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Chemical Waste Management, Kettleman Hills Facility
B-18 Landfill Expansion Project

Biological Assessment
July 2011 Revision

Attachment 3

Chemical Waste Management, Inc.
Kettleman City, CA

Rare Plant Survey of the
Kettleman Hills
Hazardous Waste Disposal Facility

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Executive Summary

Chemical Waste Management's Kettleman Hills Facility supports a limited rare plant resource. Three CNPS List 4 plants species are present on the site: Cottony Buckwheat (*Eriogonum gossypinum*), Gypsum Larkspur (*Delphinium gypsophilum* ssp. *gypsophilum*) and Kern Tarplant (*Hemizonia pallida*).

Operation of the facility will not have significant, direct impacts on rare plants. Under current Federal or State regulations, only Cottony Buckwheat requires environmental review, given the proposed expansion plans. The single known occurrence of this species on the site will be avoided by the planned expansion, and will therefore not be impacted.

1.0 INTRODUCTION

This report provides the results of a field survey for rare, endangered, or otherwise sensitive plant species on the Chemical Waste Management, Inc. Kettleman Hills Facility. The site treats, stores and/or disposes of a variety of hazardous liquid or solid wastes derived largely from industrial sources. Disposal of waste at the site (a Class I Facility) is closely regulated by County, State and Federal government agencies, insuring complete sequestering of hazardous waste. Methods of waste handling include disposal of solids in clay and synthetic lined landfills, and ponding of liquid waste in clay and synthetic lined surface impoundments.

Chemical Waste Management, Inc. is planning an expansion of facilities at the Kettleman Hills Facility. Two new burial cells, new surface impoundments, and/or evaporative tanks, and an incinerator are being considered. As a condition on approval of Conditional Use Permit No. 1412, the Kings County Board of Supervisors has required studies of vegetation and wildlife resources on the site, including an inventory of rare, endangered, or sensitive plant species. This document reports the results of surveys for rare and endangered plants conducted by Biosystems Analysis, Inc. during the spring and early summer of 1988.

1.1 Study Area

The Kettleman Hills Facility is located near the northern end of the Kettleman Hills on the western edge of the San Joaquin Valley, Kern County, California (Figure 1). The site, approximately 3.5 miles southwest of Kettleman City and 2.5 miles southwest of Interstate 5, is adjacent to State Highway 41 (Figure 2).

1.2 Proposed Facility Expansion

At present, 211 acres of the 1,600 acre facility are developed for direct waste disposal. Under current plans, an additional 288 acres would be added to the developed portion of the facility. With this proposed expansion, the remaining 1,101 acres on the periphery of the site would remain undeveloped or would be used for non-disposal purposes (a portion of the undeveloped area would be disturbed by fire-road grading and extraction or soil fill).

Two expansion areas are proposed, both contiguous with the existing facility (Figure 3). The southern expansion area comprises 180 acres of two canyons, one trending northwest and the other trending southeast. The eastern expansion area comprises 108 acres of a single canyon trending northwestward.

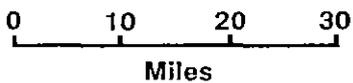
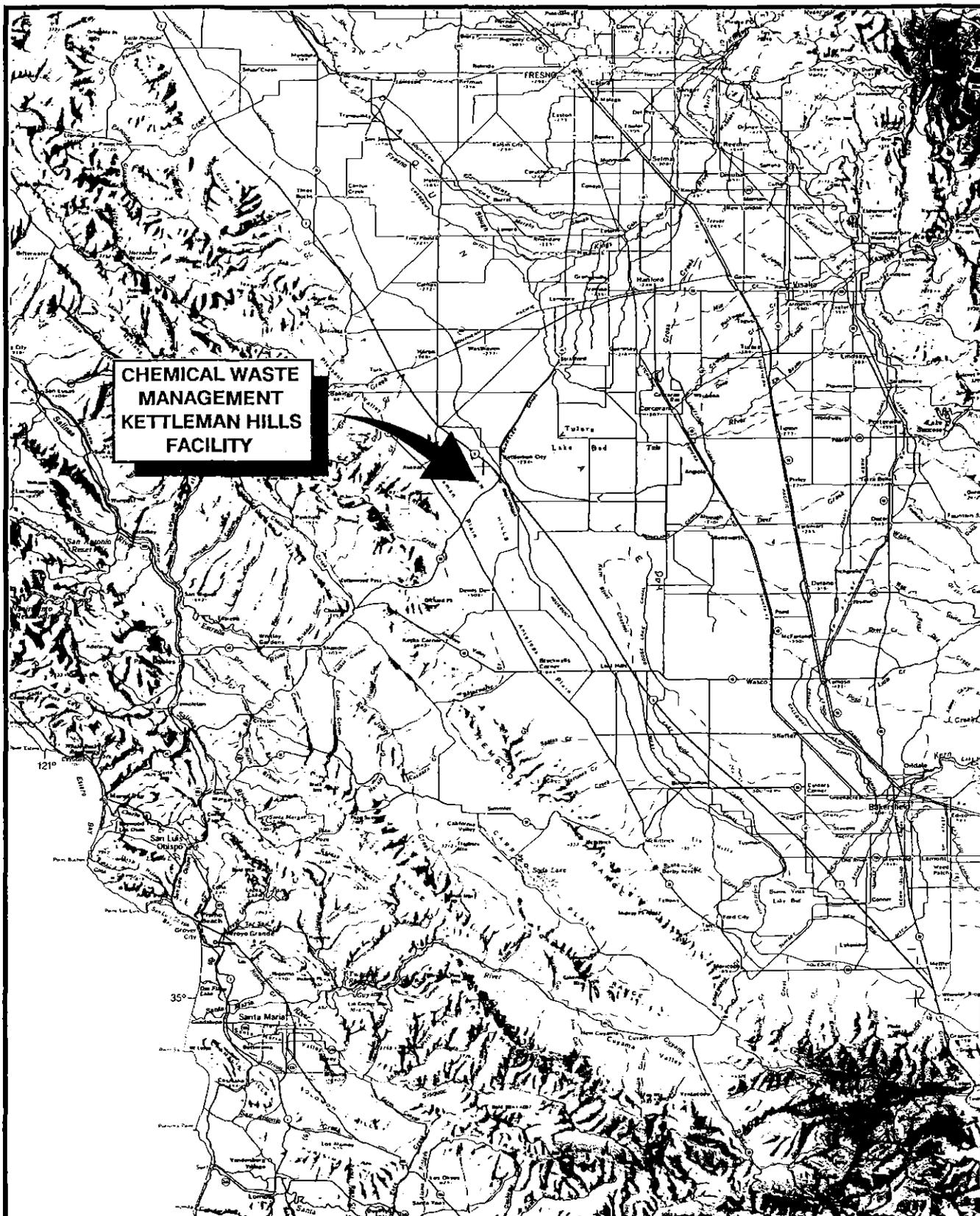


Figure 1.
Location of the study area.

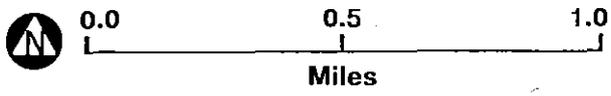
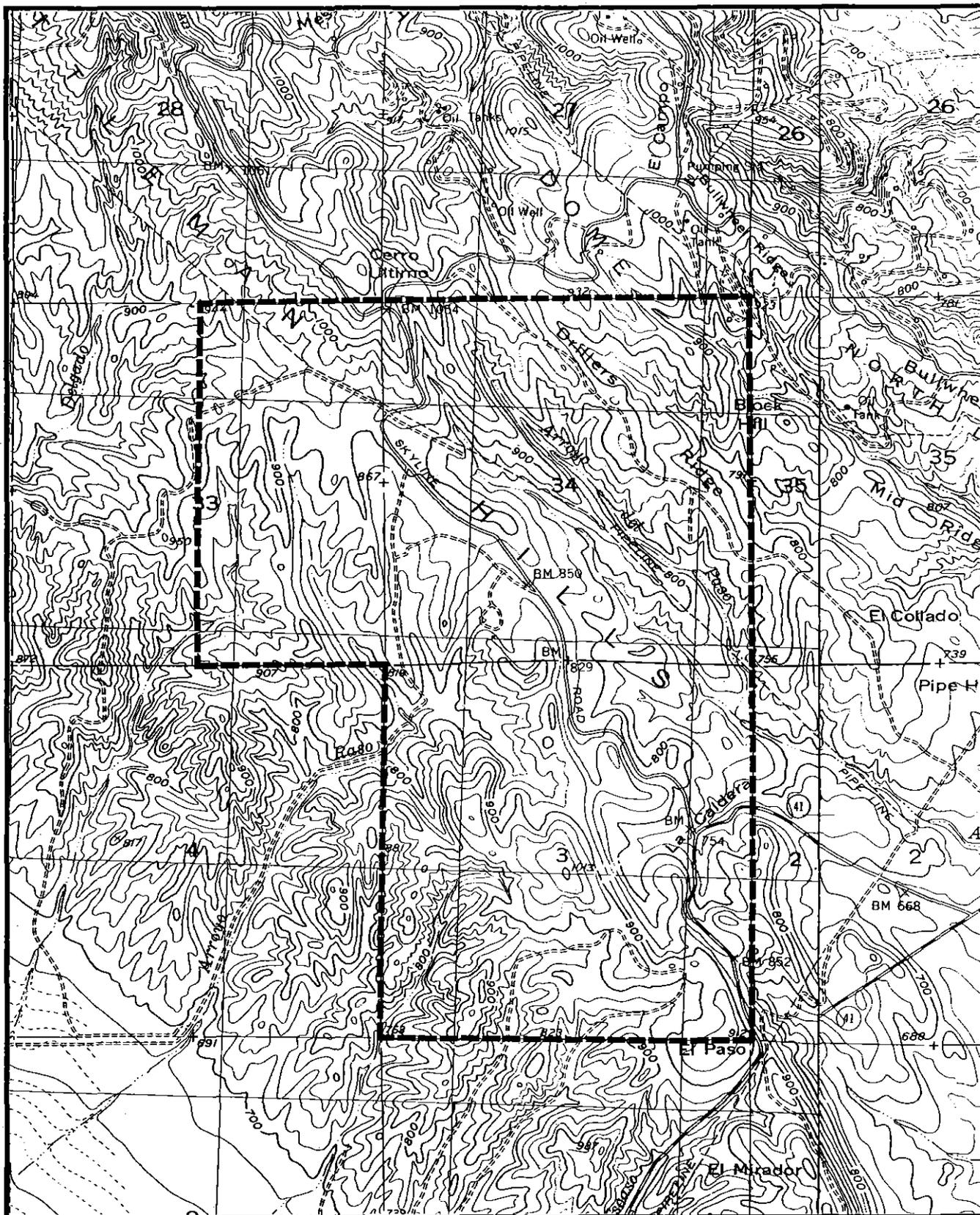


Figure 2.
Topography of the study area.

