





2003 Sensitive Planet Survey Results  
**Castaic Junction**



JUNE 2004

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**2003 Sensitive Plant Survey Results**  
*for the*  
**Castaic Junction Site**  
**Los Angeles County, California**

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# **2003 Sensitive Plant Survey Results Castaic Junction Site**

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# **2003 Sensitive Plant Survey Results**

## **Castaic Junction Site**

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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 150-acre Castaic Junction site (CJ) for the 2003 field season. Surveys placed an equal emphasis on the identification of populations of the state-listed endangered San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*; SFVS) and other sensitive plant species.

### **2.0 SITE DESCRIPTION**

The 150-acre CJ site is located in an unincorporated portion of the Santa Clara River Valley in northwestern Los Angeles County (*Figure 1*). The CJ site lies just west of Interstate 5 (I-5) and south of State Route 126 (SR-126). The City of Santa Clarita is just east of the CJ site on the east side of I-5. The CJ site lies within the Newhall U.S. Geological Survey (USGS) 7.5 minute quadrangle, Township 4 North, Range 17 West and Sections 12-13; Township 4 North, Range 16 West and Sections 7 and 18 (*Figure 2*). The center of the CJ site is located at 34° 26' 18" latitude and 118° 36' 20" longitude.

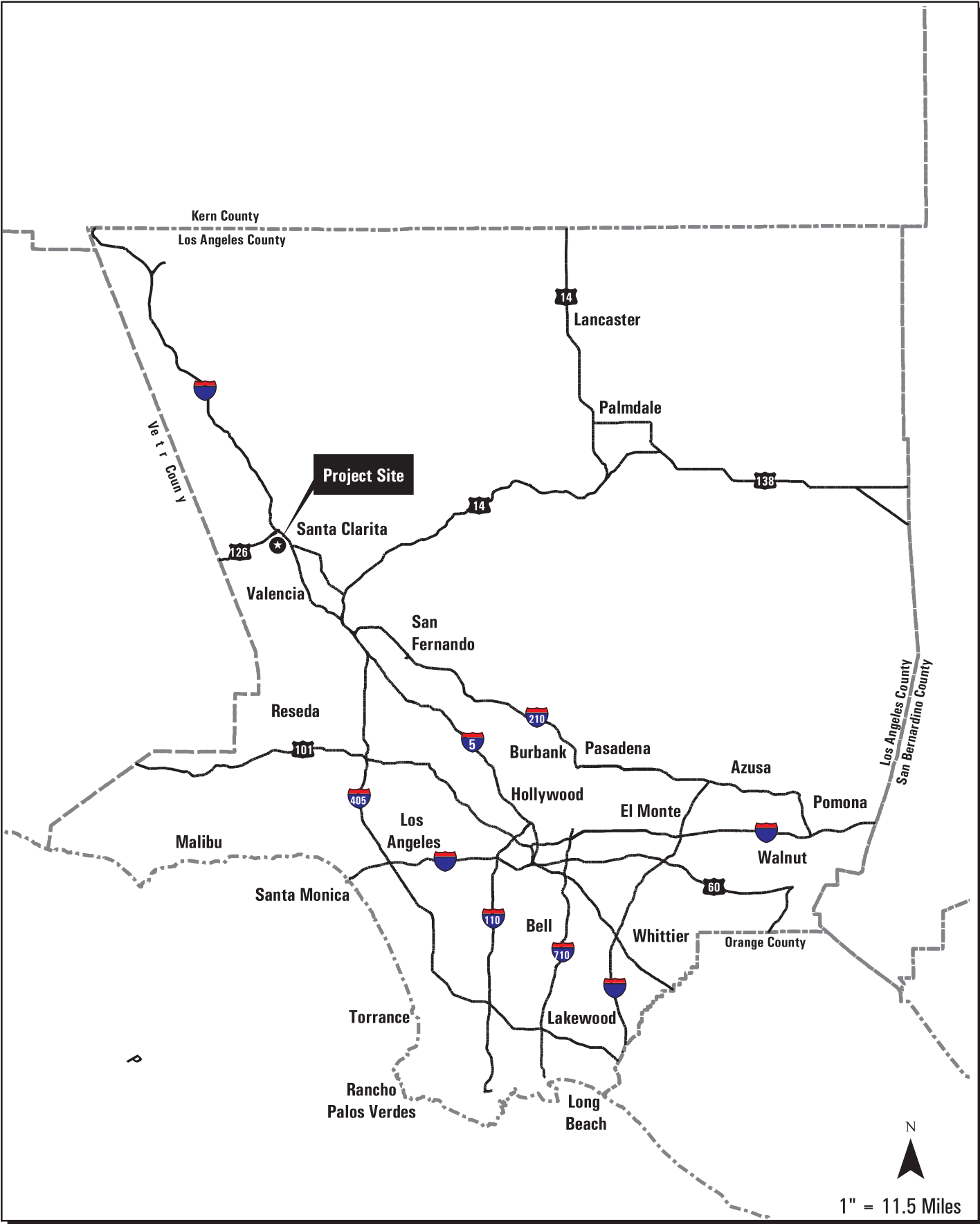
The majority of the site contains agricultural fields with edges of riparian habitat associated with the Santa Clara River. Site elevations range from approximately 1,000 feet above mean sea level (AMSL) along the Santa Clara River to approximately 1,026 feet AMSL on the ridges in the southwestern portion of the site (*Figure 2*). Slope gradients are very gentle throughout the entire CJ site. As mentioned, the distinct geographic feature includes the edge of the flood plain of the Santa Clara River on the southern portion of the site.

