RECON, "Quino Checkerspot Butterfly Habitat Assessment for Phase 1 Development and Permit Areas of Newhall Ranch" (1999; 1999C)

1999

Original in Matt Carpenter's Office

QUINO CHECKERSPOT BUTTERFLY HABITAT ASSESSMENT FOR PHASE 1 DEVELOPMENT AND PERMIT AREAS OF NEWHALL RANCH

Prepared for

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Introduction

The quino checkerspot butterfly (*Euphydryas editha quino* Behr 1863; QCB) was listed as an endangered species on January 16, 1997 (62 Federal Register 2313). Habitat loss and degradation are considered the cause of the dramatic decline in the species. Both the larval and adult stages have particular habitat requirements which are, according to the U.S. Fish and Wildlife Service (USFWS), negatively impacted by "invasive non-native vegetation and non-native invertebrates, over-grazing, poorly planned fire management practices, extreme adverse weather, over collection by butterfly collectors, and off-road vehicles" (1997).

This report provides data on an assessment of quino checkerspot butterfly habitat on the proposed Phase I development project for the Newhall Ranch Master Plan as outlined in the USFWS "Survey Protocol for the Endangered Quino Checkerspot Butterfly for the 1999 Field Season" (1999). Included in this report are maps of the distribution of food and nectar plants for QCB, vegetation types, and lists of the plants observed on the site. The suitability of the site to support quino checkerspot butterflies is also discussed.

Setting

The proposed Newhall Ranch Phase I development site and permit areas are located in the county of Los Angeles near the city of Santa Clarita (Figure 1) and within the Newhall Ranch Specific Plan (Figure 2). The Phase I site encompasses approximately 2,000 acres of steep hills, small valleys, and a portion of the Santa Clara River valley while the permit area encompasses the Santa Clara River and major tributary drainages (Figure 3).

The local topography of the Phase I and permit areas consists of a series of steep hills dissected by drainages leading into the Santa Clara River. The lowest elevation, located in the Santa Clara River valley, is 850 feet above mean sea level (MSL); and the highest elevation, located in the northern hills, is 1,700 feet above MSL. Soils in the area consist largely of silt, silty sands, clayey silts, and silty fine sands. Sandstone and siltstone cliff faces are exposed along some of the steep slopes.

Native upland vegetation grows on the steep slopes and ridges of the hills within the Phase I development and permit areas. Habitat types include coastal sage scrub, mixed chaparral, chamise chaparral, oak woodlands, and non-native grassland. Riparian vegetation occurs along portions of the Santa Clara River valley and major tributary drainages. Riparian habitat types include southern willow woodland and scrub, southern cottonwood-willow riparian woodland, freshwater marsh, alluvial scrubs, and mule fat scrub.