Basemap: U.S. Geological Survey 7 1/2' Quadrangles
Kettleman Plain (291A) 1978
Los Viejos (290B) 1981

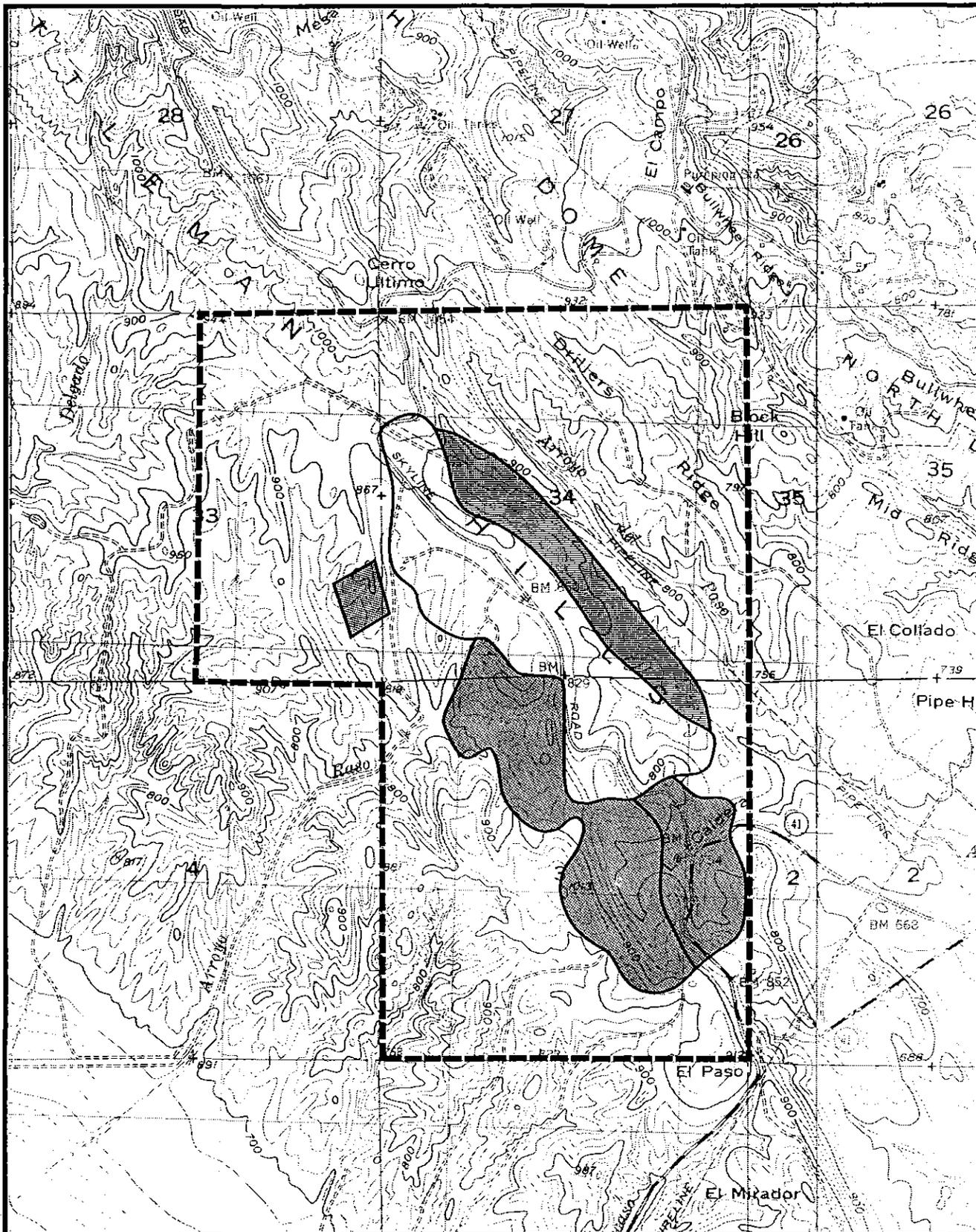
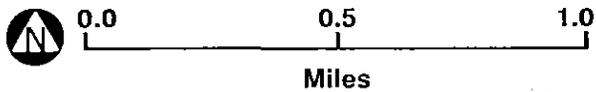


Figure 3.
Proposed facility development.

- Existing Facility
- ▨ Proposed Expansion



1.3 Environmental Setting

Diversity and structure of the flora and plant communities of the Kettleman Hills region is a largely a function of topographic and climatic conditions. The Kettleman Hills upland covers an area of approximately 150 square miles and is bounded by the Kettleman Plain to the west and the San Joaquin Valley to the east. Streams draining the Kettleman Hills are largely ephemeral washes, and generally drain at right angles to the trend of the hills.

Topography determines structure of the regional vegetation by creating a diversity of edaphic conditions and slope exposures. In general, complex highly-dissected terrain in the Kettleman Hills offers a wide variety of microhabitats: steep badlands, alkaline clay deposits, sand or rock outcrops and washes are examples. Rolling, undissected terrain generally lacks the degree of habitat diversity of dissected terrain, and therefore often supports a less diverse flora. The Kettleman Hills are comprised of three northwest-trending ridges (North Dome, Middle Dome, and South Dome) flanking the San Joaquin Valley. Summits of the hills rise about 1,000 feet above the adjacent plains (to a maximum elevation of 1,366 feet above sea level). Ruggedness of the topography and height of the hills above the surrounding plains decrease southward within the Kettleman Hills. The Kettleman Hills Facility is located at the southern end of North Dome, a somewhat less dissected portion of the hills. Badland or rock outcrop habitats are largely confined to the extreme southwest periphery of the facility (Figure 2).

Climatically, the Kettleman Hills are arid; functionally it's a desert, with regional precipitation averaging about 6 in/yr (Major 1977). The regional flora of the southern San Joaquin Valley is comprised of plants typical of both desert and cismontane California (Twisselmann 1967). Geographically, the Kettleman Hills are located at the extreme northern end of the known distributional range for many rare plants which are endemic to the San Joaquin Valley (Taylor and Stebbins 1988).

Soils of the Kettleman Hills have been mapped on a reconnaissance level by Nelson et al. (1921). Soils over the majority of the site are subalkaline sandy loams, with low organic matter, and with strong calcification in subsurface horizons. Variance in edaphic parameters over the facility is directly related to exposure of parent materials. Generally, the zonal soils of the facility support dense vegetation cover, except where azonal edaphic conditions occur: alkaline, clay-rich soils occur on badlands and on scattered "clay-slicks" underlain by fine, mudstone or silts; coarse sandstone outcrops support particularly sandy, shallow, infertile soils.

Presently, the facility is not used for livestock grazing, although the site had a long history of heavy grazing prior to development of the waste disposal facility.

2.0 METHODS

The objective of this survey was to locate and document all populations of rare plants on the Kettleman Hills Facility. Given the size of the area to be surveyed (± 1400 acres undeveloped), we chose to undertake a complete, ground survey of the site, rather than to subsample portions of the area or to conduct the survey only from the existing road network. Field work was conducted under the guidelines of the California Department of Fish and Game (1984), and those of Nelson (1984, 1987).

Development of a target list of species to consider during the field survey was undertaken using a variety of information sources. The list in Table 1 was derived from various sources:

- 1) distribution and habitat information compiled by BioSystems botanists for previous projects in the vicinity of the study area;
- 2) specimen label data gathered during surveys of major California herbaria (Taylor and Davilla 1986, Taylor 1988);
- 3) literature review (Munz and Keck 1959, Hoover 1970, Twisselmann 1967, Taylor and Stebbins 1988);
- 4) information from the Natural Diversity Data Base of the Natural Heritage Section, California Department of Fish and Game (Shevock and Hennessy 1987); and
- 5) communication with botanists with expertise with the local flora or particular taxonomic groups.

Species included in Table 1 include all taxa with some degree of endangerment or other official listing status that might occur in the vicinity of the Kettleman Hills Facility.

Table 1. Status, distribution and habitat of rare plants with potential to occur in the vicinity of the Chemical Waste Management Kettleman Hills hazardous waste disposal facility.

Species Common Name ¹	USFWS Listing ²	State Status ³	CNPS Status ⁴	Habitat Type ⁵	Distribution by County ⁴
<u>Amsinckia furcata</u> Forked-fiddleneck	Cat. 2	None	1-2-3 List 1B	shale badlands	FRE KNG KRN SBT SLO
<u>Atriplex vallicola</u> Lost Hills Saltmat	Cat. 2	None	2-2-3	clay slicks List 1B	FRE KRN SLO
<u>Caulanthus californicus</u> California Jewelflower	Cat. 2	Endangered	3-3-3* List 1B	sandy grassland	FRE KNG KRN SBA SLO TUL
<u>Delphinium gypsophilum</u> ssp. <u>gypsophilum</u> Gypsum Larkspur	None	None	1-1-3 List 4	gypsum rich grassland soils	FRE KNG KRN MAD MER SJO STA
<u>Eremalche kernensis</u> Kern Mallow	Cat. 2	None	3-3-3* List 1B	pebbly saltbush scrub	KRN
<u>Eriastrum hooveri</u> Hoover's Woolystar	Cat. 2	None	2-2-3* List 1B	sandy saltbush scrub	FRE KRN SLO SBA
<u>Eriastrum pluriflorum</u> ssp. <u>sherman-hoyteae</u> Small-stamen woolystar	None	None	1-1-3 List 4	sandy grassland	LAX KRN
<u>Eriogonum gossypinum</u> Cottony Buckwheat	Cat. 2	None	1-2-3 List 4	barren clay-sandstone	FRE KNG KRN SLO
<u>Eriogonum temblorense</u> Temblor Buckwheat	Cat. 2	None	1-1-3 List 4	barren clay-sandstone	KRN MNT SLO
<u>Eschscholtzia rhombipetala</u> Diamond-petaled poppy	Cat. 2	None	2-1-3	barren hillsides	ALA CCA SJO SLO STA
<u>Hemizonia pallida</u> Kern Tarplant	None	None	1-1-3 List 4	sparse grassland	KRN
<u>Lembertia congdonii</u> San Joaquin woolly-threads	Cat. 2	None	3-3-3* List 1B	sandy grassland scrub	FRE KNG KRN SLO TUL
<u>Lepidium jaredii</u> ssp. <u>album</u> Hoover Jared's Peppergrass	None	None	3-3-3* List 1B	clay playas and washes	FRE
<u>Nemacladus gracilis</u> Slender Nemacladus	None	None	1-1-3 List 4	grassland	FRE KNG KRN MER
<u>Trichostema ovatum</u> San Joaquin Blue-Curls	None	None	1-1-3 List 4	grassland	FRE KNG KRN TUL

Notes:

1. Nomenclature corresponds to Munz and Keck (1959) with the exception of Lembertia (Eatonella) congdonii (Gray) Greene.
 2. Cat. 2 (Under review, insufficient information); Cat. 3c (Not presently threatened) (USFWS 1985).
 3. Section 1904, California Fish and Game Code (January 1987 listing) (CDFG 1987).
 4. Smith and York (1984), Smith and Berg (1988), counties abbreviated by a three-letter code.
 5. Twisselmann (1956, 1967), Taylor and Davilla (1986), Taylor (1987) and field observations.
- * recent CNPS status recommendations by D.W. Taylor and J.C. Stebbins (Taylor and Stebbins, 1988).

Plants included were:

- 1) taxa currently under review for listing, or currently listed by the U.S. Fish and Wildlife Service (*50 CFR Part 17*, USFWS 1985) under the Endangered Species Act of 1973, as amended;
- 2) taxa listed or under review for listing by the California Fish and Game Commission under both the Native Plant Protection Act (Chapter 10, Section 1900, Fish and Game Code, Cochrane 1987) and the California Endangered Species Act (Sections 2050-2098, Fish and Game Code);
- 3) taxa that qualify for State listing under the California Environmental Quality Act (Section 15380);
- 4) taxa included on any of the lists maintained by the California Native Plant Society (Smith and York 1984, including revisions suggested by Taylor and Stebbins 1988).

Table 1 also indicates the current agency review status, habitat, distribution, and flowering time for each taxon. Sources of flowering times indicated in the table are from Munz and Keck (1959), Twisselmann (1967), Hoover (1970).