### **2.1 Plant Communities and Land Covers**

Land uses within the CJ site include agricultural and industrial operations and flood control activities. The majority of the CJ site is currently used for agriculture. In addition, this site contains ornamental plantings and developed land, consisting of storage facilities. Portions of the CJ site contain riparian habitat associated with the Santa Clara River, including southern willow scrub and sycamore alluvial woodland.

### **2.2 Geology and Soils**

Geologically, the site is located within the Transverse Range geomorphic province of southern California in the eastern portion of the Ventura depositional basin. This basin was produced by tectonic downwarping in the geologic past to produce a large-scale



Castaic Junction  
Regional Map







## **2003 Sensitive Plant Survey Results Castaic Junction Site**

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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. They are cut by segments of the Del Valle and Salt Creek faults. Bedrock formations found in the area 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).

### **3.0 METHODS AND SURVEY LIMITATIONS**

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

#### **3.1 Literature Review**

General floristic and sensitive botanical resources present or potentially present on the CJ site were identified through a literature search using the following sources: the California Natural Diversity Database (CNDDB) for the Newhall Santa Susana, Oat Mountain, Mint Canyon, San Fernando, Green Valley, Warm Springs Mountain, Whitaker Peak, Cobblestone Mountain, Piru, Simi, Thousand Oaks, and Val Verde quadrangle maps (CNDDB, September 2002); *Biological Resource Assessment of the Proposed Santa Susana Mountains/Simi Hills Significant Ecological Area* (PCR, November 2000); CalFlora (University of California, Berkeley, May 2002); U.S. Fish and Wildlife Service (USFWS 1999); California Department of Fish and Game (CDFG 2002); *Inventory of Rare and Endangered Plants of California* [California Native Plant Society (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).

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### 3.2 Field Reconnaissance Methods

Botanical surveys for sensitive plant species were conducted by FLx staff biologists Nathan Gale and Anuja Parikh. All surveys were conducted on-foot. Resumes for survey personnel are provided in *Appendix A*.

Botanical surveys of the site were conducted in April of 2003 in accordance with the schedule provided in *Table 1*. Approximately 40 person-hours (4 person-days) were spent conducting botanical surveys within the study area. Biologists were able to observe reference populations of SFVS and other sensitive species in order to develop a search-image prior to conducting surveys of the project site. Surveys focused on the identification and location of all federally- and state-listed (including SFVS), proposed for listing, and candidate species and California Native Plant Society (CNPS) List 1A, 1B, and 2 species (see the list of target species in *Table 2*).

**TABLE 1  
SURVEY SCHEDULE AND PERSONNEL  
CASTAIC JUNCTION SITE**

Date	Biologists	Purpose
4-25-03	Nathan Gale and Anuja Parikh	Focused survey for SFVS and other sensitive plant species
4-26-03	Nathan Gale and Anuja Parikh	Focused survey for SFVS and other sensitive plant species

**TABLE 2  
SENSITIVE PLANT SPECIES SUBJECT OF FIELD SURVEYS**

Scientific Name	Common Name
<i>Arenaria paludicola</i>	marsh sandwort
<i>Astragalus brauntonii</i>	Braunton's milk-vetch
<i>Atriplex coulteri</i>	Coulter's saltbush
<i>Atriplex serenana</i> var. <i> davidsonii</i>	Davidson's saltscale
<i>Baccharis malibuensis</i>	Malibu baccharis
<i>Berberis nevinii</i>	Nevin's barberry
<i>Brodiaea filifolia</i>	thread-leaved brodiaea
<i>Calochortus clavatus</i> var. <i> gracilis</i>	slender mariposa lily
<i>Calochortus plummerae</i>	Plummer's mariposa lily
<i>Calochortus weedii</i> var. <i> vestus</i>	late-flowered mariposa lily
<i>Calystegia peirsonii</i>	Peirson's morning-glory
<i>Calystegia sepium</i> ssp. <i> binghamiae</i>	Santa Barbara morning-glory