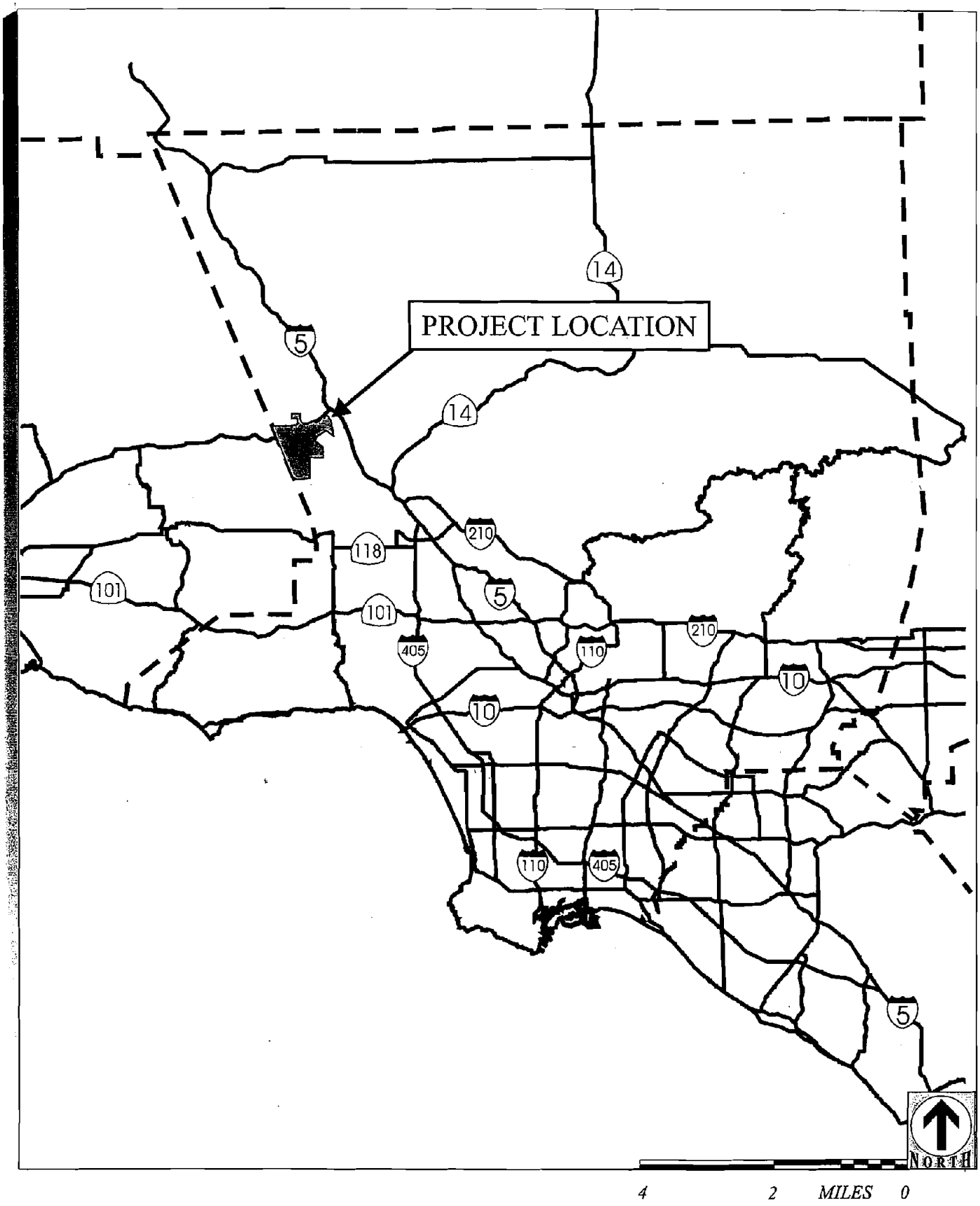

FIGURE 1

Regional Location of the Project

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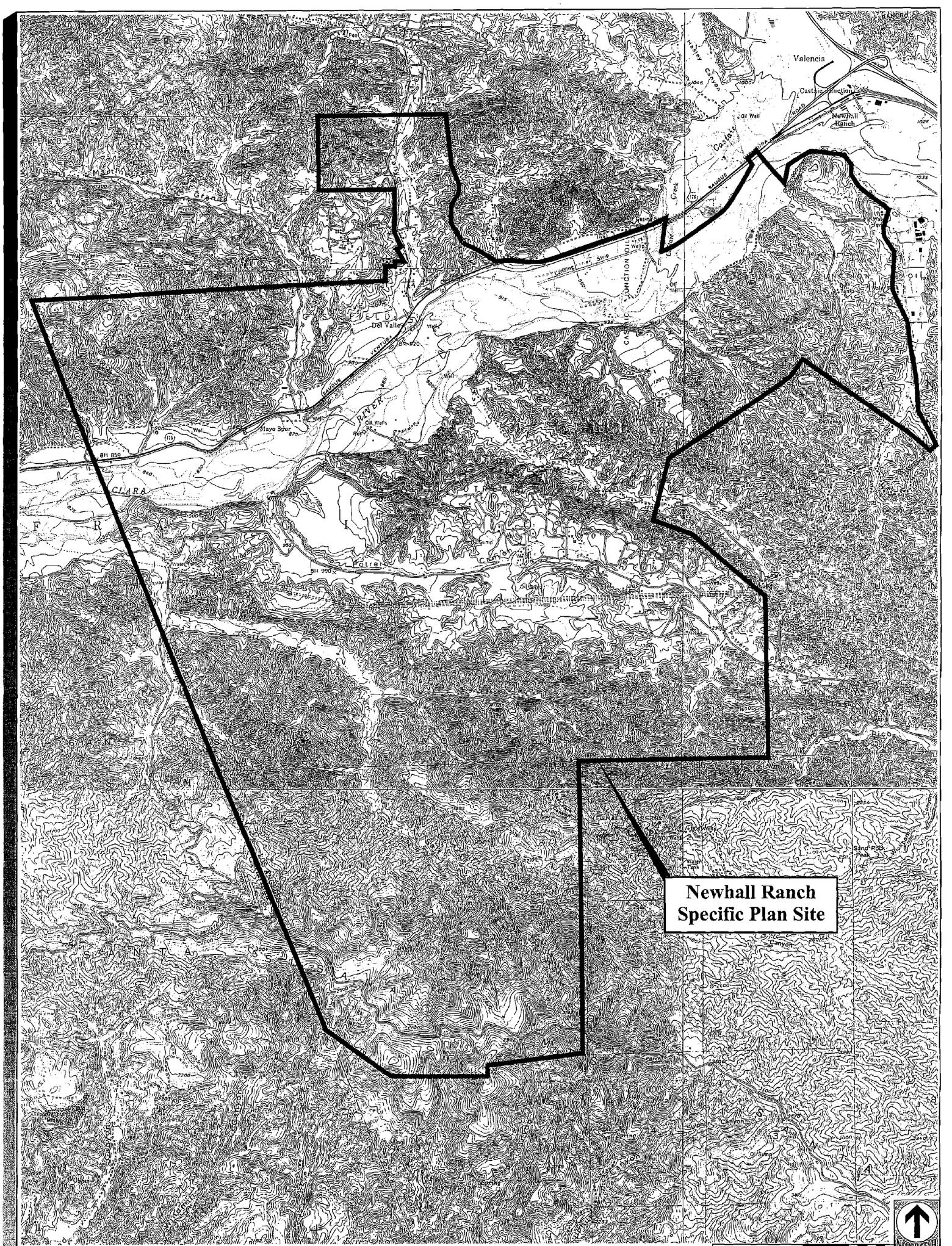

Map Source: U.S.G.S. 7.5 minute topographic maps, Newhall, Val Verde, Oat Mountain, and Simi Valley East

FIGURE 2

Project Vicinity

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Permit area

Phase I area

FIGURE 3

Locations of Phase I and Permit Survey Areas

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Historic land uses on the Phase I development area are agriculture, cattle grazing, and oil exploration. Agriculture operations occur on the flat valley bottoms of San Martinez Grande, Chiquito, Potrero, and Long Canyons as well as on the outer floodplain terraces of the Santa Clara River and nearby mesa tops. Cattle continue to graze over much of the Phase I and permit project areas. Oil exploration on the property has resulted in numerous wells and associated access roads to be built on the site.

Quino Checkerspot Butterfly

Quino checkerspot butterfly is federally listed as endangered. This species is a member of the brush-footed butterfly family (Nymphalidae). The quino checkerspot butterfly is one of 12 subspecies of the editha checkerspot and was formerly known as *E. e. wrightii.*

Although much remains to be learned about the biology of the QCB and the other subspecies of Edith's checkerspot, this group of butterflies has been one of the most intensively studied species of any butterfly in the world. A number of research articles have been published over the last 35 years covering many aspects of the biology of the checkerspot butterflies. A recently published article (Mattoni et al. 1997) summarizes the systematics, distribution, natural history, threats, and conservation planning principles for the QCB.

The quino checkerspot's distribution is defined primarily by the distribution of its principal larval host plant, dot-seed plantain (*Plantago erecta*). Dot-seed plantain is usually most abundant in areas which have natural cryptogamic soil crusts. Cryptogamic crusts form on soils in arid environments and are composed of blue-green algae (cyanobacteria), lichens, and mosses, as well as fungi and bacteria (Mattoni et al. 1997). Although dot-seed plantain is considered the primary larval food source throughout most of the quino checkerspot butterfly's range, it is likely that members of the figwort family (Scrophulariaceae), including purple owl's clover (*Castilleja exerta* [= *Orthocarpus purpurascens*]), are also used (Brown 1991; Mattoni et al. 1997).

The flight period for the adult QCB usually lasts several weeks and generally falls between late February to May. The timing of the flight period can vary considerably from year to year depending on rainfall and temperature patterns. The 1999 flight survey season began on March 15 and ended on May 10, a total of eight weeks. Adults use a number of native annual species as a nectar source during the fight period, including goldfields (*Lasthenia* spp.), cryptantha (*Cryptantha* spp.), gilia (*Gilia* spp.), ground pink (*Linanthus dianthiflorus*), chia (*Salvia columbariae*), and annual lotus (*Lotus* spp.) (Mattoni et al. 1997).

The nearest historical sightings of the quino checkerspot butterfly in Los Angeles County include observations at Tapia Camp in the Santa Monica Mountains in 1947 and Pt.