USFWS and DFG were contacted prior to the study for their input on the target list of plants. USFWS responded with a letter recognizing that the BioSystems proposed list included all Federal candidate plants potentially occurring on the site. DFG did not respond. Copies of the correspondence are in Appendix 1.

Information on potential sensitive habitats or natural areas in the vicinity of the Kettleman Hills Facility was obtained through published sources including: 1) highest priority natural community elements currently being inventoried by the Natural Diversity Data Base (Holland 1986), and 2) significant natural areas recognized by the California Natural Areas Coordinating Council (Hood 1975-78).

Field searches were conducted on foot using the "meander" method of Nelson (1987). Access to remote portions of the site was gained by four-wheel drive vehicle. Using this approach, two botanists walk in a meandering fashion through the survey area, recording each plant species encountered.

The surveys were conducted at the peak of the growing and flowering season, at the appropriate stage of phenology (flowering and fruiting) to identify any plant species encountered. Visits to the Kettleman Hills Facility were conducted periodically throughout the 1988 growing season: 7-8 March, 17-18 March, 21-22 April, 11-13 May and 16-17 June.

All rare plant locations were mapped on topographic base maps of the facility with the aid of 1:10,000 black and white aerial photographs (taken 14 January 1987), and they were documented with voucher collections.

A vegetation map of the facility was prepared using the black and white aerial photographs in conjunction with ground reconnaissance. A Bausch & Lomb Stereo zoom transfer scope was used to overlay the aerial photographs on 1:24,000 scale topographic base maps. Plant community types were subjectively classified, based on the regional experience of the investigators.

3.0 RESULTS

Populations of three rare plants were located as the result of our field surveys on the Kettleman Hills Facility. The distribution of these species on the facility is largely limited to the periphery of the site. Of the three species, only one, Cottony Buckwheat (*Eriogonum gossypinum*) has status under applicable State or Federal regulations. The other two, Gypsum Larkspur (*Delphinium gypsophilum* ssp. *gypsophilum*) and Kern Tarplant (*Hemizonia pallida*), are of limited distribution but not sufficiently rare to be accorded special status by either State or Federal agencies. Status reports for the three rare plants observed on the facility are provided in Appendix 2. Appendix 3 provides a list of all vascular plant species observed on the site during our surveys.

3.1 State or Federal Status Rare Plants

A single rare population of significance was found on the on the 1600 acre Kettleman Hills Facility, a small population of Cottony Buckwheat (*Eriogonum gossypinum*). Figure 4 shows the location of this population, which is situated in the extensive badland habitat on the southwest portion of the facility.

Eriogonum gossypinum is listed as a Category 2 species by the U.S. Fish and Wildlife Service. Category 2 species are:

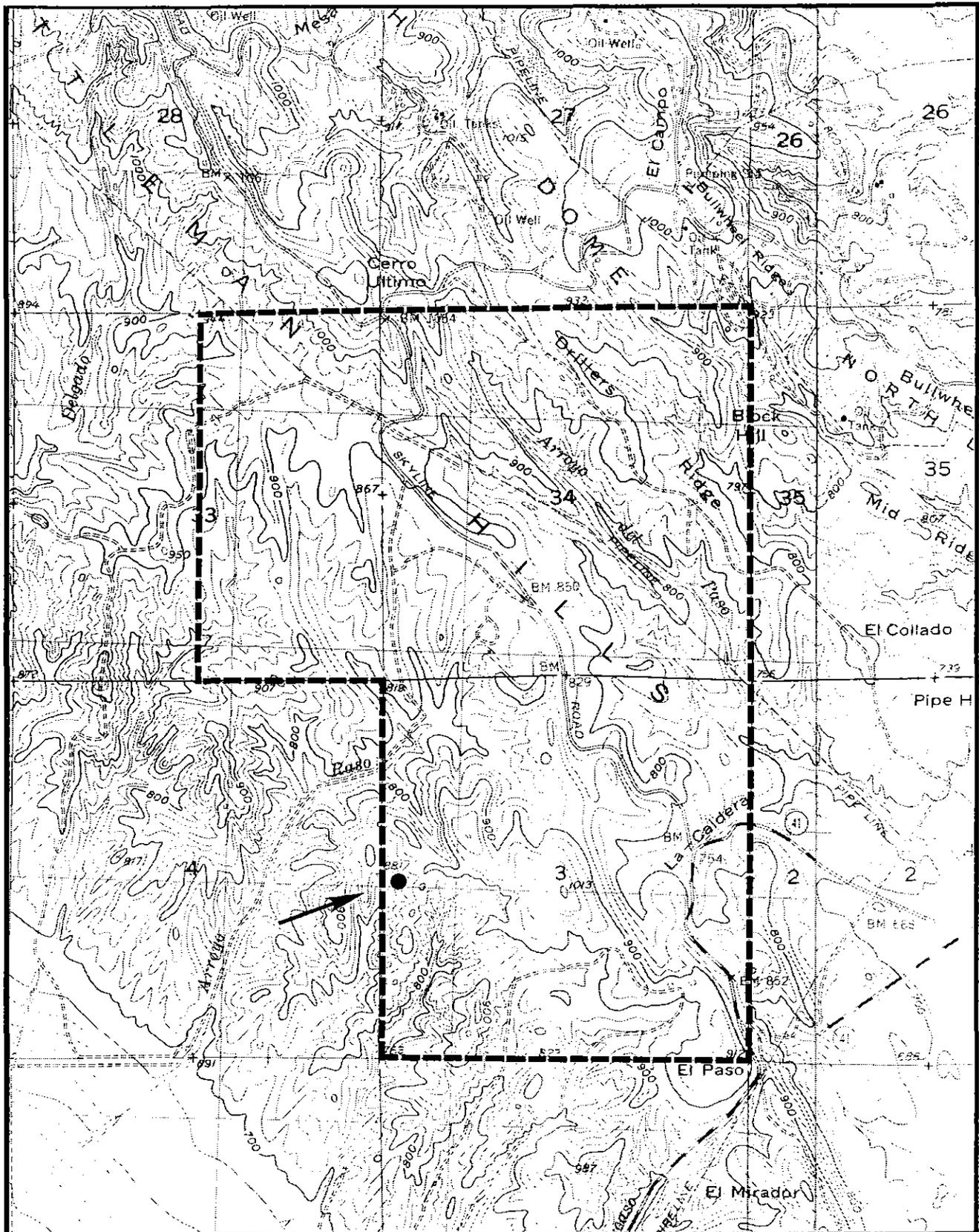


Figure 4.
Location of *Eriogonum gossypinum*.



"taxa for which information now in the possession of the Service indicates that proposing to list them as endangered or threatened species is possibly appropriate, but for which substantial data on biological vulnerability and threat(s) are not currently known or on file to support the immediate preparation of rules" (USFWS 1985).

This species is not considered endangered by the California Native Plant Society (Smith and York 1984), by the State of California (CDFG 1986), nor by Taylor and Stebbins (1988). Given the large number of extant populations of this species, it would not qualify for Federal listing as an endangered plant species (Taylor and Stebbins 1988).

Eriogonum gossypinum in the Kettleman Hills is near the northwestern limit of its geographic range. It occurs sporadically throughout the Inner South Coast Ranges (Hoover 1970, Twisselmann 1956). Nearly 200 populations of *E. gossypinum* have been reported in the Elk Hills (Kato 1986). It has also been observed in the low hills bordering Bakersfield.

Throughout its geographic range, *E. gossypinum* exhibits a high degree of habitat fidelity. It is exclusively a plant restricted to nearly barren "badland" topography, where poor soil development limits the growth of weedy introduced annual grasses. On the Kettleman Hills Facility, it occurs on the summit of a small, barren hillside in association with *Plantago erecta*, *Atriplex coronata*, *Eremalche parryi*, *Camissonia boothii* ssp. *decorticans*, *Eriastrum pluriflorum* ssp. *pluriflorum*, and other species typical of badland communities in the South Coast ranges.

3.2 Other Rare Plants

Two plant species that are somewhat rare were found on the Chemical Waste Management facility: Gypsum Larkspur (*Delphinium gypsophilum* ssp. *gypsophilum*) and Kern Tarplant (*Hemizonia pallida*).

The locations of these two species are mapped in Figures 5 and 6, respectively. Both plants are listed by the California Native Plant Society on List 4, the "A Watch List" (Smith and York 1984). List 4 species are plants of limited distribution, but are not considered sufficiently rare to be in danger of extinction. Loss of populations and habitat for List 4 species may eventually result in some of these plants being raised to a higher listing status. In the case of these two plants, however, their present status indicates they do not qualify for either State or Federal listing, given present ecological conditions in the San Joaquin Valley. At present, habitat loss for these two species is not of a magnitude sufficient to qualify them for listing.

Delphinium gypsophilum occurs in low-density stands in the southwest corner of the facility (Figure 5). Plants are scattered on the sides of small, principally northerly-facing ravines. It grows in grasslands dominated by *Avena sativa*, *Bromus rubens* and *Bromus diandrus* on gypsum rich soils. It is never abundant but is found consistently in the arid grasslands of the western side of the San Joaquin Valley. Previous data on the status of this species (Smith and York 1984) overestimated its rarity. Since it flowers only in very wet years (Lewis and Epling 1952), it can easily be overlooked.

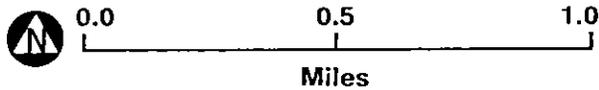
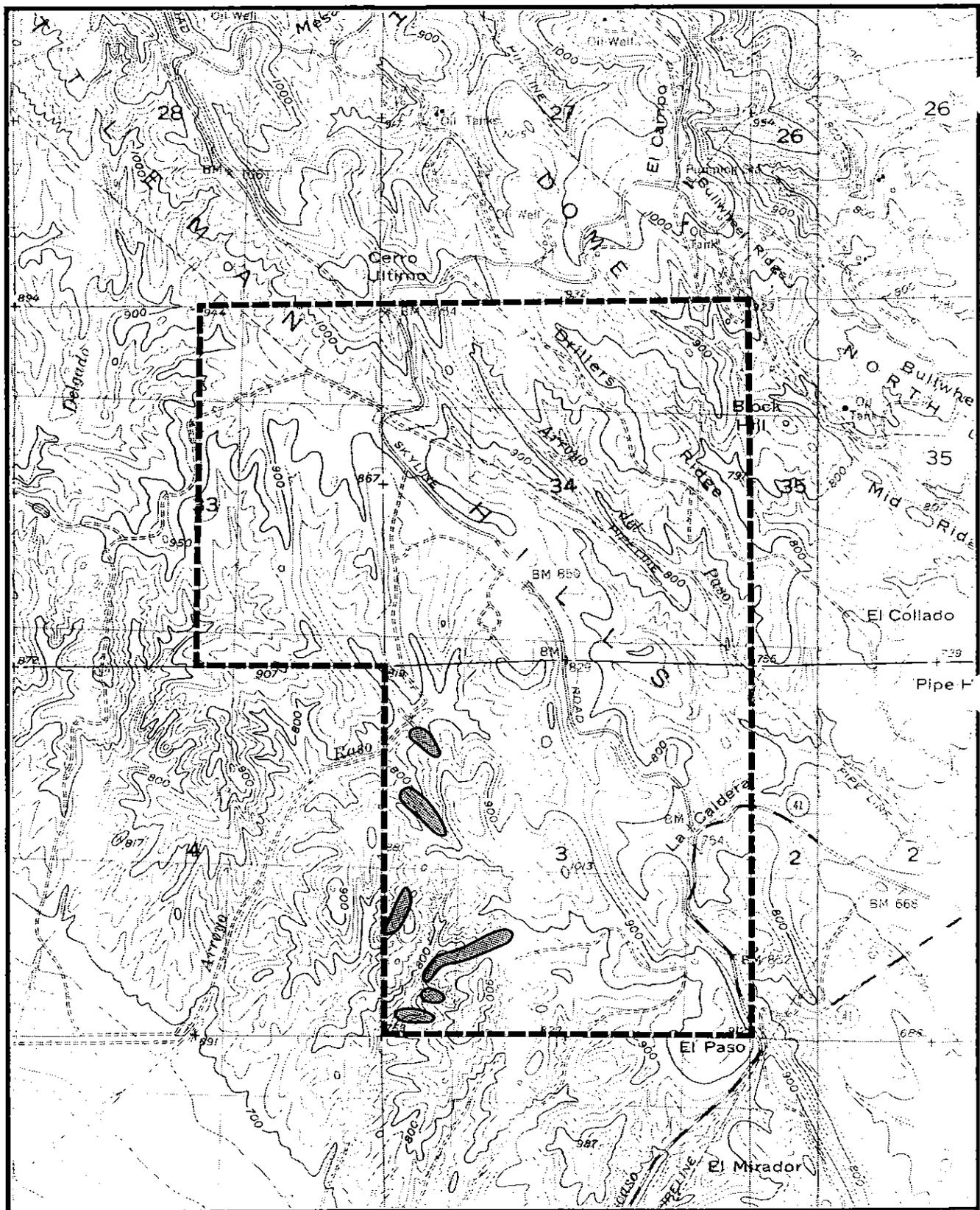


Figure 5.
Location of *Delphinium gypsophilum*.