## 2003 Sensitive Plant Survey Results Castaic Junction Site

TABLE 2  
SENSITIVE PLANT SPECIES SUBJECT OF FIELD SURVEYS

Scientific Name	Common Name
<i>Centromadia</i> [= <i>Hemizonia</i> ] <i>parryi</i> ssp. <i>australis</i>	southern tarplant
<i>Chorizanthe parryi</i> var. <i>fernandina</i>	San Fernando Valley spineflower
<i>Deinandra</i> [= <i>Hemizonia</i> ] <i>minthornii</i>	Santa Susana tarplant
<i>Dodecahema leptocerus</i>	slender-horned spineflower
<i>Dudleya blochmaniae</i> var. <i>blochmaniae</i>	Blochman's dudleya
<i>Dudleya cymosa</i> ssp. <i>marcescens</i>	marcescent dudleya
<i>Dudleya cymosa</i> ssp. <i>ovatifolia</i>	Santa Monica Mountains dudleya
<i>Dudleya multicaulis</i>	many-stemmed dudleya
<i>Dudleya parva</i>	Conejo dudleya
<i>Erodium macrophyllum</i>	round-leaved filaree
<i>Helianthus nuttallii</i> ssp. <i>parishii</i>	Los Angeles sunflower
<i>Horkelia cuneata</i> var. <i>puberula</i>	mesa horkelia
<i>Malacothamnus davidsonii</i>	Davidson's bush mallow
<i>Nama stenocarpum</i>	mud nama
<i>Nolina cismontana</i>	chaparral nolina
<i>Opuntia basilaris</i> var. <i>brachyclada</i>	short-joint beavertail
<i>Pentachaeta lyonii</i>	Lyon's pentachaeta
<i>Rorippa gambellii</i>	Gambel's water cress
<i>Senecio aphanactis</i>	rayless ragwort
<i>Sidalcea neomexicana</i>	salt spring checkerbloom
<i>Thelypteris puberula</i> var. <i>sonorensis</i>	Sonoran maiden fern

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

Surveys for the sensitive plant species listed in *Table 2* were conducted based upon: **(1)** the habitat preference, habit, and phenology of each species; **(2)** professional experience; and **(3)** any other additional information gathered from those sources discussed in *Section 3.1* above. Surveys for SFVS were focused on the edges of agricultural land.

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Within the CJ site, there are no areas where SFVS typically occurs such as open areas of 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.

### **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*), 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>).

### **3.2.2 Survey Limitations**

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

Focused surveys were directed towards the detection of all of the sensitive species identified in *Table 2* in all areas of the site (see *Figure 3*). Surveys for SFVS and other sensitive species were concentrated in areas of suitable habitat. All surveys were conducted during daylight hours under weather conditions which did not preclude observation of sensitive plant species (e.g., surveys were not conducted during heavy fog or rain).





Survey Area

N

0 650 1,300 Feet

IMAGE SOURCE: Psomas Engineering, 2001

Castaic Junction  
Project Boundary with Aerial Image

FIGURE  
3



# **2003 Sensitive Plant Survey Results**

## **Castaic Junction Site**

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### **4.0 RESULTS OF SURVEYS**

#### **4.1 Botany - Floral Diversity**

The site is situated at the nexus of the Transverse, Coast, and Sierra Nevada ranges; the Mojave Desert; and coastal plains (Hickman 1993). Ecotone areas such as this are often characterized by higher biological diversity than similar-sized areas within the core of a physiographic region (Boyd 1999). However, a large portion of the CJ site has either been developed or used for agriculture and only portions along the river remain relatively undisturbed. As such, a moderate diversity of plant species is expected during a year of at least average rainfall amounts for the area.

A total of 176 plant species was identified within the CJ site. Of these, 111 species (63%) are native to the region and 65 species (37 percent) are non-native. The list of plant species identified on the site in 2003 is provided as *Appendix B*.

#### **4.2 Sensitive Plant Species**

No sensitive plant species were observed within the study area during the course of the 2003 surveys. Sensitive species that have the potential to occur on the CJ site, based on the presence of suitable habitat and soils, are listed in *Table 3*. 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).

### **5.0 ACKNOWLEDGMENTS**

Megan S. Enright and Kam J. Muri prepared this report, with review by Mark A. Elvin and Sherri L. Miller and staff at The Newhall Land and Farming Company. Mark McGinnis provided graphics and GIS mapping analyses. Terri Parsons provided word processing.

## 2003 Sensitive Plant Survey Results Castaic Junction Site

TABLE 3  
SENSITIVE PLANT SPECIES OBSERVED OR POTENTIALLY OCCURRING  
AT THE CASTAIC JUNCTION SITE

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

## 2003 Sensitive Plant Survey Results Castaic Junction Site

TABLE 3  
SENSITIVE PLANT SPECIES OBSERVED OR POTENTIALLY OCCURRING  
AT THE CASTAIC JUNCTION SITE

Scientific Name	Common Name	Status Federal/State	CNPS List	Primary Habitat Associations/ Life Form/Blooming Period	Presence or Likelihood of Occurrence Onsite
<i>Brodiaea filifolia</i>	Thread-leaved brodiaea	FT/SE	1B	clay substrate openings in chaparral, sage scrub, and grasslands/perennial herb (geophyte)/March-June	Not observed during 2003 field season. No CNDDDB records exist for the Newhall or Val Verde quads; nearest occurrence is in San Dimas. No suitable habitat present onsite; very low likelihood of occurrence within study area.
<i>Calochortus clavatus</i> var. <i>gracilis</i>	slender mariposa lily	None/None	1B	chaparral and coastal sage scrub/perennial herb (geophyte)/March-May	Not observed during 2003 field season. No suitable habitat present onsite; not expected to occur within the study area.
<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 2003 field season. No suitable habitat present onsite; not expected to occur within the 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 2003 field season. No CNDDDB records exist for the Newhall or Val Verde quads; however, habitat similar to where species occurs in eastern Ventura County is present onsite. Moderate likelihood of occurrence within study area.
<i>Calystegia sepium</i> ssp. <i>Binghamiae</i>	Santa Barbara morning-glory	None/None	1A	marshes and swamps/perennial herb/ April-May	Not observed during 2003 field season. No CNDDDB records exist for the Newhall or Val Verde quads. No 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 2003 field season. No CNDDDB records exist for the Newhall or Val Verde quads. No suitable habitat present onsite, very low likelihood of occurrence within study area.
<i>Chorizanthe parryi</i> var. <i>fernandina</i>	San Fernando Valley spineflower	FC/SE	1B	coastal sage scrub, sandy soils/annual herb/April-June	Not observed during the 2003 field season. No suitable habitat onsite; very low likelihood of occurrence within the study area.