Dume in 1954 (Mattoni et.al. 1997). No quino checkerspot populations have been observed in Los Angeles County in the last decade.

QCB Habitat Suitability Analysis

Vegetation for the Newhall Ranch Phase I site and permit area was mapped by Dames and Moore (1993) and updated by RECON (1995). Riparian vegetation along the Santa Clara River was updated in 1999 by RECON (1999). A list of plants observed during the 1999 habitat assessment is included in Attachment 1. A quino checkerspot habitat assessment was conducted by Cindy Jones (USFWS #PRT-797665), Jennifer Hodge, and Gerry Scheid using vegetation maps, aerial photographs, and site visits. The assessment was conducted on April 2, 3, and 4, 1999, after dot-seed plantain had germinated and was growing.

Areas supporting native plant communities were searched on foot to determine if food plants were present. Surveys focused on areas with suitable topography and habitat because of the steep terrain. Ridges, low hills, and valley bottoms were the primary sites with suitable topographic conditions. Coastal sage scrub, chaparral, and open grasslands were the primary suitable habitat types. Existing vegetation communities in the Phase I and permit areas are shown on Figure 4.

A. Phase I Development Area

The coastal sage scrub community is the primary plant community that was considered potential habitat for quino checkerspot butterflies within the Phase I development area (Photograph 1). Open chaparral and grasslands were also considered to have potential to support habitat for this butterfly. Coastal sage scrub communities on the property are dominated by California sagebrush (*Artemisia californica*), purple sage (*Salvia leucophylla*), California encelia (*Encelia californica*), and California buckwheat (*Eriogonum fasciculatum*). The habitat ranges from moderately sparse shrubs with a non-native grassland understory on the lower and less steep slopes to dense patches of shrubs on the upper, steepest slopes. Some areas of limited crypotgramic crust were found in the coastal sage scrub, but these areas did not support annual plant species. The coastal sage scrub on the site has been highly impacted by cattle grazing and oil exploration (Photograph 2).

Both mixed and chamise chaparral occur on the steep slopes and ridges of the Phase I development area and lower slopes of the permit area. These habitats support stands of native shrubs that include chamise (*Adenostoma fasciculatum*), hoaryleaf ceanothus (*Ceanothus crassifolius*), lemonadeberry (*Rhus integrifolia*), black sage (*Salvia mellifera*), and laurel sumac (*Malosma laurina*). The habitat is open on the lower, less

- ALLUVIAL SCRUB
- ARROW WEED SCRUB
- CHAMISE CHAPARRAL
- COAST LIVE OAK WOODLAND
- COAST LIVE OAK WOODLAND/MAINLAND CHERRY
- COASTAL SAGE SCRUB
- ELDERBERRY SCRUB
- GRASSLAND/DISTURBED
- GREAT BASIN SCRUB
- MESIC MEADOW
- MIXED CHAPARRAL
- MULE FAT SCRUB
- SCALEBROOM SCRUB
- SOUTHERN COTTONWOOD/WILLOW RIPARIAN FOREST
- SOUTHERN WILLOW RIPARIAN WOODLAND
- SOUTHERN WILLOW SCRUB
- SUCCESSIONAL MULE FAT SCRUB
- VALLEY FRESHWATER MARSH
- AGRICULTURAL AND OTHER DEVELOPED USES
- AGRICULTURAL DRAINS
- DISTURBED

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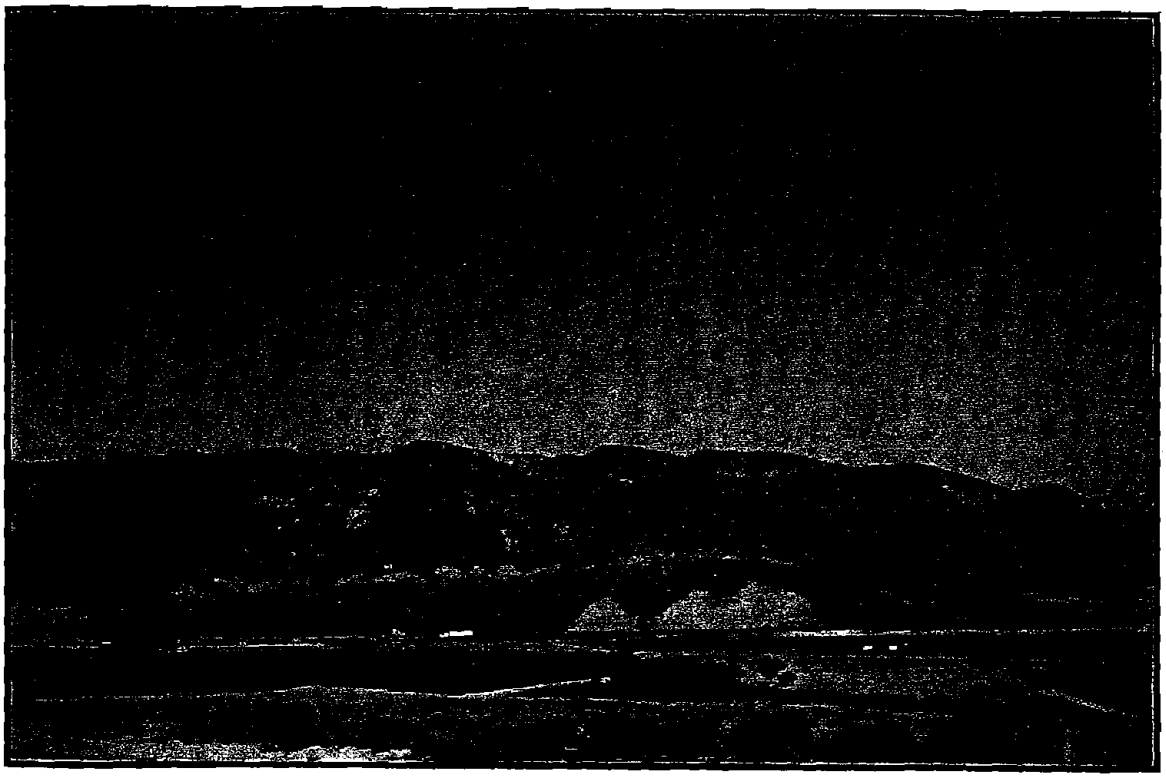
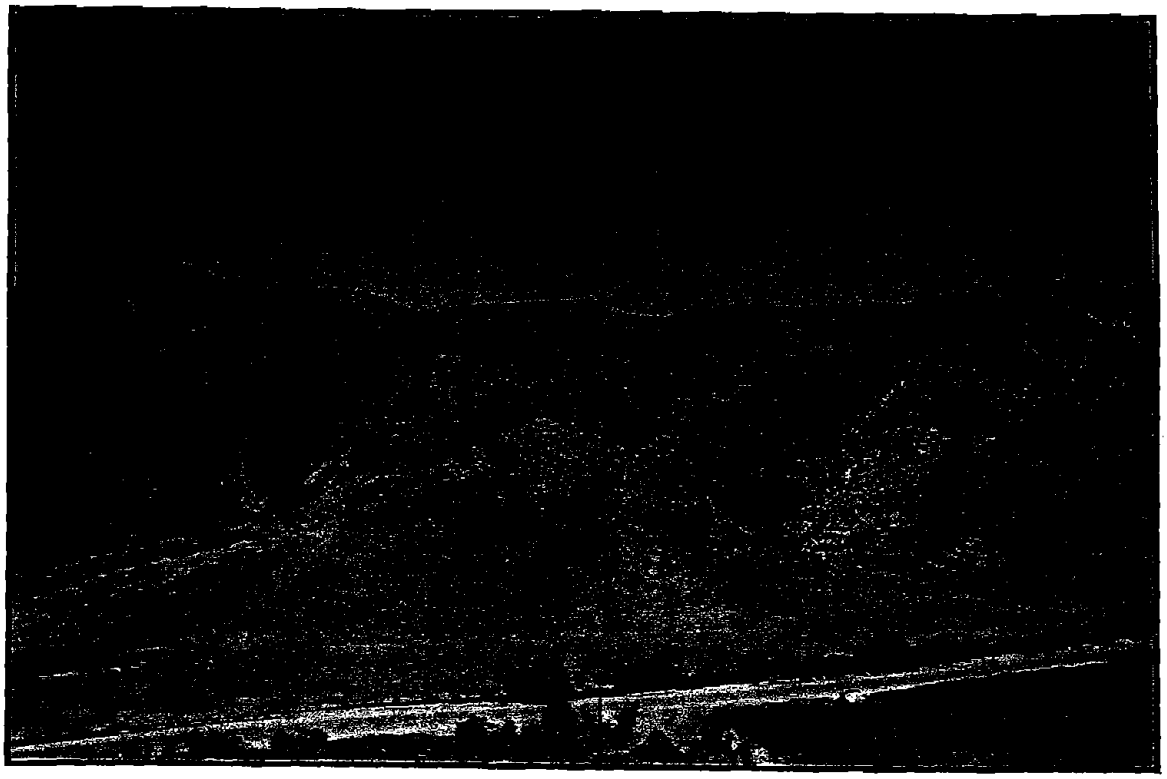
FIGURE 4

