosperms (*i.e.* cone producing plants). Since these non-vascular plants lack water transporting tissues, their life histories require that they inhabit areas of high humidity or places where water is immediately available. These areas can be found adjacent to permanent or temporary water sources or in microhabitats which provide sufficient moisture. Overall, the Newhall Ranch site is typical of the Mediterranean climate in Southern California and does not exhibit conditions favorable for a diverse flora of bryophytes. However, bryophytes were detected during surveys along north facing slopes, shady areas in canyons, and along cut banks in ephemeral drainages.

Lichens are not classified as true plants but are rather a symbiotic relationship between fungi and green algae and/or cyanobacteria. The relationship between the organisms of these phyla have allowed for their colonization of diverse niches throughout the world. Lichens were detected in the surveys of the Newhall Ranch site; however, appropriate habitat for lichens was limited to scattered non-granitic rocks and soils and fallen wood of trees and shrubs.

No sensitive bryophytes or lichens are recorded as occurring in the proximity of the Newhall Ranch project site (CDFG 2004).

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5.0 ACKNOWLEDGMENTS

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APPENDIX A

Resumes of Survey Personnel

MEGAN S. ENRIGHT
Biologist

EDUCATION

B.S., Biology-Ecology, Behavior and Evolution, University of California, San Diego, 1997

PROFESSIONAL AFFILIATIONS

Member, California Native Plant Society

Member, Women's Environmental Council

Member, Southern California Botanists

PERMITS

Federal Permit to conduct Fairy Shrimp Survey (permit number-TE022524-0)

CDFG Rare, Threatened, and Endangered Plant Voucher Collection Permit (05006)

EXPERIENCE

Ms. Enright is a biologist with seven years experience in habitat restoration and biological assessments. She participated in coastal sage scrub restoration at the City of San Diego Miramar Landfill. The project included restoration design, native plant nursery management, and revegetation monitoring. Her current role at Dudek & Associates includes biological resources assessments and impact analyses, wetland delineations and permitting, vegetation mapping, rare plant surveys, and vernal pool studies.

PROFESSIONAL ASSIGNMENTS

Pipeline 6 Project, Metropolitan Water District of Southern California, County of Riverside, California. Conducted wetlands delineation and assisted in permit coordination for the Section 401 and Section 404 permits and 1601 Streambed Alteration Agreement. Conducted initial site reconnaissance, rare plant survey, and fairy shrimp survey for the proposed alignment. In addition, assisted in siting geotechnical activities.

Yucaipa Non-Potable Water Distribution System, Yucaipa Valley Water District, Counties of San Bernardino and Riverside, California. Conducted biological surveys including vegetation mapping, wetlands delineation and rare plant surveys within a project study area, which included the construction of five reservoirs, four pump stations and 39,120 linear feet of pipelines. Focused surveys were conducted for the state- and federally-listed Santa Ana River woolly-star and slender-horned spineflower.

Oceanside to Escondido Rail Project, North County Transportation District, Cities of Oceanside, Vista, San Marcos, Escondido and County of San Diego, California. Delineated wetlands and prepared vegetation map within the Loma Alta Creek, Buena Vista Creek, Buena

Creek, Agua Hedionda Creek, San Marcos Creek, and Escondido Creek Watersheds. Prepared Section 401 and Section 404 permit applications and 1601 Streambed Alteration Agreement for impacts to non-tidal, adjacent wetlands; impacts were associated with the rail system. Prepared alternatives analysis, functional values assessment, and Conceptual Wetlands Mitigation Plan. Assisted in the preparation of an Exotics Removal Plan, Uplands Mitigation Plan, Brown-Headed Cowbird Trapping Plan, and a California gnatcatcher and least Bell's vireo Habitat Management and Monitoring Plan in accordance with the Biological Opinion issued by the United States Fish and Wildlife Service. Assisted in the preparation of the biological resources report and California Environmental Quality Act and National Environmental Policy Act documentation.

Camino Ruiz Road Alignment, Western Pacific Housing, City of San Diego - Future Urbanizing Area Subarea IV, California. Delineated wetlands, prepared vegetation map, and conducted rare plant surveys. Prepared Section 401 and Section 404 permit applications and 1603 Streambed Alteration Agreement for impacts to non-tidal, adjacent wetlands; impacts were associated with the roadway corridor. Prepared functional values assessment.

San Marcos Creek Roadway Improvements Project, City of San Marcos, City of San Marcos, California. Delineated wetlands, prepared vegetation map, and conducted rare plant surveys along San Marcos Creek from State Route 78 to Lake San Marcos.

Buena Vista Creek Channel Maintenance Project, City of Carlsbad-Engineering Division, Cities of Carlsbad and Oceanside, California. Project manager for preparation of technical reports for California Environmental Quality Act documentation and wetlands permitting. Delineated wetlands, prepared vegetation map, and conducted rare plant surveys. Prepared biological resources report for California Environmental Quality Act documentation. Facilitated pre-application agency meetings with the U.S. Army Corps of Engineers, California Department of Fish and Game, and the California Regional Water Quality Control Board. Prepared a 1601 Memorandum of Understanding in accordance with Section 1600 of the California Fish and Game Code and assisted in the preparation of an Exotics Removal Plan.

Salt Creek Channel Stage 6 Channel Widening Project, Riverside County Flood Control and Water Conservation District, County of Riverside, California. Delineated wetlands, prepared vegetation map, and conducted rare plant surveys, which included a focused survey for smooth tarplant (*Centromadia [Hemizonia] pungens*). Prepared biological resources report for California Environmental Quality Act documentation.

Canada Gobernadora, Santa Margarita Water District, Orange County, California. Project Manager for preparation of technical reports for California Environmental Quality Act documentation and wetlands permitting. Delineated wetlands, prepared vegetation map, and

conducted rare plant surveys, which included a focused survey for San Diego tarplant (*Deinandra [Hemizonia] paniculata*), southern tarplant (*Centromadia parryi* spp. *Australis*), and many-stemmed dudleya (*Dudleya multicaulis*). Project also included focused surveys for least Bell's vireo, southwestern willow flycatcher and southwestern arroyo toad. Biological constraints on the site during the due diligence phase of the project.

Rancho Santalina Project, City of San Marcos, California. Conducted a delineation of "waters of the United States" under the jurisdiction of the U.S. Army Corps of Engineers, California Department Fish Game, and California Regional Water Quality Control Board; prepared vegetation map; and conducted focused rare plant survey, which included the federally-listed threatened and state-listed endangered thread-leaved brodiae (*Brodiae filifolia*). Prepared biological resources report for California Environmental Quality Act documentation.

Planning Areas 18 and 39, The Irvine Company, City of Irvine, California. Conducted a delineation of "waters of the United States" and wetlands under the jurisdiction of the U.S. Army Corps of Engineers, California Department Fish Game, and California Regional Water Quality Control Board and prepared vegetation map within the 1,200-acre project site. Developed wetlands permitting strategies with client. In addition, Dudek conducted focused surveys for least Bell's vireo, southwestern willow flycatcher, and California gnatcatcher.

Planning Area 1, The Irvine Company, County of Orange, California. Project manager for preparation of biological technical reports for California Environmental Quality Act documentation for the Planning Area 1 Project, which encompasses over 4,200 acres, within which the northern half (approximate) would be permanent open space as part of a larger natural resources preserve, and the southern half (approximate) would be developed as a new community that includes residential, commercial, institutional (*i.e.*, schools), agricultural, and open space uses. Prepared vegetation map and conducted rare plant surveys within the 4,200-acre project site. Prepared biological resources report for California Environmental Quality Act documentation and assisted in the preparation of wetlands permitting data.

Surfer's Point, Surfer's Point, LLC, City of Encinitas, California. Conducted vegetation mapping and floristic surveys and prepared biological resources report for California Environmental Quality Act documentation for the 34-unit timeshare resort project. Project dealt with coastal issues because it was located directly adjacent to Batiquitos Lagoon just east of Coast Highway 101.

Newhall Ranch Project, Newhall Land and Farming Company, Los Angeles and Ventura County, California. Served as field task manager for botanical surveys on Newhall Land and Farming Company parcels. Directed field team in performing general sensitive plant surveys and focused surveys for the state-listed endangered San Fernando Valley spineflower

(*Chorizanthe parryi* var. *fernandina*) and other sensitive plants on approximately 6,000 acres in 2002 and 14,500 acres in 2003. In addition, collected San Fernando Valley spineflower seed from nine occurrences on Newhall Ranch in 2003. Prepared vegetation mapping for San Fernando Valley spineflower occurrence areas and assisted in the preparation of the draft conservation and management plan for this species.

Quantum Estates II Projects, Quantum Estates II, LLC, County of San Diego, California. Conducted focused surveys for the state-listed endangered and federally-listed threatened Encinitas bacchairs (*Baccharis vanessae*) on approximately 40 acres in 2003.

Perris Valley Channel Lateral “B” State 2 Project, Riverside County Flood Control and Water Conservation District, County of Riverside, California. Conducted rare plant surveys along 9,600 linear feet of the Perris Valley Channel in 2003.

Village 3 Project, Otay Ranch Company, City of Chula Vista, California. Conducted rare plant surveys, including focused surveys for the federally-listed threatened and state-listed endangered Otay tarplant, on 263 acres in 2003.

Fanita Ranch, Santee, California. Conducted rare plant surveys on 2,000 acres in 2003.

DAVID FLIETNER
Biologist

EDUCATION

M.S., Botany, University of Florida, 1987

B.S., Plant Science, University of California, Davis, 1983

GIS Certificate, University of California, Riverside extension, 1996

REGISTRATION/CERTIFICATIONS

County of San Diego Certified Biologist

Quino checkerspot butterfly, USFWS Permit #TE-008031

Riverside fairy shrimp, conservancy fairy shrimp, longhorn fairy shrimp, vernal pool fairy shrimp, San Diego fairy shrimp, vernal pool tadpole shrimp, USFWS Permit #TE-797665

Licensed Agricultural Pest Control Advisor #4577 (weed control)

Qualified Applicator License #31356 (landscape, agriculture, and aquatic)

Certified for flat-tailed horned lizard surveys, BLM (2001)

Certificate of Educational Achievement in Revegetation/ Restoration Planning, California Society for Ecological Restoration (2001)

Certificate of Completion, Desert Tortoise Council Surveying, Monitoring and Handling Techniques Workshop (2002)

AFFILIATIONS

California Invasive Plant Council

California Native Plant Society

Southern California Botanists

EXPERIENCE

Mr. Flietner is a biologist with eight years experience conducting biological resource surveys, endangered species presence/absence surveys, wetland delineations, and construction and restoration monitoring. Biological resource survey experience includes vegetation mapping, floristic inventories, and focused surveys for sensitive plant species, arroyo toad, and flat-tailed horned lizard. He conducts surveys for Quino checkerspot butterfly and has conducted surveys San Diego fairy shrimp, and Riverside fairy shrimp. His experience includes wetlands delineations in accordance with U.S. Army Corps of Engineers guidelines and applications for Clean Water Act Section 401 and 404 permits and California Department of Fish and Game Streambed Alteration agreements. In addition, he performs qualitative and quantitative assessments of revegetation projects; writes biological technical reports, wetland delineation reports, habitat restoration plans and annual progress reports. He has conducted annual pesticide training for field applicators and nursery workers in Spanish and has written pest control recommendations for habitat restoration projects.

PROFESSIONAL ASSIGNMENTS

Los Angeles to San Diego Fiber-Optic Line, Southern Portion, San Diego Gas and Electric, San Diego County, California. Conducted floristic inventory, vegetation mapping, and focused surveys for quino checkerspot butterfly in vicinity of seven “pull sites” for line stringing operation. Prepared biological letter report summarizing results of surveys.

Potential Reservoir Sites, Otay Water District, San Diego County, California. Conducted focused presence/absence surveys for quino checkerspot butterfly at three potential reservoir sites for Otay Water District. Prepared report according to U.S. Fish and Wildlife Service requirements.

Oceanside Country Club Site, City of Oceanside, Oceanside, California. Conducted vegetation mapping, floristic inventory, and post-impact assessment for sewer repair operations. Prepared biological technical report assessing impacts to wetland habitats, and conceptual wetlands mitigation and monitoring plan. Prepared Section 1601 Streambed Alteration Agreement, Section 404 Nationwide Permit application, and Section 401 Regional Water Quality Board permit application.

Rose and Tecolote Creek Clean Beaches Initiative Project, City of San Diego Storm Water and Pollution Prevention Program, San Diego, California. Conducted vegetation mapping, floristic inventory, and wetlands delineation for two pipeline projects to recirculate water in Mission Bay Regional Park. Prepared biological technical resources report, pre-construction notification under Nationwide Permit 12, Coastal Development Permit application to California Coastal Commission, and Section 401 application to Regional Water Quality Control Board.

Gavilan Hills/Smith Road Channel and Sediment Basin, Riverside County Flood Control and Water Conservation District, Riverside County, California. Mapped vegetation communities, conducted floristic inventory, and delineated wetlands in 71-acre project site. Prepared biological technical report including potential onsite mitigation for project impacts for Riverside County Flood Control and Water Conservation District.

County Line Channel Project, Riverside County Flood Control and Water Conservation District, San Bernardino and Riverside Counties, California. Mapped vegetation communities, conducted floristic inventory, identified potential Delhi sands flower-loving fly habitat, and identified occupied burrow owl habitat in approximately 2.5 linear mile project area. Prepared biological technical report including results of focused surveys for Delhi sands flower-loving fly surveys for Riverside.

Santa Ana River Maintenance Project, Riverside County Flood Control and Water Conservation District, Riverside, California. Mapped vegetation communities in approximately 500-acre flood control channel project area. Identified potential habitat of Santa Ana woolly-star and slender-horned spineflower. Prepared biological technical report describing resources and avoidance, minimization, and mitigation measures to be implemented in long-term flood control channel maintenance program.

Wildrose Business Park Regional Drainage Facility, Ridge Properties, LLC, Riverside County, California. Mapped vegetation communities, conducted floristic inventory, and performed wetlands delineation for approximately 1700 linear feet storm drain project. Prepared biological technical report and 1601 Streambed Alteration Agreement for project.

Cloverdale Leasehold, County of San Diego Water Department, Escondido, California. Performed wetland delineation on 90-acre parcel adjacent to Escondido Creek for renewal of leased property. Wrote biological letter report describing results of wetlands delineation, property use plan, and conceptual wetlands mitigation plan, including recommendation for control of *Lepidium latifolium*.

Wilson Creek Crossing, County of San Diego Department of Public Works, San Diego County, California. Mapped vegetation communities, conducted floristic inventory, performed wetlands delineation, and conducted presence/absence surveys for arroyo toad. Prepared biological technical report, conceptual wetlands mitigation and monitoring plan, Nationwide Permit 39 notification, and Section 1601 Agreement for San Diego County Water Department.

Gird Road Crossing, County of San Diego Department of Public Works, San Diego County, California. Mapped vegetation communities, conducted arroyo toad habitat assessment, floristic inventory, and wetlands delineation for San Diego Public Works Department. Prepared biological technical report including conceptual mitigation plan for impacts to CDFG-jurisdictional riparian vegetation.

San Diego Jewish Academy, San Diego, California. Monitored habitat coastal sage scrub and riparian, and restoration and wart-stemmed ceanothus revegetation projects for first two years of five-year implementation plan. Conducted quantitative and qualitative analysis and prepared two annual progress reports comparing site conditions with performance criteria. Recommended and monitoring additional maintenance measures, seeding, and plantings.

Riverside County Agricultural Preserve, Riverside County, California. Conducted habitat mapping, and biological resource inventory, including potential Delhi sands flower-loving fly habitat for proposed mixed-use development of 8,000 acre area. Prepared constraints analysis report including recommendations to avoid impacts to least Bell's vireo and southern willow flycatcher critical habitat.

NATHAN GALE

Principal Scientist, FLx

EDUCATION AND CERTIFICATIONS

PhD, Geography, University of California, Santa Barbara, 1985.

MA, Geography, University of California, Santa Barbara, 1980.

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

SUMMARY OF QUALIFICATIONS

Dr. Gale has 24 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, bike paths 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 focused 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.

DOUGLAS GETTINGER

Habitat Restoration Specialist

EDUCATION

B.S. Landscape Architecture, California State Polytechnic University at Pomona, 1979

B.S. Ornamental Horticulture, California State Polytechnic University at Pomona, 1980

REGISTRATION/CERTIFICATIONS

California Agricultural Pest Control Adviser License No. 01369 (expires 12/31/04)

PROFESSIONAL AFFILIATIONS

Member, Society for Ecological Restoration

Member, California Invasive Plant Council

Member, California Agricultural Production Consultants Association

EXPERIENCE

Mr. Gettinger has more than a decade of experience in habitat restoration work, including biological construction monitoring, and the design, implementation, and monitoring of habitat restoration projects. His training in landscape architecture and ornamental horticulture, coupled with his experience working on large construction projects help bring habitat restoration and endangered species habitat creation projects to a successful conclusion. He holds a California Pest Control Adviser License, which allows him to legally act as an expert and make recommendations for the control of invasive plant species. His project experience includes restoration of chaparral, coastal sage scrub, coastal salt marsh, freshwater marsh, limestone forest, riparian woodland, southern willow scrub, and oak woodland habitats implemented under agreements with various federal, state, and local agencies. He has experience working safely around the large earth-moving equipment found at various construction projects and has worked at hazardous materials sites requiring OSHA 40-hour hazardous worker training.

PROFESSIONAL ASSIGNMENTS

Metropolitan Wastewater Department As-needed Biological Services Contract 2000-2005, San Diego Metropolitan Wastewater Department, City of San Diego, California. Served as a biological construction monitor on numerous emergency sewer repair and maintenance projects in sensitive habitat areas located in canyons for the City of San Diego Metropolitan Wastewater Department on the as-needed biological services contract 2000-2005. Many tasks included emergency sewer repair projects where sewage was flowing into live stream conditions, which required immediate response from DUDEK staff. Other tasks included monitoring emergency sewer cleaning activities where temporary equipment access was needed in sensitive habitat canyon areas. Scheduled and coordinated the work of other biological monitors, as needed.

Initial assessment reports, biological resources reports, and/or impact assessment reports were then prepared for each task, depending on project requirements.

San Diego County Water Authority Emergency Storage Reservoir Program, San Diego County Water Authority, County of San Diego, California. Assisted in focused biological surveys and helped prepare alternatives analysis for the environmental impact report for the San Diego County Water Authority Emergency Storage Reservoir Program. Performed extensive tree inventory surveys and mapping of coast live oak (*Quercus agrifolia*) and mesa oak (*Q. engelmannii*) in proposed project alternative areas.

Metropolitan Water District Pipeline Project, Metropolitan Water District of Southern California, Hemet, California. Collected seed from several sensitive species, including San Jacinto Valley crownscale (*Atriplex coronata* var. *nutator*), little mousetail (*Myosurus minimus* ssp. *apus*), dwarf peppergrass (*Lepidium latipes*), and woolly marbles (*Psilocarpus brevissimus*) on a Metropolitan Water District pipeline right-of-way prior to construction in Riverside County, California. Seed was sent to Rancho Santa Ana Botanic Garden for counting, cleaning, and storage. Later sowed seed in appropriate locations along right-of-way after pipeline construction was completed. Also counted population and collected seed for Parish's brittlescale (*Atriplex parishii*), a species formerly presumed extinct.

Cannon Road Extension Project, City of Carlsbad Engineering Department, City of Carlsbad, California. Biological construction monitor for Phase 2 of the Cannon Road Extension Project in Carlsbad, California through sensitive habitat containing wetlands habitat for the federally endangered least Bell's vireo (*Vireo bellii pusillus*), southwestern willow flycatcher (*Empidonax traillii extimus*), and western clapper rail (*Rallus longirostris*), as well as coastal sage scrub habitat for the federally-listed threatened coastal California gnatcatcher (*Poliophtila californica*). Prepared monthly project progress reports and reported permit violations to the agencies. Project included oversight of subcontractors performing paleontological monitoring and recovery, and construction noise monitoring. Also monitored the installation and 120-day maintenance period for the temporary impacts wetland mitigation area.

Scripps Poway Parkway Extension Project, City of Poway Engineering Department, City of Poway, California. Biological monitor during two years of road construction through four miles of sensitive habitat for the Scripps Poway Parkway Extension Project in Poway, California. Located appropriate preserve habitat in the City and transplanted Coast Barrel Cactus (*Ferrocactus viridescens*) growing in the project right-of-way prior to impacts. Worked with City inspectors, surveyors, and the contractor to insure that impacts stayed within permitted limits. Monitored erosion and sediment control implementation and maintenance, and revegetation planting and seeding.

Puente Hills Landfill Wetland Mitigation Project, Sanitation Districts of Los Angeles County, City of Whittier, California. Provided horticultural and botanical monitoring for the wetland habitat restoration project associated with the Puente Hills Landfill in Whittier, California. Work was performed for the Sanitation Districts of Los Angeles County. The wetland restoration area is adjacent to the Puente Hills Landfill and also provides visual screening of the landfill for adjacent residents. Also directed staff performing the required wildlife monitoring and provided consultation for coast live oak (*Quercus agrifolia*) mitigation being implemented on weedy mustard covered slopes adjacent to the landfill, coastal sage scrub restoration being attempted on the landfill's canyon fill slopes, and ornamental buffer landscape to provide visual screening.

Rocketdyne Ecological Risk Assessment Project, Boeing Integrated Defense Systems, County of Ventura, California. Assisted with focused biological surveys to map vegetation communities and search for sensitive plant and wildlife species at a contaminated site. Surveys were the first stage in conducting an ecological risk assessment for the Santa Susana Field Laboratory, Ventura County, California.

Rancho Pacifica Cottages Habitat Enhancement Plan, Taylor-Woodrow Homes, Inc., City of Encinitas, California. Prepared a plan to control invasive exotic plant species such as giant reed (*Arundo donax*) that infests the creek channel within a biological open space being preserved on the property. The plan provides for the removal and control of invasive plant species and the planting of native wetland and upland species in their place.

Village 11 Project, Brookfield Homes, Chula Vista, California. Biological construction monitor for grading of the Village 11 project in Otay Ranch in Chula Vista, California. Grading of the approximately 500-acre site in the eastern portion of the Otay Valley was adjacent to the Salt Creek Open Space Preserve containing wetlands and habitat for the federally-listed threatened coastal California gnatcatcher. Dudek directed and monitored soil and biomass salvaging from suitable habitat areas within the project footprint and is currently monitoring installation of the wetland mitigation area.

Rolling Hills Ranch Wetland Mitigation Monitoring Project, McMillin Land Development, City of Chula Vista, California. Biological construction monitor for the installation and long-term monitoring of Phases I and II of the wetland mitigation for the Rolling Hills Ranch development in Chula Vista, California. Rolling Hills Ranch is an approximately 300-acre mixed use project. The wetland mitigation program, involves expanding wetland habitat along Salt Creek and controlling invasive, exotic salt cedar on the project site. The wetland mitigation was installed in two phases, approximately two years apart. Oversaw the collection of botanical data and preparation of the annual reports for the two phases.

Henry Ranch Biological Construction Monitoring and Wetland Mitigation Project, William Lyon Homes, City of San Ramon, California. Directed staff performing pre-construction surveys for federally-listed threatened California red-legged frog (*Rana aurora draytonii*) and nesting birds, and biological construction monitoring for permitted wetland impacts and initial land clearing at the Henry Ranch Project in San Ramon, California. Also oversaw and directed implementation of conceptual wetland mitigation pond plan, as well as other required enhancement measures.

Fieldstone Brush Management and Summer Holly Preservation Project, The Fieldstone Company, City of San Diego, California. Supervised a brush management and summer holly (*Comarostaphylos diversifolia*) preservation program at a housing project on the rim of Los Peñasquitos Canyon Preserve, San Diego, California.

Baldwin Brodiaea Preserve, The Baldwin Company, City of San Marcos, California. Supervised the planting of native purple needlegrass (*Nasella pluchra*) plants in a preserve for the federal and State-listed endangered thread-leaf brodiaea (*Brodiaea filifolia*) in San Marcos, California.

Newhall Ranch, Newhall Land and Farming Company, County of Los Angeles, California. Assisted with focused surveys for the state-listed endangered San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*) on the approximately 6,000 acres in 2002 and 14,500 acres in 2003 on Newhall Ranch in Los Angeles County, California.

Talone Lake Wetland Mitigation Project, Gatlin Development Company, City of Oceanside, California. Designed a wetland mitigation plan, oversaw construction impacts and mitigation installation for the loss of wetland habitat associated with a mixed-use project development for the Rancho del Oro project around Talone Lake, in Oceanside, California. Project site includes habitat for the federally-listed endangered least Bell's vireo (*Vireo bellii pusillus*). Assisted in preparation of a draft habitat management plan for the project and processed the 404 application with the U.S. Army Corps of Engineers and 1603 Streambed Alteration Agreement with the California Department of Fish and Game. Project included coastal sage scrub buffer zone around a wetland.

Ocean Trails Habitat Restoration Project, Ocean Trails L.P., City of Rancho Palos Verdes, California. Biological and horticultural monitor at the 92 acres Ocean Trails Restoration Project in Rancho Palos Verdes, California. The Ocean Trails project is restoring coastal sage scrub, southern cactus scrub, and coastal bluff scrub in ruderal and degraded native habitat. The restoration program is creating additional habitat for the federally-listed threatened coastal California gnatcatcher (*Polioptila californica*), which is already expanding into the still developing habitat.