Hemizonia pallida is found scattered in low density throughout the study area, but two major areas of dense concentrations of the plant occur (Figure 6). In recent years, *Hemizonia pallida* has been found to occur more commonly in California than previous data (Smith and York 1984) indicated, and it is possible that in the future its listing status will be reduced (Taylor and Stebbins 1988). The plant is a member of the "tarweed" tribe of the sunflower family. It occupies sparse, sometimes overgrazed or disturbed grassland in Kern County.

3.3 Other Habitat Features

The vegetation of the Kettleman Hills Facility is largely a low-diversity grassland dominated by non-native, annual grasses. Other, minor community types on the facility include small stands of saltbush scrub, rock outcrop, and badlands. We recognized four plant community types on the Kettleman Hills Facility. These communities (typified by the dominant or characteristic species), are:

1. *Bromus rubens* annual Grassland
2. *Atriplex polycarpa* Scrub
3. *Gutierrezia bracteata* Scrub
4. *Camissonia boothii* Badland

Annual grasslands occupy the majority of the undisturbed portions of the facility. *Bromus rubens* is the dominant, associated with *B. mollis*, *B. diandrus*, *B. trinii*, *Avena barbata*, *Vulpia microstachys* and *Schismus arabicus*. For the most part, native herbs are infrequent in the grasslands of the facility, as they are in general throughout the Kettleman Hills. Often the

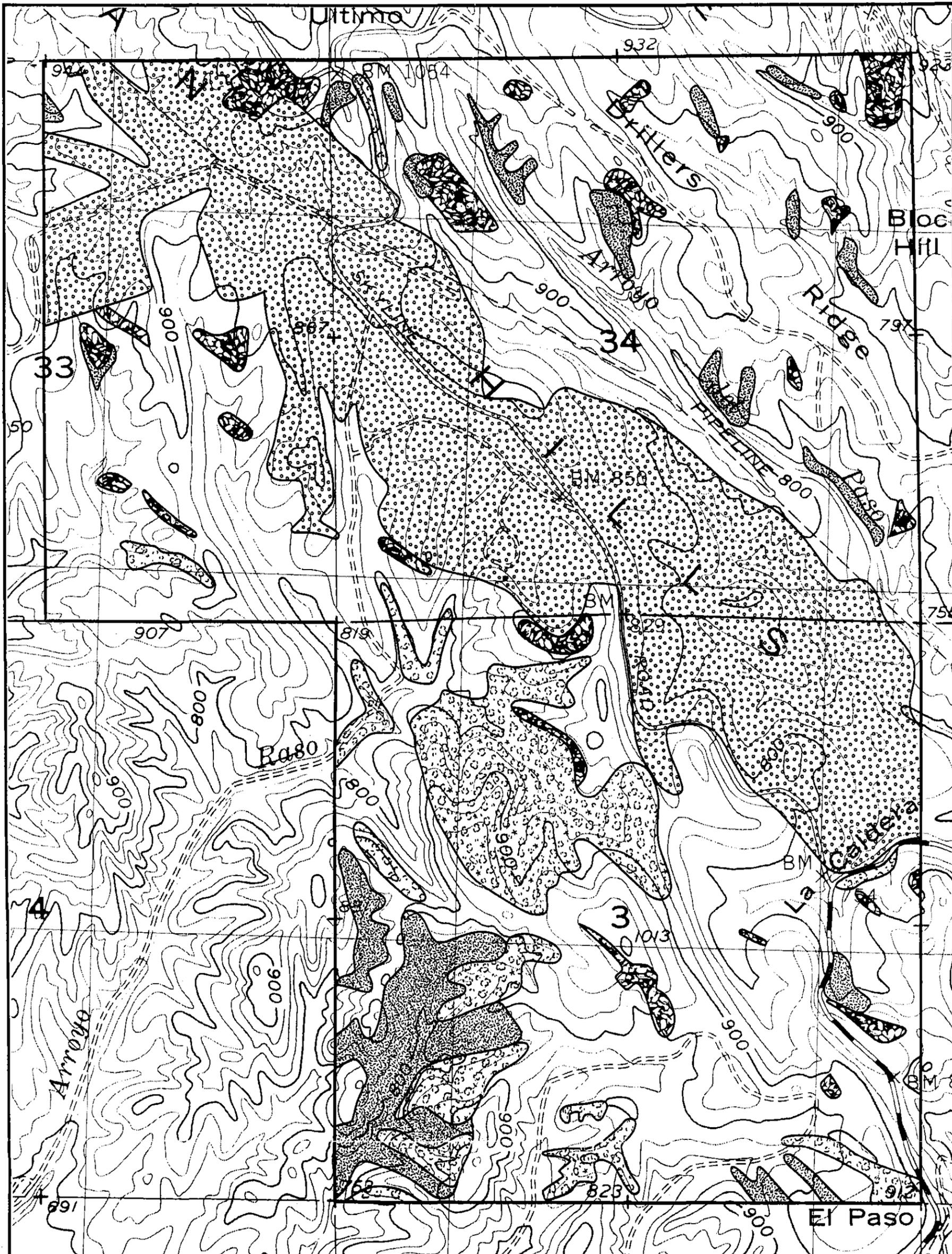


Figure 7.
Vegetation map of the study area.



LEGEND

-  Disturbed (no vegetation)
-  *Atriplex polycarpa* Scrub
-  *Gutierrezia bracteata* Scrub
-  *Bromus rubens* Grassland
-  *Camissonia boothii* Badland



diversity of grasslands is indicative of the potential for populations of rare plants. The lack of floristic diversity in annual grasslands of the facility is in large measure a function of the former land use of the region, where a long history of oil extraction and grazing has resulted in loss of diversity in native herbs. Two rare plants, *Delphinium gypsophilum* ssp. *gypsophilum* and *Hemizonia pallida* occur in annual grasslands on the facility.

Saltbush Scrub, dominated by *Atriplex polycarpa*, is of limited extent on the facility, principally occurring on the western portion. It is typically a low density of saltbush shrubs, interspersed with grassland. Occasionally, other associated shrubs occur, particularly on more mesic, northerly facing sites. *Haplopappus acradenius* ssp. *bracteosus*, *Eastwoodia elegans* and *Isomeris arborea* occur at low density in this vegetation type. On the floor of the San Joaquin Valley, the once extensive stands of *Atriplex polycarpa* scrub have been reduced to local, fragmented remnants (Preston 1981). In the valley, this community type is considered sensitive by the California Department of Fish and Game (Holland 1986). Saltbush scrub in the vicinity of the facility does not constitute a significant habitat resource warranting protection, as conditions in the area have been degraded by a long grazing history. On the Kettleman Hills Facility, heavy grazing prior to the development of the waste facility probably lowered *Atriplex polycarpa* cover significantly (Sankary and Barbour 1972).

A second type of scrub vegetation characterized by *Gutierrezia bracteata* is evident on the Kettleman Hills Facility. This plant community is scattered through the region in areas with very shallow, sandy soils associated with

outcrops of sandstone. Characteristically, *Gutierrezia* covers less than 25 percent. Cover of introduced annual grasses in this vegetation is often low (<50 percent). Native annuals are important, with *Langloisia schottii*, *Eriastrum pluriflorum*, and *Chaenactis steveioides* being characteristic.

Badland habitats on the Kettleman Hills Facility are characterized by a sparse vegetation cover. Steep slopes and poor soil development are major factors limiting the colonization of badland sites by shrubs and annual grasses. The flora of badland sites in the Kettleman Hills is characterized by *Camissonia boothii* ssp. *decorticans*, *Eriogonum ordii*, *E. angulosum*, *E. viridescens* and *Eremalche parryi*. On the Chemical Waste Management facility, badland topography is not as extensively developed as similar locations in the Kettleman Hills or South Coast Ranges. Consequently, although this habitat is known to support populations of several rare plants (*Amsinckia furcata*, *Eriastrum pluriflorum* ssp. *sherman-hoyteae*, *Eriogonum temblorense*, *E. gossypinum*, and *Eschscholtzia rhombipetala*), only *E. gossypinum* occurs on the site.

4.0 DISCUSSION AND RECOMMENDATIONS

Impacts to rare and endangered plants from the proposed expansion of the Kettleman Hills Facility would be insignificant, given the few populations of importance and their location on the site. Rare plants at the facility are confined primarily to the southwest corner of the site, outside the area to be disturbed by the proposed facility expansion. A single rare plant population on the 1,600 acre Kettleman Hills Facility would require mitigation considerations under present Federal (Bartel 1987) and State (Cochrane 1987) policies. That population of *Eriogonum gossypinum* would not be directly impacted by the proposed expansion of the facility, and should be avoided by direct disturbance activities.

Two other CNPS listed rare plants on the facility, *Delphinium gypsophilum* ssp. *gypsophilum* and *Hemizonia pallida*, will largely be unimpacted by the proposed expansion. Most of the large concentration of *Hemizonia pallida* occurs in the northern portion of the site but the plants lie outside of the proposed expansion area. No mitigation for these species is required, given their endangerment status.

The botanically most diverse portion of the facility, and the largest concentration of native and rare plants, occurs in the southwest corner of the study area. The topography of this portion of the site is steep, and not conducive to use as an active portion of the facility. This portion of the site functions primarily as a buffer area. Management of this area to preserve and enhance rare plant populations should emphasize avoidance of

ground disturbing activities and other habitat modification in rare plant population sites.

In general, the Kettleman Hills Facility lacks botanical diversity. The lack of topographic diversity and a former heavy grazing history, partly explains the lack of floristic richness in the area, and accounts for the lack of endangered plant populations on the site.

4.1 Specific Recommendations

We recommend that soil disturbance activities in the vicinity of the *Eriogonum gossypinum* population be avoided. Given the location of the population, there would be no need for construction or maintenance activities in the vicinity of the population.