Existing Vegetation on the Phase I and Permit Survey Areas



PHOTOGRAPH 1
Habitat in Phase I Development Area



PHOTOGRAPH 2
Grazed Coastal Sage Scrub in Phase I Development Area

steep slopes mainly due to cattle grazing, and dense on the steep slopes and protected canyons.

Grasslands on the site are dominated by non-native species such as several grass species of the genus *Bromus*. Species present include ripgut grass (*B. diandrus*), smooth brome (*B. hordaceous*), foxtail chess (*B. madritensis* ssp. *rubens*), and downy brome (*B. tectorum*). Wild oats (*Avena fatua*) and slender wild oats (*A. barbata*) also occur in the grasslands along with various mustard species. Although generally a dense cover of grasses and weeds make up these grasslands, some small openings occur that could support food and nectar plants for the quino checkerspot.

No dot-seed plantain was found growing in the Phase I development area. Small patches of an alternate host plant (owl's clover) and one of the nectar plants (goldfields) were observed, but these occur in highly disturbed conditions and the populations were small (Figure 5). The owl's clover patch was observed in an active agricultural field and was estimated to be at a density of one plant per 10 square meters. Only five goldfield plants were observed in an area of about 20 square meters.

B. Permit Area

Vegetation communities within the permit area are primarily riparian with upland habitats on the adjacent slopes. Habitats along the Santa Clara River include riparian woodlands and scrubs that are not suitable for either the food plant or nectar plants used by the quino checkerspot butterfly. The flat floodplain terraces that are clear of riparian habitat support agricultural crops and thus are not suited for the butterfly. The major tributary drainages to the Santa Clara River to the south support narrow bands of riparian habitat such as mule fat scrub, alluvial scrub, oak woodland, and mainland cherry forest. Grassland and agricultural areas often occur adjacent to the drainages on the terraces above the high flow line. These habitats, in general, are not suitable for food and nectar plants; however, some areas on the adjacent terraces appeared to have suitable physical conditions for food and nectar plants. These areas proved to be too disturbed from cattle grazing and non-native species to support significant populations for food or nectar plants.

The lower slopes of the canyons adjacent to Long and Lyons Canyons and smaller unnamed tributary canyons are vegetated with patches of coastal sage scrub. Most of the lower edges of the coastal sage scrub near the drainages has been disturbed heavily by cattle grazing and invasion of non-native annuals in the openings between the shrubs (Photographs 3 and 4). Annual cover is generally dense leaving little opportunity for food or nectar plants to survive in large numbers. Oil exploration activities (i.e., wells, access roads, pipelines) have also impacted the coastal sage scrub in these canyons.

- Dot-seed plantain
- Goldfields
- Owl's clover
- Permit area
- Phase I area

FIGURE 5

Location of Quino Checkerspot Host and Nectar Plants

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PHOTOGRAPH 3
Habitat in Lyon Canyon, Permit Area

PHOTOGRAPH 4
Disturbed Habitat along Drainage Course in Lyon Canyon

Potrero Canyon is the largest tributary canyon south of the Santa Clara River on the property. The large flat valley floor and low rolling hills could provide suitable physical conditions for food and nectar plants for the quino checkerspot butterfly. However, these hills and flat areas have been extensively used for agricultural purposes and cattle grazing almost eliminating any potential for suitable quino checkerspot butterfly habitat (Photograph 5). One area in upper Potrero Canyon along the Potrero drainage had coastal sage scrub and oak woodlands that have the potential to support food and nectar plants for the butterfly. These areas are disturbed, but not to the magnitude of areas in lower Potrero Canyon.

One small patch of dot-seed plantain was found under an oak tree in a dense stand of non-native grasses within an unnamed drainage above San Jose Flats (see Figure 5; Photograph 6). Approximately 30 to 50 plants were counted over a two-meter-square area (Photograph 7). No additional dot-seed plantain were observed anywhere near this small population. No dot-seed plantain or nectar plants were observed within any of the other areas in the permit area.