## 2003 Sensitive Plant Survey Results Castaic Junction Site

TABLE 3  
SENSITIVE PLANT SPECIES OBSERVED OR POTENTIALLY OCCURRING  
AT THE CASTAIC JUNCTION SITE

Scientific Name	Common Name	Status Federal/State	CNPS List	Primary Habitat Associations/ Life Form/Blooming Period	Presence or Likelihood of Occurrence Onsite
<i>Deinandra</i> [= <i>Hemizonia</i> ] <i>minthornii</i>	Santa Susana tarplant	None/SR	1B	chaparral and coastal sage scrub on rocky substrate/deciduous shrub/July-November	Not observed during 2003 field season. No CNDDDB records exist for the Newhall or Val Verde quads; however, records exist for the Simi Hills and Oat Mountain. No suitable habitat present onsite; very low likelihood of occurrence within study area.
<i>Delphinium parryi</i> ssp. <i>Blochmaniae</i>	dune larkspur	None/None	1B	maritime chaparral, coastal dunes/ perennial herb/ April-may	Not observed during 2003 field season. No suitable habitat present onsite; very low likelihood of occurrence within study area.
<i>Dodecahema leptoceras</i>	slender-horned spineflower	FE/SE	1B	alluvial scrub on sandy substrate/ annual herb/April- June	Not observed during 2003 field season. Historic CNDDDB records exist for the Newhall or Val Verde quads. No suitable habitat present onsite; very low likelihood of occurrence onsite.
<i>Dudleya blochmaniae</i> var. <i>blochmaniae</i>	Blochman's dudleya	None/None	1B	clay openings in chaparral and coastal sage scrub, grasslands/perennial herb/April-June	Not observed during 2003field season. No CNDDDB records exist for the Newhall or Val Verde quads. No suitable habitat present onsite; very 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 2003field season. No CNDDDB records exist for Newhall and Val Verde quads. No suitable habitat present; very 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 2003field season. No CNDDDB records exist for Newhall and Val Verde quads. No suitable habitat present; very low likelihood of occurrence within study area.

## 2003 Sensitive Plant Survey Results Castaic Junction Site

TABLE 3  
SENSITIVE PLANT SPECIES OBSERVED OR POTENTIALLY OCCURRING  
AT THE CASTAIC JUNCTION SITE

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 2003 field season. No CNDDDB records exist for the Newhall or Val Verde quads; closest known occurrences are in Calabasas and San Dimas. No suitable habitat present onsite; very low likelihood of occurrence within study area.
<i>Dudleya parva</i>	Conejo dudleya	FT/None	1B	coastal sage scrub and grassland on rocky, gravelly clays/perennial herb/May-June	Not observed during 2003 field season. No CNDDDB records exist for the Newhall or Val Verde quads. No suitable habitat present onsite; very 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 2003 field season. No CNDDDB records exist for the Newhall or Val Verde quads; however, records exist for Simi Valley. No suitable habitat present onsite; very low likelihood of occurrence within study area.
<i>Helianthus nuttallii</i> ssp. <i>Parishii</i>	Los Angeles sunflower	None/None	1A	marshes and swamps/perennial herb/ August-October	Not observed within study area during 2003 field season. A <i>Helianthus</i> population, discovered in 2002 by Elvin and Sanders at Castaic Spring, on the south side of the Santa Clara River between Middle Canyon and San Jose Flats, was determined by some experts to be this species. The final determination of the identity of this species is still being worked on. No suitable habitat observed in 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 2003 field season. No CNDDDB records exist for the Newhall or Val Verde quads. No suitable habitat present onsite; very low likelihood of occurrence within the study area.