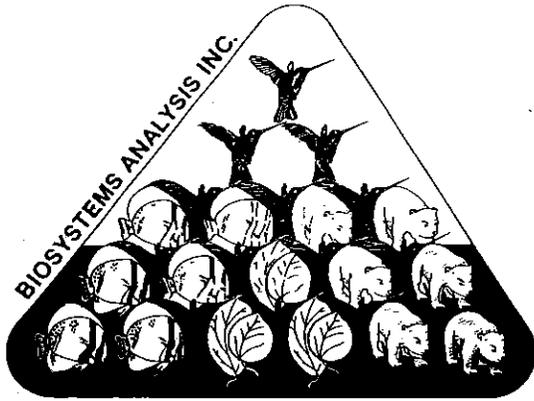
5.0 LITERATURE CITED

- Bartel, J.A. 1987. The Federal listing of rare and endangered plants: What is involved and what does it mean? pp. 15-22 in: T. Elias [Ed.], Conservation and Management of Rare and Endangered Plants California Native Plant Society, Sacramento, CA.
- California Department Of Fish & Game. 1986. Designated Rare or Endangered Plants. Resources Agency, Sacramento, CA. 15 August 1986.
- California Department Of Fish and Game. 1984. Guidelines for assessing effects of proposed developments on rare and endangered plants and plant communities. Resource Agency, State of California 4 May 1984.
- California Department Of Fish and Game. 1986. Designated Rare or Endangered Plants. Resources Agency Sacramento, CA 15 August 1986.
- California Department Of Fish and Game. 1987. Designated Endangered or Rare plants. State of California, Resources Agency October, 1987.
- Cochrane, S.A. 1987. Endangered Plants and California State Laws. pp. 33-38 in: T. Elias [Ed.], Conservation and Management of Endangered Plants California Native Plant Society, Sacramento, CA:
- Holland, R. F. 1986. Preliminary descriptions of terrestrial natural communities of California. California Department of Fish and Game Nongame-Heritage Program, Sacramento, CA.
- Hood, L. [Ed.]. 1975-1978. Inventory of California Natural Areas. California Natural Areas Coordinating Council Sonoma, CA.
- Hoover, R. F. 1970. The vascular plants of San Luis Obispo County, California. University of California Press Berkeley.
- Kato, T. 1986. Annual summary of endangered species preconstruction surveys conducted during 1985 on Naval Petroleum Reserve #1 (NPR-1), Kern Co., Cal. EG&E Energy Measurements, Goleta, CA. Document 10282-2081.
- Lewis, H. and C. Epling. 1952. Increase in the adaptive range of the genus *Delphinium*. Evolution 6:253-267.
- Major, J. 1977. California climate in relation to vegetation. pages 11-74 in: M.G. Barbour and J. Major [Eds.], Terrestrial Vegetation of California Wiley, New York.
- Munz, P. A., and D. D. Keck. 1959. A California Flora. University of California Press Berkeley.
- Nelson, J.R. 1987. Rare Plant Surveys: Techniques for Impact Assessment. pp. 159-166 in: T. Elias [Ed.], Conservation and Management of Rare and Endangered Plants California Native Plant Society, Sacramento, CA.
- Nelson, J. W., W. C. Dean, and E. C. Eckmann. 1921. Reconnaissance soil survey of the upper San Joaquin Valley, California. U.S.D.A., Bureau of Soils.

- Nelson, J. R. 1984. Rare plant field survey guidelines. pp. vi-vii in: J.P. Smith and R. York [Eds.], Inventory of Rare and Endangered Vascular Plants of California Native Plant Society, Special Publication No. 1 [3rd edition].
- Preston, W. L. 1981. Vanishing Landscapes: Land and Line in the Tulare Lake Basin. University of California Press Berkeley, CA.
- Sankary, M. N., and M. G. Barbour. 1972. Autecology of *Atriplex polycarpa* from California. Ecology 53:1155-1162.
- Shevock, J.R., and L.L. Hennessy. 1987. The California Natural Diversity Data Base - a common denominator. pp. 181-184 in: T. Elias [Ed.], Conservation and Management of Endangered Plants California Native Plant Society, Sacramento, CA.
- Smith, J.P., and K. Berg. 1988. Inventory of Rare and Endangered Plants of California. California Native Plant Society Special Publication No. 4 [4th edition, in press], Sacramento, CA.
- Smith, J. P., and R. York. 1984. Inventory of Rare and Endangered Vascular Plants of California. California Native Plant Society Special Publication No. 1 (3rd Edition) Berkeley, California.
- Taylor, D.W. 1988. Status survey of San Joaquin woolly-threads (*Lembertia congdonii*). U.S. Fish and Wildlife Service Sacramento, CA.
- Taylor, D. W., and W. B. Davilla. 1986. Status survey for three plants endemic to the San Joaquin Valley, California. Unpublished report to U.S. Fish and Wildlife Service Sacramento, CA.
- Taylor, D.W., and J.C. Stebbins. 1988. Flora of the San Joaquin Valley: endemism and endangerment status. in: D.A. Williams [Ed.], proceedings of a conference on Endangered Species of the San Joaquin Valley, California.
- Twisselmann, E. C. 1956. A flora of the Temblor Range and the neighboring part of the San Joaquin Valley. Wasmann Journal of Biology 14:161-300.
- Twisselmann, E. C. 1967. A flora of Kern County, California. Wasmann Journal of Biology 25:1-395.
- U.S. Fish and Wildlife Service. 1985. Endangered and threatened wildlife and plants. Federal Register 50(188):39526-39527.

APPENDIX 1

Agency Consultation Request & Responses



29 February 1988

California Department of Fish & Game
Region 4
1234 Shaw Avenue
Fresno, CA 93701

Sir or Madame;

Chemical Waste Management, Inc. has retained our firm to conduct a rare plant inventory of their storage facility in the Kettleman Hills, Kings County, California. The site is located just north of Highway 41 about 3 miles west of Interstate 5, on the western border of the San Joaquin Valley, and consists largely of rolling grassland dominated by Red Brome (*Bromus rubens*), Wild-oat (*Avena barbata*) and Soft-chess (*Bromus mollis*), with some scrub dominated by Saltbush (*Atriplex polycarpa*).

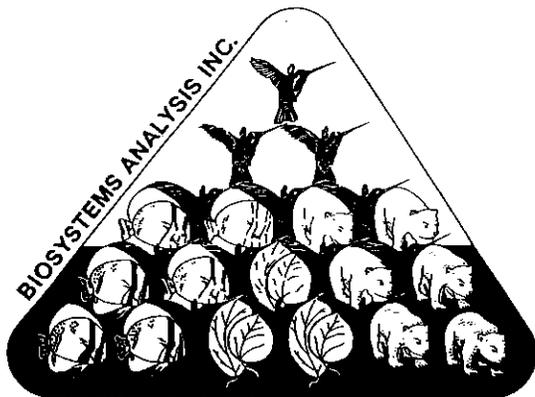
The objective of our survey will be to identify rare plant resources of the site. Chemical Waste Management is proposing to enlarge their existing facility. A EIR was prepared for the project. As part of the required environmental compliance for the project, the Kings County Planning Agency (lead agency for the EIR) is requiring an endangered plant survey.

Chemical Waste Management requested that we solicit the input of the California Department of Fish and Game regarding the target list of plants we should be surveying for. Our surveys will begin in March, and will continue into the early summer.

In order to facilitate your recommendations on the target list of species, I have prepared the attached table. It lists all plants on the current CNPS list with the potential to occur in the region, based on habitat and geographic criteria. A map showing the location of the facility is attached to aid you.

Sincerely;

Dean Wm. Taylor, Ph.D.
Senior Botanist



29 February 1988

U.S. Fish and Wildlife Service
Endangered Species Office
2800 Cottage Way, Rm. E-1823
Sacramento, CA 95825

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Chemical Waste Management requested that we solicit the input of the U.S. Fish and Wildlife Service regarding the target list of plants we should be surveying for. Our surveys will begin in March, and will continue into the early summer.

In order to facilitate your recommendations on the target list of species, I have prepared the attached table. It lists all plants on the current CNPS list with the potential to occur in the region, based on habitat and geographic criteria. A map showing the location of the facility is attached to aid you.

Sincerely;

Dean Wm. Taylor, Ph.D.
Senior Botanist



United States Department of the Interior

FISH AND WILDLIFE SERVICE
SACRAMENTO ENDANGERED SPECIES OFFICE
2800 Cottage Way, Room E-1823
Sacramento, California 95825-1846

In Reply Refer To:
JAB/1-1-88-TA-297

MAR 08 1988

Dr. Dean Wm. Taylor
Senior Botanist
BioSystems Analysis Inc.
303 Potrero Street, Suite 29-203
Santa Cruz, California 95060

Subject: Rare Plant List for Site of Chemical Waste Management's
Proposed Storage Facility, Kings County.

Dear Dr. Taylor:

In response to your letter of February 29, 1988, my staff reviewed the subject rare plant list. Although the list includes all Federal candidate plants potentially occurring on the project site, several plants (e.g., Atriplex vallicola) included on the list probably do not occur on the project site. As a result, we recommend surveys focus on four species; Amsinckia furcata, Caulanthus californicus, Eriastrum hooveri, and Lembertia congdonii. Moreover, we recommend that you amend your list to reflect that L. congdonii is currently not a candidate species but a recommended addition to the candidate list.

Questions regarding this letter should be addressed to Jim Bartel at 916/978-4866. Thank you for your continued support of endangered species.

Sincerely,

Gail C. Kobetich
Field Supervisor

cc: Field Supervisor, Ecological Services, Sacramento, CA (ES-S)
Chief, Endangered Species, Portland, OR (FWE-SE)

APPENDIX 2

Status Reports of Sensitive Species
Located within the Chemical Waste Management
Kettleman Hills Facility

- Scientific Name:** *Delphinium gypsophilum* Ewan
- Publication:** Univ. Colorado Phys. & Biol. Studies 2(2):1-55 (1945).
- Synonyms:** None.
- Common Name:** Gypsum-loving larkspur
- Family:** Ranunculaceae (Buttercup Family)
- Status:** Federal: No status
State: No status
CNPS: List 4 (Plants of limited distribution)
R-E-D Code: 1-1-3
- Flowering Period:** March - May
- Habitat:** Slopes in foothills bordering the San Joaquin Valley, principally on north-facing exposures at the base of steep slopes and in associated gullies, in annual grassland.
- Elevation:** Below 3000 feet.
- Distribution:** Inner foothill of the South Coast Ranges south of Altamont Pass in San Joaquin County and Alameda County, south to Kern County, foothills of the Tehachapi Mountains bordering the San Joaquin Valley (Commanche Hills), and the Poso Hills east of Bakersfield.
- Known Locations**
- Within Study Area:** T23S, R18E Section 3; Kettleman Hills Hazardous Waste Disposal Facility; plants scattered on sides of small ravines between Skyline Rd. and Arroyo Raso. (D.W. Taylor, G. Clifton, R. E. Palmer, R. Buck obs.).
- Discussion:** *Delphinium gypsophilum* is placed on List 4 ("a watch list") because of its limited distribution. Our field observations indicate that the species is more common than was previously assumed: at the present time this species is not sufficiently endangered to warrant a higher listing status. The species is only infrequently seen, largely because it flowers only in wet years. In dry years, rosette leaves may not persist into spring, and thus the plant can be easily overlooked. Lewis and Epling (1952), monitoring a population in western Kern County, noted that it flowered only twice in a 10 year period!
- D. gypsophilum* ssp. *gypsophilum* is white flowered, while its congener, ssp. *parviflorum* Lewis & Epling is light-blue flowered.