Suitability of Site for Quino Checkerspot Butterflies

The likelihood of a quino checkerspot population being supported in the Phase I development area or the permit area is very low. There were no more than 50 plantain individuals observed in only one location in the two study areas. In addition, there were only a small number of nectar plants and no significant cryptogamic crusts present. Decades of cattle grazing, agriculture, and oil exploration have significantly affected areas with appropriate physical characteristics of suitable quino checkerspot habitat. The result is habitat patches that lack the required annual plant species for the butterfly. The last sighting of the quino checkerspot butterfly in Los Angeles County was in 1954, and the lack of more recent sightings, even with the increased effort over the last two seasons, suggests that the area has become unsuitable for quino.

References Cited

Brown, J.

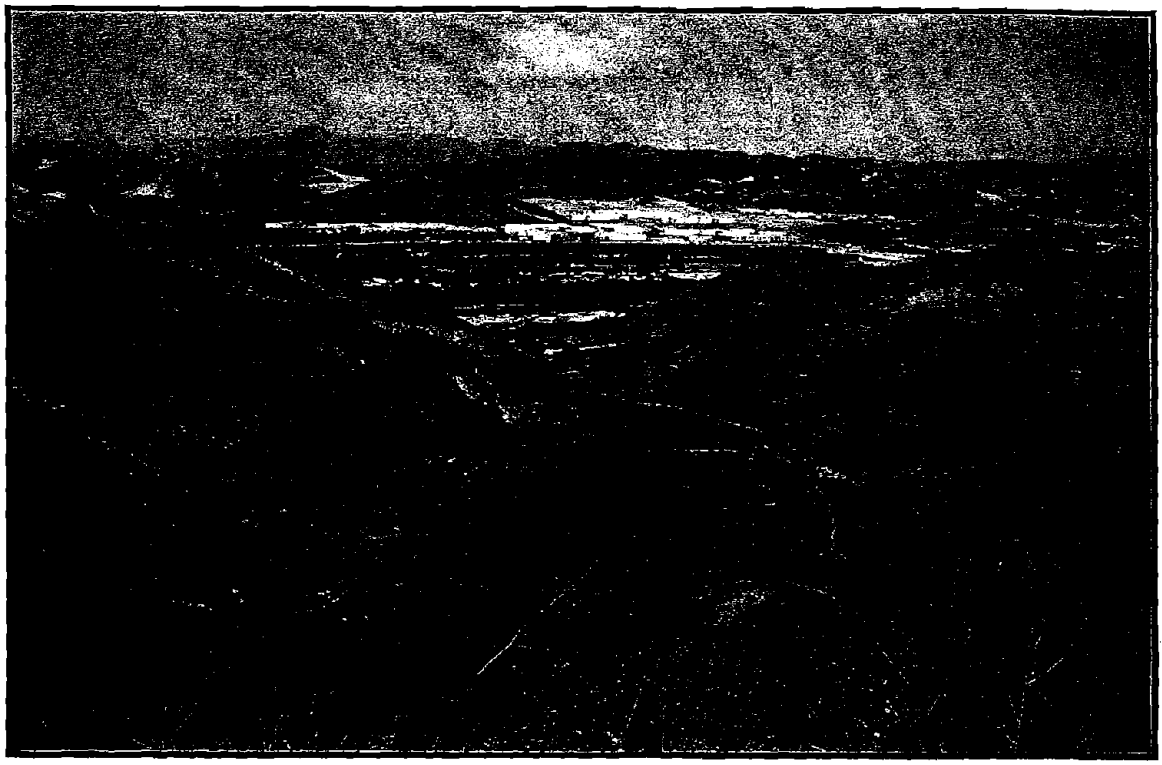
1991 Sensitive and Declining Butterfly Species (Insects: Lepidoptera) in San Diego County, California. Draft, Dudek and Associates, May.

Brown, J. W., H. G. Real, and D. K. Faulkner

1992 *Butterflies of Baja California.* Lepidoptera Research Foundation, Inc., Beverly Hills, California.

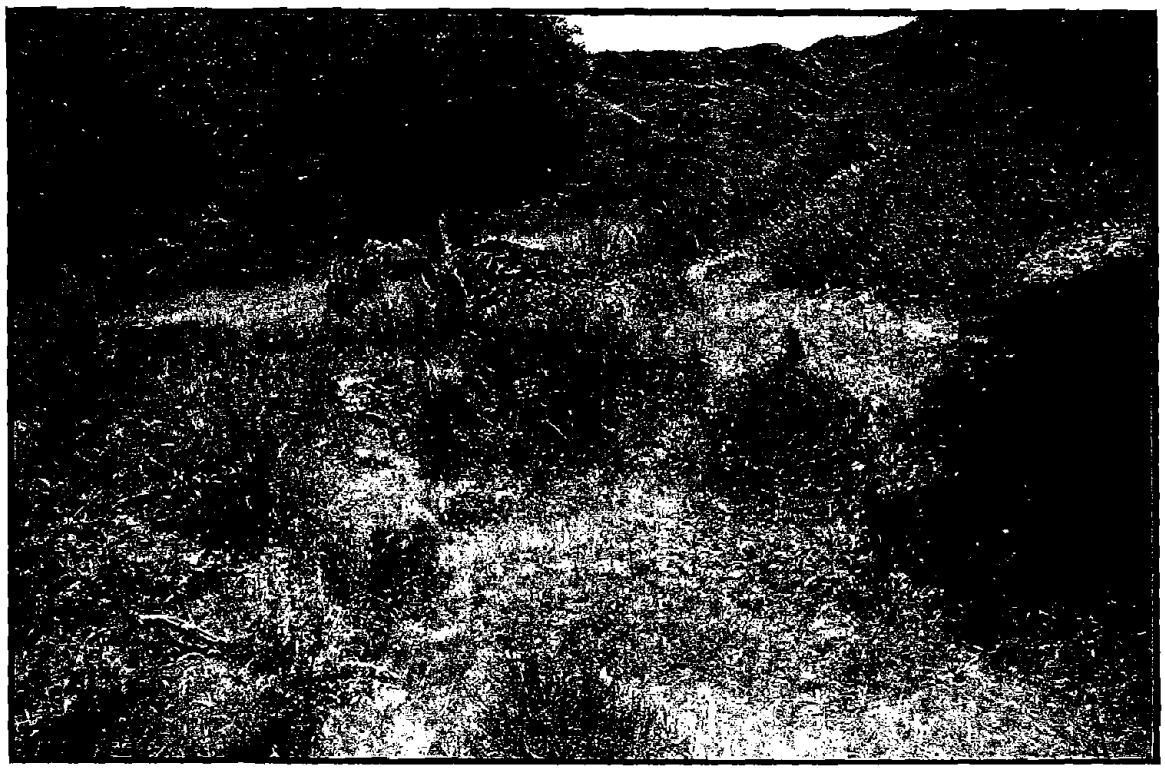
PHOTOGRAPH 5

Grazed Habitat in Potrero Canyon Permit Area



PHOTOGRAPH 6

Canyon above San Jose Flats



PHOTOGRAPH 7

Location Where Plantago was Found above San Jose Flats

Dames and Moore

1993 Biological Resources of the Upland Areas of the West Ranch. Prepared for the Newhall Ranch Company. July.

Emmel, T. C., and J. F. Emmel

1973 *The Butterflies of Southern California.* Natural History Museum of Los Angeles County.