Potrero Canyon Wetland Mitigation Plan, City of Los Angeles Department of Recreation and Parks, City of Los Angeles, California. Developed a riparian mitigation plan for impacts in a coastal canyon being filled to stabilize landslides and prevent further property losses at Potrero Canyon in the Pacific Palisades neighborhood in Los Angeles, California. Made an extensive search for offsite mitigation alternatives in the area. Attended community workshops to explain mitigation and learn neighborhood concerns about the project. Plan was prepared for presentation to the California Coastal Commission.

VIPUL JOSHI
Biologist

EDUCATION

B.S., Evolution, Behavior, Ecology, University of California, San Diego, 1997

EXPERIENCE

Mr. Joshi has five years professional experience as a biological consultant specializing in botanical surveying, permit acquisition, permit compliance, and project management. Mr. Joshi is well experienced with southern California flora and environmental regulations. Mr. Joshi also has had experience managing constraints analysis, entitlement processing, permit acquisition, and biological construction monitoring for a variety of public and private projects.

Mr. Joshi has specific experience with CEQA processing with a variety of local jurisdictions, state and federal Endangered Species Act permit processing, wetlands permitting including Nationwide and Individual Permits from the U.S. Army Corps of Engineers, and management of permit compliance. Specific biological survey skills include full rare plant surveys, focused presence/absence surveys for the state- and federally-listed quino checkerspot butterfly and vernal pool fairy shrimp, project-level vegetation mapping, wetlands delineation, vernal pool identification, vernal pool watershed mapping, and general biological assessment of functions and values.

PROFESSIONAL ASSIGNMENTS

Cielo del Norte, San Diego County, California. Provided baseline vegetation and rare plant surveys for project in Harmony Grove area. Drafted biological technical report and endangered species permitting strategy for 500-acre development in a critical preserve planning area. Participated in multiple screencheck EIR processing with the County. Provide project management for ongoing entitlement process.

Nickel Creek, Ramona, California. Provided baseline vegetation, wetlands delineation, and rare plant mapping for 14-acre multi-family residential development on the Santa Maria River. Coordinated with architect on least impactful development design and coordinated with County of San Diego to design a multi-use trail connection along the river while avoiding impacts to jurisdictional waters. Provided Biological Resources Technical Report evaluating project impacts pursuant to CEQA.

Manchester Avenue Residential Development, Encinitas, California. Provided project management for entitlement processing of medium-scale residential subdivision on coastal property supporting numbers rare vegetation communities and plant species. Project capabilities included vegetation mapping, rare plant surveys, wetlands delineation, impact assessment

pursuant to CEQA, and permitting strategy for impacts to jurisdictional wetlands, state- and federal endangered species.

Levatino Property, Carlsbad, California. Provided biological resource mapping, rare plant surveys, and wetlands delineation for 20-acre property. Evaluated development constraints in consideration of regional planning efforts, state and federal regulations.

Maldonado Property, Carlsbad, California. Provided biological resource mapping, rare plant surveys, and wetlands delineation for 50-acre property. Evaluated development constraints in consideration of regional planning efforts, state and federal regulations.

Santa Fe Meadows, Santa Fe Valley, California. Provided vegetation mapping, rare plant survey, and wetlands delineation for 40-acre residential development area.

Shaw Property, San Diego, California. Provided vegetation mapping, rare plant, and wetlands delineation for 40-acre property.

Via de la Valle, San Diego, California. Provided biological resources mapping, wetlands delineation, rare plants survey, and development constraints analysis for 20-acre property on

Our Lady of Mt. Carmel Catholic Church, San Diego, California. Conducted baseline vegetation surveys, wetlands delineation, rare plants survey, vernal pool identification, and vernal pool watershed mapping. Drafted Biological Resources Technical Report for Mitigated Negative Declaration and participated in community meetings and response to comments. Drafted Resource Management Plan for onsite open space management and avoidance of long-term impacts to adjacent USFWS National Wildlife Refuge property.

Lux Art Institute, Encinitas, California. Provided biological resource mapping, including vegetation mapping, wetlands delineation, and rare plant survey for 20-acre property. Provided constraints analysis, evaluation of project impacts pursuant to a Habitat Loss Permit under Section 4(d) of the federal Endangered Species Act, and management of permit compliance.

Fry's Electronics, San Marcos, California. Provided initial vernal pool identification and mapping, utilizing portable GPS system, wetlands delineation, and rare plant mapping. Rare plant mapping included pool by pool floral inventory and mapping of state- and federally-listed endemic vernal pool plant species.

San Jacinto Valley, Riverside County, California. Provided biological resource mapping, wetland delineation, and rare plant survey for endemic alkali species within San Jacinto River floodplain.

San Marcos Creek Roadway Improvements Project, City of San Marcos, City of San Marcos, California. Delineated wetlands, prepared vegetation map, and conducted rare plant surveys along San Marcos Creek from State Route 78 to Lake San Marcos.

Otay Ranch, Chula Vista, California. Provided biological resource surveys and documentation for various developments covering over 4,000 acres of vacant land. Tasks have included vegetation mapping, rare plants surveys, wetlands delineations, fairy shrimp surveys, and quino checkerspot surveys. Provided Biological Resource Technical Report pursuant to CEQA documentation, assisted in preparation of Second Tier EIR, development wetlands and endangered species permitting strategies, preparing and processing Section 404 Nationwide Permits 14 and 39, Section 401 Water Quality Certification, Section 1601 Streambed Alteration Agreement, and Section 7 Biological Opinion, and managing compliance with various permit conditions.

Irvine Company, Irvine, California. Provided vegetation mapping, wetlands delineation, and rare plant mapping for over 5,000 acres of vacant land.

Fanita Ranch, Santee, California. Provided vegetation mapping, rare plant, and wetlands delineation for 2,000 acre property.

Salt Creek Gravity Sewer, City of Chula Vista, California. Developed project alternatives permitting strategy with City and project engineers for 11-mile gravity sewer along north edge of Otay River Valley. Provided baseline vegetation mapping, wetlands delineation, and rare plant surveys. Prepared biological technical report and EIR biological evaluation for CEQA compliance. Submitted and coordinated acquisition of Section 404 Nationwide Permit 12, Section 401 Water Quality Certification, Section 1603 Streambed Alteration Agreement, and Section 7 Biological Opinion, including identification of mitigation alternatives. Coordinated construction monitoring and permit compliance.

North Agua Hedionda Sewer Rehabilitation, City of Carlsbad, California. Provided project management for half-mile sewer rehabilitation and shoreline protection project adjacent to coastal lagoon. Assignments included vegetation mapping, tidal wetlands delineation, rare plant surveys, development of engineering alternatives, permitting strategies, public scoping meetings, analysis of alternative impacts, EIR biological resources documentation, tidal wetlands mitigation identification, permit preparation for Section 404 Nationwide Permit 14, Section 401 Water Quality Certification, Section 1603 Streambed Alteration Agreement, Coastal Development Permit, Section 7 Biological Opinion, and project planning in terms of scheduling and budget.

Yucapia Non-Potable Water Distribution System, Yucapia Valley Water District, Counties of San Bernardino and Riverside, California. Provided baseline vegetation mapping, wetlands delineation, and rare plant surveys for 500-acre riparian study area.

Pipe 6, Metropolitan Water District, Riverside County, California. Conducted rare plant surveys and quino checkerspot butterfly surveys over approximately 20 mile long alignment.

Perris Valley Storm Drain, Lateral B, Riverside County Flood Control District, California. Provided wetlands delineation and focused rare plant surveys for the two mile long open flood control channel for deepening and widening project. Analyzed CEQA and wetlands permitting strategies and provided Biological Resources Technical Report and wetlands permit applications for Section 404 Nationwide Permits 3, 12, and 14, Section 1603 Streambed Alteration Agreement, and Section 401 Water Quality Certification. Met with ACOE staff to confirm wetlands delineation.

Canada Gobernadora, Santa Margarita Water District, Orange County, California. Conducted rare plant surveys, which included a focused survey for San Diego tarplant (*Deinandra [Hemizonia] paniculata*), southern tarplant (*Centromadia parryi* spp. *australis*), and many-stemmed dudleya (*Dudleya multicaulis*).

SR-125 South, Caltrans/CTV, California. Provided support in preparation of Section 7 Biological Assessment and permit compliance negotiations. Conducted vegetation mapping, rare plant, and quino checkerspot surveys for various mitigation site alternatives. Drafted conceptual revegetation and management plans for various mitigation sites including sites on south edge of Otay River Valley, Otay Mesa, and Otay Mountain..

LaBorde Canyon off-Highway Vehicle Park Study, County of Riverside, California. Provided baseline vegetation mapping and plant species inventory.

COLIN KHOURY
Environmental Planner/Biologist 1

EDUCATION AND CERTIFICATIONS

BA Agricultural Ecology, Thesis in Seed Conservation; Prescott College, 2000
Course work in Plant Genetics, University of Arizona, 2003

SUMMARY OF QUALIFICATIONS

Colin Khoury is an experienced biologist, having worked in educational, research, and agricultural ecology related positions for the past 10 years. Mr. Khoury's general duties as an Environmental Planner/Biologist I with Dudek include sensitive plant surveys, vegetation mapping, wetlands delineations, and preparation of biological technical reports. Mr. Khoury has a strong foundation in plant taxonomy, ecology, biology, and genetics. He possesses strong organizational, communication, and teaching skills, and is experienced in managing employees in a variety of agricultural environments. Among Mr. Khoury's specialties are plant breeding, seed conservation techniques, and descriptor systems for the characterization of field crops. Mr. Khoury is also fluent in Spanish and proficient in Portuguese.

EXPERIENCE

Newhall Ranch Project, Newhall Land and Farming, Counties of Los Angeles and Ventura, California. Conducted focused surveys for the state-listed endangered San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*) and other sensitive plants on over 10,000 acres. Surveyed high country of Newhall property for vegetation mapping leading toward a designated preserve and slender mariposa lily replanting mitigation site.

Chula Vista Seniors Housing Project, City of Chula Vista, California. Conducted biological assessments including vegetation mapping and rare plant surveys. Produced the biological resources section of the 2005 EIR for the project.

Portola Hills, County of Orange, California. Conducted vegetation mapping and wetlands delineations for 250-acre site. Assisted in the production of biological technical reports and projected rare plant surveys analysis.

Ferber Ranch, County of Orange, California. Conducted rare plants surveys and wetland delineations.

Arbor Creek, City of Vista, California. Conducted rare plant surveys.

Warner Ranch, County of San Diego, California. Conducted rare plant surveys.

Stallion Ridge, County of San Diego, California. Performed rare plant surveys.

Centre Point, City of Santa Clarita, California. Conducted rare plant surveys and geographical positioning systems (GPS) data collection.

Winchester Ranch, County of San Diego, California. Conducted rare plant surveys.

San Marcos Creek, City of San Marcos, California. Conducted rare plant surveys within riparian habitat.

Marine Corps Base Camp Pendleton, County of San Diego, California. Conducted rare plant surveys for Pendleton button celery (*Eryngium pendletonensis*) on 246 acres. Produced a biological technical report covering findings related to rare plant distribution and abundance.

Mid-County Parkway, County of Riverside, California. Conducted rare plant surveys and assisted in the production of a biological technical report concerning rare plant findings.

Oceanside to Escondido Rail Project, North County Transit District (NCTD), Cities of Oceanside, Vista, San Marcos, and Escondido and County of San Diego, California. Produced proposals for production of an oak tree mitigation plan, oak tree impact surveys, and upland mitigation plans.

Carlsbad Municipal Golf Course, City of Carlsbad, California. Performed construction monitoring and oversight for project grading and vegetation removal.

Torrey Pines State Reserve, County of San Diego, California. Monitored removal of irrigation equipment by Urban Corps following successful revegetation project for Metropolitan Wastewater District.

Southern California Edison Bark Beetle Project, San Bernardino National Forest, California. Provided biological monitoring for power line construction and tree removal.

Laboratory of J. Tewksbury, Santa Cruz, Bolivia. Field research for the University of Washington. Study of *Capsicum annum*, involving field mapping, test plot installation, and fungal resistance experiments.

Native Seeds/Search, Tucson, Arizona. Crop Curator for Phaseolus, including seed bank conservation and documentation, and three years of field grow-outs (data collection and regeneration). Conservation Farm Coordinator for 60-acre grow-out site, including management of three employees and many volunteers. General seed bank conservation, distribution, and documentation duties for entire collection. Publications of Phaseolus-related articles in the organization newsletter.

Prescott College, Prescott, Arizona. Adjunct faculty in the Environmental Studies Program. Twice taught an undergraduate-level course in agricultural Seed Conservation.

Prescott Creek Preservation Association, Prescott, Arizona. Riparian restoration and well monitoring.

Green Oak Ranch Native Plant Nursery, Vista, California. Assistant in California native plant nursery.

Agriculture and Seed Production (experience in farming and nursery operations and in vegetable seed companies)

- Turtle Tree Seed, Copake, New York.
- Peters Seed and Research, Myrtle Creek, Oregon.
- Organic Botanicals, Fallbrook, California.
- Exotica Rare Fruit Nursery, Vista, California.
- Birdsfoot Farm, Canton, New York.
- Rancho Rasayana, La Ribera, Baja California Sur, Mexico.
- Camp Joy Gardens, Boulder Creek, California.
- Live Power Community Farm, Covelo, California.
- CIESA, El Bolson, Argentina.

MEMBERSHIPS

California Native Plant Society (CNPS), San Diego Chapter.

REBEKAH KREBS
Environmental Specialist

EDUCATION AND CERTIFICATIONS

BA Environmental Studies, Florida Gulf Coast University, 2002

AA Associate in Arts, Valencia Community College, 1999

Plant ID Coursework, Florida Gulf Coast University

38 Hours of Army Corps of Engineers Wetland Delineation and Management Training

DEP Wetland Delineation and Management Training

SUMMARY OF QUALIFICATIONS

Rebekah Krebs' interest in environmental education, sustainable land activities and methods, environmental auditing, sustainable design, and wildlife rehabilitation make her a valuable asset to Dudek. Ms. Krebs' general duties as an Environmental Specialist with Dudek include: She specializes in Lee, Collier, Charlotte, and Hendry County protected species surveys; bald eagle monitoring; red cockaded woodpecker surveys and cavity tree searches; FWCC deer and hog spotlight and track surveys; gopher tortoise surveys and relocation; wetland flagging and delineation; environmental resource permits and other permitting documents; wetland monitoring; and reviewing exotic vegetation control.

EXPERIENCE

Environmental Scientist I, Boylan Environmental, Inc., Ft. Myers, Florida, 2004. Completed permitting-associated activities and reports for the following agencies: DEP, ASOE, FWCC, USFWS, and SFWMD. Created maps used for environmental permitting with the use of AutoCAD and associated programs. Performed wetland delineation and monitoring as well as wildlife monitoring and surveying duties.

Ecologist I, Passarella and Associates, Inc., Ft. Myers, Florida, 2002–2004. Completed permitting-associated activities and reports for the following agencies: DEP, ACOE, FWCC, USFWS, and the SFWMD. Carried out wetland delineation, monitoring, and sustainability reporting duties, as well as wildlife monitoring, relocation, and surveys.

Internship, CREW Land and Water Trust, Ft. Myers, Florida, 2001–2002. Designed and implemented environmental curriculum for guided hikes and school field trip, assisted in land stewardship of public lands, participated in community outreach programs, and assisted in the operation of a non-profit environmental organization.

MEMBERSHIPS

Florida Association of Environmental Professionals, Society of Wetland Scientists, California Native Plant Society; Society of Wetland Scientists; Society of Ecological Restoration; California Botanical Society.

THOMAS S. LIDDICOAT
Biologist

EDUCATION AND CERTIFICATIONS

Biology Major with Ecology emphasis, 2005

EXPERIENCE

Ecology Research Assistant, The Soil Ecology and Restoration Group (SERG), San Diego, California, February 2005 – Present. Manage greenhouse native flora for positive growth to be used in habitat restoration projects, conduct vegetative monitoring protocols to analyze site progress, perform multiple soil analysis procedures to understand soil compositions and microbial communities of collected samples.

Veterinary Assistant, Del Mar Heights Veterinary Hospital, Del Mar, California, April 2002 – Present. Knowledgeable in x-ray positioning, techniques, and developing; very confident in preparing and reviewing a wide variety of microscopy specimens; regularly test/clean laboratory analysis machines to insure precision standards of quality control.

Research Lab Assistant, San Diego State University Herbarium, San Diego, California, January – March 2005. Used TOPO GPS program to pinpoint exact locations of specimens collected; with careful dissection, specifically looking at seed morphology in the plant genus of Calyptridium to discover the correct taxonomic placement for phylogeny.

SHERRI MILLER

PROJECT MANAGER/BIOLOGIST

EDUCATION AND CERTIFICATIONS

MS, Botany, Duke University (1994)

BS, Biology, Washington & Lee University (1992)

SUMMARY OF QUALIFICATIONS

Ms. Miller has 11 years of experience in environmental documentation and permitting. Project experience includes biological resource surveys; data collection and analysis; California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA) documentation; environmental assessments; wetlands delineations, permitting, mitigation design and monitoring; and endangered species surveys and permitting. Projects include issues relative to the California Coastal Act, the California Fish and Game Code, the federal Clean Water Act (Sections 401 and 404), the Rivers and Harbors Act, the Coastal Zone Management Act, the National Historic Preservation Act (NHPA), the Migratory Bird Treaty Act, federal Endangered Species Act (fESA) and state Endangered Species Act (sESA).

EXPERIENCE

Michelson Water Reclamation Plant EIR, Irvine Ranch Water District, Orange County, California. Assistant project manager responsible for preparation of environmental documentation in compliance with CEQA and for biological resources investigations. Key environmental issues include groundwater, biological resources, flood control, and reclaimed water project alternatives.

Yucaipa Non-Potable Water Distribution System, Yucaipa Valley Water District, Counties of Riverside and San Bernardino, California. Project manager for preparation of the environmental documentation for this project. Conducted biological surveys including vegetation mapping, wetlands delineation and focused surveys for sensitive species, including along San Timoteo Creek. Focused surveys were conducted for the state- and federally-listed least Bell's vireo, southwestern willow flycatcher, arroyo toad, slender-horned spinyflower, and Santa Ana River woolly-star. Conducted public hearings for this controversial project. The project included the preparation, processing and completion of an EIR/EIS. The District is the CEQA lead agency. The U.S. Environmental Protection Agency (EPA) is the lead NEPA agency. Currently pursuing permits from the U.S. Army Corps of Engineers (ACOE), Regional Water Quality Control Board (RWQCB), California Department of Fish and Game (CDFG) and the U.S. Fish and Wildlife Service (FWS).

North Agua Hedionda Lagoon Interceptor Sewer Maintenance Access Road, City of Carlsbad Public Works Department, City of Carlsbad, California. Conducted biological surveys including vegetation mapping and wetlands delineation for 2,500-linear foot sewer pipeline and access road protection project. Currently preparing an EIR and a Coastal Development Permit (CDP). Due to the project's location along the Agua Hedionda Lagoon, a sensitive ecological resource, major issues addressed in the EIR include biological resources, water quality/hydrology and public services. Currently pursuing permits from the ACOE, RWQCB and California Coastal Commission (CCC) for impacts to tidal wetlands and inter-tidal mud flats.

North Green Valley, Leucadia County Water District, City of Carlsbad, California. Oversaw preparation of MND for the construction of 300 feet of new pipeline, repair of 2,150 feet of pipeline and the rehabilitation of 23 manholes. Prepared and processed permits from the ACOE, RWQCB and CDFG for impacts to non-tidal wetlands. Prepared and processed a CDP from the City of Carlsbad in accordance with their Local Coastal Program.

La Costa Greens, Leucadia County Water District, City of Carlsbad, California. Oversaw preparation of MND for the construction of 5,800 feet of new pipeline at the La Costa Resort and Spa. Issues included recreational uses and biological resources, including least Bell's vireo and California gnatcatcher.

Sewer Outfall Regulator Structure Upgrade, San Elijo Joint Powers Authority, City of Encinitas, California. Conducted vegetation mapping and wetlands delineation along San Elijo Lagoon. Prepared and processed a CDFG permit for wetlands impacts associated with the installation of a bypass pipeline and removal of a valve.

Telegraph Canyon Utility Project, Otay Ranch, City of Chula Vista, California. Conducted vegetation mapping and wetlands delineation for utility crossing of Telegraph Canyon Creek. Prepared and processed permits from ACOE, RWQCB and CDFG.

Salt Creek Sewer Line, City of Chula Vista Engineering Department, City of Chula Vista, California. Conducted baseline vegetation mapping and wetlands delineation for 11-mile gravity sewer along north edge of Otay River Valley. Oversaw preparation of biological resources technical report and EIR biological evaluation for CEQA compliance. Oversaw preparation and processing of permits from ACOE, RWQCB and CDFG. Oversaw preparation of a Biological Assessment for section 7 consultation between ACOE and FWS for Otay tarplant, quino checkerspot butterfly, coastal California gnatcatcher and least Bell's vireo.

Sewer Pump Station Upgrade, Leucadia County Water District, City of Carlsbad, California. Conducted biological surveys including vegetation mapping and wetlands delineation along Batiquitos Lagoon. Prepared and processed permits from the ACOE, RWQCB

and CDFG for wetlands impacts associated with the upgrade of the pump station, construction of a vehicle turnaround area and relocation of the access road. Assisted in obtaining a Coastal Development Permit from the CCC.

Moreno-Lakeside Pipeline, San Diego County Water Authority, San Diego County, California. Conducted vegetation mapping and wetlands delineation for eight-mile water distribution pipeline project. Prepared and processed from the ACOE, RWQCB and CDFG. Prepared BA for section 7 consultation between ACOE and FWS for coastal California gnatcatcher and arroyo toad.

Pipeline Relocation along Gird Road, Rainbow Municipal Water District, San Diego County, California. Conducted vegetation mapping and wetlands delineation for this pipeline relocation project, necessitated due to a bridge expansion along Gird Road. Prepared and processed permits from ACOE, CDFG and RWQCB and prepared Addendum to County of San Diego MND. The project involved the addition of relocating a pipeline in this bridge expansion project. Issues discussed include impacts to state and federal jurisdictional wetlands, community character and traffic.

12-Inch Forcemain Replacement/Lift Stations 1 and 2, Rainbow Municipal Water District, County of San Diego, California. Conducted biological surveys including vegetation mapping and wetlands delineation. Prepared MND for construction of approximately 1,300 linear feet of new forcemain pipeline underneath the San Luis Rey River utilizing horizontal directional drilling (HDD), and improvements to Lift Stations 1 and 2. This project involved federal funding from the United States Department of Agriculture (USDA) and a Categorical Exclusion (CATEX) was prepared pursuant to NEPA.

Pectin Reef Project, Southern Orange County Wastewater Authority, County of Orange, California. Conducted vegetation mapping and wetlands delineation for pipeline project within the Aliso and Wood Canyons Wilderness Park. Prepared a biological resources technical report for CEQA documentation and conceptual wetlands mitigation and monitoring for onsite mitigation. Prepared and processed permits from ACOE, RWQCB and CDFG for impacts to non-tidal wetlands within the Aliso and Wood Canyons Wilderness Park.

Aliso Creek Emergency Sewer and Park Improvements, Moulton Niguel Water District, County of Orange, California. Conducted vegetation mapping and wetlands delineation for sewer pipeline relocation and trail relocation. Prepared a Mitigated Negative Declaration (MND), biological resources technical report and assisted in the preparation of a conceptual wetlands mitigation and monitoring plan for onsite mitigation. Prepared and processed permits from ACOE, RWQCB and CDFG for impacts to non-tidal wetlands along Aliso Creek within the Aliso and Wood Canyons Wilderness Park.

Solana Beach Force Main Replacement, City of Solana Beach Engineering Department, Cities of Encinitas and Solana Beach, California. Oversaw biological surveys including vegetation mapping and wetlands delineation, and preparation of a biological constraints analysis. Prepared Mitigated Negative Declaration (MND) for installation of a new force main under San Elijo Lagoon using horizontal directional drilling (HDD). Preparing and processing an agreement with the CDFG for potential inadvertent returns during HDD.

Oceanside to Escondido Rail Project, North County Transit District (NCTD), Cities of Oceanside, Vista, San Marcos and Escondido and County of San Diego, California. Conducted biological surveys including vegetation mapping and wetlands delineation within the Loma Alta Creek, Buena Vista Creek, Buena Creek, Agua Hedionda Creek, San Marcos Creek, and Escondido Creek Watersheds along the North County Transportation District right-of-way. Prepared and processed permits from the ACOE, RWQCB and CDFG for impacts to non-tidal, adjacent wetlands; impacts were associated with the rail system and stations. Prepared alternatives analysis, functional values assessment, and conceptual wetlands mitigation plan. Prepared documentation to support issuance of a Coastal Consistency Determination in accordance with the California Coastal Act and a Biological Opinion from the FWS in accordance with the federal Endangered Species Act. Prepared the biological resources report and CEQA/NEPA documentation. NCTD was the lead CEQA agency and the Federal Transportation Administration (FTA) was the lead NEPA agency. Other project-related issues relative to the National Historic Preservation Act and Migratory Bird Treaty Act were resolved.