## 2003 Sensitive Plant Survey Results Castaic Junction Site

TABLE 3  
SENSITIVE PLANT SPECIES OBSERVED OR POTENTIALLY OCCURRING  
AT THE CASTAIC JUNCTION SITE

Scientific Name	Common Name	Status Federal/State	CNPS List	Primary Habitat Associations/ Life Form/Blooming Period	Presence or Likelihood of Occurrence Onsite
<i>Lasthenia glabrata ssp. Coulteri</i>	Coulter's goldfields	None/None	1B	Marshes, swamps, plays, vernal pools/ annual herb/ February-June	Not observed during 2003 field season. No suitable habitat present onsite; very low likelihood of occurrence within the study area.
<i>Malacothamnus davidsonii</i>	Davidson's bush mallow	None/None	1B	chaparral, coastal sage scrub, riparian woodland/ deciduous scrub/June-January	Not observed during 2003 field season. Nearest occurrences are in Van Nuys and Sunland quads. No suitable habitat present onsite; very low likelihood of occurrence within the study area.
<i>Nama stenocarpum</i>	mud nama	None/None	2	edges of lakes, rivers, ponds, vernal pools/annual/January-July	Not observed during 2003 field season. No CNDDDB records exist for the Newhall or Val Verde quads. Moderate likelihood of occurrence on banks of Santa Clara River floodplain onsite.
<i>Nolina cismontane</i>	chaparral nolina	None/None	1B	chaparral, coastal sage scrub on sandstone or gabbro substrate/ perennial shrub/May-July	Not observed during 2003 field season. No CNDDDB records exist for the Newhall or Val Verde quads. No suitable habit present onsite; very low likelihood of occurrence within the study area.
<i>Opuntia basilaris var. brachyclada</i>	short-joint beavertail	None/None	1B	chaparral, Joshua tree woodland, Mojavean desert scrub/succulent shrub/ April-June	Not observed during 2003 field season. No suitable habitat present onsite; very low likelihood of occurrence within the study area.
<i>Pentachaeta lyonii</i>	Lyon's pentachaeta	FE/SE	1B	openings in chaparral and coastal sage scrub, grasslands/annual herb/March-August	Not observed during 2003 field season. No CNDDDB records exist for the Newhall or Val Verde quads; nearest occurrences are in the Simi Valley. No suitable habitat present onsite; very low likelihood of occurrence within the study area.
<i>Rorippa gambellii</i>	Gambel's watercress	FE/ST	1B	Marsh and swamps (freshwater and brackish)/ perennial herb/April-June	Not observed during 2003 field season. No suitable habitat present onsite; very low likelihood of occurrence within the study area.

## 2003 Sensitive Plant Survey Results Castaic Junction Site

**TABLE 3**  
**SENSITIVE PLANT SPECIES OBSERVED OR POTENTIALLY OCCURRING**  
**AT THE CASTAIC JUNCTION SITE**

Scientific Name	Common Name	Status Federal/State	CNPS List	Primary Habitat Associations/ Life Form/Blooming Period	Presence or Likelihood of Occurrence Onsite
<i>Senecio aphanactis</i>	rayless ragwort	None/None	2	chaparral, coastal sage scrub, cismontane woodland on alkaline substrate/annual herb/January-April	Not observed during 2003 field season. Historic CNDDDB record for Saugus, south of Santa Clara River. No suitable habitat present onsite; very low likelihood of occurrence within the study area.
<i>Sidalcea neomexicana</i>	Salt spring checkerbloom	None/None	2	chaparral, coastal sage scrub, and playas on alkaline substrate/perennial herb/March-June	Not observed during 2003 field season. No suitable habitat present onsite; very low likelihood of occurrence within the study area.
<i>Thelypteris puberula</i> var. <i>sonorensis</i>	Sonoran maiden fern	None/None	2	meadows and seeps/perennial herb/ fertile January-September	Not observed during 2003 field season. No CNDDDB records exist for the Newhall or Val Verde quads; nearest occurrence at Point Dume. Moderate likelihood of occurrence on banks of Santa Clara River floodplain onsite.

### Legend

FE: Federally-listed as endangered      SE: State-listed as endangered  
 FT: Federally-listed as threatened      ST: State-listed as threatened  
 FC: Federal candidate for listing      SR: State-listed as rare  
 SC: State candidate for listing

CNPS List 1A: Plants presumed extinct in California  
 CNPS List 1B: Plants rare, threatened, or endangered in California and elsewhere  
 CNPS List 2: Plants rare, threatened, or endangered in California but more common elsewhere  
 CNPS List 3: Plants about which we need more information – a review list  
 CNPS List 4: Plants of limited distribution – a watch list

## 2003 Sensitive Plant Survey Results Castaic Junction Site

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## **2003 Sensitive Plant Survey Results Castaic Junction Site**

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- Sawyer, J.O. and T. Keeler-Wolf. 1995. *A Manual of California Vegetation*. California Native Plant Society. 471 pp.
- Smith, C.F. 1976. *Flora of the Santa Barbara Region, California*. Santa Barbara Botanic Garden and Capra Press. 391 pp.
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**RESUMES OF SURVEY PERSONNEL**



# **APPENDIX A**

## **RESUMES OF SURVEY PERSONNEL**

**ANUJA K. PARIKH**  
**Principal Ecologist, FLx**

### **EDUCATION AND CERTIFICATIONS**

Ph.D., Plant Geography, University of California, Santa Barbara, 1989.  
M.S., Geography, University of Bombay, India, 1981.  
B.S., Zoology and Geology, University of Bombay, India, 1979.  
PWS, Certified Professional Wetland Scientist #841, Society of Wetland Scientists, 1995.

### **SUMMARY OF QUALIFICATIONS**

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

### **EXPERIENCE**

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

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

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

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**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.

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**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, photodocumentation, 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, photodocumentation, and report preparation.

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

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

**Natural Resources Management Plans. U.S. Air Force and Higginbotham/Briggs & Associates.** Participation in data collection, field visits, agency coordination, document preparation and review for Natural Resources Management Plans prepared for Kaena Point Satellite Tracking Station, HI, and Onizuka AFB, CA.

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

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

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

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

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

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

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## RESUMES OF SURVEY PERSONNEL

**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,"



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Prepared for the U.S. Department of the Air Force, Detachment 10, Space and Missile Systems Center, San Bernardino, CA, February 1996.