Mattoni, R., G. F. Pratt, T. R. Longcore, J. F. Emmel, and J. N. George

1997 The Endangered Quino Checkerspot Butterfly, *Euphydryas editha quino* (Lepidoptera: Nymphalidae). *Journal of Research on the Lepidoptera* 34:99-118.

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1995 Biota Report Newhall Specific Ranch Plan. Prepared for Los Angeles County Department of Regional Planning. September.

1999 Habitat Assessment of the Santa Clara River on the Newhall Ranch Property. Prepared for Newhall Ranch Company. July.

U.S. Fish and Wildlife Service (USFWS)

1997 Interim General Survey Protocols and Mitigation Guidelines for the Endangered Quino Checkerspot Butterfly, dated November 4.

1999 Survey Protocol for the Endangered Quino Checkerspot Butterfly (*Euphydryas editha quino*) for the 1999 Field Season, dated January 25.

ATTACHMENT 1

ATTACHMENT 1
PLANT SPECIES OBSERVED

Scientific Name	Common Name	Origin
Acourtia microcephala DC.	Purple-head, Sacapellote	N
Adenostoma fasciculatum Hook. & Arn.	Chamise	N
Adiantum jordani K.Mull.	California maiden-hair fern	N
Agrostis gigantea Roth	Redtop	I
Ambrosia acanthicarpa Hook.	Annual bur-sage	N
Ambrosia psilostachya DC.	Western ragweed	N
Amsinckia menziesii (Lehm.) Nelson & J.F. Macbr. var. *intermedia* (Fischer & C. Meyer) Ganders	Rancher's fireweed	N
Amsinckia menziesii (Lehm.) Nelson & J.F. Macbr. var. *menziesii*	Rancher's fireweed	N
Antirrhinum coulterianum Benth.	White snapdragon	N
Apocynum cannabinum L.	Indian hemp	N
Apium graveolens L.	Celery	I
Argemone munita Durand & Hilg.	Chicalote	N
Artemisia californica Less.	California sagebrush	N
Artemisia douglasiana	Mugwort	N
Artemisia dracunculus L.	Tarragon	N
Artemisia tridentata Nutt. ssp. *tridentata*	Big sagebrush	N
Arundo donax L.	Giant reed	I
Asclepias californica E. Greene	California or Round-hooded milkweed	N
Asclepias fascicularis Decne.	Narrow-leaf milkweed	N
Astragalus didymocarpus Hook. & Arn. var. *didymocarpus*	Twin locoweed	N
Astragalus trichopodus (Nutt.) A.Gray var. *phoxus*	Locoweed	N
Atriplex canescens (Parsh) Nutt.	Fourwing saltbush, shad-scale	N
Atriplex lentiformis (Torrey) S. Watson ssp. *lentiformis*	Big saltbush	N
Atriplex semibaccata R.Br.	Australian saltbush	I
Atriplex triangularis Willd.	Spearscale	N
Avena barbata Link	Slender wild oat	I
Avena fatua L.	Wild oat	I
Baccharis emoryi A. Gray	Chaparral broom	N
Baccharis pilularis DC.	Coyote bush	N
Baccharis salicifolia (Ruiz Lopez & Pavón) Pers.	Mule fat, seep-willow	N
Brassica nigra (L.) Koch.	Black mustard	I
Bromus diandrus Roth.	Ripgut grass	I
Bromus hordaceus L.	Smooth brome	I

ATTACHMENT 1
PLANT SPECIES OBSERVED
(continued)

Scientific Name	Common Name	Origin
Bromus madritensis L. ssp. *rubens* (L.) Husnot	Foxtail chess	I
Bromus tectorum L.	Cheat grass, downy brome	I
Calochortus clavatus S. Watson ssp. *clavatus*	Club-haired mariposa lily	N
Calochortus venustus Benth.	Mariposa lily	N
Calystegia macrostegia (E. Greene) Brummitt ssp. *intermedia* (Abrams) Brum.	Chaparral morning-glory	N
Camissonia sp.	Sun cup	N
Camissonia bistorta (Torrey & A. Gray) Raven	California sun cup	N
Camissonia boothii (Douglas) Raven ssp. *decorticans* (Hook. & Arn.) Raven	Shredding evening primrose	N
Camissonia californica (T.& G.) Raven	False-mustard	N
Camissonia strigulosa (Fischer & C. Meyer) Raven	Sun cup	N
Capsella bursa-pastoris (L.) Medikus	Shepard's purse	I
Carex praegracilis W. Boott	Sedge	N
Castilleja affinis Hook. & Arn. ssp. *affinis*	Indian paint brush	N
Castilleja exserta (A.A. Heller) Chuang & Heckard	Purple owl's clover	N
Ceanothus crassifolius Torrey	Hoaryleaf ceanothus	N
Ceanothus oliganthus Nutt. var. *oliganthus*	Ceanothus	N
Centaurea melitensis L.	Tocalote	I
Chaenactis glabriuscula DC. var. *glabriuscula*	Yellow pincushion	N
Chamaesyce polycarpa (Benth.) Millsp.	Spurge	N
Chamomilla suaveolens (Pursh) Rydb.	Pineapple weed	I
Chenopodium album L.	Lamb's quarters, pigweed	I
Chenopodium ambrosioides L.	Mexican tea	I
Chenopodium botrys L.	Jerusalem oak	I
Chenopodium californicum (S. Watson) S. Watson	California pigweed	N
Chorizanthe staticoides Benth.	Turkish rugging	N
Chorizanthe xantii S. Watson var. *xantii*	Spineflower	N
Cirsium occidentale (Nutt.) Jepson var. californicum (A. Gray) Keil & C. Turner	California thistle	N
Cirsium vulgare (Savi) Ten.	Bull thistle	I
Clarkia bottae (Spach) Harlan Lewis & M. Lewis	Punchbowl godetia	N
Clarkia epilobioides (Nutt.) Nelson & J.F. Macbr.	Canyon godetia	N
Clarkia purpurea (Curtis) Nelson & J.F. Macbr. ssp. *purpurea*	Valley godetia	N
Clarkia unguiculata Lindley	Elegant clarkia	N