Rancho Santa Fe Road Widening and Bridge Replacement Project, City of Carlsbad Public Works Department, City of Carlsbad, California. Conducted biological surveys including vegetation mapping, wetlands delineation and focused surveys for the roadway corridor. Prepared and processed permits from the ACOE, RWQCB and CDFG. Prepared alternatives analysis for Caltrans and Federal Highway Administration (FHWA). Prepared functional values assessment and conceptual wetlands mitigation plan. Prepared the biological resources report and CEQA/NEPA documentation.

Camino Ruiz, Western Pacific Housing, City of San Diego, California. Conducted biological surveys including vegetation mapping and wetlands delineation for this roadway project in Subarea IV. Prepared biological resources technical report and prepared and processed wetlands permits from ACOE, RWQCB and CDFG. Evaluated wetlands mitigation sites and developed conceptual wetlands mitigation and monitoring plan.

Discovery Street, City of San Marcos Engineering Department, City of San Marcos, California. Conducted biological surveys including vegetation mapping, wetlands delineation and focused surveys for sensitive plant species. Prepared a Mitigated Negative Declaration (MND) for the road improvement/flood control project along San Marcos Creek. Prepared and

processed wetlands permits with ACOE, RWQCB and CDFG for roadway construction and flood control project.

Oceanside to Escondido Bikeway Project, City of San Marcos, Cities of Oceanside, Vista, San Marcos, and Escondido, California. Conducted vegetation mapping and wetlands delineation for regional bike trail project. Prepared and processed permits from the ACOE, CDFG and RWQCB for impacts to non-tidal wetlands. Assistance included preparation of several amendments to the permits following issuance due to project changes and construction monitoring services.

Union Valley Parkway Project, City of Santa Maria and County of Santa Barbara, City of San Maria, California. Conducted biological surveys including vegetation mapping, wetlands delineation and focused surveys for La Graciosa thistle. Prepared biological resources report in support of CEQA documentation for the 8,500-foot-long roadway project.

Alternate Route 5, City of Williamsburg Engineering Department, County of James City, Virginia. Conducted biological surveys including wetlands delineation and focused surveys for sensitive species. Prepared and processed permits from the ACOE and RWQCB for non-tidal wetlands impacts associated with the proposed roadway. The project included a functional values assessment and evaluation of potential mitigation sites. Coordinated with FWS and the State Historic Preservation Officer (SHPO) regarding Section 7 (fESA) and Section 106 (NHPA) consultation, respectively.

Cedar Road, City of Chesapeake Engineering Department, City of Chesapeake, Virginia. Delineated wetlands and coordinated endangered species survey. Prepared and processed wetlands permits from ACOE and RWQCB for impacts to tidal and non-tidal wetlands associated with roadway widening and utility relocation. Prepared alternatives analysis and functional values assessment; prepared wetlands mitigation plan. Coordinated with FWS regarding Section 7 (fESA) consultation.

U.S. 52 Realignment, North Carolina Transportation Department, Counties of Rowan, Cabarrus and Stanly, North Carolina. Conducted biological surveys including vegetation mapping, wetlands delineation and focused surveys for the endangered species Schweinitz's sunflower within 42 miles of alternative corridor segments. Identified environmental constraints during preliminary corridor segment analysis.

Hale Avenue Resource Recovery Facility (HARRF) Flood Control Project and Escondido Creek Enhancement, City of Escondido Engineering Department, City of Escondido, California. Conducted biological surveys including vegetation mapping and wetlands delineation. Prepared and processed permits from the ACOE, RWQCB and CDFG. Prepared

alternatives analysis, Public Notice and EA for ACOE. Prepared an MND for the proposed Escondido Creek enhancement and flood protection project adjacent to the HARRF. The proposed project consists of raising the existing levees and widening the existing stream channel, resulting in impacts to 4.49 acres (approximately 2,500 linear feet) of wetlands. Key issues for this project included community outreach, aesthetics (Dudek prepared visual simulations of the creek), noise and traffic.

Buena Vista Creek Channel Maintenance Project, City of Carlsbad Engineering Division, Cities of Carlsbad and Oceanside, California. Conducted biological surveys including vegetation mapping and wetlands delineation. Prepared biological resources technical report in support of CEQA document. Prepared Program EIR for the long-term channel-maintenance project. Worked with City engineering staff to avoid and minimize impacts to wetlands and sensitive species. Obtained a memorandum of Understanding (MOU) from the CDFG and assisted in the preparation of an Exotics Removal Plan.

Poway Creek Channel Maintenance Project, City of Poway, California. Provided baseline surveys, project management, and permit acquisition for channel maintenance project consisting of silt removal affecting over three acres of riparian habitat. Provided resource mapping, development of least impactful feasible alternative with project engineer, evaluation of project for Mitigation Negative Declaration, and wetlands permit preparation and processing for Section 404 Individual Permit, Section 1603 Streambed Alteration Agreement, and Section 401 Water Quality Certification.

Flood Control Activities in Temescal Wash, Lee Lake Water District, Riverside County, California. Conducted biological surveys including vegetation mapping, wetlands delineation and focused surveys for state-and federally listed threatened or endangered plants for 4,000 linear feet of improvements to Temescal Wash in Riverside County. Obtained after-the-fact permits from the ACOE, CDFG and RWQCB for flood control activities to protect the Wastewater Treatment Plant. Negotiated with resource agencies to identify appropriate mitigation measures, including hydroseeding and creation of 2.84 acres of scrub wetlands.

Rose and Tecolote Creek Clean Beaches Initiative Project, City of San Diego Stormwater Pollution Prevention Program, City of San Diego, California. Oversaw biological surveys including vegetation mapping, floristic inventory, and wetlands delineation for two pipeline projects to recirculate water in Mission Bay Regional Park. Prepared biological technical resources report and MND. Oversaw the preparation and processing of permits from the ACOE and RWQCB and the preparation of a CDP application to the CCC.

Homestead Dam, Commanding General MCAS Miramar, County of San Diego, California. Conducted biological surveys including vegetation mapping, wetlands delineation and focused

surveys for willow monardella. Prepared BA for section 7 consultation between MCAS Miramar and FWS for coastal California gnatcatcher. Project included maintenance activities to an existing dam in accordance with the Dam Safety Maintenance and Repair program, including replacement of outlet pipe, installation of erosion control devices for bank stabilization, removal of woody vegetation from the dam surface and revegetation with non-woody native plants.

Ferry Ranch, Palmtag-Davis Communities, County of San Diego, California. Conducted wetlands delineation and prepared and processed permits from the ACOE, RWQCB and CDFG for the 41-unit residential development in the unincorporated community of Lakeside. Prepared conceptual wetlands mitigation plan and coordinated with San Diego County Flood Control District regarding development of an onsite flood-control channel.

Southern Canals Dredging Project, City of Virginia Beach, Virginia Beach, Virginia. Prepared constraints analysis and coordinated with regulatory agencies regarding dredging of 10 miles of drainage canals and outfalls connected with the Northland River and the Back Bay.

Lowe's Retail Store, Lowe's, Inc., City of Santee, California. Conducted biological surveys including vegetation mapping and wetlands delineation. Obtained permits from ACOE, RWQCB and CDFG for impacts to non-tidal wetlands. Conducted informal consultation with FWS for least Bell's vireo. Prepared alternatives analysis and functional values assessment.

Creekside Marketplace, City of San Marcos Planning Department, City of San Marcos, California. Conducted vegetation mapping for commercial shopping center adjacent to San Marcos Creek. Prepared biological resources technical report in support of a CEQA document.

Lower Rosan Ranch, City of San Juan Capistrano Redevelopment Agency, City of San Juan Capistrano, California. Conducted vegetation mapping and wetlands delineation of the 14-acre site, located adjacent to San Juan Creek. Prepared and processed permits from ACOE, RWQCB and CDFG. Evaluated offsite wetlands mitigation opportunities and assisted in the preparation of a conceptual wetlands mitigation and monitoring plan.

Lowe's Retail Store, Lowe's, Inc., County of James City, Virginia. Delineated wetlands for proposed commercial retail store. Prepared and processed ACOE and RWQCB permits for impacts to non-tidal wetlands. Prepared alternatives analysis and functional values assessment; developed wetlands mitigation plan.

La Jolla Crossroads, La Jolla Crossroads, LLC, City of San Diego, California. Prepared and processed wetlands permits from ACOE, RWQCB and CDFG for impacts to non-tidal wetlands for mixed-use, in-fill project. Prepared alternatives analysis and functional values assessment. Evaluated wetlands mitigation sites and prepared conceptual wetlands mitigation and monitoring

plan. Prepared CEQA Addendum for CDFG and conducted community outreach meetings for wetlands mitigation site.

Newhall Specific Plan, Newhall Land and Farming, Inc., Counties of Los Angeles and Ventura, California. Oversaw focused surveys for sensitive plant species, including the state-listed San Fernando Valley spineflower. Oversaw implementation of San Fernando Valley spineflower seed collection. Prepared biological resources technical reports documenting survey results in compliance with EIR mitigation requirements. Developed San Fernando Valley spineflower conservation plan for the management of spineflower preserves. Coordinated with CDFG regarding 2081 permit for soils testing.

Project 2000, Rancho Mission Viejo Company, County of Orange, California. Conducted biological surveys including vegetation mapping and wetlands delineation of approximately 1,000 acres near San Juan Capistrano. Biological investigations also included surveys for state- and federally-listed threatened or endangered plant species. Prepared biological resources technical report in support of CEQA documentation.

Otay Ranch Specific Plan Area, Otay Ranch, City of Chula Vista, California. Conducted biological surveys including vegetation mapping, wetlands delineation and focused surveys for dot-seed plantain, host plant of the federally-listed endangered Quino checkerspot butterfly. Prepared and processed permits from the ACOE, RWQCB and CDFG. Negotiated with resource agencies to identify appropriate mitigation measures, including creation of freshwater marsh and southern willow scrub wetlands.

Long Point Specific Plan, Rancho Palos Verdes, California. Conducted biological resources surveys of the approximately 316-acre project site, including vegetation mapping, wetlands delineation and focused surveys for state- and federally-listed threatened or endangered plant species. Prepared a biological resources technical report for support of an EIR.

Dos Pueblos Golf Links, CPH Dos Pueblos LLC, County of Santa Barbara, California. Conducted biological surveys of the 202-acre project site, including vegetation mapping, wetlands delineation, focused surveys for sensitive plant species and native grassland surveys. Obtained wetlands permits from ACOE, RWQCB and CDFG. Prepared and processed a Habitat Conservation Plan (HCP) with the FWS for a Section 10 permit for potential impacts to the federally-listed California red-legged frog and tidewater goby. Prepared an EA for the FWS. Assisted in the processing of a Coastal Development Permit with the CCC. Project-related issues included the Migratory Bird Act and the California Coastal Act.

Public Park, City of San Diego Parks and Recreation Department, City of San Diego, California. Conducted biological investigations including vegetation mapping and wetlands

delineation. Prepared a biological technical resources report in support of CEQA documentation. Prepared and processed permits from the ACOE, RWQCB and CDFG for the five-acre park site in Subarea IV. Prepared conceptual wetlands mitigation plan for onsite mitigation.

Escondido Police Firing Range, City of Escondido, County of San Diego, California. Conducted vegetation mapping and wetlands delineation of the 22-acre firing range site. Prepared a biological resources technical report in support of a CEQA document.

Westview High School, Poway Unified School District, City of San Diego, California. Conducted vegetation mapping and wetlands delineation. Prepared a biological technical resources report in support of CEQA documentation. Assisted in preparation of the MND. Prepared and processed permits from the ACOE, RWQCB and CDFG for the 70-acre high school site in Subarea IV. Prepared alternatives analysis, Public Notice and EA for ACOE. Evaluated offsite uplands and wetlands mitigation opportunities. Prepared conceptual wetlands mitigation plan for onsite and offsite mitigation.

Elementary School, Poway Unified School District, City of San Diego, California. Conducted biological investigations including vegetation mapping and wetlands delineation. Prepared a biological technical resources report in support of CEQA documentation. Prepared and processed permits from the ACOE, RWQCB and CDFG for the 10-acre elementary site in Subarea IV. Prepared conceptual wetlands mitigation plan for onsite mitigation.

Sunset Continuation High School, San Dieguito Unified High School District, City of Encinitas, California. Prepared MND for the expansion of parking and the construction of nine new classrooms for existing school site. Key environmental issues addressed in the MND included traffic and noise.

The Academy High School, San Dieguito Unified High School District, City of Encinitas, California. Prepared MND for the proposed improvements to the existing high school. Improvements include expansion of parking, reconfiguration of the campus layout and construction of a purchasing and receiving facility. Key environmental issues addressed in the MND included traffic, noise, and historical resources related to the architecture of various classroom buildings.

Chula Vista High School and Hilltop High School, Sweetwater Union High School District, City of Chula Vista, California. Prepared an MND for the proposed improvements to the existing high schools. Improvements include construction of a two-story classroom building, removal of relocatable classrooms and reconfiguration of a parking lot. All proposed work would occur within the existing school footprints and no increase in student capacity was proposed. Key environmental issues addressed in the MND included traffic and noise during construction,

as well as hazardous waste. Responsible for preparation and distribution of all public notices to adjacent property owners and local newspapers, as well as the State Clearinghouse.

National City Middle School, Sweetwater Union High School District, City of National City, California. Prepared a Notice of Exemption for the District for construction of a new 12,333 square foot gymnasium. All proposed work would occur within the existing footprint of the campus. Nearby residential developments were not expected to be affected by increases in noise levels or traffic as the District did not anticipate an increase in student capacity as a result of the new gymnasium.

CSU San Marcos Master Plan Update, CSU San Marcos, City of San Marcos, California. Conducted biological investigations including vegetation mapping and wetlands delineation. Prepared a biological technical resources report in support of CEQA documentation for the student housing project. Prepared and processed permits from the ACOE, RWQCB and CDFG and prepared conceptual wetlands mitigation plan for onsite mitigation.

Bryn Glen, D.R. Horton, Inc., City of San Diego, California. Conducted biological investigations including vegetation mapping, wetlands delineation and focused surveys for San Diego barrel cactus. Prepared a biological technical resources report in support of CEQA documentation. Prepared and processed permits from the ACOE, RWQCB and CDFG for the 65-unit residential development in Subarea IV. Prepared conceptual wetlands mitigation plan for onsite mitigation.

Torrey Del Mar, D.R. Horton, Inc., City of San Diego, California. Conducted biological investigations including vegetation mapping and wetlands delineation. Prepared a biological technical resources report in support of CEQA documentation. Prepared and processed permits from the ACOE, RWQCB and CDFG for the 321-unit residential development in Subarea IV. Prepared conceptual wetlands mitigation plan for onsite mitigation.

Torrey Ranch, Garden Communities LLC, City of San Diego, California. Conducted biological investigations including vegetation mapping and wetlands delineation for the 65-unit residential development, elementary school site and park site in Subarea IV. Prepared a biological technical resources report in support of CEQA documentation. Prepared and processed permits from the ACOE, RWQCB and CDFG. Prepared alternatives analysis, Public Notice and EA for ACOE. Prepared conceptual wetlands mitigation plan for onsite mitigation. Issues include coastal California gnatcatcher.

East Grove, Lyon Homes, Inc., City of Escondido, California. Conducted biological investigations including vegetation mapping and wetlands delineation. Prepared and processed permits from the ACOE, RWQCB and CDFG. Prepared alternatives analysis, Public Notice and

EA for ACOE. Assisted in preparation of conceptual wetlands mitigation plan for onsite mitigation.

Treasures, County of San Diego, California. Conducted biological investigations including vegetation mapping and wetlands delineation. Prepared a biological technical resources report in support of CEQA documentation.

Ferry Ranch, Palmtag-Davis Communities, County of San Diego, California. Conducted wetlands delineation and prepared and processed permits from the ACOE, RWQCB and CDFG for the 41-unit residential development in the unincorporated community of Lakeside. Prepared conceptual wetlands mitigation plan and coordinated with San Diego County Flood Control District regarding development of an onsite flood-control channel.

Rancho Santalina, City of San Marcos Planning Department, City of San Marcos, California. Conducted biological surveys including vegetation mapping, wetlands delineation and focused survey for thread-leaved brodiaea. Prepared biological technical report and MND for the 351-unit residential development. Issues included land use and planning and biology.

Chocolate Mountain Ranch Estates, Chocolate Mountain Ranch Estates, County of San Diego, California. Conducted biological surveys including vegetation mapping and wetlands delineation for 242-acre proposed residential subdivision in the unincorporated community of Alpine. Prepared biological resources technical report and EIR. The County was the lead agency for CEQA. Major issues include traffic, aesthetics, biological resources and public services.

University Commons Development Project, Brookfield Homes, City of San Marcos, California. Conducted biological surveys including vegetation mapping, wetlands delineation and focused surveys for thread-leaved brodiaea and Orcutt's brodiaea. Prepared and processed permits from the ACOE, CDFG and RWQCB. Prepared alternatives analysis, Public Notice and EA for ACOE. Prepared BA and EA for section 7 consultation between the FWS and the ACOE.

Cupertino Project, Ryland Homes, City of Vista, California. Conducted wetlands delineation and vegetation mapping for the 64-unit residential development. Prepared and processed permits from the ACOE, CDFG and RWQCB. Prepared wetlands mitigation plan for onsite mitigation.

Skimino Farms Development, Skimino Farms, LLC, County of York, Virginia. Conducted biological surveys including wetlands delineation and focused surveys for sensitive species for the 315-acre project site. Prepared and processed permits from the ACOE and RWQCB for impacts to non-tidal, adjacent wetlands; impacts were associated with roadway and stormwater basin construction. Prepared alternatives analysis and functional values assessment. Coordinated with FWS regarding Section 7 (ESA) consultation.

Rancho Jamul Mitigation Bank, Wildlands, Inc., County of San Diego, California. Conducted biological resources surveys of the approximately 2,187-acre project site including vegetation mapping, wetlands delineations, and focused surveys for sensitive plant species. Prepared biological resources technical report in support of CEQA document for the creation of a resource-agency approved wetlands mitigation bank.

Prairie Band of Potawatomi Indians Gaming Facility, Harrah's Entertainment, Mayetta, Kansas. Prepared EA for the gaming facility and hotel complex, in compliance with NEPA, for the National Indian Gaming Commission (NIGC), the federal lead agency. Conducted wetlands delineation and vegetation mapping. Prepared and processed permits from ACOE and RWQCB for impacts associated with the construction of the gaming facility and 1.5 miles of roadway improvements. Prepared alternatives analysis and functional values assessment.

Little River Band of Ottawa Indians Gaming Facility, Harrah's Entertainment, Manistee, Michigan. Prepared EA for the gaming facility, hotel and RV complex, in compliance with NEPA, for the NIGC, the federal lead agency. Conducted wetlands delineation and vegetation mapping. Prepared alternatives analysis.

Eastern Band of Cherokee Indians Gaming Facility, Harrah's Entertainment, Cherokee, North Carolina. Prepared EA for the gaming facility, in compliance with NEPA, for the NIGC, the lead federal lead agency. Conducted wetlands delineation and vegetation mapping. Prepared alternatives analysis. Consulted with the North Carolina SHPO. Prepared and processed permits from the ACOE and RWQCB.

Cow Creek Band of Umpqua Tribe of Indians Gaming Facility, Harrah's Entertainment, Canyonville, Oregon. Prepared EA for the gaming facility, in compliance with NEPA, for the NIGC, the lead federal lead agency. Prepared alternatives analysis. Important issues related to inadequate existing wastewater treatment facilities.

Narragansett Indian Gaming Facility, Harrah's Entertainment, Charlestown, Rhode Island. Prepared EA for the gaming facility, in compliance with NEPA, for the NIGC, the lead federal lead agency. Conducted wetlands delineation and vegetation mapping. Prepared alternatives analysis. Important issues related to the treatment of wastewater onsite and the subsequent discharge into an aquifer feeding Indian Cedar Swamp, a Wildlife Management Area.

Pre-Mining Baseline Analysis, Aluminum Company of America, County of Rockdale, Texas. Conducted biological surveys including spring and fall vegetation baseline studies, wetlands delineations, qualitative and quantitative grassland sampling, and endangered species surveys for 1,600 acre project site in central Texas.

Western Riverside County Multiple Species Habitat Conservation Plan, Riverside County, California. Assisted in the development of the Multiple Species Habitat Conservation Plan (HCP) for western Riverside County. Project involved research on potentially covered plant species followed by syntheses of ecological information into species accounts, analysis of coverage, development of the narrow endemics species policy, wetlands policy and adaptive management plan.

Upper Santa Ana River Habitat Conservation Plan, San Bernardino County Water Conservation District, Cities of Redlands and Highlands and County of San Bernardino, California. Currently preparing an HCP for a multi-purpose project including mining activities, infrastructure improvements (i.e., roadways and utilities), recreational trails, groundwater recharge basins and flood control activities along the upper Santa Ana River. Species include coastal California gnatcatcher, least Bell's vireo, slender-horned spineflower, and Santa Ana River woollystar. Preparing a biological resources technical report in support of the EIR/EIS. The San Bernardino County Water Conservation District is the lead CEQA agency and the Bureau of Land Management is the lead NEPA agency.

Dos Pueblos Golf Links, CPH Dos Pueblos LLC, County of Santa Barbara, California. Conducted biological surveys of the 202-acre project site, including vegetation mapping, wetlands delineation, focused surveys for sensitive plant species and native grassland surveys. Obtained wetlands permits from ACOE, RWQCB and CDFG. Prepared and processed an HCP with the FWS for a Section 10 permit for potential impacts to the federally-listed California red-legged frog and tidewater goby. Prepared an EA for the FWS. Assisted in the processing of a Coastal Development Permit with the CCC. Project-related issues included the Migratory Bird Act and the California Coastal Act.

Kern Valley Sanitary Landfill Closure and Embankment and Scour Protection, Kern County Waste Management Division, Kern County, California. Conducted vegetation mapping and wetlands delineation for landfill closer and bank protection project. Prepared and processed permits from the CDFG and RWQCB. Prepared and processed a Letter of Permission from the ACOE. Prepared functional values assessment and Conceptual Wetlands Mitigation and Monitoring Plan.

MEMBERSHIPS

Association of Environmental Professionals (AEP); Women's Environmental Council (WEC)

KAMARUL MURI
Biologist/Environmental Specialist

EDUCATION

B.S., Ecology Behavior and Evolution, University of California, San Diego, 2001

REGISTRATION/CERTIFICATIONS

US Fish and Wildlife Service Quino checkerspot 10(a) Permit # TE051250-0; issued 3/04/2002, expires 03/03/2006

California Department of Fish and Game Rare, Threatened and Endangered Plant Voucher Collecting Permit # 05077; issued 3/10/2003, expires 3/10/2006.

EXPERIENCE

Mr. Muri has more than two years experience as a consultant and field biologist through involvement in a wide array of projects in San Diego, Riverside, Orange, Los Angeles and San Bernardino Counties. Project experience includes biological resource surveys; data collection and analysis; California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA) documentation; environmental assessments; wetlands permitting, mitigation design and monitoring; and endangered species surveys. Projects include issues relative to the California Coastal Act, the California Fish and Game Code, the federal Clean Water Act (Sections 401 and 404), the Rivers and Harbors Act, the Coastal Zone Management Act, the Migratory Bird Treaty Act, federal Endangered Species Act (fESA) and state Endangered Species Act (sESA). Mr. Muri currently holds a federal permit to conduct surveys for the federally-listed endangered adult Quino checkerspot butterfly and is working towards obtaining a permit to conduct surveys for the federally-listed threatened coastal California gnatcatcher.

PROFESSIONAL ASSIGNMENTS

Rancho Santa Fe Road Realignment and Bridge Construction Project, City of Carlsbad, California. Conducting biological monitoring of construction and ensuring compliance with resource permits during construction of the project. Resource permits issued for the project involve the federally-listed threatened coastal California gnatcatcher and wetlands regulated by the California Department of Fish and Game, the U.S. Army Corps of Engineers and the California Regional Water Quality Control Board. Also assisted with breeding season surveys to monitor nesting activity of gnatcatcher pairs located adjacent to the project.

Oceanside to Escondido Bikeway Project, North County Transit District, Cities of Vista and San Marcos, California. Monitored the removal of wetlands vegetation associated with construction activities for the project.

Salt Creek Channel Widening Project, Riverside County Flood Control and Water Conservation District, Riverside County, California. Conducted surveys of an existing smooth tarplant population to identify areas most suitable for translocation in support of a channel widening project. Helped to prepare specifications for the translocation effort and coordinated seed collection.

Perris Valley Lateral 'B' Stage 2 Project, Riverside County Flood Control and Water Conservation District, Riverside County, California. Conducted biological resource mapping, a delineation of jurisdictional wetlands and prepared a biological resources technical report in support of the channel widening project. Project impacts to jurisdictional areas were processed with a joint permit application for compliance with Section 1600 of the California Fish and Game Code, Sections 401 and 404 of the federal Clean Water Act (CWA). Compliance with Section 404 of the federal CWA was achieved through the use of several Nationwide Permits for project-related improvements to roads and utilities.