- Scientific Name:** *Eriogonum gossypinum* Curran
- Publication:** Bull. Calif. Acad. Sciences 1:274 (1885).
- Synonyms:** None.
- Common Name:** Cottony buckwheat
- Family:** Polygonaceae (Buckwheat Family)
- Status:** Federal: Cat. 2 (Under review, insufficient information)
State: No status
CNPS: List 4 (Plants of limited distribution)
R-E-D Code: 1-2-3
- Flowering Period:** April-September.
- Habitat:** Open, barren openings in hills surrounding the upper San Joaquin Valley, predominately on clay or sand rich sedimentary rocks supporting badland topography.
- Elevation:** Below 2100 feet.
- Distribution:** Fresno, Kings, Kern, and San Luis Obispo counties, ranging in the foothills of the Sierra from Poso Creek south to Sand Ridge near Caliente; in the Elk Hills, in the inner hills of the Temblor Range from the vicinity of Maricopa north to about Bitterwater Creek; and in the Kettleman Hills.
- Known Locations**
- Within Study Area:** 1) T23S, R18E Section 3; Kettleman Hills Hazardous Waste Disposal Facility; approximately .5 miles east of Arroyo Raso inside the disposal site boundary, D.W. Taylor and R.E. Palmer #9578, 22 April 1988 (UC).
- 2) "Kettleman Hills, Kings County" (Twisslemann 1967).
- Discussion:** *Eriogonum gossypinum* was found at a single location on the Chemical Waste Management site. The species is uncommon in the Kettleman Hills, Temblor Range and the hills east of Bakersfield, but it is frequent in the Elk Hills. It is absent from the valley floor. *Eriogonum gossypinum* often grows with several other annual species of *Eriogonum*, particularly *E. ordii* and *E. angulosum*.

- Scientific Name:** *Hemizonia pallida* Keck
- Publication:** Madrono 3:8 (1935)
- Synonyms:** None.
- Common Name:** Kern Tarplant
- Family:** Asteraceae (Sunflower Family)
- Status:** Federal: No status
State: No status
CNPS: List 4 (Plants of limited distribution)
R-E-D Code: 1-1-3
- Flowering Period:** April - June
- Habitat:** Plains and foothills in grassland bordering the San Joaquin Valley.
- Elevation:** Up to 2200 feet.
- Distribution:** foothills of the Inner South Coast Ranges, south from the Kettleman Hills of Kings County through southern Temblor Range, Kern County, foothills of the Tehachapi Mountains and bordering San Joaquin Valley, and in the hills east of Bakersfield north to Poso Creek.
- Known Locations**
- Within Study Area:**
- 1) Kings Co., T22S, R18E Section 34N; Kettleman Hills; on Drillers Ridge northeast of Arroyo del Paso, D.W. Taylor, G. Clifton, R. E. Palmer, R. Buck (obs.)
 - 2) Kings Co., T23S, R18E Section 3S; Kettleman Hills; between Skyline Rd. and Arroyo Raso, D.W. Taylor and R.E. Palmer #9559, 22 April 1988 (UC).
- Discussion:** *Hemizonia pallida* is found throughout the Kettleman Hills, and generally in the remaining grasslands of the southern San Joaquin Valley. The species is common in the Chemical Waste Management, Inc. disposal site facility area. The two collection locations above represent the areas on the disposal site with dense concentrations of the plant.
- Hemizonia pallida* is placed on List 4 (a "watch list") by the California Native Plant Society. Recent work by various botanists in the San Joaquin Valley has indicated that this species is more widespread than previously supposed. It is unlikely that the listing status of *Hemizonia pallida* will be raised.

APPENDIX 3

**Checklist of Vascular Plants
Observed in 1988 Surveys of the
Chemical Waste Management
Kettleman Hills Facility**

Kettleman Hills Hazardous Waste Disposal Site

LIST OF VASCULAR PLANT SPECIES

GYMNOSPERMAE

Ephedraceae

Ephedra californica Wats.

ANGIOSPERMAE - DICOTS

Apiaceae

Lomatium utriculatum (Nutt. ex Torr. & Gray) Coult. & Rose

Asteraceae

Ambrosia psilostachya DC.
Blepharizonia plumosa (Kellogg) Greene {but cf. var. *viscida* Keck}
Centauria solstitialis L.
Chaenactis stevioides Hook. & Arn.
Eastwoodia elegans Brandeg.
Ericameria linearifolia (DC.) Urbatsch & Wussow
Gutierrezia bracteata Abrams
Haplopappus acradenius ssp. *bracteosus* (Greene) Hall
Hemizonia pallida Keck
Hemizonia pungens (Hook. & Arn.) Torr. & Gray
Hymenoclea salsola Torr. & Gray ex Gray
Lactuca serriola L.
Lagophylla glandulosa Gray
Lasthenia californica DC. ex Lindl.
Lasthenia ferrisia Ornduff
Layia glandulosa (Hook.) Hook. & Arn.
Layia munzii Keck
Layia pentachaeta Gray {but cf. ssp. *albida*}
Lessingia nemaclada Greene
Malacothrix coulteri Harvey & Gray
Matricaria matricarioides (Less.) Porter
Microseris douglasii (DC.) Schultz-Bip.
Microseris lindleyi (DC.) Gray
Monolopia stricta Crum
Psilocarphus brevissimus Nutt.
Senecio vulgaris L.
Sonchus oleraceus L.

Boraginaceae

- Amsinckia intermedia* Fisch. & Mey.
- Amsinckia tessellata* Gray
- Pectocarya pennicillata* (Hook. & Arn.) A. DC.
- Plagiobothrys canescens* Benth.
- Plagiobothrys stipitatus* var. *micranthus* (Piper) I.M. Johnston

Brassicaceae

- Brassica geniculata* (Desf.) J. Ball
- Capsella bursa-pastoris* (L.) Medic.
- Caulanthus inflatus* S. Wats.
- Descuriana sophia* (L.) Webb ex Prantl
- Lepidium nitidum* Nutt.
- Sisymbrium irio* L.
- Tropidocarpum gracile* var. *dubium* (A. Davids.) Jepson

Capparidaceae

- Cleome isomeris* Greene

Caryophyllaceae

- Cerastium glomeratum* Thuill.
- Herniaria cinere* DC.
- Spergularia marina* (L.) Griseb.

Chenopodiaceae

- Allenrolfea occidentalis* (S. Wats.) Kuntze
- Atriplex coronata* S. Wats.
- Atriplex lentiformis* (Torr.) S. Wats.
- Atriplex parryi* S. Wats.
- Atriplex patula* L.
- Atriplex phyllostegi* (Torr.) S. Wats.
- Atriplex polycarpa* (Torr.) S. Wats.
- Atriplex rosea* L.
- Atriplex serenan* A. Nels.
- Atriplex spinifera* J. P. Macbr.
- Kochia californica* S. Wats.
- Salsola kali* L.
- Suaeda californic* S. Wats.

Crassulaceae

- Crassula erecta* (Hook. & Arn.) Berger

Cucurbitaceae

Marah fabaceus (Naud.) Greene

Cuscutaceae

Cuscuta salina Engelm.

Euphorbiaceae

Eremocarpus setigeru (Hook.) Benth.
Euphorbia ocellata (Dur. & Hilg.) Millsp.

Fabaceae

Astragalus didymocarpus Hook. & Arn.
Astragalus lentiginosus Dougl. ex Hook var. *nigricalycis* M.E. Jones
Astragalus oxyphysus Gray
Lotus humistratus Greene
Lotus subpinnatus Lag.
Lupinus bicolor Lindl.
Lupinus horizontalis Heller
Lupinus nanus ssp. *menkeræ* (C.P. Sm.) D. Dunn
Lupinus ruber Heller
Lupinus succulentus Dougl. ex W.D.J. Koch
Medicago polymorpha L.
Melilotus indica (L.) All.
Trifolium gracilentum Torr. & Gray
Trifolium tridentatum Lindl.
Trifolium variegatum Nutt.

Frankeniaceae

Frankenia grandiflora Cham. & Schlecht.

Geraniaceae

Erodium cicutarium (L.) L'Her.
Erodium brachycarpum (Godr.) Thellung
Erodium moschatum (L.) L'Her.

Hydrophyllaceae

Nemophila menziesii Hook. & Arn.
Phacelia ciliata Benth.
Phacelia tanacetifolia Benth.

Lamiacea

Marrubium vulgare L.
Salvia carduacea Benth.
Salvia columbariae Benth.
Trichostemma lanceolataum Benth.

Loasaceae

Mentzelia dispersa S. Wats.

Malvaceae

Eremalche parryi (Greene) Greene
Malva parviflora L.

Onagraceae

Camissonia boothii (Dougl. ex Lehm.) Raven ssp. *decortican* (Hook. & Arn.) Raven
Camissonia campestris (Greene) Raven
Clarkia tembloriensis Vasek

Papaveraceae

Eschscholtzia californica Cham.
Eschscholtzia caespitosa Benth.
Stylomecon heterophylla G. Taylor

Plantaginaceae

Plantago heterophylla Nutt.
Plantago bigelovii Gray ssp. *californica* (Greene) Bassett
Plantago lanceolata L.

Polemoniaceae

Eriastrum hooveri (Jepson) Mason
Eriastrum pluriflorum (Heller) Mason ssp. *pluriflorum*
Langloisia schottii (Torr.) Greene
Linanthus liniflorus (Benth.) Greene
Microsteris gracilis (Hook.) Greene

Polygonaceae

Chorizanthe stellulata Benth.
Chorizanthe uniaristata Torr. & Gray
Eriogonum angulosum Benth.
Eriogonum gossypinum Curran

Eriogonum ordii S. Wats.
Eriogonum viridescens Heller
Hollisteria lanata S. Wats.
Mucronea perfoliata (Gray) Heller

Portulacaceae

Calandrinia ciliata (Ruiz & Pavon) DC.
Calyptridium monandrum Nutt.

Ranunculaceae

Delphinium gypsophyllu Ewan ssp. *gypsophilum*
Delphinium parishii Gray

Scrophulariaceae

Orthocarpus brevistylus (Hoover) Hoover
Orthocarpus densiflorus Benth.
Orthocarpus purpurasens Benth.

Valerianaceae

Plectritis ciliosa (Greene) Jepson

MONOCOTS

Amaryllidaceae

Dichelostemma pulchellu (Salisb.) Heller

Iridaceae

Iris hartwegii Baker
Sisyrinchium bellum S. Wats.

Juncaceae

Juncus bufonius L.

Poaceae

Avena barbata Pott ex Link
Bromus diandrus Roth

Bromus mollis L.
Bromus rubens L.
Bromus tectorum L.
Bromus trinii Desv.
Distichlis spicata (L.) Greene var. *stricta* (Torr.) Beetle.
Hordeum depressum (Scribn. & Sm.) Rydb.
Hordeum leporinum Link
Poa scabrella (Thurb.) Benth. ex Vasey
Polypogon monspeliensi (L.) Desf.
Schismus barbatus (L.) Thellung
Sporobolus airoides (Torr.) Torr.
Vulpia megalura (Nutt.) Rydb.
Vulpia microstachys var. *pauciflora* (Scribn. ex Beal) Lonard & Gould
Vulpia myuros (L.) K.C. Gmel.
Vulpia octoflora (Walt.) Rydb.



**RARE PLANT SURVEY OF
THE CHEMICAL WASTE MANAGEMENT, INC.
KETTLEMAN HILLS FACILITY**

Prepared for:

Chemical Waste Management, Inc.
P. O. Box 471
Kettleman City, California 93239

Prepared by:

John M. Miller, Ph.D.
Glenn Clifton

BIOSYSTEMS ANALYSIS, INC.
303 Potrero Street, Suite 203
Santa Cruz, California 95060

Job No. 596

July 1991

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1.0 INTRODUCTION

1.1 STUDY AREA

Located in Kings County, California just west of Kettleman City, the Chemical Waste Management, Inc. facility occupies a site of more than 800 acres in the northern portions of the Kettleman Hills. It is a fully permitted, operating hazardous waste facility with significant areas that are undeveloped (Figure 1).