ATTACHMENT 1
PLANT SPECIES OBSERVED
(continued)

Scientific Name	Common Name	Origin
Claytonia perfoliata Willd.	Miner's lettuce	N
Clematis pauciflora Nutt.	Ropevine	N
Cnicus benedictus L.	Blessed thistle	I
Convolvulus arvensis L.	Bindweed, Orchard morning-glory	I
Conyza canadensis (L.) Cronq.	Horseweed	N
Coriandrum sativum L.	Coriander, Cilantro	I
Cotula australis (Sieber) Hook.f.	Australian brass-buttons	I
Cotula coronopifolia L.	Brass-buttons	I
Crassula connata (Ruiz Lopez & Pavon) A. Berger	Pygmy-weed	N
Croton californicus Muell.-Arg.	California croton	N
Cryptantha sp.	Cryptantha	N
Cucurbita foetidissima Kunth	Calabazilla	N
Cuscuta californica Hook. & Arn. var. *californica*	Dodder	N
Cynodon dactylon (L.) Pers.	Bermuda grass	I
Datura wrightii Regel	Jimson weed	N
Dichelostemma capitatum Alph. Wood	Blue dicks	N
Distichlis spicata (L.) E. Greene	Saltgrass	N
Dudleya lanceolata (Nutt.) Britt. & Rose	Live-for-ever	N
Encelia californica Nutt.	Common encelia	N
Epilobium ciliatum Ref. ssp. *ciliatum*	Sticky willowweed	N
Eremocarpus setigerus (Hook.) Benth.	Dove weed	N
Eriastrum sapphirinum (Eastw.) H. Mason	Sapphire eriastrum	N
Ericameria palmeri (A. Gray) H.M. Hall var. *pachylepis* (H.M. Hall) G. Nesom	Goldenbush	N
Eriodictyon trichocalyx A.A. Heller var. *trichocalyx*	Hairy yerba santa	N
Eriogonum fasciculatum Benth. var. *fasciculatum*	California buckwheat	N
Eriogonum fasciculatum Benth. var. *foliolosum* (Nutt.) Abrams	California buckwheat	N
Eriogonum fasciculatum Benth. var. *polifolium* (A. DC.) Torrey & A. Gray	California buckwheat	N
Eriogonum gracile Benth. var. *gracile*	Slender buckwheat	N
Eriophyllum confertiflorum (DC.) A. Gray var. *confertiflorum*	Golden-yarrow	N
Erodium botrys (Cav.) Bertol.	Pin-clover	I
Erodium cicutarium (L.) L. Her.	White-stemmed filaree	I
Erodium moschatum (L.) L. Her.	Green-stemmed filaree	I
Eucalyptus spp.	Eucalyptus	I

ATTACHMENT 1
PLANT SPECIES OBSERVED
(continued)

Scientific Name	Common Name	Origin
Eucrypta chrysanthemifolia (Benth.) E. Greene var. *chysanthemifolia*	Eucrypta	N
Filago arizonica A. Gray	Arizona filago	N
Filago californica Nutt.	California filago, Fluffweed	N
Galium angustifolium Nutt. *angustifolium*	Narrow-leaf bedstraw	N
Gnaphalium luteo-album L.	Everlasting	I
Hazardia squarrosa (Hook. & Arn.) E. Greene var. *grindelioides* (DC.) Clark	Saw-toothed goldenbush	N
Helianthus annuus L.	Common sunflower	N
Helianthus gracilentus A. Gray	Slender sunflower	N
Heliotropium curassavicum L.	Chinese pusley	N
Hemizonia fasciculata (DC.) Torrey & Gray	Tarplant	N
Heteromeles arbutifolia (Lindley) Roemer	Toyon, Christmas berry	N
Heterotheca grandiflora Nutt.	Telegraph weed	N
Hordeum vulgare L.	Common barley	I
Hypochaeris glabra L.	Smooth cat's-ear	I
Isocoma menziesii (Hook. & Arn.) G. Nesom var. *vernonioides* (Nutt.) G. Nesom	Coast goldenbush	N
Isomeris arborea Nutt.	Bladderpod	N
Iva axillaris Pursh ssp. *robustior* (Hook.) Bassett	Poverty weed	N
Juncus bufonius L. var. *bufonius*	Toad rush	N
Juncus mexicanus Willd.	Mexican rush	N
Lactuca serriola L.	Prickly lettuce	I
Lamarckia aurea (L.) Moench.	Goldentop	I
Lamium amplexicaule L.	Dead nettle, henbit	I
Lasthenia californica Lindley	Goldfields	N
Lepidium virginicum L. var. *virginicum*	Tall peppergrass	I
Lepidospartum squamatum (A. Gray) A. Gray	Scale-broom	N
Leptochloa uninervia (C. Presl) A. Hitchc. & Chase	Mexican sprangletop	I
Leptodactylon californicum Hook. & Arn.	Prickly phlox	N
Lessingia filaginifolia (Hook. & Arn.) M.A. Lane var. *filaginifolia*	California-aster	N
Leymus condensatus (C. Presl) A. Love	Giant ryegrass	N
Lolium perenne L.	Perennial ryegrass	I
Lotus hamatus E. Greene	Grab lotus	N
Lotus scoparius (Nutt. in Torrey & A. Gray) Ottley var. *scoparius*	California broom	N

ATTACHMENT 1
PLANT SPECIES OBSERVED
(continued)