Non-potable Water Distribution System Project, Yucaipa Valley Water District, Riverside and San Bernardino Counties, California. Conducted vegetation mapping and a jurisdictional wetlands delineation within a six-mile study area along San Timoteo Creek and evaluated impacts to undeveloped areas over approximately 200,000 linear feet of proposed non-potable water pipeline. Documents prepared in support of the project include a biological resources technical report and wetlands permit applications. Provided assistance in preparing the Draft Environmental Impact Report/ Environmental Impact Statement in accordance with the California Environmental Policy Act and the National Environmental Protection Act. Used aerial photographs to estimate historical vegetation density within San Timoteo Creek over a 42-year period to support the design of a Habitat Monitoring Program based on adaptive management principles.

San Diego Pipeline No. 6, Metropolitan Water District of Southern California, Riverside County, California. The project consists of a 30-mile nine-foot diameter water conveyance pipeline. Mr. Muri provided assistance in conducting habitat assessments for sensitive and federally-listed wildlife species.

Bark Beetle Tree Removal Project, Southern California Edison, San Bernardino, San Gabriel, and Santa Rosa Mountains, California. Conducting wildlife surveys, botanical surveys, habitat assessments and surveys for sensitive and U.S. Forest Service Threatened, Endangered, and Sensitive species throughout the San Bernardino, San Gabriel and Santa Rosa Mountains along Southern California Edison power line routes. The surveys are supporting implementation of a Bark Beetle tree removal project along existing power lines within Riverside and San Bernardino County.

Southern California Edison Utility Pole Maintenance Project, San Bernardino and San Gabriel Mountains, California. Monitored pole maintenance activities in biologically sensitive areas to ensure avoidance of impacts to potentially-occurring sensitive and U.S. Forest Service Threatened, Endangered and Sensitive species.

Cathedral High School Project, Catholic Diocese of San Diego, City of San Diego, California. Processed wetlands permitting package for the high school project to obtain authorization for impacts to jurisdictional waters under Section 401/404 of the federal Clean Water Act and Section 1603 of the California Fish and Game Code. Also responsible for monitoring construction and ensuring compliance with resource permits during construction of the project.

Beach Street Project, Taylor Woodrow Homes, City of Encinitas, California. Project manager for an 8.3-acre single- and multi-family residential development project on Requeza Street in the City of Encinitas. Conducted biological surveys and prepared a biological resources technical report to support environmental processing of the project pursuant to CEQA. Other tasks managed as part of the project included gaining approval from the City and the California Department of Fish and Game for encroachment into the 50-foot wetlands buffer required according to City guidelines, preparing an application for a Section 1603 Streambed Alteration Agreement to authorize habitat enhancement activities within wetlands onsite, and coordinating the completion of pre-construction nesting bird surveys.

El Apajo Estates Development Project Sensitive Amphibian Surveys, Rancho Santa Fe, California. Assisted with nocturnal relocation surveys for sensitive toad species on the 40-acre El Apajo development property located along the San Dieguito River in Rancho Santa Fe.

Mediterranean Village Residential Development, City of San Diego, California. Provided biological resource mapping, wetlands delineation, and impact analysis pursuant to CEQA.

Trabuco Canyon Private Residence Project, County of Orange, California. Conducted general biological reconnaissance surveys and focused surveys for California gnatcatcher within an undeveloped property near Trabuco Canyon in southern Orange County. Preparing a biological resources technical report to support development permit application.

Costa Del Sol Project, Barratt American, City of San Diego, California. Monitoring construction activities adjacent to sensitive native habitats to be preserved within the Multiple Habitat Planning Area of the City of San Diego's Multiple Species Conservation Program.

White Horse Estates Project, Barratt American, City of San Diego, California. Monitoring construction activities adjacent to sensitive native habitats to be preserved within the Multiple Habitat Planning Area of the City of San Diego's Multiple Species Conservation Program.

Newhall Ranch Rare Plant Surveys, Newhall Ranch and Farming Company, Los Angeles and Ventura Counties, California. Conducted focused surveys for the state-listed endangered San Fernando Valley spineflower and other sensitive plants on approximately 6,000 acres in 2002 and 14,500 acres in 2003. In addition, collected San Fernando Valley spineflower seed from nine occurrences on Newhall Ranch.

Western Riverside County Multiple Species and Habitat Conservation Plan, County of Riverside, California. Assisted in the document research and preparation of species accounts for endangered, threatened, sensitive and other key species in the County of Riverside.

RELEVANT EXPERIENCE

Attended San Diego Natural History Museum class "Sensitive Butterflies of San Diego County" in December, 2003. The class specialized in the biology and identification of the nine most sensitive butterfly species in San Diego County.

Attended Association of Environmental Professionals "CEQA Basics" seminar in November, 2003.

Attended Building Industry Association seminar on Storm Water Sampling and Analysis Strategy in March, 2003.

CHRISTOPHER E. OESCH
Habitat Restoration Specialist

EDUCATION

M.S., Environmental Systems; International Development Technology Humboldt State University Arcata, California, 2003

B.A., International Agriculture, Eastern Mennonite University, 1998

THESIS WORK

Mr. Oesch's thesis work focused on Hardscape Stream Channel Naturalization. The thesis examines modification of cement channelized stream sections, commonly found in urban settings, for mitigating their negative impacts to native plant and animal populations. This is achieved by incorporating aspects of natural stream hydrology and morphology into an existing hardscape channel. This approach is intended for improving habitat in existing hardscape channels when total removal of the hardscape structure is not an option. The thesis was modeled for the hardscape channel west of I-5 on Rose Creek, San Diego, California.

EXPERIENCE

Upon completing his Bachelors degree in International Agriculture, Mr. Oesch worked on sustainable agriculture restoration and development projects in Guatemala and Honduras. He has recently completed graduate research in hardscape urban wetland restoration modeled for Rose Creek in San Diego, California. He is currently working on a variety of habitat restoration projects at DUDEK involving freshwater marsh, salt marsh, riparian, urbanized/disturbed, chaparral, stream channel, and coastal sage scrub habitats.

PROFESSIONAL ASSIGNMENTS

Lake Val Sereno/La Jolla Crossroads Off-Site Mitigation, Encinitas, California. Project monitor for the La Jolla Crossroads off-site mitigation located at Lake Val Sereno. This project involves the enhancement of 5.37 acres of freshwater wetland to fulfill the requirements of agency permits ACOE NWP-12, CDFG 1601 agreement and RWQCB 401 certification. Duties include advising on the removal of exotic and invasive plant species, documenting progress of planted native plants, collecting quantitative transect data, and recommending courses of action to improve site success in meeting performance standards.

Famosa Slough Saltmarsh/ Sorrento Creek Dredging Mitigation, San Diego, California. Author of the conceptual plan for a .5 acre enhancement area of saltmarsh. This enhancement is to fulfill mitigation requirements from the Sorrento Creek Maintenance Dredging performed by City of San Diego, Engineering and Capital Projects Department. This project is designed to

fulfill the criteria of permits CDFG 1601 and ACOE 404. The enhancement area will include middle and lower saltmarsh plant species, bordered by a coastal sage scrub habitat buffer strip.

Poggi Creek Streambed Modification, Chula Vista, California. Conceptual plan designer for a streambed erosion control project. This grade control structure design uses a low-profile, biodegradable approach to avoid being classified as “channel fill”. The intended purpose is to prevent streambed scour, encourage sediment deposition, and promote native freshwater plant species establishment.

Torrey Hills Basin Wetland Mitigation, San Diego, California. Project monitor for site involving the creation of approximately 3 acres of wetland habitat to mitigate for impacts of the adjacent Torrey Hills housing development. His duties include advising on the removal of exotic and invasive plant species, documenting progress of planted native plants, collecting quantitative transect data, and recommending courses of action to troubleshoot hydrologic adversities in the performance of the basin’s morphology.

Meadowbrook Villages Development Wetland Mitigation Project, Escondido, California. Assisted in design of the stormwater detention/ wetland creation basin for a retirement development. The basin created opportunity for onsite wetland mitigation as well as provided increased stormflow storage capacity along Reidy Creek to prevent flooding. Also assisted in preliminary soil sampling and biotic surveying.

Las Virgins Creek Hardscape Naturalization Proposal, Los Angeles, California. Assisted in a proposal for the naturalization of a section of concrete hardscape channel along Los Virgins Creek (see thesis work). Goals of the naturalization would be to create sediment deposition sufficient to grow wetland plant species, add topography to the channel bottom and sides which would encourage a more natural hydrologic regime, and to achieve these goals while passing floodwater efficiently as to not promote flooding.

Vista Sorrento Parkway Alkali Marsh Mitigation Project, San Diego, California. Biological monitor for the project. This includes collecting transect data, recommendations on weed removal and native plant mortality. The project entails creation/enhancement of 1 acre of coastal sage scrub, mulefat scrub, and salt marsh habitats as mitigation for impacts from the Caltrans ROW project.

Los Penasquitos Lagoon Saltmarsh Mitigation Project, San Diego, California. Assisted in the monitoring of native saltmarsh and coastal sage scrub habitat including transect data collection, advisement on remedial plantings, and non-native plant removal.

Rolling Hills Ranch Wetland Mitigation Project, Chula Vista, California. Assisted in annual monitoring efforts and transect data collection for 2 acres of created wetland habitat. This creation area was in mitigation for the surrounding Rolling Hills Ranch housing development.

Green Valley Mobile Home Park Slope Stabilization Project, Vista, California. Project monitor for stream-side mitigation project which includes freshwater marsh, riparian and disturbed habitats. This project is designed to fulfill requirements of CDFG 1603 and ACOE 404 permits. Mitigation was triggered when the mobile home park owners placed riprap along the stream banks covering freshwater marsh habitat and disturbing hydrology. Monitor duties include: recommendations on weed removal, native plantings and general maintenance.

Summit Ridge Business Park Mitigation Project, San Diego, California. Biological monitor for 10 acres of coastal sage scrub, with a 1 acre freshwater marsh component. This project is mitigation for the development of the Summit Ridge Business Park. Monitoring duties include biotic surveys, transect data collection, weed removal recommendations, and native planted species survival.

Newhall Ranch *Chorizanthe* Seed Collection, Santa Clarita, California. Participated with a team of biologists collecting seed of the rare and endangered *Chorizanthe perryi fernadina* (spineflower). Polygons of spineflower locations were GPSed and mapped. Teams then returned to collect seed.

Rose Creek/Nature School Habitat Enhancement Plan, San Diego, California. Mapped 13 acres of the Rose Creek riparian corridor directly east I-5. Plants and habitat locations were GPSed and a biotic survey was taken.

Agricultural Support/Development Project, El Peten, Guatemala. Coordinated an agricultural support and development project for several Mayan Indigenous communities in the Peten region of Guatemala. This involved working with government officials for importation of agricultural supplies from Belize, traveling between site locations and exploring possibilities for reestablishing crops. The project was necessitated by crops lost to fire and drought.

Carroll Canyon Emergency Maintenance Sewer Project, San Diego, California. Assisted in designating access routes around sensitive habitat for Metropolitan Wastewater vehicles to gain access to sewer clean-out locations.

Sorrento Valley Utilities Revegetation, San Diego County, California. Monitored work crews in the removal of non-native plant species in biologically sensitive saltmarsh, freshwater marsh, and coastal sage scrub habitats.

Sorrento Creek Maintenance Dredging Project, San Diego, California. Monitored City of San Diego work crews in removal of sediment from the channel bottoms of Carroll Canyon, Los Peñasquitos, and Sorrento creeks. Monitoring was to insure the least possible impacts to surrounding vegetation, aquatic and terrestrial animal habitats. The project site contained potential Clapper rail (*Rallus longirostris*) habitat, which required flushing prior to beginning work in the channel areas. Duties also included: water samples taken daily and tested for total suspended solids (TSS) to ensure that discharge downstream of the project met TSS level requirements.

Tecolote Canyon Tree-of-Heaven Removal Project, San Diego, California. Monitored work crews in removal of tree-of-heaven (*Ailanthus altissima*) and other exotics from a section of Tecolote Canyon. Duties included: advisement of routes of least impact to surrounding native habitats, felling trees, and cut biomass dispersal.

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 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, bike paths 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 IICTechnical ReportCHydrology, 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.

DARREN SMITH

EDUCATION

M.A. Geography with an Emphasis in Biogeography, San Diego State University, 1996

B.A. Geography, Humboldt State University, 1989

EXPERIENCE

Darren Smith has twelve years experience in biological resource management. He has participated in a large number of biological research and production projects at San Diego State University (SDSU), working with Dr. John O'Leary and Dr. Janet Franklin. Mr. Smith worked for Dudek and Associates from 1997 to 2001 as an associate biologist working on a variety of conservation and development projects. He has also worked for the City of San Diego and the California Coastal Commission. Mr. Smith is currently working at California State Parks as an associate resource ecologist. His work experience in research, private consulting and government has encompassed a wide variety of projects involving intensive vegetation sampling, biological inventories and monitoring, and applying GIS and remote sensing technology to biological resource conservation and development problems. Mr. Smith has produced or played a significant role in five southern California regional vegetation mapping efforts, and participated in numerous post-burn, post-impact and revegetation monitoring projects. Mr. Smith has conducted field-based research in Mediterranean-type and tropical ecosystems, focusing on patterns of plant species composition and diversity and their relationship to physical environment and disturbance. The outcome of these skills and work experience has led to the production of timely, well-received research, technical reports, and data products.

PROFESSIONAL ASSIGNMENTS

- Supervised field and GIS production of TJ River Watershed vegetation and landcover database in San Diego County, California and Baja California.
- Produced vegetation maps for Fallbrook Naval Weapons Station, and Marine Corps Air Station.
- Produced vegetation, and sensitive lands data layers for the City of San Diego Environmental Tier/Future Urbanizing Area project.
- Conducted rare plant surveys and mapped vegetation for a variety of projects in San Diego, Orange, Riverside, San Bernardino, Los Angeles, Kern, Santa Barbara, and San Luis Obispo Counties (1997-current). A selection of projects include: Moreno-Lakeside Pipeline, Wilson Creek Mitigation Bank, SCE Power Pole maintenance and replacement, White Water golf Course, Canyon Vista Estates, MSCP Black Mountain Sensitive Plant Inventory, Santa Fe Pipeline project, NCTB Miramar Curve, Oceanside/Melrose, Lone Tree Estates, Santa Fe Valley Properties, Chula Vista SPA1 and Wolf Canyon, Chino

Hills State Park Inventory, Monitoring, and Assessment Program, La Purisima Visitor Center, Chino Hills Visitor Center, Red Rock-Last Chance Canyon Riparian Bypass, Piute Butte Bouldering Constraints, and Lower Topanga Canyon Rare Plant Inventory.

- Monitored saltmarsh, and riparian revegetation efforts at Rancho Santa Fe Road Bridge, Sorrento Valley Utilities Improvements, Tijuana River Emergency Channel Mitigation Projects.
- Conducted pre-burn vegetation surveys of Burton-Mesa chaparral, Santa Barbara County.
- Monitored riparian vegetation for recovery following the removal of vehicular impacts in Coyote Canyon Anza-Borrego Desert State Park.
- Conducted long-term regional monitoring of post-burn coastal sage scrub in San Diego, Riverside and Orange Counties.
- Participated in a long-term California gnatcatcher habitat assessment including multi-year breeding and non-breeding season vegetation surveys in breeding pair home ranges and nesting sites, at MCAS Miramar, San Diego County.
- Participated in long-term study of vegetation recovery on San Clemente Island in Los Angeles County.

ANDREW THOMSON

Environmental Specialist/Biologist

EDUCATION AND CERTIFICATION

MS, Environmental Science, Washington State University (2000)

BS, Biology, Utah State University (1997)

EXPERIENCE

Mr. Thomson is an environmental specialist/biologist with five years experience working on a variety of habitat restoration projects with Dudek, and formerly, with the US Forest Service in the San Bernardino National Forest. He has been involved in a variety of restoration projects for wetlands creation and enhancement, coastal uplands, native bunchgrass grassland, montane habitats and sensitive plant species. He has conducted biological resource surveys, environmental assessments, vegetation mapping and sensitive plant species surveys throughout San Diego County. Additionally, he has conducted biological monitoring of construction and maintenance projects in environmentally sensitive areas. He is currently working on a variety of habitat restoration projects with various responsibilities at Dudek.

City of San Diego Metropolitan Wastewater Department (MWWD) As-Needed Biologist, City of San Diego, California. Provided construction monitoring and prepared impact analyses, biological letter report and biological resources technical report preparation and mitigation recommendations for over 21 MWWD projects involving necessary sewer line maintenance and emergency sewer break repair in sensitive habitat areas located within the City of San Diego.

Lake Murray Trunk Sewer Replacement/Relocation and Permanent Access Path Project, City of San Diego Metropolitan Wastewater Department, City of San Diego, California. Prepared a biological resources technical report for the Lake Murray Trunk Sewer Replacement/Relocation and Permanent Access Path Project. The project proposes to replace approximately 14,500 linear feet of the trunk sewer pipeline, a portion of which is located in sensitive coastal sage scrub and wetland habitats. The biological resources technical report also provides recommendations for mitigating biological impacts from the implementation of the project.

North City Raw Sludge and Water Pipelines Revegetation Project, City of San Diego Metropolitan Wastewater Department, City of San Diego, California. Conducted biological monitoring, data collection and data analysis of this 29-acre chaparral and coastal sage scrub habitat restoration project site to determine success of restoration efforts in terms of established

performance criteria. Prepared annual biological monitoring reports which included an assessment of revegetation efforts and recommendations for remedial actions.

Sorrento Valley Utilities Improvement Revegetation Project, City of San Diego, California. Conducted biological monitoring, data collection and data analysis of this 12-acre salt marsh habitat restoration project. Also, prepared annual biological monitoring reports to document project conditions and make recommendations for remedial actions.

Sorrento Creek Channel Maintenance Project, City of San Diego Transportation Department – Street Division, City of San Diego, California. Provided construction monitoring and water quality monitoring in sensitive wetland habitat during channel dredging (2001 and 2003) and vegetation clearing (2002) for the Sorrento Creek Channel Maintenance Project. Prepared environmental compliance reports, water quality and waste discharge compliance reports and construction monitoring summary reports for the project. Prepared a sediment monitoring plan that included methodology and rationale for monitoring potential adverse effects resulting from the creation and maintenance of the Sorrento Creek flood control channel. Additionally, conducted annual sediment monitoring and prepared sediment monitoring summary reports.

State Route 125 Otay Tarplant Salvage and Habitat Replacement Project, San Diego County, California. Assisted with the planning stages of the plant salvage and relocation of the state-listed, endangered, and federally-listed, threatened, Otay tarplant for the construction of SR125. Assisted with the determination of suitable receptor sites for salvaged Otay tarplant seed and accompanying soil.

Brookview Senior Housing Wetland Mitigation/Revegetation Project, Brookview Interfaith Housing Corporation, City of Poway, California. Provided construction monitoring during the plant installation and seed application processes. Conducted long-term biological monitoring for this 1.2-acre wetland restoration site. Habitats created include southern willow scrub, freshwater marsh and sycamore woodland. Also, prepared annual biological monitoring reports to document the progress of the project in relation to established performance criteria.

Rancho Santalina Development Project, Rancho Santalina L.P., City of San Marcos, California. Conducted focused rare plant surveys for state-listed, endangered and federally-listed, threatened, thread-leaved brodiaea plant species and mapped the extent of the population at the 69-acre site in San Marcos. Prepared the Rancho Santalina Thread-leaved Brodiaea Mitigation/ Transplantation Plan which provided recommendations for salvaging thread-leaved brodiaea from the project area and transplanting to an onsite preserve area. The plan also provided maintenance and monitoring guidelines in order to achieve project success criteria.

East Grove Wetland Mitigation/Revegetation Project, William Lyon Homes, Inc., City of Escondido, California. Conducted biological monitoring for this 11.7-acre wetland restoration project. Also, prepared annual reports to document the condition of the restoration project. Habitat types restored include freshwater marsh and southern willow scrub.

University Commons Orcutt's Brodiaea Mitigation/Transplantation Project, Brookfield Homes, City of San Marcos, California. Conducted focused rare plant surveys for the California Native Plant Society (CNPS) List 1B sensitive Orcutt's Brodiaea plant species on this 312-acre residential development project site. Prepared the University Commons Orcutt's Brodiaea Mitigation/Transplantation Plan which provided guidance and recommendations for salvaging a large population of Orcutt's brodiaea from the project area and transplanting to an adjacent receptor site. The plan also provided maintenance and monitoring guidelines in order to achieve project success criteria. Provided construction monitoring during salvaging, relocation, and installation of Orcutt's Brodiaea. Conducted biological monitoring of the transplanted population and prepared annual monitoring reports to document the condition of the mitigation site in terms of established performance criteria.

4S Ranch Thread-Leaved Brodiaea and San Diego Goldenstars Mitigation/Transplantation Program, Newland Communities/4S Kelwood, Rancho Bernardo, California. Conducted biological monitoring of the transplanted state-listed, endangered and federally-listed, threatened thread-leaved brodiaea plant species. Prepared annual progress reports for this project and provided recommendations.

4S Ranch, Artesian Creek Wetland Revegetation Project, Newland Communities/4S Kelwood, County of San Diego, California. Conducted biological monitoring for this 4.6-acre wetland restoration project. Also, prepared annual reports to document the condition of the restoration project in relation to predetermined performance standards. Habitat types restored include freshwater marsh, mulefat scrub, and southern willow scrub.

Newhall Ranch Project, Newhall Land and Farming Company, Los Angeles and Ventura County, California. Conducted focused surveys as a member of a team of botanists for the state-listed, endangered San Fernando Valley spineflower plant species and other sensitive plants. Rare plant surveys were conducted on approximately 6,000 acres of land in 2002 and 14,500 acres of land in 2003. Also, participated in a seed collection of San Fernando Valley spineflower, for the Newhall Land and Farming Company, to be used for plant research and preservation.

Newhall Ranch Westridge Range Management Plan for Native Grassland Restoration, Newland Land and Farming Company, Counties of Los Angeles and Ventura, California.

Responsible for preparation of the native grassland restoration plan. The goal of the plan is to restore native grassland to enhance oak tree growth.

Planning Area 1, The Irvine Company, County of Orange, California. Conducted rare plant surveys for the CNPS List 1B sensitive plant species, intermediate mariposa lily as a member of a team of botanists within a portion of the 4,200-acre project site.

Rolling Hills Ranch Wetland Mitigation Project, McMillin Land Development, City of Chula Vista, California. Conducted biological monitoring for phase one (1.2-acre) and phase two (1.79-acre) wetland restoration project. Also, prepared annual reports to document the condition of the restoration project in relation to predetermined performance standards. Habitat types restored include freshwater marsh, alkali marsh and southern willow scrub.

Rolling Hills Ranch (Salt Creek Ranch) Coast Barrel Cactus Translocation Project, McMillin Land Development, City of Chula Vista, California. Conducted biological monitoring of a transplanted population (1,670 individuals) of the CNPS List 2 sensitive coast barrel cactus plant species. Also, prepared annual progress reports documenting the status of the transplantation progress in relation to established performance standards.

Kumeyaay Campground San Diego Ambrosia Transplantation Project, Mission Trails Regional Park, City of San Diego, California. Conducted biological monitoring and prepared annual status reports in 2001 and 2002 for a transplanted population of the federally listed, endangered, San Diego Ambrosia plant species.

Arroyo Trabuco Golf Course Coastal Sage Scrub and Valley Needlegrass Grassland Revegetation Plan, DMB San Juan Golf Associates, LLC., San Juan Capistrano, California. Prepared the valley needlegrass grassland and coastal sage scrub conceptual habitat restoration plan for the 230-acre Arroyo Trabuco Golf Course project in Orange County. Also, assisted with the preparation of a biological resource management plan for the Arroyo Trabuco Golf Course project.

Trump National Golf Course Habitat Restoration Project, City of Rancho Palos Verdes, California. Conducted biological monitoring of the approximately 100-acre Trump National Habitat Restoration Project. Habitats being restored at the project include coastal sage scrub, southern cactus scrub and coastal bluff scrub. The habitat restoration program has been successful in its goal to provide habitat suitable for nesting for the federally-listed, threatened coastal California gnatcatcher.

US Forest Service, San Bernardino National Forest, California. Worked as a biological technician in the Big Bear area for the San Bernardino National Forest. Provided ecological

restoration work for the U.S. Forest Service that involved native seed collection and germination, plant propagation and pest management, and outplanting to damaged sites. Also, designed experimental plots, maintained records and monitored restoration success, adapting methods as necessary. Organized and supervised volunteer groups that contributed time to wildlife and plant habitat improvement projects in the area. Participated as a crew member to complete biological plant surveys for threatened, endangered, and sensitive plant species. Mapped sensitive plant population locations using Global Positioning System (GPS) units, and created maps with a Geographic Information System (GIS). Additionally, prepared ecological restoration program grants to fund the restoration program for the Big Bear area of the San Bernardino National Forest.