This document supplements our earlier study with new observations and sightings during the 1991 growing season. This ostensibly provides regulatory agencies with additional information for their use in providing comments to permitting agencies involved with approval of ongoing operation and expansion of the facility.

Our studies not only encompassed existing property but also a strip of road where a proposed water pipeline installation is anticipated. In addition we were asked to investigate fire-breaks that protect the facility, even though such fire protection strips were off property.

In 1989 the United States Fish and Wildlife Service (USFWS) produced a biological opinion which addressed construction of the Evaporative Tank System and Final Stabilization Unit including some 27 acres of habitat "loss" due to construction and grading of existing roads and firebreaks. The most recent opinion was issued on May 2, 1991. The present study by BioSystems Analysis, Inc. will address the aspects of habitat loss or degradation which apply to sensitive plants.

1.2 THE CHEMICAL WASTE MANAGEMENT, INC. FACILITY AND PROPOSED WATER PIPELINE

Chemical Waste Management, Inc. operates a facility in the Kettleman Hills for the storage, treatment and disposal of hazardous wastes. It is a fully permitted facility by the Environmental Protection Agency (EPA) and State of California Department of Health Services (DHS). Over 1500 acres are owned by the company of which about 220 acres are currently used for waste disposal and management. A barbed wire fence surrounds the entire property while an inner fence delineates the active facility. Chemical Waste Management, Inc. proposes to replace the inner fence with a chain link fence by the beginning of 1993.

One of the activities proposed by Chemical Waste Management, Inc. is the construction of a new water pipeline along Old Skyline Road beginning near Cerro Lodoso on the Avenal Highway extending southeast to the existing facility in the vicinity of Cerro Ultimo. The Avenal Water Line would be 8" PVC and installed along Old Skyline Road three feet from the edge of the tarseal pavement (buried four feet deep). A backhoe or trenching machine would be used. Laydown and storage areas would be necessary for equipment, pipe, and backfill material. It

is estimated that backfill material and pipe might cover 0.3 acre for every mile of pipeline in these laydown areas. Care would be taken to use previously disturbed sites for the laydown of construction materials. All work is proposed to take place within 15 feet of either side of the water pipeline.

A pump station would be installed next to the City of Avenal's three million gallon water tank near Cerro Lodoso. This would consist of a concrete slab for above ground pipe about 20 feet from the existing tank.

1.3 ENVIRONMENTAL SETTING

Our earlier report (Taylor *et al.*, 1988) provides an introduction to plant associations of the southern Kettleman Hills including a vegetation map which outlines disturbed areas, *Atriplex polycarpa* scrub, *Gutierrezia bracteata* scrub, *Bromus rubens* grassland and *Camissonia boothii* badland. Following a more normal rainfall pattern in 1991 we were able to modify the descriptive names of these plant associations while taking into account the profusion of annual and perennial dominant species that became visible as a direct response to increased moisture.

Plant communities visible in 1991 include *Atriplex polycarpa/Bromus rubens*, *Gutierrezia bracteata/Hemizonia pallida*, *Bromus rubens/Erodium cicutarium*, and *Hemizonia pallida/Camissonia boothii* var. *decorticans* associations. The extent of disturbed areas has increased since 1988 which reflects grading and some construction associated with facilities expansion.

Other areas mapped as "disturbed" in 1988 because they had no vegetation actually contain an abundance of *Hemizonia pallida* and ephemeral annuals such as *Eriastrum hooveri* and *E. pluriflorum* that were not visible in 1988. Such areas consist mainly of sandstones, siltstones, and claystones of the Tertiary San Joaquin Formation.

EMCON Associates, Inc. provided an account to Chemical Waste Management, Inc. of the geology underlying the Kettleman Hills facility. Essentially the substrate consists of areas of Quaternary alluvium and interbedded sequences of the Tertiary Tulare formation, San Joaquin Formation (including the Cascajo Conglomerate), and Etchegoin Formation (EMCON Associates, Inc., unpublished).

Taylor *et al.* (1988) reported on the rare plants found at the Kettleman Hills facility. An updated table is presented subsequently which reflects the most recent changes to the legal status of the relevant taxa (Table 1). It was on these plants, hereinafter known as the "target species" that we focused our efforts in the present work.

Table 1. Status, distribution, and habitat of rare plants with potential to occur in the vicinity of the Chemical Waste Management Kettleman Hills hazardous waste disposal facility, 1991.

Species ¹ Common Name ²	USFWS Listing ³	State Status ⁴	CNPS Status ²	Habitat Type ⁵	Distribution by County ²
<i>Amsinckia furcata</i> forked-fiddleneck	Cat. 2	None	2-2-3 List 1B	shale badlands	FRE KNG KRN SBT SLO
<i>Atriplex vallicola</i> Lost Hills saltmat	Cat. 2	None	2-2-3 List 1B	clay slicks	FRE KRN SLO
<i>Caulanthus californicus</i> California jewelflower	Endangered	Endangered	3-3-3 List 1B	sandy grassland	FRE KNG* KRN SBA SLO TUL*
<i>Delphinium gypsophilum</i> <i>ssp. gypsophilum</i> gypsum larkspur	None	None	1-1-3 List 4	gypsum rich grassland soils	ALA CCA FRE KNG KRN MAD MER SJQ STA
<i>Eriastrum hooveri</i> Hoover's woollystar	Threatened	None	1-2-3 List 1B	sandy saltbush scrub	FRE KRN SLO SBA
<i>Eriogonum gossypinum</i> cottony buckwheat	Cat. 3c	None	1-2-3 List 4	barren clay-sandstone	FRE KNG KRN SLO
<i>Eriogonum temblorense</i> Temblor buckwheat	Cat. 2	None	1-1-3 List 4	barren clay-sandstone	KRN MNT SLO
<i>Hemizonia pallida</i> Kern tarplant	None	None	1-2-3 List 4	sparse grassland	KRN KNG
<i>Hollisteria lanata</i> hollisteria	Cat. 2	None	1-2-3 List 4	saltbush scrub grassland	FRE KRN MER MNT SBA SLO
<i>Lembertia congdonii</i> San Joaquin woolly-threads	Endangered	None	3-2-3 List 1B	sandy grassland scrub	FRE* KNG KRN SBA SBT SLO TUL*
<i>Lepidium jaredii</i> Jared's peppergrass	None	None	1-2-3 List 4	clay playas and washes	FRE KNG KRN SBT SLO
<i>Nemacladus gracilis</i> slender nemacladus	None	None	1-1-3 List 4	grassland	FRE KNG KRN MER
<i>Trichostema ovatum</i> San Joaquin blue-curls	None	None	1-2-3 List 4	grassland	FRE KNG KRN TUL

Notes:

1. Nomenclature corresponds to Kartesz and Kartesz (1980) with the exception of *Lembertia (Eriogonella) congdonii* (Gray) Greene.
2. Smith and Berg (1988); counties abbreviated by a three letter code. Some county records are based on recent, unpublished information.
3. Cat. 2 (Under review, insufficient information); Cat. 3c (Not presently threatened) (USFWS 1990a, 1990b).
4. Section 1904, California Fish and Game Code (January 1989 listing) (CDFG 1989).
5. Twisselmann (1956, 1967), Munz and Keck (1968), Taylor and Devilla (1986), Smith and Berg (1988) and field observations.

2.0 METHODS

The California Native Plant Society's Inventory of Rare and Endangered Vascular Plants (Smith & Berg, 1988) was used as the guiding document for the present work. Standard reconnaissance level visual observations were carried out within the proposed study area. Where the pipeline route was walked, fifty foot strips on either side of the surveyed and marked centerline were scrutinized.

Time of sampling was critical. Therefore we chose to sample in mid-to late May, 1991 in order to take advantage of the higher rainfall year, and to observe plants during the height of the flowering period for the target species.

When it was determined that *Eriastrum hooveri* occurred on sandstone substrates in extraordinary abundance we employed geological maps in order to provide clues on where searches might be focused.

Abrams (1951), Munz (1959, 1974), Taylor & Davilla (1986) and Taylor (1989) were consulted during the course of the present study. We also employed the rare plant data base compiled by BioSystems Analysis, Inc. and the company reference herbarium.

3.0 RESULTS

3.1 PLANTS OF THE CHEMICAL WASTE MANAGEMENT, INC. FACILITY

The normal rainfall of the spring of 1991 allowed us to modify our earlier plant list for the Kettleman Hills facility (Taylor *et al.*, 1988). Plants that we observed in 1991 are listed in Table 2. When compared with the 1988 list, we found more than twenty additional species not seen earlier. Other species recorded three years ago were not seen in 1991.

In terms of overall vegetational change, plant community composition differs from the situation observed in 1988 by Taylor *et al.* Specifically, *Hemizonia pallida* is a dominant species in association with *Camissonia boothii* var. *decorticans* or *Gutierrezia bracteata*, respectively.

3.2 SENSITIVE PLANTS FOUND ALONG THE ROUTE OF THE PROPOSED WATER PIPELINE.

Following the existing Chevron road, known as Old Skyline Road on the USGS maps of the area, which follows the ridge from Cerro Lodoso to Cerro Ultimo, the proposed water pipeline will be installed along the tar sealed roadway. Pipe laydown areas will employ existing turnouts. Disturbance from sheep grazing was severe along this route when we visited the site in late May 1991. Nevertheless, we sampled a fifty foot strip on either side of the centerline, prepared a running plant list of species seen (Table 3), and mapped the sensitive plants discovered (Figure 2).

Of the sensitive plant species that appear in the CNPS manual (Smith and Berg, 1988), and while taking into account our previous rare plant survey (Taylor *et al.*, 1988), we located seven species which may be of regulatory concern. These were *Eriastrum hooveri* (Jepson) Mason (Plate 1A) [Polemoniaceae], *Lembertia congdonii* (Gray) Greene [Asteraceae], *Hollisteria lanata* Watson [Polygonaceae], *Hemizonia pallida* Keck [Asteraceae], *Trichostema ovatum* [Lamiaceae], *Eriogonum gossypinum* Curran [Polygonaceae] and *Delphinium gypsophilum* Ewan ssp. *gypsophilum* [Ranunculaceae].

The species which have legal and paralegal status were *Eriastrum hooveri*, commonly known as Hoover's woollystar which is a CNPS List 1B species and listed as federally threatened taxon. *Lembertia congdonii*, San Joaquin woolly-threads, is also CNPS List 1B and federally listed as endangered (see also Taylor, 1989).

One occurrence of *Lembertia congdonii* was found within the proposed 50 foot buffer strip of the water pipeline and a minimum of 25 feet from the existing road on BLM lands. A number of populations of Hoover's woollystar were quite commonly growing within both fifty foot buffer strips. Despite being trampled by sheep this species occurs here in relative abundance. However, it was noted that plants of Hoover's woollystar had been uprooted by sheep prior to producing seed.

Table 2. List of Vascular Plants Found on the Chemical Waste Management, Inc. Kettleman Hills Facility.