Scientific Name	Common Name	Origin
Lotus strigosus (Nutt.) E. Greene	Bishop's lotus	N
Lupinus bicolor Lindl.	Miniature lupine	N
Lupinus hirsutissimus Benth.	Stinging lupine	N
Lupinus microcarpus Sims var. *densiflorus* (Benth.) Jepson	Chick lupine	N
Lupinus microcarpus Sims var. *microcarpus*	Chick lupine	N
Lupinus sparsiflorus Benth.	Coulter's lupine	N
Lupinus succulentus Koch	Arroyo lupine	N
Lupinus truncatus Hook. & Arn.	Chaparral lupine	N
Malacothamnus fasciculatus (Torrey & A. Gray) E. Greene	Chaparral mallow	N
Malva parviflora L.	Cheeseweed, little mallow	I
Malacothrix saxatilis (Nutt.) Torrey & A. Gray var. *tenuifolia* (Nutt.) A. Gray	Malacothrix	N
Marah macrocarpus (E. Greene) E. Greene	Wild cucumber	N
Marrubium vulgare L.	Horehound	I
Melica imperfecta Trin.	California melic	N
Melilotus alba Medikus	White sweet clover	I
Melilotus indica (L.) All.	Sourclover	I
Mimulus aurantiacus Curtis	Bush monkeyflower	N
Mimulus guttatus DC.	Common monkeyflower	N
Mirabilis californica A. Gray	Wishbone bush	N
Nassella lepida (A. Hitchc.) Barkworth	Foothill needlegrass	N
Nassella pulchra (A. Hitchc.) Barkworth	Purple needlegrass	N
Navarretia atractyloides (Benth.) Hook. & Arn.	Prickly navarretia	N
Nicotiana glauca Grah.	Tree tobacco	I
Oenothera californica (Wats.) Watson	California evening primrose	N
Opuntia basilaris Engelm. & Bigel. var. *basilaris*	Beavertail cactus	N
Opuntia littoralis (Engelm.) Cockerell.	Shore cactus	N
Opuntia prolifera Engelm.	Cholla	N
Paeonia californica Torrey & A. Gray	Peony	N
Pectocarya linearis (Ruiz Lopez & Pavon) DC. ssp. *ferocula*	Comb-bur	N
Pentagramma triangularis (Kaulf.) G. Yatskievych, M.D. Windham & E. Wollenweber ssp. *triangularis*	Goldback fern	N
Phacelia ramosissima Lehm. var. *latifolia* (Torrey) Cronq.	Shrubby phacelia	N
Phacelia tanacetifolia Benth.	Phacelia	N

ATTACHMENT 1
PLANT SPECIES OBSERVED
(continued)

Scientific Name	Common Name	Origin
Phacelia viscida (Benth.) Torrey	Sticky phacelia	N
Phoradendron macrophyllum (Englm.) Cockerell	Big leaf mistletoe	N
Plantago erecta Morris	Dot-seed plantain	N
Plantago lanceolata L.	English plantain	I
Plantago major L.	Common plantain	I
Pluchea odorata (L.) Cass.	Salt marsh fleabane	N
Pluchea sericea (Nutt.) Cov.	Arrow weed	N
Poa annua L.	Annual bluegrass	I
Polygonum argyrocoleon Kunze	Knotweed, smartweed	I
Polygonum arenastrum Boreau	Common knotweed, doorweed	I
Polygonum lapathifolium L.	Willow weed	N
Polypogon monspeliensis (L.) Desf.	Annual beard grass	I
Populus balsamifera L. ssp. *trichocarpa* (Torrey & A. Gray) Brayshaw	Black cottonwood	N
Populus fremontii Wats. ssp. *fremontii*	Fremont cottonwood, alamo	N
Prunus ilicifolia (Nutt.) Walp. ssp. *ilicifolia*	Holly-leafed cherry, Islay	N
Pterostegia drymarioides Fischer & C. Meyer	California thread-stem	N
Quercus agrifolia Nee	Coast live oak, Encina	N
Quercus lobata Nee	Valley oak, Roble	N
Rhamnus crocea Nutt.	Spiny redberry	N
Rhus ovata Wats.	Sugar bush	N
Rhus trilobata Torrey & A. Gray	Skunkbrush	N
Ricinus communis L.	Castor bean	I
Rorippa nasturtium-aquaticum (L.) Hayek	Water cress	I
Rosa californica C. & S.	California rose	N
Rubus ursinus C. & S.	California blackberry	N
Rumex acetosella L.	Sheep sorrel	I
Rumex crispus L.	Curly dock	I
Rumex hymenosepalus Torrey	Wild rhubarb, canaigre	N
Salix exigua Nutt.	Narrow-leaved willow	N
Salix laevigata Bebb	Red willow	N
Salix lasiolepis Benth.	Arroyo willow	N
Salsola tragus L.	Russian thistle, tumbleweed	I
Salvia apiana Jepson	White sage	N

ATTACHMENT 1
PLANT SPECIES OBSERVED
(continued)

Scientific Name	Common Name	Origin
Salvia columbariae Benth.	Chia	N
Salvia leucophylla E. Greene	Purple sage	I
Salvia mellifera E. Greene	Black sage	N
Sambucus mexicana C. Presl	Blue elderberry	N
Schismus barbatus (L.) Thell.	Mediterranean grass	I
Scirpus acutus Bigelow var. *occidentalis* (S. Watson) Beetle	Bulrush	N
Scirpus americanus Pers.	Three-square	N
Scirpus maritimus L.	Prairie bulrush	N
Selaginella bigelovii L. Underw.	Bigelow clubmoss	N
Senecio californicus DC.	California groundsel	N
Senecio flaccidus Less. var. *douglasii* (DC.) B. Turner & T. Barkley	Sandwash groundsel	N
Senecio vulgaris L.	Common groundsel	I
Silybum marianum (L.) Gaertner	Milk thistle	I
Sisymbrium altissimum L.	Tumble or Jim Hill mustard	I
Sisymbrium irio L.	London rocket	I
Sisymbrium officinale L.	Hedge mustard	I
Sisymbrium orientale L.	Mustard	I
Solanum americanum Miller	Nightshade	I
Solanum douglasii Dunal	Douglas nightshade	N
Solanum xanti A. Gray	Purple nightshade	N
Sonchus asper (L.) Hill ssp. *asper*	Prickly sow thistle	I
Sonchus oleraceus L.	Common sow thistle	I
Stellaria media (L.) Villars	Common chickweed	I
Stephanomeria virgata Benth. ssp. *virgata*	Slender stephanomeria	N
Stillingia linearifolia S. Watson	Desert stillingia	N
Tamarix sp.	Tamarisk	I
Tribulus terrestris L.	Puncture vine	I
Typha latifolia L.	Broad-leaved cattail	N
Uropapus lindleyi (DC.) Nutt.	Silver puffs	N
Urtica dioica L. ssp. *holosericea* (Nutt.) Thorne	Hoary nettle	N
Urtica urens L.	Dwarf nettle	I
Verbena lasiostachys Link.	Western vervain	N
Veronica anagallis-aquatica L.	Water speedwell	I

ATTACHMENT 1
PLANT SPECIES OBSERVED
(continued)

Scientific Name	Common Name	Origin
Vitis girdiana Munson	Desert wild grape	N
Vulpia myuros (L.) var. *myuros*	Rattail fescue	I
Vulpia octoflora (Walt.) Rydb.	Six-weeks fescue	N
Xanthium spinosum L.	Spiny cocklebur	N
Xanthium strumarium L.	Cocklebur	N
Yucca whipplei Torrey	Our Lord's candle	N

Origin

N = Native to locality
I = Introduced species from outside locality