TRICIA WOTIPKA
Environmental Specialist / Biologist

EDUCATION

B.S., Wildlife and Fisheries Science, Pennsylvania State University (2000) – Dean's Honor List,
Fall 1998 - Spring 2000

PROFESSIONAL AFFILIATIONS

Audubon Society, 2000
Member, Women's Environmental Council
Secretary, 2001
Newsletter Chair, 2002
Member, Southern California Botanists

PROFESSIONAL CERTIFICATIONS

CDFG Rare, Threatened, and Endangered Plant Voucher Collection Permit (05078)

EXPERIENCE

Ms. Wotipka has over three years experience in environmental document preparation and resource conservation planning. Project experience includes vegetation mapping, rare plant surveys, general wildlife surveys, biological resource surveys, data collection and analysis, environmental assessments, wetlands delineations, permitting, mitigation design and monitoring, and endangered species surveys. Projects include issues relative to the California Fish and Game Code, the federal Clean Water Act (Sections 401 and 404), the National Environmental Policy Act (NEPA), the Migratory Bird Treaty Act, and the Endangered Species Act (ESA). Ms. Wotipka has also trained with the Wetlands Training Institute, Inc. and has successfully completed a course in basic wetlands delineation.

PROFESSIONAL ASSIGNMENTS

Pipeline Relocation along Gird Road, Rainbow Municipal Water District, San Diego County, California. Conducted vegetation mapping and wetlands delineation for this pipeline relocation project, necessitated due to a bridge expansion along Gird Road. Prepared and processed permits from ACOE, CDFG and RWQCB and prepared Addendum to County of San Diego MND. The project involved the addition of relocating a pipeline in this bridge expansion project. Issues discussed include impacts to state and federal jurisdictional wetlands, community character and traffic.

Aliso Creek Emergency Sewer and Park Improvements, Moulton Niguel Water District, County of Orange, California. Conducted vegetation mapping and wetlands delineation for sewer pipeline relocation and trail relocation. Prepared and processed permits from ACOE,

RWQCB and CDFG for impacts to non-tidal wetlands along Aliso Creek within the Aliso and Wood Canyons Wilderness Park. Assisted in conducting focused rare plant surveys for the federally-listed threatened and state-listed endangered thread-leaved brodiaea (*Brodiaea filifolia*). Prepared biological resources technical report in support of a CEQA document and assisted in the preparation of a conceptual wetlands mitigation and monitoring plan for onsite mitigation.

Railway Expansion Project, Sorrento-Miramar Curve Realignment and Second Main Track Project, City of San Diego, California. Conducted vegetation mapping and field surveys for sensitive, state- and federally-listed plant species on approximately 190 acres.

San Marcos Creek Roadway Improvements Project, City of San Marcos, San Marcos, California. Prepared a Section 404 and 401 permit application in accordance with the federal Clean Water Act and a 1601 Streambed Alteration Agreement in accordance with California Fish and Game Code.

Sorrento-Miramar Curve Realignment and Second Main Track, North County Transit District, City of San Diego, California. Conducted a delineation of "waters of the United States" under the jurisdiction of the ACOE, CDFG, and California RWQCB and assisted in conducting rare plant surveys within the project study area, which occupies approximately 180 acres along the linear rail corridor.

Telegraph Canyon Road Widening Project, City of Chula Vista, Chula Vista, California. Prepared and processed a Water Quality Certification application pursuant to Section 401 of the federal Clean Water Act and a Streambed Alteration Agreement pursuant to Section 1601 of the California Fish and Game Code.

San Marcos Creek Roadway Improvements and Flood Protection Project, City of San Marcos, San Marcos, California. Prepared a Section 404 and 401 permit application in accordance with the federal Clean Water Act and a 1601 Streambed Alteration Agreement in accordance with California Fish and Game Code.

Poway Creek Channel Maintenance Project, City of Poway, California. Provided baseline biological surveys for channel maintenance project consisting of silt removal affecting over three acres of riparian habitat.

Homestead Dam, Commanding General MCAS Miramar, County of San Diego, California. Conducted biological surveys including vegetation mapping, wetlands delineation and focused surveys for willow monardella. Prepared BA for section 7 consultation between MCAS Miramar and FWS for coastal California gnatcatcher. Project included maintenance activities to

an existing dam in accordance with the Dam Safety Maintenance and Repair program, including replacement of outlet pipe, installation of erosion control devices for bank stabilization, removal of woody vegetation from the dam surface and revegetation with non-woody native plants.

Old Mission Dam, City of San Diego Parks and Recreation Division, San Diego, California. Assisted in wetlands delineation and vegetation map upstream of the historic Old Mission Dam.

Salt Creek Channel Stage 6 Channel Widening Project, Riverside County Flood Control and Water Conservation District, County of Riverside, California. Delineated wetlands and prepared vegetation map along the approximately five-mile alignment.

El Cuervo Norte Project, City of San Diego, San Diego, California. Conducted a delineation of "waters of the United States" and wetlands under the jurisdiction of the U.S. Army Corps of Engineers, California Department Fish Game, and California Regional Water Quality Control Board for the 24-acre Wetlands Mitigation Site for State Route 56 located within the Los Peñasquitos Canyon Preserve along Los Peñasquitos Canyon Creek.

Valpreda Footbridge Crossing Project, City of San Marcos, San Marcos, California Conducted a delineation of "waters of the United States" and wetlands under the jurisdiction of the U.S. Army Corps of Engineers, California Department Fish Game, and California Regional Water Quality Control Board for the approximately two acre site. The jurisdictional delineation was conducted to determine the biological constraints on the site during the due diligence phase of the project.

La Jolla Crossroads, La Jolla Crossroads, LLC, City of San Diego, California. Prepared and processed wetlands permits from ACOE, RWQCB and CDFG for impacts to non-tidal wetlands for mixed-use, in-fill project. Prepared alternatives analysis and functional values assessment. Evaluated wetlands mitigation sites and prepared conceptual wetlands mitigation and monitoring plan. Prepared CEQA Addendum for CDFG and conducted community outreach meetings for wetlands mitigation site.

Newhall Specific Plan, Newhall Land and Farming, Inc., Counties of Los Angeles and Ventura, California. Conducted focused surveys for sensitive plant species, including the state-listed San Fernando Valley spineflower and participated in San Fernando Valley spineflower seed collection.

East Grove, Lyon Homes, Inc., City of Escondido, California. Prepared alternatives analysis, Public Notice and EA for ACOE.

University Commons Development Project, Brookfield Homes, City of San Marcos, California. Performed a delineation of “waters of the United States” and wetlands under the jurisdiction of the U.S. Army Corps of Engineers and California Department of Fish and Game on approximately 400-acres. Prepared and processed a Section 404 and 401 permit application in accordance with the federal Clean Water Act and a 1603 Streambed Alteration Agreement in accordance with California Fish and Game Code. In addition, Dudek conducted focused surveys for least Bell’s vireo, quino checkerspot butterfly, arroyo toad, southwestern willow flycatcher, and California gnatcatcher.

Gateway Vista de Oro Residential Development, Gateway Vista de Oro, L.L.C., City of Vista, California. Conducted a delineation of “waters of the United States” and wetlands under the jurisdiction of the U. S. Army Corps of Engineers (ACOE) and California Department of Fish and Game (CDFG). Obtained a Section 401 permit application in accordance with the federal Clean Water Act and a 1603 Streambed Alteration Agreement in accordance with California Fish and Game Code. Conducted a pre-construction nesting bird survey within the wetlands habitat and coordinated with the client regarding tree removal and mitigation planting installation.

Lowe’s Retail Store, Lowe’s, Inc., City of Santee, California. Conducted biological surveys including vegetation mapping and wetlands delineation. Obtained permits from ACOE, RWQCB and CDFG for impacts to non-tidal wetlands. Conducted informal consultation with FWS for least Bell’s vireo. Prepared alternatives analysis and functional values assessment.

Western Riverside Multiple Species Habitat Conservation Plan (MSHCP), County of Riverside, County of Riverside, California. Research for potentially covered plant species followed by syntheses of ecological information into species accounts.

Newhall Ranch Project, Newhall Land and Farming Company, Los Angeles and Ventura Counties, California. Conducted focused surveys for the state-listed endangered San Fernando Valley spineflower (*Chorizanthe parryi* var. *Fernandina*) and other sensitive plants on approximately 6,000 acres in 2002 and 14,500 acres in 2003. In addition, collected San Fernando Valley spineflower seed from nine occurrences on Newhall Ranch.

PUBLICATIONS

Researched and prepared the introduction of the "Spring Creek Watershed Water Sampling Protocol" for the Clearwater Conservancy, State College, Pennsylvania - Fall 1999.

APPENDIX B

Vascular Plant Species Observed

At Newhall Ranch

(2002, 2003, 2004, 2005)

APPENDIX B VASCULAR PLANT SPECIES – NEWHALL RANCH

LYCOPODIAE

SELAGINELLACEAE – SPIKE-MOSS FAMILY

Selaginella bigelovii – Bigelow's spike-moss

EQUISETAE

EQUISETACEAE – HORSETAIL FAMILY

Equisetum hyemale – common scouring-rush

Equisetum laevigatum – smooth scouring-rush

Equisetum telmateia – giant horsetail

FILACEAE

AZOLLACEAE – MOSQUITO FERN FAMILY

Azolla c.f. filiculoides – duckweed fern

DENNSTAEDTIACEAE – BRAKEN FAMILY

Adiantum jordanii – California maiden-hair

Pellaea andromedifolia – coffee fern

Pellaea mucronata var. *mucronata* – bird's-foot fern

Pentagramma triangularis – goldenback fern

POLYPODIACEAE – POLYPODY FAMILY

Polypodium californicum – California polypody

CONIFERAE

CUPRESSACEAE – CYPRESS FAMILY

* *Cedrus deodara* – Deodar cedar

Juniperus californica – California juniper

PINACEAE – PINE FAMILY

* *Pinus halepensis* – Aleppo pine

* *Pinus pinea* – stone pine

APPENDIX B VASCULAR PLANT SPECIES – NEWHALL RANCH

ANGIOSPERMAE (DICOTYLEDONES)

AIZOACEAE – FIG-MARIGOLD FAMILY

- * *Aptenia cordifolia* – baby sun-rose
- * *Carpobrotus* sp. – sea-fig

AMARANTHACEAE – AMARANTH FAMILY

- * *Amaranthus albus* – tumbleweed
- Amaranthus blitoides* – prostrate amaranth
- * *Amaranthus hybridus* – amaranth
- Amaranthus palmeri* – Palmer’s amaranth
- Amaranthus powellii* – Powell’s amaranth
- * *Amaranthus retroflexus* – rough pigweed

ANACARDIACEAE – SUMAC FAMILY

- Malosma laurina* – laurel sumac
- Rhus ovata* – sugar-bush
- Rhus trilobata* – squaw bush
- * *Schinus molle* – Peruvian pepper-tree
- Toxicodendron diversilobum* – poison-oak

APIACEAE – CARROT FAMILY

- * *Anethum graveolens* – dill
- Apiastrum angustifolium* – wild celery
- * *Apium graveolens* – celery
- Berula erecta* – cutleaf water-parsnip
- Bowlesia incana* – American Bowlesia
- * *Conium maculatum* – poison hemlock
- * *Coriandrum sativum* – cilantro
- * *Daucus carota* – Queen Anne’s lace
- Daucus pusillus* – rattlesnake weed
- Lomatium utriculatum* – common lomatium
- Sanicula bipinnata* – poison sanicle

APOCYNACEAE – DOGBANE FAMILY

- Apocynum cannabinum* – Indian hemp
- * *Vinca major* – periwinkle

APPENDIX B

VASCULAR PLANT SPECIES – NEWHALL RANCH

ASCLEPIADACEAE – MILKWEED FAMILY

- Asclepias californica* – California milkweed
- Asclepias fascicularis* – narrow-leaf milkweed

ASTERACEAE – SUNFLOWER FAMILY

- Achillea millefolium* – yarrow
- Achyrachaena mollis* – blow-wives
- Acourtia microcephala* – sacapellote
- Agoseris grandiflora* – large-flowered agoseris
- Ambrosia acanthicarpa* – annual burweed
- Ambrosia confertifolia* – weak-leaved burweed
- Ambrosia psilostachya* – western ragweed
- Artemisia californica* – coastal sagebrush
- Artemisia douglasiana* – California mugwort
- Artemisia dracunculus* – tarragon
- Artemisia tridentata* – Great Basin sagebrush
- Baccharis douglasii* – marsh baccharis
- Baccharis emoryi* – Emory's baccharis
- Baccharis pilularis* – coyote brush
- Baccharis salicifolia* – mule fat
- Baccharis sarothroides* – chaparral broom
- Brickellia californica* – California brickellbush
- Brickellia nevinii* – Nevin's brickellbush
- * *Carduus pycnocephalus* – Italian thistle
- * *Centaurea melitensis* – star thistle
- Chaenactis glabriuscula* – yellow pincushion
- * *Chrysothamnus nauseosus* – rubber rabbitbrush
- Cirsium occidentale* var. *californicum* – California thistle
- Cirsium occidentale* var. *occidentale* – cobwebby thistle
- * *Cirsium vulgare* – bull thistle
- * *Cnicus benedictus* – blessed thistle
- Conyza canadensis* – horseweed
- Conyza coulteri* – Coulter's conyza
- Coreopsis bigelovii* – Bigelow's coreopsis
- * *Coreopsis tinctoria* – calliopsis
- Corethrogyne filaginifolia* – virgate cudweed aster
- * *Cotula coronopifolia* – African brass-buttons
- Encelia actoni* – Acton's encelia

APPENDIX B

VASCULAR PLANT SPECIES – NEWHALL RANCH

- Encelia californica* – California bush sunflower
Encelia farinosa – brittlebush, incensio
Ericameria palmeri var. *pachylepis* – goldenbush
Ericameria pinifolia – pine-bush
Erigeron foliosus – leafy daisy
Eriophyllum confertiflorum – long-stem golden yarrow
Euthamia occidentalis – western goldenrod
Filago californica – California fluffweed
* *Filago gallica* – narrow-leaf filago
* *Gazania linearis* – gazania
Gnaphalium bicolor – bicolor cudweed
Gnaphalium californicum – California everlasting
Gnaphalium canescens ssp. *microcephalum* – white everlasting
Gnaphalium leucocephalum – Sonora everlasting
Gnaphalium luteo-album – white cudweed
Gnaphalium sp. *nova* – everlasting
Gnaphalium palustre – lowland cudweed
Hazardia squarrosa ssp. *grindelioides* – saw-toothed goldenbush
Helianthus annuus – common sunflower
Helianthus nuttallii c.f. ssp. *parishii* – Los Angeles sunflower
Hemizonia fasciculata – fascicled tarweed
Hemizonia kelloggii – Kellogg's tarweed
Heterotheca grandiflora – telegraph weed
Heterotheca sessiliflora – golden aster
Isocoma menziesii – goldenbush
Iva axillaris – poverty weed
* *Lactuca saligna* – willowleaf lettuce
* *Lactuca serriola* – prickly lettuce
Lagophylla ramosissima – common hareleaf
Lasthenia californica – coast goldfields
Lepidospartum squamatum – scale-broom
Lessingia filaginifolia – California aster
Lessingia glandulifera – lessingia
Malacothrix saxatilis – cliff malacothrix
* *Matricaria matricarioides* – pineapple weed
Micropus californicus – slender cottonweed
Pluchea odorata – marsh-fleabane
Pluchea sericea – arrow weed

APPENDIX B

VASCULAR PLANT SPECIES – NEWHALL RANCH

- * *Pulicaria paludosa* – Spanish sunflower
- Rafinesquia californica* – California chicory
- Senecio californicus* – California butterweed
- Senecio flaccidus* var. *douglasii* – butterweed
- * *Senecio vulgaris* – common groundsel
- Silybum marianum* – milk thistle
- * *Sonchus asper* – prickly sow-thistle
- * *Sonchus oleraceus* – common sow-thistle
- Stebbinoseris heterocarpa* [*Microseris heterocarpa*] – brown puffs
- Stephanomeria exigua* – small wreathplant
- Stephanomeria pauciflora* – wire-lettuce
- Stephanomeria virgata* – twiggy wreathplant
- Stylocline gnaphaloides* – everlasting nest-straw
- Uropappus lindleyi* [*Microseris lindleyi*] – silver puffs
- Wyethia ovata* – mule ears
- Xanthium spinosum* – spiny cocklebur
- Xanthium strumarium* – cocklebur

BETULACEAE – BIRCH FAMILY

Alnus rhombifolia – white alder

BORAGINACEAE – BORAGE FAMILY

Amsinckia menziesii var. *intermedia* – yellow fiddleneck

Amsinckia menziesii var. *menziesii* – yellow fiddleneck

Amsinckia tessellata – devil's lettuce

Cryptantha sp. – forget-me-not

Cryptantha intermedia – common forget-me-not

Cryptantha micrantha – redroot cryptantha

Cryptantha microstachys – tejon cryptantha

Cryptantha muricata – prickly cryptantha

Heliotropium curassavicum – wild heliotrope

Pectocarya linearis – slender pectocarya

Pectocarya penincillata – pectocarya

Pectocarya setosav – pectocarya

Plagiobothrys arizonicus – popcorn flower

Plagiobothrys canescens – rusty popcorn flower

Plagiobothrys collinus – California popcorn flower

Plagiobothrys fulvus – common popcorn flower

APPENDIX B

VASCULAR PLANT SPECIES – NEWHALL RANCH

BRASSICACEAE – MUSTARD FAMILY

- Athysanus pusillus* – dwarf athysanus
- * *Brassica nigra* – black mustard
- * *Capsella bursa-pastoris* – shepherd's purse
- Caulanthus lasiophyllus* – California mustard
- Descurainia pinnata* ssp. *halictorum* – tansy mustard
- * *Hirschfeldia incana* – short-podded mustard
- Lepidium lasiocarpum* – peppergrass
- * *Lepidium latifolium* – peppergrass
- Lepidium virginicum* – wild peppergrass
- * *Lobularia maritime* – sweet-alyssum
- * *Raphanus sativus* – wild radish
- * *Rorippa nasturtium-aquaticum* – water cress
- * *Sisymbrium altissimum* – tumble mustard
- * *Sisymbrium irio* – London rocket
- * *Sisymbrium officinale* – hedge mustard
- * *Sisymbrium orientale* – Oriental mustard
- Stanleya pinnata* var. *pinnata* – Prince's plume
- Thysanocarpus curvipes* – fringedpod
- Tropidocarpum gracile* – slender dobie-pod

CACTACEAE – CACTUS FAMILY

- * *Cereus peruvianus* – Peruvian apple cactus
- Opuntia basilaris* var. *ramosa* – beaver-tail cactus
- Opuntia californica* var. *parkeri* – cane cholla
- Opuntia littoralis* – coastal prickly-pear
- Opuntia X vaseyi* – prickly-pear cactus
- * *Trichocereus spachianus* – golden torch cactus

CAPPARACEAE – CAPER FAMILY

- Isomeris arborea* – bladderpod

CAPRIFOLIACEAE – HONEYSUCKLE FAMILY

- Lonicera subspicata* – southern honeysuckle
- Sambucus mexicana* – Mexican elderberry
- Symphoricarpos* sp. – snowberry
- Symphoricarpos c.f. mollis* – spreading snowberry

APPENDIX B

VASCULAR PLANT SPECIES – NEWHALL RANCH

CARYOPHYLLACEAE – PINK FAMILY

- * *Cerastium glomeratum* – sticky mouse-ear
- * *Herniaria cinerea* – gray herniaria
- Loeflingia squarrosa* – no common name
- * *Silene gallica* – common catchfly
- Spergularia* sp. – stickwort, starwort
- * *Spergularia rubra* – sand-spurrey
- * *Spergularia c.f. villosa* – villous sand-spurrey
- * *Stellaria media* – common chickweed

CASURINACEAE – SHEET OAK FAMILY

- * *Casuarina cunninghamiana* - Australian Pine

CHENOPODIACEAE – GOOSEFOOT FAMILY

- Atriplex canescens* – four-winged saltbush
- * *Atriplex heterosperma* – weedy orache
- Atriplex lentiformis* – big saltbush, quail brush
- * *Atriplex rosea* – tumbling orache
- * *Atriplex semibaccata* – Australian saltbush
- Atriplex serenana* var. *serenana* – bractscale
- Atriplex suberecta* – Australian saltbush
- Atriplex triangularis* – spearscale
- * *Bassia hyssopifolia* – five-hooked bassia
- * *Beta vulgaris* – garden beet
- * *Chenopodium album* – lamb's-quarters
- * *Chenopodium ambrosioides* – Mexican tea
- Chenopodium berlandieri* – pitseed goosefoot
- * *Chenopodium botrys* – goosefoot
- Chenopodium californicum* – California goosefoot
- * *Chenopodium murale* – nettle-leaved goosefoot
- Chenopodium rubrum* – red goosefoot
- * *Salsola tragus* – Russian-thistle
- * *Spinacia oleracea* – spinach

CONVOLVULACEAE – MORNING-GLORY FAMILY

- Calystegia macrostegia* ssp. *cyclostegia* – morning-glory
- Calystegia peirsonii* – Peirson's morning-glory
- * *Convolvulus arvensis* – bindweed

APPENDIX B

VASCULAR PLANT SPECIES – NEWHALL RANCH

CRASSULACEAE – STONECROP FAMILY

Crassula connata – dwarf stonecrop

Dudleya cymosa – unidentified dudleya

Dudleya lanceolata – lanceleaf dudleya

CUCURBITACEAE – GOURD FAMILY

Cucurbita foetidissima – coyote-melon, calabazilla

Marah macrocarpus – wild cucumber

CUSCUTACEAE – DODDER FAMILY

Cuscuta californica – California dodder

Cuscuta pentagona – five-angled dodder

Cuscuta subinclusa – canyon dodder

DATISCACEAE – DASTICA FAMILY

Dastica glomerata – Durango root

ERICACEAE – HEATH FAMILY

Arctostaphylos glauca – bigberry manzanita

EUPHORBIACEAE – SPURGE FAMILY

Chamaesyce albomarginata – rattlesnake spurge

* *Chamaesyce maculata* – spotted spurge

Chamaesyce polycarpa – small-seed sand mat

Chamaesyce serpyllifolia – thyme-leaved spurge

Croton californicus – California croton

Eremocarpus setigerus – doveweed

Euphorbia spathulata – reticulate-seed spurge

* *Ricinus communis* – castor-bean

Stillingia linearifolia – linear-leaved stillingia

FABACEAE – PEA FAMILY

* *Acacia baileyana* – golden wattle

Astragalus didymocarpus – white dwarf locoweed

Astragalus gambelianus – Gambel's locoweed

Astragalus trichopodus – Santa Barbara locoweed

Glycyrrhiza lepidota – wild licorice

Lathyrus laetiflorus – wild sweet pea

APPENDIX B

VASCULAR PLANT SPECIES – NEWHALL RANCH

- Lathyrus vestitus* – wild pea
Lotus corniculatus – bird's-foot lotus
Lotus hamatus – grab lotus
Lotus humistratus – lotus
Lotus purshianus – Spanish-clover
Lotus salsuginosus – coastal lotus
Lotus scoparius var. *scoparius* – deerweed
Lotus strigosus – strigose deerweed
Lupinus bicolor – Lindley's annual lupine
Lupinus excubitus – Mountain Springs bush lupine
Lupinus excubitus var. *hallii* – grape soda lupine
Lupinus hirsutissimus – stinging lupine
Lupinus microcarpus var. *densiflorus* – chick lupine
Lupinus microcarpus var. *microcarpus* – chick lupine
Lupinus sparsiflorus – Coulter's lupine
Lupinus succulentis – arroyo lupine
Lupinus truncatus – collar lupine
* *Medicago polymorpha* – California burclover
* *Medicago polymorpha* var. *brevispina* – short-spined California burclover
* *Medicago sativa* – alfalfa
* *Melilotus alba* – white sweet-clover
* *Melilotus indica* – yellow sweet-clover
* *Robinia pseudoacacia* – black locust
Trifolium sp. – clover
Trifolium albopurpureum – rancheria clover
Trifolium ciliolatum – tree clover
* *Trifolium fragiferum* – strawberry clover
Trifolium gracilentum – pin-point clover
* *Trifolium hirtum* – rose clover
Trifolium microcephalum – maiden clover
* *Trifolium repens* – white clover
Trifolium willdenovii – valley clover
Vicia hassei – Hesse's vetch
* *Vicia villosa* ssp. *villosa* – winter vetch

FAGACEAE – BEECH FAMILY

- Quercus agrifolia* – coast live oak
Quercus berberidifolia – scrub oak

APPENDIX B

VASCULAR PLANT SPECIES – NEWHALL RANCH

Quercus douglasii – blue oak

Quercus lobata – valley oak

GERANIACEAE – GERANIUM FAMILY

- * *Erodium brachycarpum* – shortfruit stork's bill
- * *Erodium botrys* – long-beaked filaree
- * *Erodium cicutarium* – red-stemmed filaree
- * *Erodium moschatum* – white-stemmed filaree