"Vegetation Monitoring of Created Wetland Sites on the San Antonio Terrace, Vandenberg Air Force Base, California," (with N. Gale), in M.C. Landin (Ed.) Proceedings of the National Interagency Workshop on Wetlands: Technology Advances for Wetlands Science, Technical Report, Wetlands Research and Technology Center, U.S. Army Engineers Waterways Experiment Station, Vicksburg, MS, 1995, 153-55.

"Recovery Plan for Marsh Sandwort (*Arenaria paludicola*) and Gambel's Watercress (*Rorippa gambelii*)," (with N. Gale), U.S. Fish and Wildlife Service, Ventura, CA, August 1994.

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

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

"Biotic Inventory and Ecosystem Characterization for Fish Slough, Inyo and Mono Counties, California," (with the Fish Slough Research Team), Report to State of California, The Resources Agency, Department of Fish and Game, by the Departments of Biological Sciences, Geography, and Geological Sciences, University of California, Santa Barbara, June 1991.

"Ecology of a Mediterranean-Climate Estuarine Wetland at Carpinteria, California: Plant Distributions and Soil Salinity in the Upper Marsh," (with R. Callaway, S. Jones, W. Ferren), *Canadian Journal of Botany*, 68, 1990, 1139-1146.

"Botanical Resources at Emma Wood State Beach and the Ventura River Estuary, California: Inventory and Management," (with W. Ferren, M. Capelli, D. Magney, K. Clark, and J. Haller), Report to the State of California Department of Parks and Recreation, Environmental Report No. 15, The Herbarium, Department of Biological Sciences, University of California, Santa Barbara, August 1990.

"UCSB Campus Wetlands Management Plan, Part II—Technical Report—Hydrology, 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.

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"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.

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## **RESUMES OF SURVEY PERSONNEL**

**NATHAN GALE**  
**Principal Scientist, FLx**

### **EDUCATION AND CERTIFICATIONS**

Ph.D., Geography, University of California, Santa Barbara, 1985.  
M.A., Geography, University of California, Santa Barbara, 1980.  
PWS, Certified Professional Wetland Scientist #1216, Society of Wetland Scientists, 1999.

### **SUMMARY OF QUALIFICATIONS**

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

### **EXPERIENCE**

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

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

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## **RESUMES OF SURVEY PERSONNEL**

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, photodocumentation, 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

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conducted for the full range of environmental and socioeconomic issues; major areas of focus involved endangered species' habitats, cultural and historical resources, and hazardous waste sites.

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

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

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

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

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

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

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

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

**Implementation of Recovery Activities for Two Federally Endangered Plant Species. California Department of Fish and Game and University of California.** Research on species biology and ecology, plant propagation, experimental establishment of new populations, and monitoring of existing

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## **RESUMES OF SURVEY PERSONNEL**

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**

# APPENDIX A

## RESUMES OF SURVEY PERSONNEL

"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.

**APPENDIX B**  
**VASCULAR PLANT SPECIES OBSERVED**  
**CASTAIC JUNCTION SITE (2003)**



# **2003 Sensitive Plant Survey Results Magic Mountain Entertainment Site**

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## **APPENDIX B**

### **VASCULAR PLANT SPECIES – CASTAIC JUNCTION SITE**

#### **EQUISETAE**

##### **EQUISETACEAE**

*Equisetum hymenale* - common scouring-rush

*Equisetum laevigatum* - smooth scouring-rush

#### **FILACEAE**

##### **AZOLLACEAE - MOSQUITO FERN FAMILY**

*Azolla filiculoides* - duckweed fern

#### **ANGIOSPERMAE (DICOTYLEDONES)**

##### **ANACARDIACEAE - SUMAC FAMILY**

*Rhus ovata* - sugar-bush

\* *Schinus molle* - Peruvian pepper-tree

##### **APIACEAE - CARROT FAMILY**

\* *Apium graveolens* - celery

*Berula erecta* – cutleaf water-parsnip

*Bowlesia incana* – hoary bowlesia

\* *Conium maculatum* - poison-hemlock

##### **ASTERACEAE - SUNFLOWER FAMILY**

*Ambrosia acanthicarpa* - annual burweed

*Ambrosia psilostachya* var. *californica* - western ragweed

*Artemisia californica* - coastal sagebrush

*Artemisia douglasiana* - California mugwort

*Artemisia dracunculus* - tarragon

*Artemisia tridentata* - Great Basin sagebrush

*Baccharis douglasii*- marsh baccharis

*Baccharis pilularis* – coyote brush

*Baccharis salicifolia* - mule fat

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- Brickellia nevinii* – Nevin's brickellbush
- \* *Carduus pycnocephalus* - Italian thistle
- \* *Centaurea melitensis* - star thistle
- \* *Centaurea solstitialis* - Barnaby's thistle
- Corethrogyne filaginifolia* - virgate cudweed aster
- \* *Cirsium vulgare* - bull thistle
- \* *Cnicus benedictus* - blessed thistle
- Conyza canadensis* – horseweed
- Euthamia occidentalis* - western goldenrod
- Gutierrezia californica* - California matchweed
- Gnaphalium californicum* - California everlasting
- \* *Gnaphalium luteo-album* - white cudweed
- Helianthus annuus* - common sunflower
- \* *Hypochaeris glabra* - smooth car's-ear
- Heterotheca grandiflora* - telegraph weed
- Heterotheca sessiliflora* - golden aster
- \* *Lactuca serriola* - prickly lettuce
- Malacothrix saxatilis* var. *tenuifolia* - cliff malacothrix
- Rafinesquia californica* - California chicory
- \* *Picris echinoides* - bristly ox-tongue
- Senecio flaccidus* var. *douglasii* - butterweed
- \* *Senecio vulgaris* - common groundsel
- \* *Silybum marianum* - milk thistle
- \* *Sonchus asper* - prickly sow-thistle
- \* *Sonchus oleraceus* - common sow-thistle
- Xanthium strumarium* - cocklebur