GROSSULARIACEAE – CURRANT FAMILY

Ribes aureum – golden currant

Ribes malvaceum – chaparral currant

HYDROPHYLLACEAE – WATERLEAF FAMILY

Emmenanthe penduliflora – whispering bells

Eriodictyon crassifolium var. *nigrescens* – yerba santa

Eucrypta chrysanthemifolia – common eucrypta

Nemophila menziesii – baby blue-eyes

Nemophila parviflora var. *quercifolia* – oak-leaved nemophila

Phacelia cicutaria – caterpillar phacelia

Phacelia cicutaria var. *hispida* – caterpillar phacelia

Phacelia distans – blue fiddleneck

Phacelia imbricata ssp. *imbricata* – imbricate phacelia

Phacelia minor – wild canterbury-bell

Phacelia ramosissima – shrubby phacelia

JUGLANDACEAE – WALNUT FAMILY

Juglans californica – southern California black walnut

LAMIACEAE – MINT FAMILY

- * *Marrubium vulgare* – horehound
- Mentha citrata* – orange mint
- Salvia apiana* – white sage
- Salvia columbariae* – chia
- Salvia leucophylla* – purple sage
- Salvia mellifera* – black sage
- Stachys ajugoides* – bugle hedge-nettle
- Stachys ajugoides* var. *rigida* – rigid hedge-nettle

APPENDIX B

VASCULAR PLANT SPECIES – NEWHALL RANCH

Stachys albens – white hedge-nettle

Trichostema lanceolatum – vinegar weed

LAURACEAE – LAUREL FAMILY

Umbellularia californica – California laurel

LOASACEAE – STICK-LEAF FAMILY

Mentzelia sp. – blazing star

Mentzelia laevicaulis – blazing star

Mentzelia micrantha – small-flowered stick-leaf

LYTHRACEAE – LOOSESTRIFE FAMILY

Lythrum californicum – California loosestrife

MALVACEAE – MALLOW FAMILY

Malacothamnus fasciculatus ssp. *laxiflorus* – chaparral bush mallow

Malacothamnus fremontii – bush mallow

Malacothamnus marrubioides – bush mallow

* *Malva neglecta* – common mallow

* *Malva parviflora* – cheeseweed

MELIACEAE – MAHOGANY FAMILY

* *Melia azedarach* – China berry

MORACEAE – FIG FAMILY

* *Ficus carica* – edible fig

MYRTACEAE – MYRTLE FAMILY

* *Eucalyptus* sp. – eucalyptus

* *Eucalyptus camaldulensis* – red gum

* *Eucalyptus globulus* – blue gum

* *Eucalyptus leucoxylon* – white ironbark

* *Eucalyptus polyanthemos* – silver dollar gum

* *Eucalyptus sideroxylon* – red ironbark

NYCTAGINACEAE – FOUR O'CLOCK FAMILY

Mirabilis laevis var. *crassifolia* [*M. californica*] – California wishbone-bush

APPENDIX B

VASCULAR PLANT SPECIES – NEWHALL RANCH

OLEACEAE – OLIVE FAMILY

- Fraxinus dipetala* – California ash
- * *Fraxinus uhdei* – tropical ash
- Fraxinus velutina* – velvet ash
- * *Ligustrum lucidum* – glossy privet
- * *Olea europaea* – mission olive

ONAGRACEAE – EVENING-PRIMROSE FAMILY

- Camissonia bistorta* – southern sun cup
- Camissonia boothii* – sun cup
- Camissonia boothii* ssp. *decorticans* – shredding evening primrose
- Camissonia californica* – mustard primrose
- Camissonia hirtella* – sun cup
- Camissonia micrantha* – miniature sun cup
- Camissonia strigulosa* – sun cup
- Clarkia purpurea* – winecup clarkia
- Clarkia speciosa* – clarkia
- Clarkia unguiculata* – elegant clarkia
- Epilobium brachycarpum* – willow herb
- Epilobium canum* ssp. *canum* – California fuchsia
- Epilobium ciliatum* – California cottonweed
- Ludwigia peploides* – yellow waterweed
- Ludwigia repens* – water primrose
- Oenothera elata* – evening primrose
- * *Oenothera laciniata* – evening primrose

OROBANCHACEAE – BROOM-RAPE FAMILY

- Orobanche parishii* ssp. *parishii* – broom-rape
- Orobanche* sp. – broom-rape

PAEONIACEAE – PEONY FAMILY

- Paeonia californica* – California peony

PAPAVERACEAE – POPPY FAMILY

- Argemone corymbosa* – prickly poppy
- Eschscholzia californica* – California poppy
- Platystemon californicus* – California creamcups

APPENDIX B

VASCULAR PLANT SPECIES – NEWHALL RANCH

PLANTAGINACEAE – PLANTAIN FAMILY

- Plantago erecta* – dot-seed plantain
- * *Plantago indica* – plantain
- * *Plantago lanceolata* – English plantain
- * *Plantago major* – common plantain

PLATANACEAE – SYCAMORE FAMILY

Platanus racemosa – western sycamore

POLEMONIACEAE – PHLOX FAMILY

Allophyllum divaricatum – purple false gillyflower
Allophyllum glutinosum – sticky false gillyflower
Eriastrum densifolium – woollystar
Eriastrum densifolium ssp. *elongatum* – elongate eriastrum
Eriastrum densifolium ssp. *mohavense* – Mohave eriastrum
Eriastrum sapphirinum – sapphire eriastrum
Gilia angelensis – angel gilia
Gilia capitata – globe gilia
Leptodactylon californicum – prickly phlox
Linanthus androsaceus – common linanthus
Linanthus pygmaeus - linanthus
Navarretia atractylodes – holly-leaf skunkweed
Phlox gracilis – slender phlox

POLYGONACEAE – BUCKWHEAT FAMILY

Chorizanthe fimbriata – fringed spineflower
Chorizanthe parryi var. *fernandina* – San Fernando Valley spineflower
Chorizanthe staticoides – turkish rugging
Eriogonum angulosum – angle-stem buckwheat
Eriogonum baileyi – Bailey's buckwheat
Eriogonum brachyanthum – short-flowered buckwheat
Eriogonum elongatum – long-stemmed buckwheat
Eriogonum fasciculatum ssp. *foliolosum* – California buckwheat
Eriogonum fasciculatum ssp. *polifolium* – California buckwheat
Eriogonum gracile var. *gracile* – slender woolly buckwheat
Eriogonum gracillimum – rose and white buckwheat
Eriogonum maculatum – spotted buckwheat
Eriogonum c.f. *viridescens* – buckwheat
Lastarriaea coriacea – lastarriaea

APPENDIX B

VASCULAR PLANT SPECIES – NEWHALL RANCH

- * *Polygonum arenastrum* – common knotweed
- * *Polygonum argyrocoleon* – smartweed
- Polygonum lapathifolium* – willow weed
- Polygonum punctatum* – perennial smartweed
- Pterostegia drymarioides* – pterostegia
- * *Rumex conglomeratus* – whorled dock
- * *Rumex crispus* – curly dock
- Rumex hymenosepalus* – wild rhubarb
- Rumex maritimus* – golden dock
- Rumex obtusifolius* – dock
- Rumex salicifolius* – willow dock

PORTULACACEAE – PURSLANE FAMILY

- Calandrinia ciliata* – redmaids
- Calyptridium* sp. – pussypaws
- Claytonia parviflora* – small-leaved montia
- Claytonia perfoliata* – miner’s lettuce
- * *Portulaca oleracea* – common purslane

RANUNUCULACEAE – BUTTERCUP FAMILY

- Clematis ligusticifolia* – yerba de chiva
- Delphinium parryi* ssp. *parryi* – Parry’s larkspur

RHAMNACEAE – BUCKTHORN FAMILY

- Ceanothus crassifolius* – hoary-leaved ceanothus
- Ceanothus tomentosus* – woolyleaf ceanothus
- Rhamnus crocea* – redberry
- Rhamnus ilicifolia* – holly-leaf redberry

ROSACEAE – ROSE FAMILY

- Adenostoma fasciculatum* – chamise
- Cercocarpus betuloides* – mountain-mahogany
- Cercocarpus betuloides* var. *betuloides* – birch-leaf mountain-mahogany
- Cercocarpus betuloides* var. *blancheae* – island mountain-mahogany
- Heteromeles arbutifolia* – toyon
- Prunus ilicifolia* – holly-leaf cherry
- Rosa californica* – California rose

APPENDIX B

VASCULAR PLANT SPECIES – NEWHALL RANCH

- Rubus ursinus* – California blackberry
- * *Sangwisorba minor* – garden burnet

RUBIACEAE – MADDER FAMILY

- Galium angustifolium* – narrow-leaved bedstraw
- * *Galium aparine* – goose grass
- Galium nuttallii* ssp. *nuttallii* – San Diego bedstraw
- Galium porrigens* – climbing bedstraw

SALICACEAE – WILLOW FAMILY

- Populus fremontii* – Fremont's cottonwood
- Populus tremuloides* – Quaking aspen
- Salix exigua* – narrow-leaved willow
- Salix gooddingii* – black willow
- Salix laevigata* – red willow
- Salix lasiolepis* – arroyo willow
- Salix lucida* ssp. *lasiandra* – golden willow

SAURURACEAE – LIZARD'S-TAIL FAMILY

- Anemopsis californica* – yerba mansa

SCROPHULARIACEAE – FIGWORT FAMILY

- Antirrhinum coulterianum* – white snapdragon
- Antirrhinum multiflorum* – withered snapdragon
- Castilleja affinis* – coast paintbrush
- Castilleja densiflora* – dense-flowered owl's-clover
- Castilleja exserta* – common owl's-clover
- Castilleja foliolosa* – woolly Indian paintbrush
- Collinsia heterophylla* – purple Chinese houses
- Cordylanthus rigidus* – bird's beak
- Keckiella cordifolia* – heart-leaf penstemon
- Linaria canadensis* – toadflax
- Mimulus aurantiacus* – bush monkeyflower
- Mimulus aurantiacus* var. *pubescens* – bush monkeyflower
- Mimulus guttatus* – seep monkeyflower
- Mimulus pilosus* – downy monkeyflower
- Penstemon centranthifolius* – scarlet bugler
- * *Verbascum thapsus* – woolly mullein

APPENDIX B

VASCULAR PLANT SPECIES – NEWHALL RANCH

- * *Verbascum virgatum* – wand mullein
- * *Veronica anagallis-aquatica* – water speedwell

SIMAROUBACEAE – QUASSIA FAMILY

- * *Ailanthus altissima* – tree of heaven

SOLANACEAE – NIGHTSHADE FAMILY

- Datura wrightii* – western jimsonweed
- * *Nicotiana glauca* – tree tobacco
- Nicotiana quadrivalvis* – Indian tobacco
- * *Solanum americanum* – small-flowered nightshade
- Solanum douglasii* – white nightshade
- * *Solanum eleagnifolium* – silver leaf horse-nettle
- * *Solanum sarrachoides* – hairy nightshade
- Solanum xanti* – chaparral nightshade

TAMARICACEAE – TAMARISK FAMILY

- * *Tamarix* sp. – tamarisk
- * *Tamarix ramoissima* – tamarisk

ULMACEAE – ELM FAMILY

- * *Ulmus pumila* – Siberian elm

URTICACEAE – NETTLE FAMILY

- Hesperocnide tenella* – western nettle
- Parietaria hespera* – western pellitory
- Urtica dioica* – giant creek nettle
- * *Urtica urens* – dwarf nettle

VERBENACEAE – VERVAIN FAMILY

- Verbena lasiostachys* – western verbena

VIOLACEAE – VIOLET FAMILY

- Viola pedunculata* – Johnny jump-ups

VISCACEAE – MISTLETOE FAMILY

- Phoradendron macrophyllum* – big leaf mistletoe
- Phoradendron villosum* – oak mistletoe

APPENDIX B

VASCULAR PLANT SPECIES – NEWHALL RANCH

VITACEAE – GRAPE FAMILY

Parthenocissus vitacea – woodbine, Virginia creeper

Vitis girdiana – desert wild grape

ZYGOPHYLLACEAE – CALTROP FAMILY

* *Tribulus terrestris* – puncture vine

ANGIOSPERMAE (MONOCOTYLEDONES)

ARECACEAE – PALM FAMILY

* *Washingtonia robusta* – Mexican fan palm

CYPERACEAE – SEDGE FAMILY

Carex alma – sturdy sedge

Carex praegracilis – clustered field sedge

Carex sp. – sedge

Cyperus eragrostis – tall cyperus

Cyperus esculentus – yellow nut-grass

* *Cyperus involucratus* – nutsedge

Cyperus odoratus – coarse cyperus

Eleocharis montevidensis – slender creeping spike-rush

Eleocharis parishii – Parish's spikerush

Eleocharis rostellata – beaked spikerush

Scirpus acutus – hard-stemmed bulrush

Scirpus americanus – winged three-square

Scirpus maritimus – alkali bulrush

Scirpus microcarpus – bulrush

Scirpus robustus – Pacific coast bulrush

JUNCACEAE – RUSH FAMILY

Juncus sp. – rush

Juncus acutus ssp. *leopoldii* – southwestern spiny rush

Juncus balticus – wire rush

Juncus bufonius – toad rush

Juncus longistylis – rush

Juncus mexicanus – Mexican rush

Juncus rugulosus – wrinkled rush

Juncus textilis – Indian rush

APPENDIX B

VASCULAR PLANT SPECIES – NEWHALL RANCH

Juncus torreyi – rush

Juncus triformis – Yosemite dwarf rush

Juncus xiphioides – iris-leaved rush

LEMNACEAE – DUCKWEED FAMILY

Lemna miniscula – duckweed

Lemna valdiviana – duckweed

LILIACEAE – LILY FAMILY

* *Allium cepa* – onion

Allium porrum – onion

* *Amaryllis bella-donna* – naked lady

* *Asparagus officinalis* – asparagus

Bloomeria crocea – common goldenstar

Brodiaea terrestris ssp. *kernensis* – dwarf brodiaea

Calochortus clavatus var. *gracilis* – slender mariposa lily

Calochortus venustus – mariposa lily

Dichelostemma capitatum – blue dicks

Muilla maritima – common muilla

Yucca whipplei – Our Lord's candle

Yucca schidigera – Mojave Yucca

POACEAE – GRASS FAMILY

Achnatherum coronatum – giant needlegrass

* *Agrostis* sp. – bentgrass

* *Agrostis viridis* – water bent

* *Arundo donax* – giant reed

* *Avena barbata* – slender oat

* *Avena fatua* – wild oat

Avena sativa – cultivated oat

Bromus catharticus – California brome

Bromus catharticus var. *catharticus* – California brome

* *Bromus diandrus* – ripgut grass

* *Bromus hordeaceus* – soft chess

* *Bromus madritensis* ssp. *rubens* – foxtail chess

* *Bromus sterilis* – sterile brome

* *Bromus tectorum* – cheat grass

* *Cortaderia jubata* – pampas grass

APPENDIX B

VASCULAR PLANT SPECIES – NEWHALL RANCH

- * *Crypsis schoenoides* – prickly grass
- * *Cynodon dactylon* – Bermuda grass
- * *Digitaria sanguinalis* – hairy crabgrass
- Distichlis spicata* – salt grass
- * *Echinochloa colonum* – jungle-rice
- Echinochloa crus-galli* – barnyard grass
- * *Eleusine indica* – goose grass
- Elymus glaucus* – western wild-rye
- Elymus multisetus* – big squirreltail
- Eragrostis mexicana* – lovegrass
- * *Festuca arundinacea* – tall fescue
- * *Hordeum marinum* – Mediterranean barley
- * *Hordeum murinum* – glaucous foxtail barley
- * *Lamarckia aurea* – goldentop
- * *Leptochloa uninerva* – Mexican sprangletop
- Leymus condensatus* – giant ryegrass
- Leymus triticoides* – beardless wild rye
- * *Lolium multiflorum* – Italian ryegrass
- * *Lolium perenne* – perennial ryegrass
- Melica imperfecta* – California melic
- Muhlenbergia asperifolia* – scratch-grass
- Muhlenbergia microsperma* – littleseed muhly
- Nassella cernua* – nodding needlegrass
- Nassella lepida* – foothill needlegrass
- Nassella pulchra* – purple needlegrass
- Panicum capillare* – western witchgrass
- * *Panicum miliaceum* – broom corn millet
- * *Parapholis incurve* – sickle grass
- Paspalum distichum* – knotgrass
- * *Phalaris aquatica* – Harding grass
- * *Phalaris minor* – Mediterranean canary grass
- * *Piptatherum miliaceum* – smilo grass
- * *Poa annua* – annual bluegrass
- Poa secunda* – Malpais bluegrass
- * *Polypogon interruptus* – ditch beard grass
- * *Polypogon monspeliensis* – rabbit's-foot grass
- Schismus barbatus* – abumashi
- Sorghum bicolor* – sorghum

APPENDIX B

VASCULAR PLANT SPECIES – NEWHALL RANCH

- Sorghum halepense* – Johnsongrass
- Sporobolus airoides* – alkali scation
- * *Triticum aestivum* – cultivated wheat
- Vulpia microstachys* – fescue
- * *Vulpia myuros* – rattail fescue
- Vulpia octoflora* – six-weeks fescue

POTAMOGETONACEAE – PONDWEED FAMILY

Potamogeton foliosus – leafy pondweed

TYPHACEAE – CATTAIL FAMILY

Typha domingensis – slender cattail

Typha latifolia – broad-leaved cattail

- * signifies introduced (non-native) species

APPENDIX C

California Natural Diversity Database 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 # _____
Copy Sent To _____	

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

Reporter: Anuja Parikh, Nathan Gale

Phone: (760) 942.5147

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

Date of Field Work: May 9, 10, 14, 16, 24; June 1-3, 7, 9; 2005 County: Los Angeles

Collection: no If yes, #
Mus./Herb:

Location: Northern Santa Susana Mountains/Santa Clarita Valley, Newhall Ranch, southeast of confluence of the Santa Clara River and Castaic Creek, east, south, and west edges of Airport Mesa and adjacent mesas.

Quad Name: Newhall
X 7½' 15' Elevation: 1075-1250' T 4N R 16W W 1 of W 1 Sec 3
T 4N R 17W E 1 of E 1 Sec 3

Landowner/Manager: Newhall Land, 23823 Valencia Boulevard, Valencia, CA 91355

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

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

Total # of Individuals = 630 Is this a subsequent visit? X Yes ___ No ___ Compared to your last visit: ___ more ___ same ___ fewer

Phenology (plants): ___ % vegetative ___ % 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):

Most occurred in California sagebrush (purple sage series). Dominant plants include *Artemisia californica*, *Eriogonum fasciculatum*, *Salvia leucophylla*, and *Bromus* spp. Most plants were on up to 50% slopes with north, northwest, or northeast aspects.

Current Land Use/Visible Disturbances/Possible Threats: Current Land Use: Cattle grazing, farming; Visible Disturbances: cattle grazing, farming, grading/clearing; Possible Threats: proposed residential/commercial development.

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

Comments: This report summarizes 36 discrete locations, each with from 1 to an estimated 200 individuals observed.

Should/Could this site be protected? How?

Other comments:

DETERMINATION (Check one or more, fill in blanks)

___ Keyed in a site reference:

___ Compared with specimen housed at:

___ Compared with photo/drawing in:

___ By another person (name):

X Other: Personal knowledge

OTHER KNOWLEDGEABLE INDIVIDUALS (Name/Address/Phone)

PHOTOGRAPHS (Check one or more)

Subject _____ Type _____

___ Plant/Animal _____ Slide

___ Habitat _____ Print

___ Diagnostic Feature

___ Other

May we obtain duplicates at our cost?

___ Yes X No



■ slender mariposa lily - *Calochortus clavatus* var. *gracilis*

Newhall Ranch - Airport Mesa
2005 Sensitive 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*
ATTACH OR DRAW A MAP ON BACK.

Document Code _____	Quad Code _____
Index Code _____	Occurrence # _____
Copy Sent To _____	

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

Reporter: Anuja Parikh, Nathan Gale, and others

Phone: (760) 942.5147

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

Date of Field Work: May 9-June 9, 2005

County: Los Angeles

Collection: no

If yes, #

Mus./Herb:

Location: Northern Santa Susana Mountains/Santa Clarita Valley, Newhall Ranch, southeast of confluence of the Santa Clara River and Castaic Creek, east, south, and west edges of Airport Mesa and adjacent mesas.

Quad Name: Newhall
X 7½' 15' Elevation: 1075-1250'
 T 4N R 16W W ¼ of W ¼ Sec 3
 T 4N R 17W E ¼ of E ¼
 Sec 3

Landowner/Manager: Newhall Land, 23823 Valencia Boulevard, Valencia, CA 91355

Species Found? X Yes No If not, reason:

Is this a new location record? Yes X No Unknown

Total # of Individuals = ~1,706,000 Is this a subsequent visit? X Yes No Compared to your last visit: X more same fewer

Phenology (plants): % vegetative % 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):

Most occurred in California grassland series, with some plants in California sagebrush communities (purple sage and California buckwheat series). Dominant plants include erod cic, *Bromus madritensis rubens*, *Erodicum cicutarium*, *Schismus barbatus*, *Bromus rubens*, *Artemisia californica*, and *Eriogonum fasciculatum*. Most plants were on up to 50% slopes with southwest, south, or southeast aspects.

Current Land Use/Visible Disturbances/Possible Threats: Current Land Use: Cattle grazing, farming; Visible Disturbances: cattle grazing, farming, grading/clearing; Possible Threats: proposed residential/commercial development.

Overall Site Quality: Excellent Good X Fair Poor

Comments: This report summarizes 154 discrete locations, each with from 1 to an estimated 500,000 individuals observed.

Should/Could this site be protected? How?

Other comments:

DETERMINATION (Check one or more, fill in blanks)

 Keyed in a site reference:

 Compared with specimen housed at:

 Compared with photo/drawing in:

 By another person (name):

X Other: Personal knowledge

OTHER KNOWLEDGEABLE INDIVIDUALS (Name/Address/Phone)

PHOTOGRAPHS (Check one or more)

Subject _____ Type _____

 Plant/Animal Slide

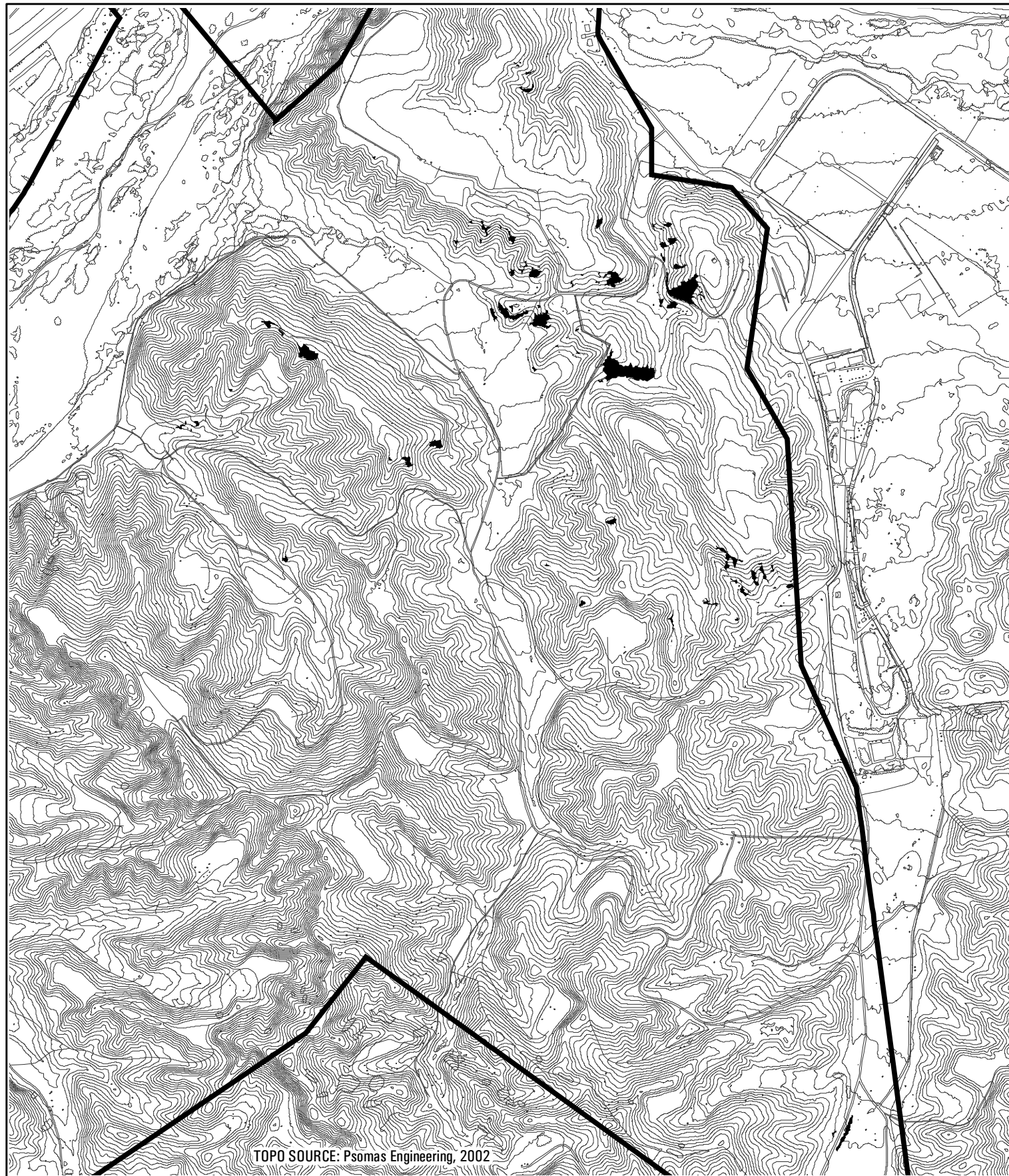
 Habitat Print

 Diagnostic Feature

 Other

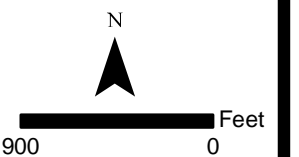
May we obtain duplicates **at our cost?**

 Yes X No



TOPO SOURCE: Psomas Engineering, 2002

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



Newhall Ranch - Airport Mesa
2005 Sensitive 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
ATTACH OR DRAW A MAP ON BACK.**

Document Code _____	Quad Code _____
Index Code _____	Occurrence # _____
Copy Sent To _____	

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

Reporter: Galen Hagen, Michelle Balk, Dave Flietner

Phone: (760) 942-5147

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

Date of Field Work: July 6-8, 2005

County: Los Angeles

Collection: no

If yes, #

Mus./Herb:

Location: Northern Santa Susana Mountains, Newhall Ranch, northwest of confluence of the Santa Clara River and Castaic Creek, scattered on both sides of Chiquito Canyon.

Quad Name: Val Verde ☒ 7½' ☐ 15' Elevation: 1000-1300' T 4N R 17W ☐ ¼ of ☐ ¼ Sec 15 and 16

Landowner/Manager: Newhall Land, 23823 Valencia Boulevard, Valencia, CA 91355

Species Found? ☒ Yes ☐ No If not, reason:

Is this a new location record? ☐ Yes ☒ No ☐ Unknown

Total # of Individuals = ~60 Is this a subsequent visit? ☒ Yes ☐ No Compared to your last visit: ☒ more ☐ same ☐ fewer

Phenology (plants): ☐ % vegetative ☐ % 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):

California sagebrush is the predominant vegetation type with *Artemisia californica*, *Eriogonum fasciculatum*, *Centaurea melitensis* and *Bromus diandrus* the most common associated species. Soils texture most commonly loam, silt loam, or clay loam. Primarily on north, northwest, and northeast facing slopes with slope gradients typically ranging between 20 degrees and 45 degrees.

Current Land Use/Visible Disturbances/Possible Threats: Land used for cattle grazing and farming. Proposed for commercial/residential development.

Overall Site Quality: ☐ Excellent ☐ Good ☒ Fair ☐ Poor

Comments: This description summarizes 5 discrete locations, each with from 1 to 26 individuals observed.

Should/Could this site be protected? How?

Other comments:

DETERMINATION (Check one or more, fill in blanks)

☐ Keyed in a site reference:

☐ Compared with specimen housed at:

☐ Compared with photo/drawing in:

☐ By another person (name):

☒ Other: personal knowledge

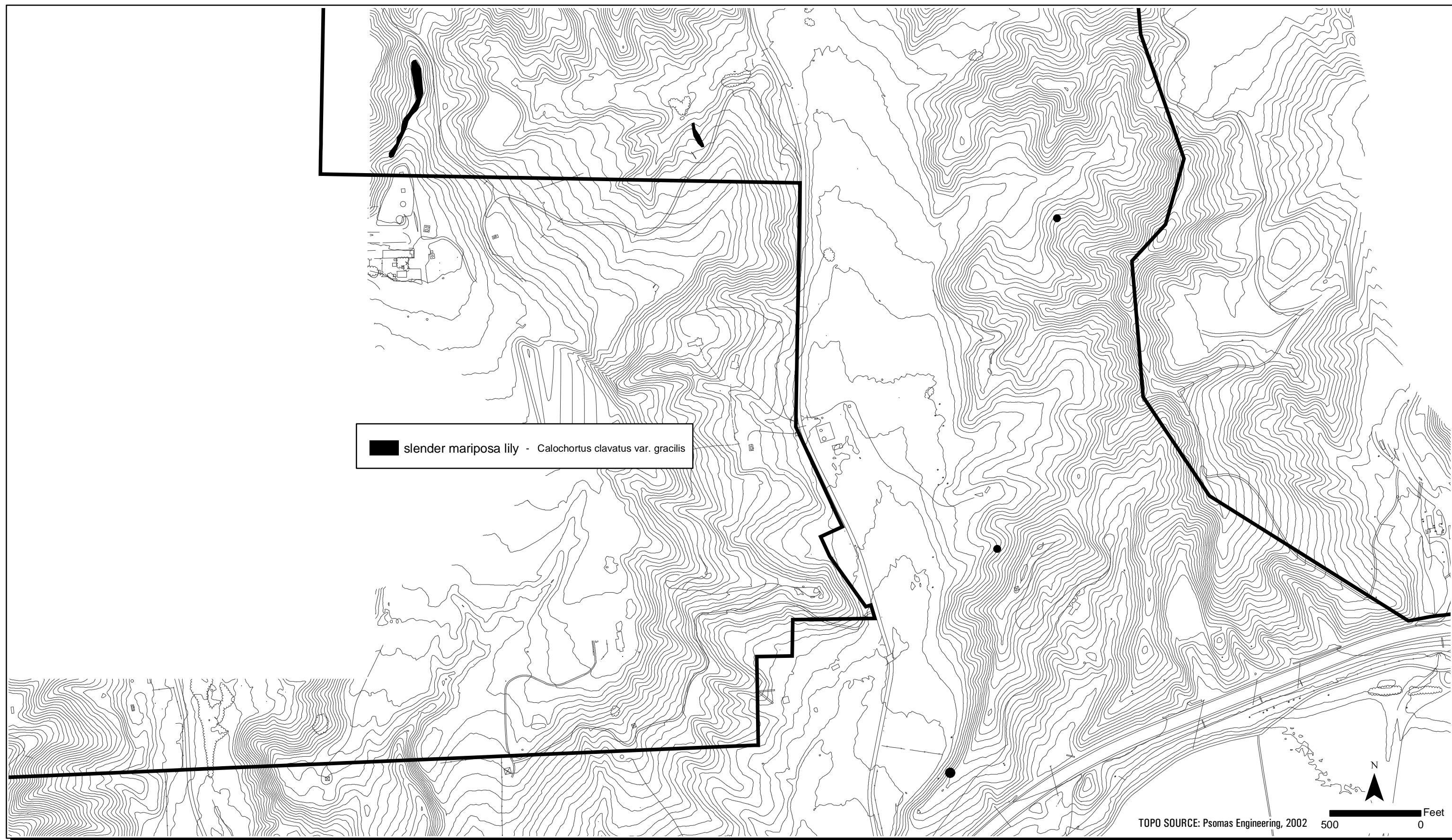
OTHER KNOWLEDGEABLE INDIVIDUALS (Name/Address/Phone)

PHOTOGRAPHS (Check one or more)

Subject	Type
<input type="checkbox"/> Plant/Animal	<input type="checkbox"/> Slide
<input type="checkbox"/> Habitat	<input type="checkbox"/> Print
<input type="checkbox"/> Diagnostic Feature	
<input type="checkbox"/> Other	

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

☐ Yes ☒ No



Newhall Ranch - Chiquito Canyon
2005 Sensitive 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.
ATTACH OR DRAW A MAP ON BACK.

PL EA -'

Document Code _____	Quad Code _____
IndexCode _____	Occurrence # _____
Ecology Sent To _____	

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

Reporter: Megan Enright and others Phone: (760) 942-5147

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

Date of Field Work: May 1, 3, 5, 11, 12, 27, 28; June 21-2 and 28-30; 2005

County: Los Angeles

Collection: no

If yes, #

Mus./Herb:

Location: Northern Santa Susana Mountains/Santa Clarita Valley, Newhall Ranch, south of confluence of the Santa Clara River and Castaic Creek, eastern, southern, and western edges of Grapevine Mesa and scattered ridges in the area.

Quad Name: Val Verde

X 7½' 15' Elevation: 1040-1290' T 17W R 4N N ¼ Sec 3

Landowner/Manager: Newhall Land, 23823 Valencia Boulevard, Valencia, CA 91355

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

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

Total # of Individuals = ~934 Is this a subsequent visit? X Yes No Compared to your last visit: X more ___ same ___ fewer

Phenology (plants): ___ % vegetative ___ % 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):

California sagebrush communities predominate, including black sage, purple sage, and California buckwheat series. Aspect ranges from east to northwest, with most on north-east facing slopes of up to 45%. Soil texture is silt loam or loam.

Current Land Use/Visible Disturbances/Possible Threats: Current Land Use: Cattle grazing, farming; Visible Disturbances: cattle grazing, farming; Possible Threats: proposed residential/commercial development.

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

Comments: This report summarizes approximately 60 discrete locations, each with from 1 to an estimated 200 individuals observed.

Should/Could this site be protected? How?

Other comments:

DETERMINATION (Check one or more, fill in blanks)

___ Keyed in a site reference:

___ Compared with specimen housed at:

___ Compared with photo/drawing in:

___ By another person (name):

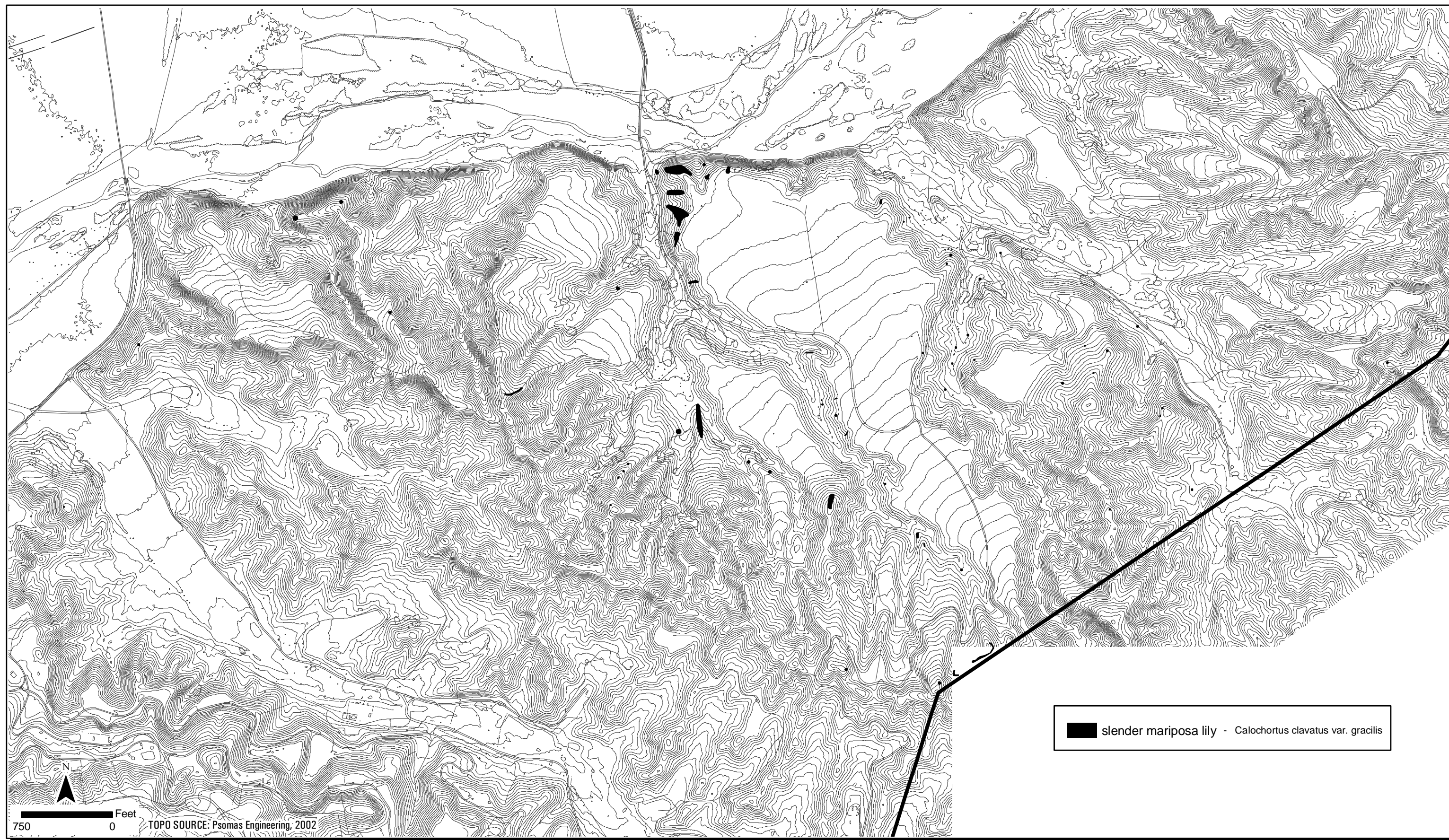
X Other: personal knowledge

OTHER KNOWLEDGEABLE INDIVIDUALS (Name/Address/Phone)

PHOTOGRAPHS (Check one or more)

Subject	Type
___ Plant/Animal	___ Slide
___ Habitat	___ Print
___ Diagnostic Feature	
___ Other	

May we obtain duplicates at our cost?
___ Yes X No



Newhall Ranch - Grapevine Mesa
2005 Sensitive 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
ATTACH OR DRAW A MAP ON BACK.

Document Code _____	Quad Code _____
Index Code _____	Occurrence # _____
Copy Sent To _____	

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

Reporter: Michelle Balk, Colin Khoury, Sherri Miller, Darren Smith, Megan Enright, others Phone: (760) 942-5147

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

Date of Field Work: May 1 - 5, 10-12; June 25, 26, 29; 14 July; 2005 County: Los Angeles Collection: no If yes, # Mus./Herb:

Location: Northern Santa Susana Mountains/Santa Clarita Valley, Newhall Ranch, south of confluence of the Santa Clara River and Castaic Creek, eastern, southern, and western edges of Grapevine Mesa and scattered ridges in the area.

Quad Name: Val Verde X 7½' 15' Elevation: 1040-1290' T 17W R 4N N ¼ Sec 3

Landowner/Manager: Newhall Land, 23823 Valencia Boulevard, Valencia, CA 91355

Species Found? X Yes No If not, reason:

Is this a new location record? Yes X No Unknown

Total # of Individuals = ~4,000,000 Is this a subsequent visit? X Yes No Compared to your last visit: X more same fewer

Phenology (plants): % vegetative % 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):

Mixed chaparral, California sagebrush - California buckwheat, and chamise series communities provided habitat for most plants, with non-native cover generally 40 - 70%. Dominant plants include Bromus spp., Avena fatua, Erodium cicutarium, and Salsola tragus. Associated native species include *Adenostema fasciculata*, *Ericameria* sp. and *Artemisia californica*. Slopes were generally southwest-facing and less than 30%, although plants were found on all slopes with all aspects. Soil texture is predominantly silt loam.

Current Land Use/Visible Disturbances/Possible Threats: Current Land Use: Cattle grazing, farming; Visible Disturbances: cattle grazing, farming; Possible Threats: proposed residential/commercial development.

Overall Site Quality: Excellent X Good Fair Poor

Comments: This report summarizes 103 discrete locations, each with from 1 to an estimated 1,765,000 individuals observed.

Should/Could this site be protected? How?

Other comments:

DETERMINATION (Check one or more, fill in blanks)

 Keyed in a site reference:

 Compared with specimen housed at:

 Compared with photo/drawing in:

 By another person (name):

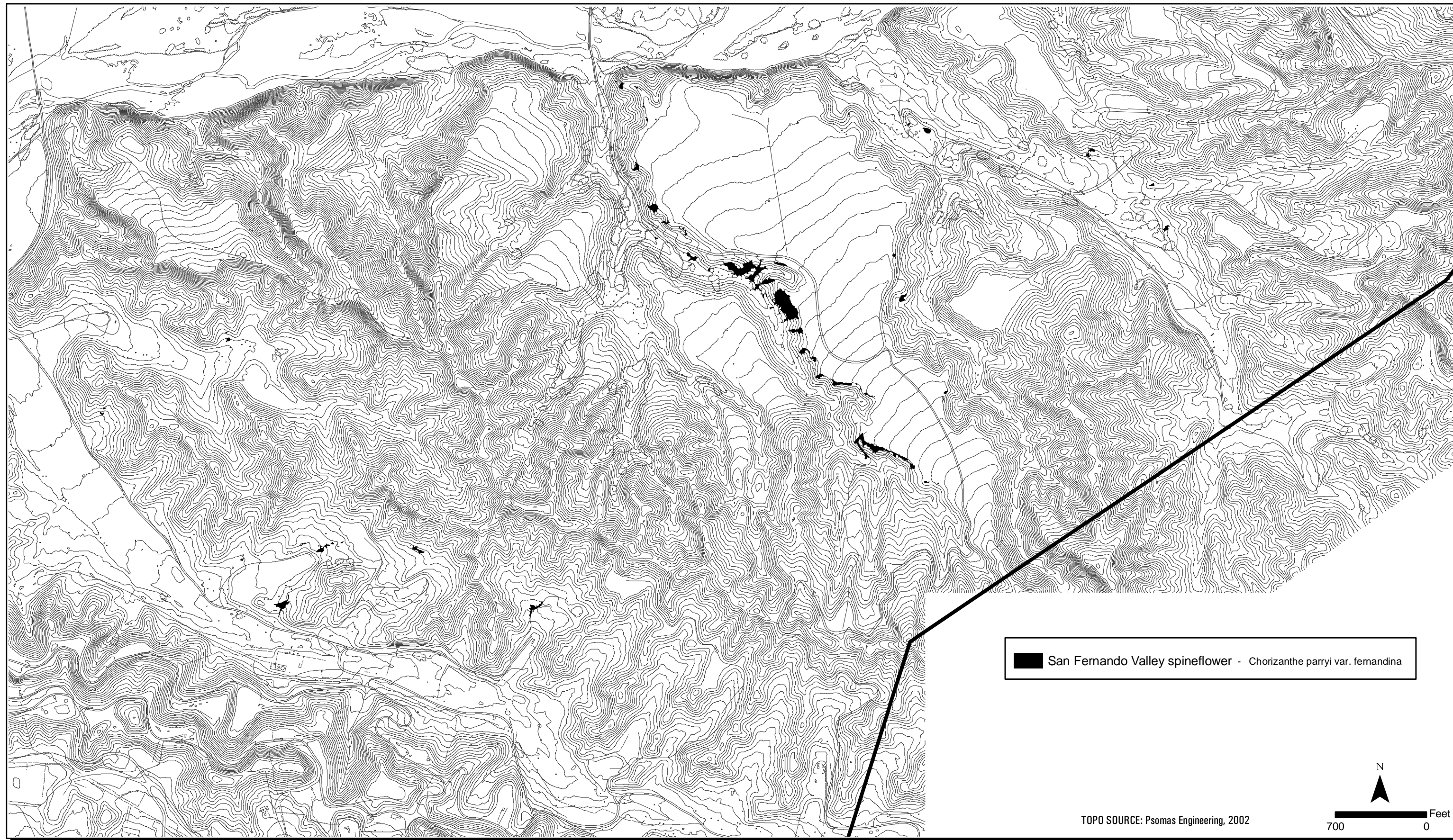
X Other: Personal knowledge

OTHER KNOWLEDGEABLE INDIVIDUALS (Name/Address/Phone)

PHOTOGRAPHS (Check one or more)

Subject	Type
<u> </u> Plant/Animal	<u> </u> Slide
<u> </u> Habitat	<u> </u> Print
<u> </u> Diagnostic Feature	
<u> </u> Other	

May we obtain duplicates at our cost?
 Yes X No



Newhall Ranch - Grapevine Mesa
2005 Sensitive 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
ATTACH OR DRAW A MAP ON BACK.

Document Code _____	Quad Code _____
Index Code _____	Occurrence # _____
Copy Sent To _____	

Scientific name (no codes): *Gnaphalium sp. nova*

Reporter: Anuja Parikh, Nathan Gale Phone: (760) 942.5147

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

Date of Field Work: July 6, 2005 County: Los Angeles Collection: no If yes, # Mus./Herb:

Location: Northern Santa Susana Mountains/Santa Clarita Valley, Newhall Ranch: south of State Route 126 just east of the Ventura County line, along Santa Clara River.

Quad Name: Val Verde and Newhall X 7½' 15' Elevation: 1100-1400' 4N R 17W NW ¼ Sec 3

Landowner/Manager: Newhall Land, 23823 Valencia Boulevard, Valencia, CA 91355

Species Found? X Yes No If not, reason:

Is this a new location record? Yes X No Unknown

Total # of Individuals= 805 plants Is this a subsequent visit? X Yes No Compared to your last visit X more same fewer

Phenology (plants): % vegetative % 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):

Dominant natives in the vicinity of these occurrences include *Heterotheca sessiliflora*, *Lepidospartum squamatum*, *Senecio flaccidus douglasii*, *Eriogonum fasciculatum*, and *Pluchea sericia*. High amounts of bare ground were present in the vicinity of the occurrences. Soils consisted of sand.

Current Land Use/Visible Disturbances/Possible Threats: Current Land Use: Cattle grazing, farming; Visible Disturbances: cattle grazing, fire in recent past (5-10 years); Possible Threats: Proposed for estate residential development.

Overall Site Quality: Excellent Good X Fair Poor (based on non-native plant cover)

Comments: This report summarizes 2 discrete locations, with 800 individuals and 5 individuals.

Should/Could this site be protected? How?

Other comments:

DETERMINATION (Check one or more, fill in blanks)

 Keyed in a site reference:

 Compared with specimen housed at:

 Compared with photo/drawing in:

 By another person (name):

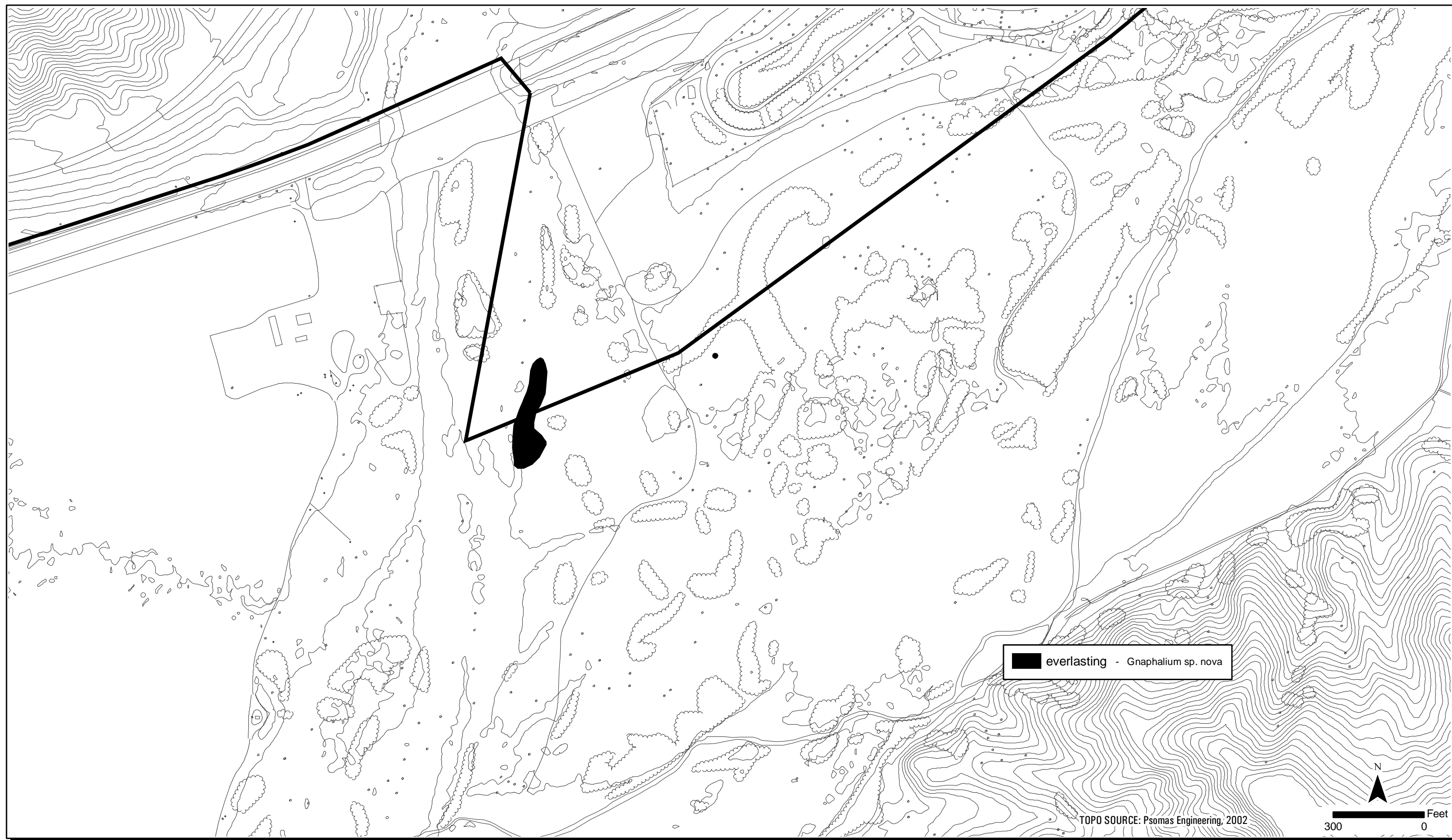
 X Other: personal knowledge

OTHER KNOWLEDGEABLE INDIVIDUALS (Name/Address/Phone)

PHOTOGRAPHS (Check one or more)

Subject	Type
<u> </u> Plant/Animal	<u> </u> Slide
<u> </u> Habitat	<u> </u> Print
<u> </u> Diagnostic Feature	
<u> </u> Other	

May we obtain duplicates **at our cost?**
 Yes X No



Newhall Ranch
2005 Sensitive Plant Survey Results

FIGURE
1

CALIFORNIA NATIVE SPECIES FIELD SURVEY FORM

OFFICE USE ONLY

PLEASE ENTER ALL INFORMATION AVAILABLE TO YOU.
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ATTACH OR DRAW A MAP ON BACK.