#### BORAGINACEAE - BORAGE FAMILY

- Amsinckia menziesii* var. *intermedia* - common fiddleneck
- Amsinckia menziesii* var. *menziesii* - rigid fiddleneck
- Cryptantha microstachys* – cryptantha
- Cryptantha muricata* – prickly popcorn flower
- Heliotropium curassavicum* - wild heliotrope
- Pectocarya penicillata* - sleeping combseed, winged comb-seed, winged pectocarya

#### BRASSICACEAE - MUSTARD FAMILY

- \* *Brassica nigra* - black mustard
- Descurainia obtusa* spp. *adenophora* – tansy mustard
- Descurainia pinnata* spp. *halictorum* – tansy mustard

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- \* *Hirschfeldia incana* - short-podded mustard
- \* *Lepidium latifolium* - broad-leaved pepper-grass
- Rorippa nasturtium-aquaticum* - water cress
- \* *Sisymbrium altissimum* - tumble mustard
- \* *Sisymbrium irio* - London rocket

#### CACTACEAE - CACTUS FAMILY

*Opuntia littoralis* - coastal prickly-pear

#### CAPRIFOLIACEAE - HONEYSUCKLE FAMILY

*Sambucus mexicana* - Mexican elderberry

#### CHENOPODIACEAE - GOOSEFOOT FAMILY

- Atriplex canescens* - four-winged saltbush
- \* *Atriplex semibaccata* - Australian saltbush
  - \* *Atriplex triangularis* - spearscale
  - \* *Chenopodium album* - lamb's-quarters
  - Chenopodium berlandieri* - pitseed goosefoot
  - \* *Chenopodium murale* - nettle-leaved goosefoot
  - \* *Salsola tragus* - Russian-thistle

#### CONVOLVULACEAE - MORNING-GLORY FAMILY

- Calystegia macrostegia* - western bindweed
- \* *Convolvulus arvensis* - bindweed

#### CRASSULACEAE - STONECROP FAMILY

*Crassula connata* - dwarf stonecrop

#### CUCURBITACEAE - GOURD FAMILY

*Cucurbita foetidissima* - coyote-melon, calabazilla

#### EUPHORBIACEAE - SPURGE FAMILY

*Croton californicus* - California croton

#### FABACEAE - PEA FAMILY

*Lotus scoparius* - deerweed  
*Lotus strigosus* - strigose deerweed  
*Lupinus excubitus* var. *excubitus*- grape soda lupine  
*Lupinus succulentus* - arroyo lupine

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- \* *Medicago polymorpha* - California burclover
- \* *Melilotus alba* - white sweet-clover
- \* *Melilotus indica* - yellow sweet-clover
- \* *Parkinsonia aculeata* - Mexican palo verde
- \* *Vicia villosa* var. *villosa* - winter vetch

#### FAGACEAE - BEECH FAMILY

- Quercus agrifolia* - coast live oak
- Quercus lobata* - valley oak

#### GERANIACEAE - GERANIUM FAMILY

- \* *Erodium botrys* - broad-lobed filaree
- \* *Erodium cicutarium* - red-stemmed filaree

#### GROSSULARIACEAE - CURRANT FAMILY

- Ribes aureum* - golden currant

#### HYDROPHYLLACEAE - WATERLEAF FAMILY

- Eucrypta chrysanthemifolia* - common eucrypta
- Phacelia ramosissima* - shrubby phacelia

#### JUGLANDACEAE - WALNUT FAMILY

- Juglans californica* - California black walnut

#### LAMIACEAE - MINT FAMILY

- \* *Marrubium vulgare* - horehound
- \* *Mentha citrata* - orange mint
- Salvia mellifera* - black sage
- Stachys albens* - white hedge-nettle

#### MALVACEAE - MALLOW FAMILY

- Malacothamnus fasciculatus* - mesa bushmallow
- \* *Malva parviflora* - cheeseweed

#### MYOPORACEAE - MYOPORUM FAMILY

- \* *Myoporum laetum* - lollypop tree, ngaio tree

#### MYRTACEAE - MYRTLE FAMILY

- \* *Eucalyptus camaldulensis* - red gum

## **2003 Sensitive Plant Survey Results**

### **Magic Mountain Entertainment Site**

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#### **OLEACEAE - OLIVE FAMILY**