PL EA -'

Document Code _____	Quad Code _____
IndexCode _____	Occurrence # _____
Ecology Sent To _____	

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

Reporter: Anuja Parikh, Nathan Gale Phone: (760) 942.5147

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

Date of Field Work: June 6, 8, 29; July 3; 2005 County: Los Angeles Collection: no If yes, # Mus./Herb: _____

Location: Northern Santa Susana Mountains/Santa Clarita Valley, Newhall Ranch: south of State Route 126 just east of the Ventura County line, on ridges and north facing slopes on the eastern side Potrero Canyon.

Quad Name: Val Verde and Newhall X 7½' 15' Elevation: 1100-1400' 4N R 17W NW ¼ Sec 3

Landowner/Manager: Newhall Land, 23823 Valencia Boulevard, Valencia, CA 91355

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

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

Total# of Individuals = 143 plants Is this a subsequent visit? X Yes ___ No Compared to your last visit: ___ more ___ same X fewer

Phenology (plants): ___ % vegetative ___ % 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):

California sagebrush plant communities predominate, with about 50% of the individuals on California sagebrush-purple sage series. Dominant plants include Salvia leucophylla, Artemisia californica, and Eriogonum fasciculatum. Soil texture is clay loam. Most plants are on northwest-facing slopes, although they occurred on all aspects.

Current Land Use/Nisible Disturbances/Possible Threats: Current Land Use: Cattle grazing, farming; Visible Disturbances: cattle grazing, fire in recent past (5-10 years); Possible Threats: Proposed for estate residential development.

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

Comments: This report summarizes 10 discrete locations, each with from 4 to an estimated 123 individuals observed.

Should/Could this site be protected? How?

Other comments:

DETERMINATION (Check one or more, fill in blanks)

___ Keyed in a site reference:

___ Compared with specimen housed at:

___ Compared with photo/drawing in:

___ By another person (name):

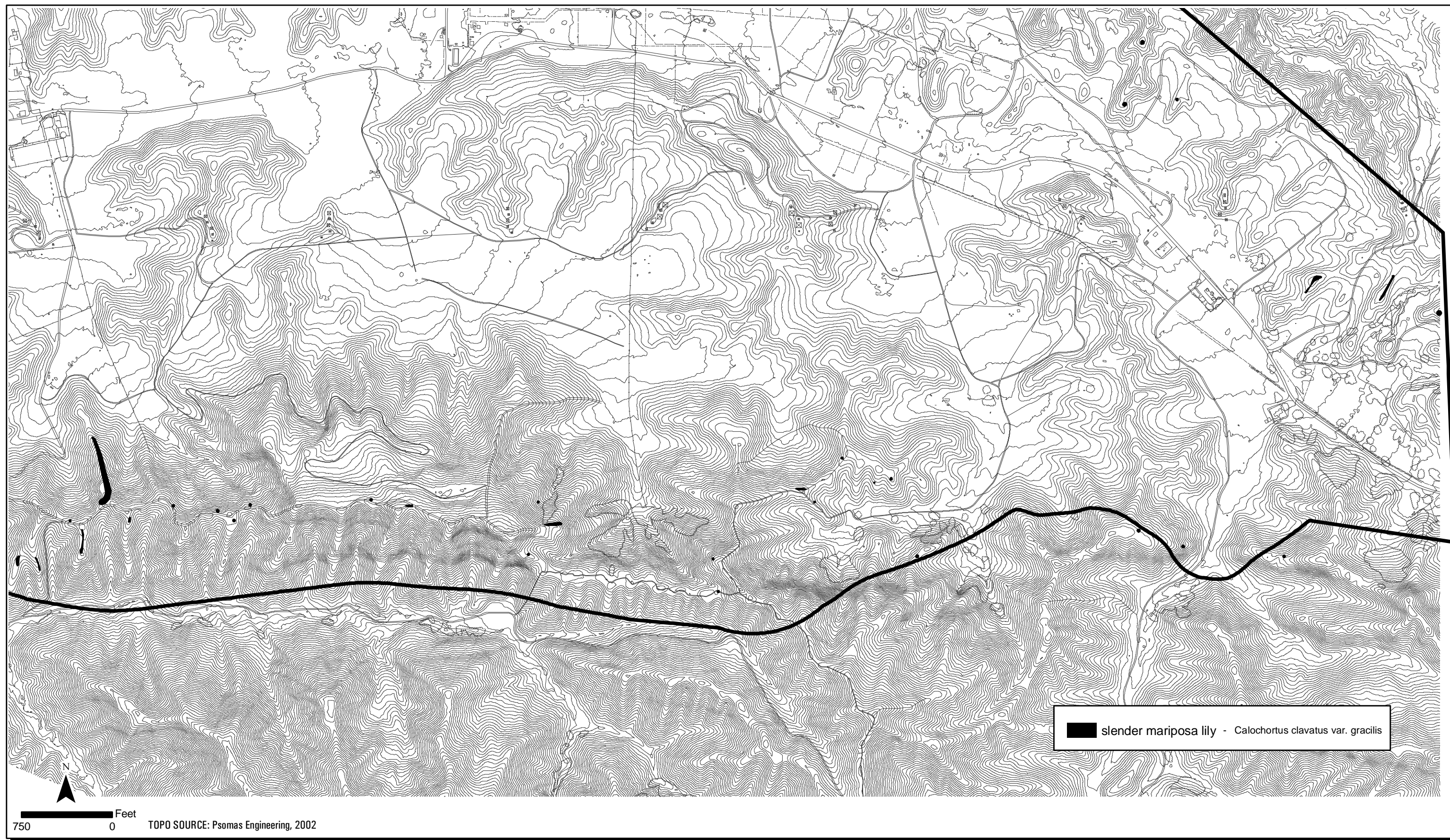
X Other: personal knowledge

OTHER KNOWLEDGEABLE INDIVIDUALS (Name/Address/Phone)

PHOTOGRAPHS (Check one or more)

Subject	Type
___ Plant/Animal	___ Slide
___ Habitat	___ Print
___ Diagnostic Feature	
___ Other	

May we obtain duplicates at our cost?
___ Yes X No



Newhall Ranch - East Potrero Canyon
2005 Sensitive 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.
ATTACH OR DRAW A MAP ON BACK.

PL EA -'

Document Code _____	Quad Code _____
Index Code _____	Occurrence # _____
Ecology Sent To _____	

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

Reporter: Anuja Parikh, Nathan Gale Phone: (760) 942.5147

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

Date of Field Work: June 6, 8, 29; July 3; 2005 County: Los Angeles Collection: no If yes, # Mus./Herb: _____

Location: Northern Santa Susana Mountains/Santa Clarita Valley, Newhall Ranch: south of State Route 126 just east of the Ventura County line, on ridges and north facing slopes on the western side Potrero Canyon.

Quad Name: Val Verde and Newhall X 7½' 15' Elevation: 1100-1400' 4N R 17W NW ¼ Sec 3

Landowner/Manager: Newhall Land, 23823 Valencia Boulevard, Valencia, CA 91355

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

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

Total# of Individuals = 191 plants Is this a subsequent visit? X Yes ___ No Compared to your last visit: ___ more ___ same X fewer

Phenology (plants): ___ % vegetative ___ % 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):

California sagebrush plant communities predominate, with about 50% of the individuals on California sagebrush-purple sage series. Dominant plants include Salvia leucophylla, Artemisia californica, and Eriogonum fasciculatum. Soil texture is clay loam. Most plants are on northwest-facing slopes, although they occurred on all aspects.

Current Land Use/Visible Disturbances/Possible Threats: Current Land Use: Cattle grazing, farming; Visible Disturbances: cattle grazing, fire in recent past (5-10 years); Possible Threats: Proposed for estate residential development.

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

Comments: This report summarizes 10 discrete locations, each with from 4 to an estimated 123 individuals observed.

Should/Could this site be protected? How?

Other comments:

DETERMINATION (Check one or more, fill in blanks)

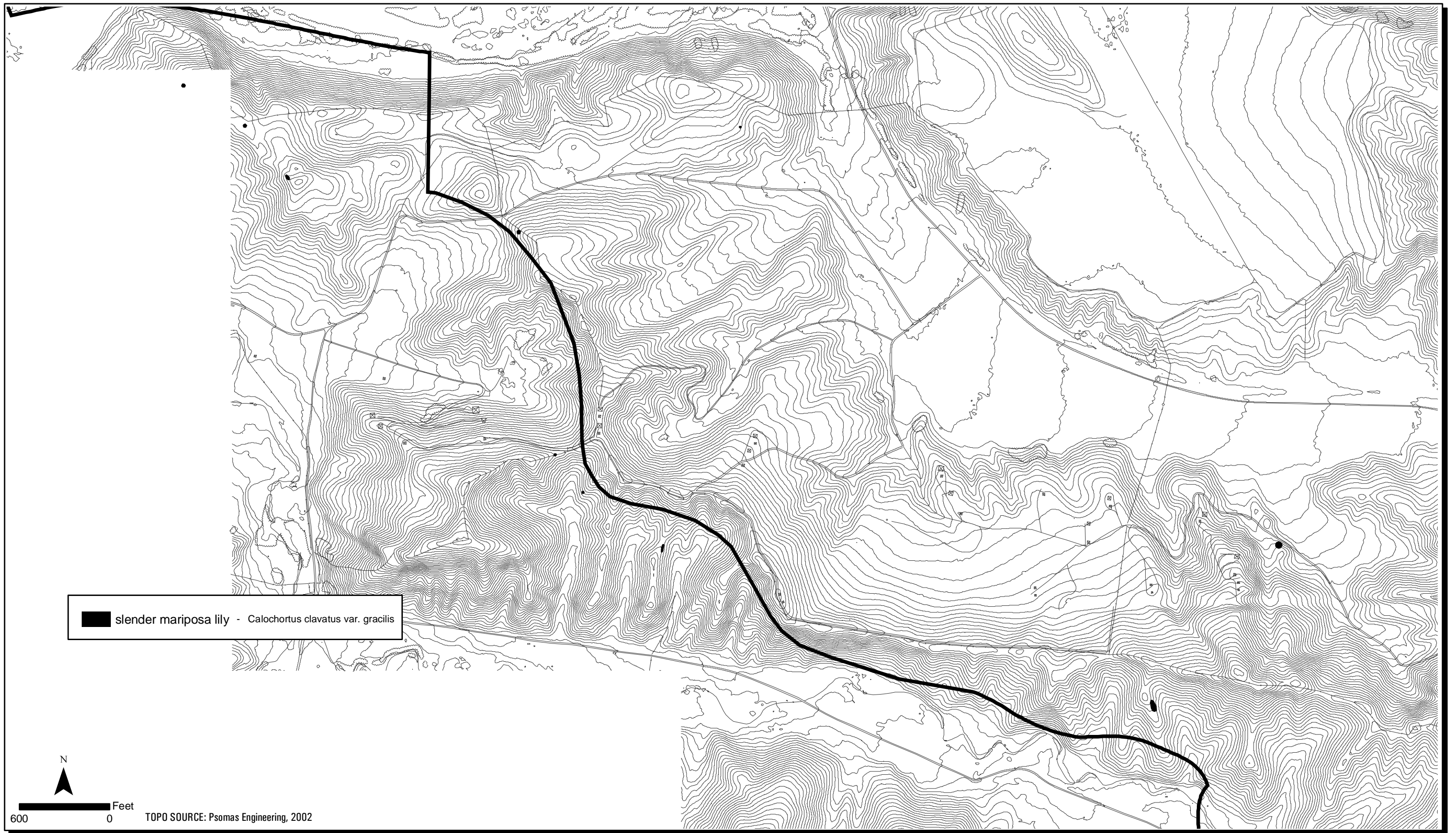
- ___ Keyed in a site reference:
- ___ Compared with specimen housed at:
- ___ Compared with photo/drawing in:
- ___ By another person (name):
- X Other: personal knowledge

OTHER KNOWLEDGEABLE INDIVIDUALS (Name/Address/Phone)

PHOTOGRAPHS (Check one or more)

- | Subject | Type |
|------------------------|-----------|
| ___ Plant/Animal | ___ Slide |
| ___ Habitat | ___ Print |
| ___ Diagnostic Feature | |
| ___ Other | |

May we obtain duplicates at our cost?
___ Yes X No



Newhall Ranch - West Potrero Canyon
2005 Sensitive 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
ATTACH OR DRAW A MAP ON BACK.

Document Code _____	Quad Code _____
Index Code _____	Occurrence # _____
Copy Sent To _____	

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

Reporter: Anuja Parikh, Nathan Gale Phone: (760) 942.5147

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

Date of Field Work: June 4 - 9, 2005 County: Los Angeles Collection: no If yes, # Mus./Herb:

Location: Northern Santa Susana Mountains/Santa Clarita Valley, Newhall Ranch: south of State Route 126 just east of the Ventura County line, on ridges and north facing slopes throughout Potrero Canyon.

Quad Name: Val Verde and Newhall X 7½' 15' Elevation: 1100-1400' 4N R 17W NW ¼ Sec 3

Landowner/Manager: Newhall Land, 23823 Valencia Boulevard, Valencia, CA 91355

Species Found? X Yes No If not, reason:

Is this a new location record? Yes X No Unknown

Total # of Individuals= ~326,000 plants Is this a subsequent visit? X Yes No Compared to your last visit X more same fewer

Phenology (plants): % vegetative % 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):

California sagebrush - black sage series, California grassland series, and California sagebrush - purple sage series, typically with 40% - 60% non-native cover. Dominant plants associated with the populations include *Artemisia californica*, *Salvia leucophylla*, *Centaurea melitensis*, *Erodium cicutarium*, *Bromus* spp. and *Eriogonum fasciculatum*. Soil texture is generally clay loam. Most plants are on southeast to south facing slopes, with some on southwestern aspects. Slopes were generally between 10% and 17%. Many areas have up to 50% bare ground.

Current Land Use/Visible Disturbances/Possible Threats: Current Land Use: Cattle grazing, farming; Visible Disturbances: cattle grazing, fire in recent past (5-10 years); Possible Threats: Proposed for estate residential development.

Overall Site Quality: Excellent Good Fair X Poor (based on non-native plant cover)

Comments: This report summarizes 28 discrete locations, each with from 2 to an estimated 125,000 individuals observed.

Should/Could this site be protected? How?

Other comments:

DETERMINATION (Check one or more, fill in blanks)

 Keyed in a site reference:

 Compared with specimen housed at:

 Compared with photo/drawing in:

 By another person (name):

X Other: personal knowledge

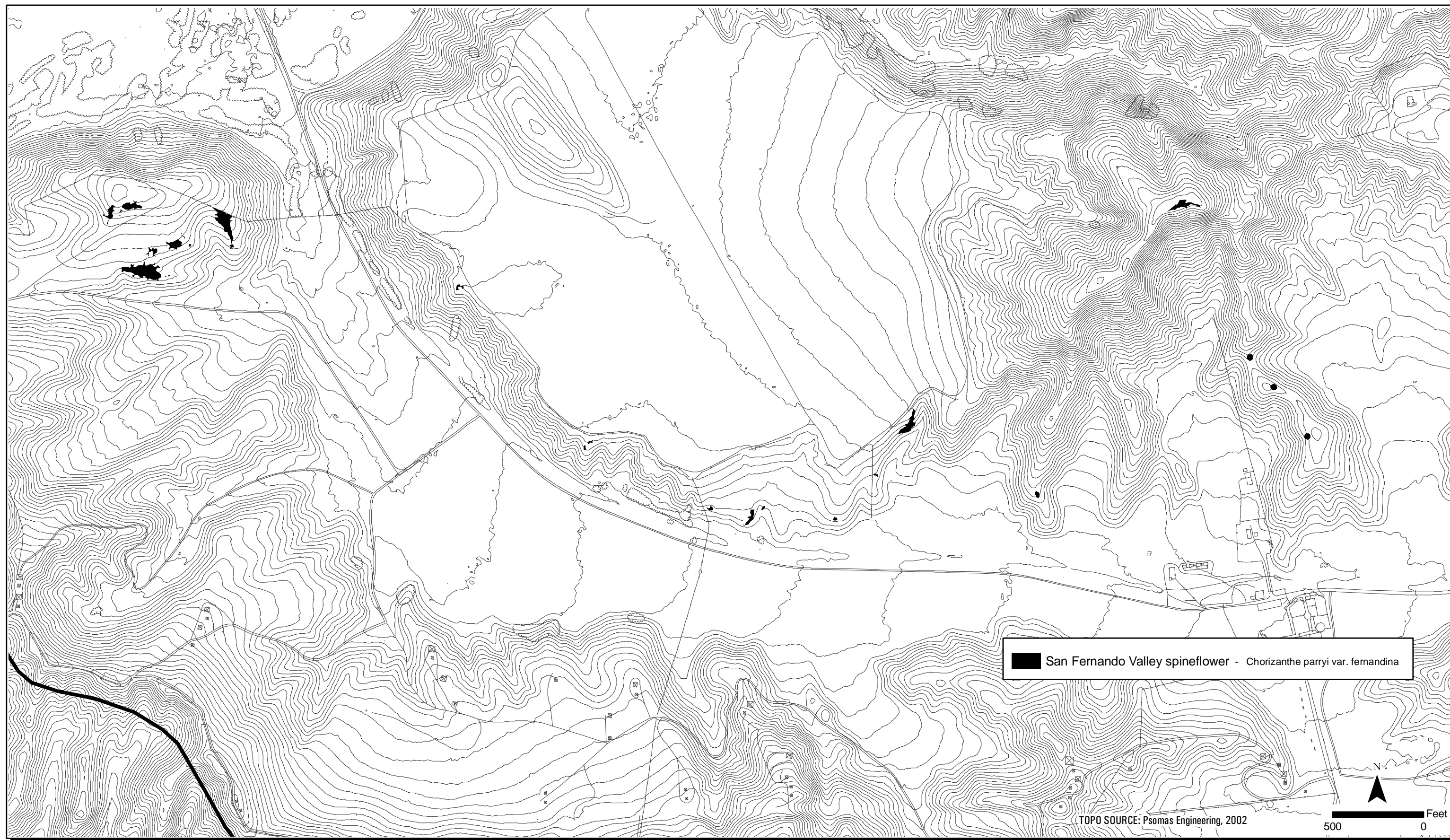
OTHER KNOWLEDGEABLE INDIVIDUALS (Name/Address/Phone)

PHOTOGRAPHS (Check one or more)

Subject	Type
<u> </u> Plant/Animal	<u> </u> Slide
<u> </u> Habitat	<u> </u> Print
<u> </u> Diagnostic Feature	
<u> </u> Other	

May we obtain duplicates at our cost?

 Yes X No



Newhall Ranch - Potrero Canyon
2005 Sensitive 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
ATTACH OR DRAW A MAP ON BACK.

Document Code _____	Quad Code _____
Index Code _____	Occurrence # _____
Copy Sent To _____	

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

Reporter: Andy Thomson, Sherri Miller, Vipul Joshi Phone: (760) 942.5147

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

Date of Field Work: 28 May, 29 June, 6 July 2005 County: Los Angeles Collection: no If yes, # Mus./Herb:

Location: Santa Clarita Valley, Newhall Ranch: north of State Route 126, west of San Martinez Grande Canyon Road

Quad Name: Val Verde X 7½' 15' Elevation: 1000-1700' T 4N R 17W ¼ Sec 15,16,22

Landowner/Manager: Newhall Land, 23823 Valencia Boulevard, Valencia, CA 91355

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

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

Total # of Individuals = ~ 123,530 Is this a subsequent visit X Yes ___ No Compared to your last visit: X more ___ same ___ fewer

Phenology (plants): ___ % vegetative ___ % 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):

Locations are predominantly within disturbed or ruderal habitat. Ruderal habitat is dominated by *Bromus hordeaceus*, *Avena fatua*, *Centaurea melitensis*, *Vulpia myuros*, and *Hirschfeldia incana*. Clay soils predominate, with some loam. Most plants are on south or southwest slopes from 0-40%.

Current Land Use/Visible Disturbances/Possible Threats: Current Land Use: Cattle grazing, farming; Visible Disturbances: cattle grazing, fire in recent past (5-10 years); Possible Threats: Currently proposed for estate residential development.

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

Comments: This report summarizes 11 discrete locations, each with from 3 to an estimated 120,000 individuals observed.
Should/Could this site be protected? How?

Other comments:

DETERMINATION (Check one or more, fill in blanks)

___ Keyed in a site reference:

___ Compared with specimen housed at:

___ Compared with photo/drawing in:

___ By another person (name):

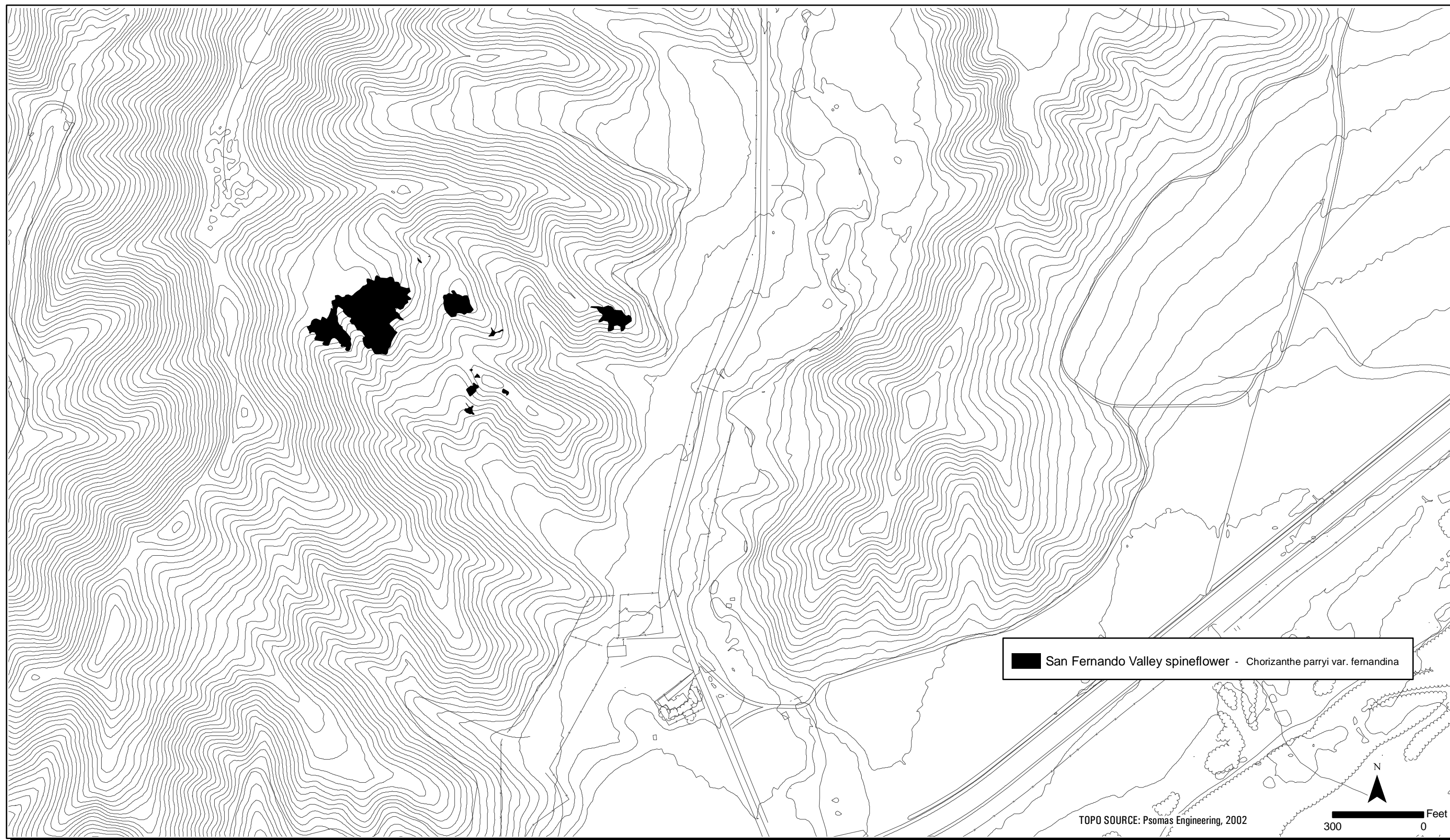
X Other: Personal knowledge

OTHER KNOWLEDGEABLE INDIVIDUALS (Name/Address/Phone)

PHOTOGRAPHS (Check one or more)

Subject	Type
___ Plant/Animal	___ Slide
___ Habitat	___ Print
___ Diagnostic Feature	
___ Other	

May we obtain duplicates at our cost?
___ Yes X No



Newhall Ranch - San Martinez Grande
2005 Sensitive Plant Survey Results

FIGURE
1