*Fraxinus dipetala* - California ash

#### **ONAGRACEAE - EVENING-PRIMROSE FAMILY**

*Camissonia bistorta* - California sun cup

*Camissonia californica* - mustard primrose

*Camissonia campestris* spp. *campestris* - Mojave sun cup

*Camissonia strigulosa* - field evening primrose

*Epilobium ciliatum* - California cottonweed

*Ludwigia peploides* - yellow waterweed

#### **PLANTAGINACEAE - PLANTAIN FAMILY**

\* *Plantago major* - common plantain

#### **PLATANACEAE - SYCAMORE FAMILY**

*Platanus racemosa* - western sycamore

#### **POLEMONIACEAE - PHLOX FAMILY**

*Eriastrum densifolium* spp. *elongatum* - eriastrum

*Gilia angelensis* - angel gilia

#### **POLYGONACEAE - BUCKWHEAT FAMILY**

*Eriogonum baileyi* - wild buckwheat

*Eriogonum fasciculatum* ssp. *foliolosum* - California buckwheat

\* *Polygonum arenastrum* - common knotweed

\* *Polygonum argyrocoleon* - silversheath knotweed

*Polygonum punctatum* - perennial smartweed

*Rumex salicifolius* - willow dock

#### **PORTULACACEAE - PURSLANE FAMILY**

*Claytonia parviflora* - small-leaved montia

*Claytonia perfoliata* - miner's-lettuce

#### **RANUNUCULACEAE - BUTTERCUP FAMILY**

*Clematis ligusticifolia* - yerba de chiva

#### **RHAMNACEAE - BUCKTHORN FAMILY**

*Ceanothus oliganthus* - hairy ceanothus

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#### **ROSACEAE - ROSE FAMILY**

- Rosa californica* - California rose
- Rubus ursinus* - California blackberry

#### **SALICACEAE - WILLOW FAMILY**

- Populus fremontii* - Fremont's cottonwood
- Salix exigua* - narrow-leaved willow
- Salix laevigata* - red willow
- Salix lasiolepis* var. *bracelinae* - arroyo willow
- Salix lucida* ssp. *lasiandra* - golden willow

#### **SAURURACEAE - LIZARD'S-TAIL FAMILY**

- Anemopsis californica* - yerba mansa

#### **SCROPHULARIACEAE - FIGWORT FAMILY**

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

#### **SOLANACEAE - NIGHTSHADE FAMILY**

- Datura wrightii* - western jimsonweed
- \* *Nicotiana glauca* - tree tobacco
- Solanum douglasii* - white nightshade

#### **TAMARICACEAE - TAMARISK FAMILY**

- \* *Tamarix ramosissima* - Mediterranean tamarisk

#### **URTICACEAE - NETTLE FAMILY**

- Parietaria hespera* var. *hespera* - pellitory
- Urtica dioica* - giant creek nettle
- \* *Urtica urens* - dwarf nettle

#### **VERBENACEAE - VERVAIN FAMILY**

- Verbena lasiostachys* var. *lasiostachys* - western verbena

#### **VISCACEAE - MISTLETOE FAMILY**

- Phoradendron macrophyllum* - big leaf mistletoe

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### ANGIOSPERMAE (MONOCOTYLEDONES)

#### ARECACEAE - PALM FAMILY

- \* *Washingtonia robusta* - Mexican fan palm

#### CYPERACEAE - SEDGE FAMILY

- Cyperus eragrostis* - tall cyperus
- Cyperus odoratus* - coarse cyperus
- Eleocharis parishii* - Parish's spike-rush
- Scirpus acutus* - hard-stemmed bulrush
- Scirpus americanus* - winged three-square
- Scirpus californicus* - California bulrush
- Scirpus pungens* - common three-square
- Scirpus robustus* - Pacific coast bulrush

#### JUNCACEAE - RUSH FAMILY

- Juncus macrophyllus* - long-leaved rush
- Juncus mexicanus* - Mexican rush
- Juncus rugulosus* - wrinkled rush
- Juncus xiphioides* - iris-leaved rush

#### LEMNACEAE - DUCKWEED FAMILY

- Lemna miniscula* - least duckweed

#### LILIACEAE - LILY FAMILY

- Dichelostemma capitatum* - blue dicks

#### POACEAE - GRASS FAMILY

- \* *Arundo donax* - giant reed
- \* *Avena barbata* - slender oat
- \* *Avena fatua* - wild oat
- Bromus carinatus* var. *carinatus* - California brome
- \* *Bromus diandrus* - ripgut grass
- \* *Bromus hordeaceus* - soft chess
- \* *Bromus madritensis* ssp. *rubens* - foxtail chess
- \* *Bromus tectorum* - cheat grass
- \* *Cortaderia jubata* - pampas grass
- Distichlis spicata* - salt grass
- \* *Echinochloa crus-galli* - barnyard grass

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- \* *Hordeum murinum* ssp. *leporinum* - glaucous foxtail barley
- Leptochloa uninervia* – Mexican sprangletop
- Leymus tritocoides* - beardless wild rye
- \* *Lolium multiflorum* - English ryegrass
- Paspalum distichum* - knotgrass
- \* *Pennisetum clandestinum* - kikuyu grass
- \* *Piptatherum miliaceum* - smilo grass
- \* *Polypogon monspeliensis* - rabbit's-foot grass
- \* *Schismus barbatus* - Mediterranean schismus
- \* *Sorghum halapense* - Johnson grass
- \* *Vulpia myuros* - rattail fescue

#### TYPHACEAE - CATTAIL FAMILY

- Typha latifolia* - broad-leaved cattail
- Typha domingensis* - slender cattail

- \* signifies introduced (non-native) species