DICOTS

Asteraceae

- Blepharizonia plumosa* (Kellogg) Greene {but cf. var. *viscida* Keck}
- Centaurea melitensis* L.
- Chaenactis stevioides* Hook. & Arn.
- Conyza coulteri* Gray
- Eastwoodia elegans* Brandeg.
- Gutierrezia bracteata* Abrams
- Hemizonia pallida* Keck
- Lactuca serriola* L.
- Lasthenia californica* DC. ex Lindl.
- Lessingia lemmonii* Gray
- Malacothrix coulteri* Harvey & Gray
- Matricaria matricarioides* (Less.) Porter
- Micropus californicus* F. & M.
- Microseris douglasii* (DC.) Schultz-Bip.
- Microseris lindleyi* (DC.) Gray
- Monolopia stricta* Crum
- Monolopia lanceolata* Nutt.
- Psilocarphus brevissimus* Nutt.
- Senecio vulgaris* L.
- Sonchus asper* L.

Boraginaceae

- Amsinckia intermedia* Fisch. & Mey.
- Pectocarya penicillata* (Hook. & Arn.) A. DC.
- Plagiobothrys canescens* Benth.

Brassicaceae

- Caulanthus inflatus* S. Wats.
- Lepidium nitidum* Nutt.
- Lepidium oblongum* Small
- Sisymbrium irio* L.

Caryophyllaceae

- Herniaria cinere* DC.
 - Loeflingia squarrosa* Nutt.
 - Spergularia marina* (L.) Griseb.
-

Table 2. (Continued).

Chenopodiaceae

- Atriplex polycarpa* (Torr.) S. Wats.
- Kochia californica* S. Wats.
- Monolepis nuttalliana* (Schult.) Greene
- Salsola kali* L.

Crassulaceae

- Crassula erecta* (Hook. & Arn.) Berger

Cucurbitaceae

- Marah fabaceus* (Naud.) Greene

Euphorbiaceae

- Eremocarpus setigerus* (Hook.) Benth.
- Euphorbia ocellata* (Dur. & Hilg.) Millsp.

Fabaceae

- Astragalus didymocarpus* Hook. & Arn.
- Astragalus oxyphysus* Gray
- Lotus humistratus* Greene
- Lotus subpinnatus* Lag.
- Lupinus nanus* ssp. *menkeriae* (C.P. Sm.) D. Dunn
- Lupinus succulentus* Dougl. ex W.D.J. Koch
- Medicago polymorpha* L.
- Trifolium olivaceum* Greene
- Trifolium tridentatum* Lindl.

Geraniaceae

- Erodium cicutarium* (L.) L'Her.

Hydrophyllaceae

- Phacelia ciliata* Benth.
- Phacelia tanacetifolia* Benth.

Lamiaceae

- Marrubium vulgare* L.
 - Salvia carduacea* Benth.
 - Salvia columbariae* Benth.
 - Trichostema lanceolatum* Benth.
 - Trichostema ovatum* Curran
-

Table 2. (Continued).

Loasaceae

Mentzelia dispersa S. Wats.

Malvaceae

Eremalche parryi (Greene) Greene

Malva parviflora L.

Onagraceae

Camissonia campestris (Greene) Raven

Clarkia unguiculata Lindl.

Papaveraceae

Eschscholtzia californica Cham.

Eschscholtzia lemmonii Greene

Plantaginaceae

Plantago erecta Morris

Polemoniaceae

Eriastrum hooveri (Jepson) Mason

Eriastrum pluriflorum (Heller) Mason ssp. pluriflorum

Langloisia schottii (Torr.) Greene

Linanthus dichotomus Benth.

Linanthus liniflorus (Benth.) Greene

Polygonaceae

Chorizanthe uniaristata Torr. & Gray

Chorizanthe xantii Watson

Eriogonum angulosum Benth.

Eriogonum fasciculatum Benth.

Eriogonum gossypinum Curran

Eriogonum viridescens Heller

Hollisteria lanata S. Wats.

Portulacaceae

Calandrinia ciliata (Ruiz & Pavon) DC.

Claytonia perfoliata Donn ex Willd.

Ranunculaceae

Delphinium gypsophilum Ewan ssp. gypsophilum

Table 2. (Continued).

Scrophulariaceae

Orthocarpus purpurascens Benth.

Solanaceae

Datura stramonium L.

MONOCOTS

Alliaceae

Allium crispum Greene

Amaryllidaceae

Dichelostemma pulchellum (Salisb.) Heller

Poaceae

Avena barbata Pott ex Link

Bromus diandrus Roth

Bromus mollis L.

Bromus rubens L.

Hordeum leporinum Link

Poa scabrella (Thurb.) Benth. ex Vasey

Polypogon monspeliensis (L.) Desf.

Schismus barbatus (L.) Thellung

Sporobolus airoides (Torr.) Torr.

Vulpia megalura (Nutt.) Rydb.

Vulpia microstachys var. *pauciflora* (Scribn. ex Beal) Lonard & Gould

Vulpia myuros (L.) K.C. Gmel.

Vulpia octoflora (Walt.) Rydb.

Table 3. Plant List of the Proposed Water Pipeline Route from Cerro Lodoso to Cerro Ultimo, Kettleman Hills, California

DICOTS

Asteraceae

Ambrosia acanthocarpa Hook.
Blepharizonia plumosa (Kellogg) Greene {but cf. var. *viscida* Keck}
Centaurea melitensis L.
Eastwoodia elegans Brandeg.
Gutierrezia bracteata Abrams
Helianthus annua L.
Hemizonia pallida Keck
Lactuca serriola L.
Lasthenia californica DC. ex Lindl.
Lembertia congdonii (Gray) Greene
Lessingia lemmonii Gray
Malacothrix coulteri Harvey & Gray
Microseris douglasii (DC.) Schultz-Bip.
Microseris lindleyi (DC.) Gray
Monolopia lanceolata Nutt.
Senecio vulgaris L.
Sonchus oleraceus L.

Boraginaceae

Amsinckia intermedia Fisch. & Mey.
Pectocarya penicillata (Hook. & Arn.) A. DC.
Plagiobothrys canescens Benth.

Brassicaceae

Guillenia lasiophyllum Greene
Lepidium nitidum Nutt.
Lepidium oblongum Small
Sisymbrium irio L.

Caryophyllaceae

Herniaria cinere DC.
Loeflingia squarrosa Nutt.

Chenopodiaceae

Atriplex polycarpa (Torr.) S. Wats.
Chenopodium rubrum L.
Monolepis nuttalliana (Schult.) Greene
Salsola kali L.

Table 3. (Continued).

Crassulaceae

Crassula erecta (Hook. & Arn.) Berger

Cucurbitaceae

Cucurbita foetidissima HBK.

Marah fabaceus (Naud.) Greene

Euphorbiaceae

Eremocarpus setigerus (Hook.) Benth.

Euphorbia ocellata (Dur. & Hilg.) Millsp.

Fabaceae

Astragalus oxyphysus Gray

Lotus subpinnatus Lag.

Lupinus nanus ssp. *menkeriae* (C.P. Sm.) D. Dunn

Lupinus succulentus Dougl. ex W.D.J. Koch

Trifolium tridentatum Lindl.

Geraniaceae

Erodium cicutarium (L.) L'Her.

Hydrophyllaceae

Phacelia douglasii (Benth.) Torr.

Phacelia tanacetifolia Benth.

Lamiaceae

Marrubium vulgare L.

Salvia columbariae Benth.

Trichostema ovatum Curran

Loasaceae

Mentzelia dispersa S. Wats.

Malvaceae

Eremalche parryi (Greene) Greene

Malva parviflora L.

Onagraceae

Camissonia campestris (Greene) Raven

Plantaginaceae

Plantago erecta Morris

Table 3. (Continued).

Polemoniaceae

- Eriastrum hooveri* (Jepson) Mason
- Eriastrum pluriflorum* (Heller) Mason ssp. *pluriflorum*
- Langloisia schottii* (Torr.) Greene

Polygonaceae

- Chorizanthe uniaristata* Torr. & Gray
- Eriogonum angulosum* Benth.
- Eriogonum viridescens* Heller
- Hollisteria lanata* S. Wats.
- Mucronea perfoliata* (Gray) Heller

Portulacaceae

- Calandrinia ciliata* (Ruiz & Pavon) DC.

Scrophulariaceae

- Orthocarpus brevistylus* (Hoover) Hoover

Solanaceae

- Datura stramonium* L.

MONOCOTS

Amaryllidaceae

- Dichelostemma pulchellum* (Salisb.) Heller

Poaceae

- Avena barbata* Pott ex Link
 - Bromus diandrus* Roth
 - Bromus rubens* L.
 - Hordeum leporinum* Link
 - Polypogon monspeliensis* (L.) Desf.
 - Schismus barbatus* (L.) Thellung
-



PLATE 1A. Photograph of several plants of *Eriastrum hooveri* (photo by D. Taylor)

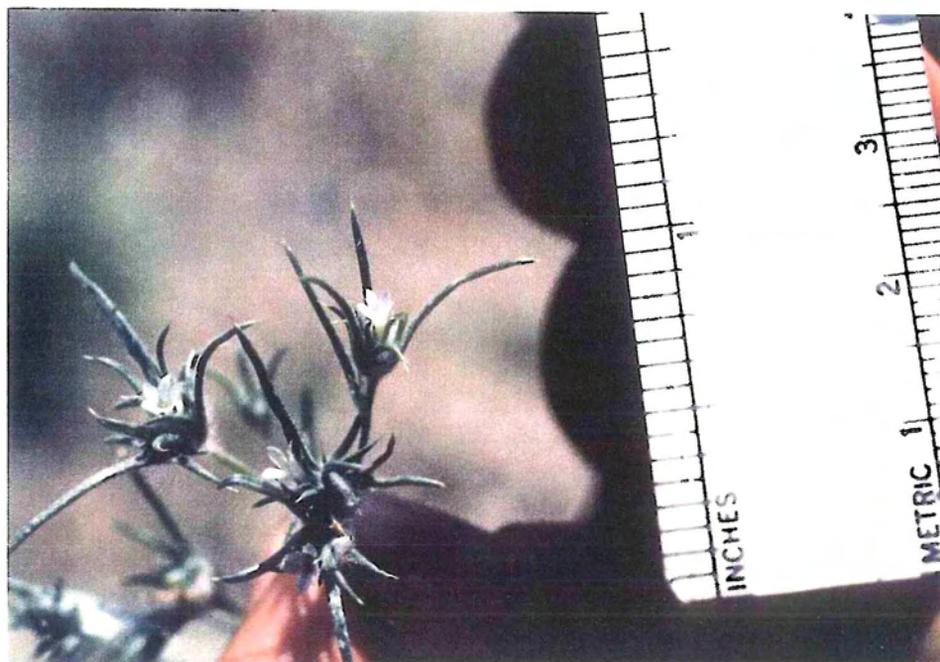


PLATE 1B. Close-up photograph of *Eriastrum hooveri* (photo by D. Taylor)

California watch list species (CNPS List 4) seen along the proposed pipeline route were quite common: *Hollisteria lanata* seemed to thrive on disturbed road cuts and was apparently completely unaffected by intense sheep grazing in this area. San Joaquin bluecurls (*Trichostema ovatum*) was equally common, favoring sites disturbed by early season cattle grazing. Perhaps more interestingly, *Hemizonia pallida*, commonly known as the Kern tarplant, literally covered thousands of acres discerned from visual observation at the various vista points along Old Skyline Road. The latter species was so common that we recognized it as a dominant species in the two major plant communities observed in the Kettleman Hills during the spring of 1991.

Plant communities seen along Old Skyline Road (which follows the summit ridge system of the Kettleman Hills) were similar to those found on the Chemical Waste Management, Inc. property. These consisted of *Bromus rubens/Erodium cicutarium* annual grasslands indigenous to NE facing slopes and *Hemizonia pallida/Gutierrezia* associations in the more rocky areas. The species found along the route of the proposed water pipeline appear in table 3.

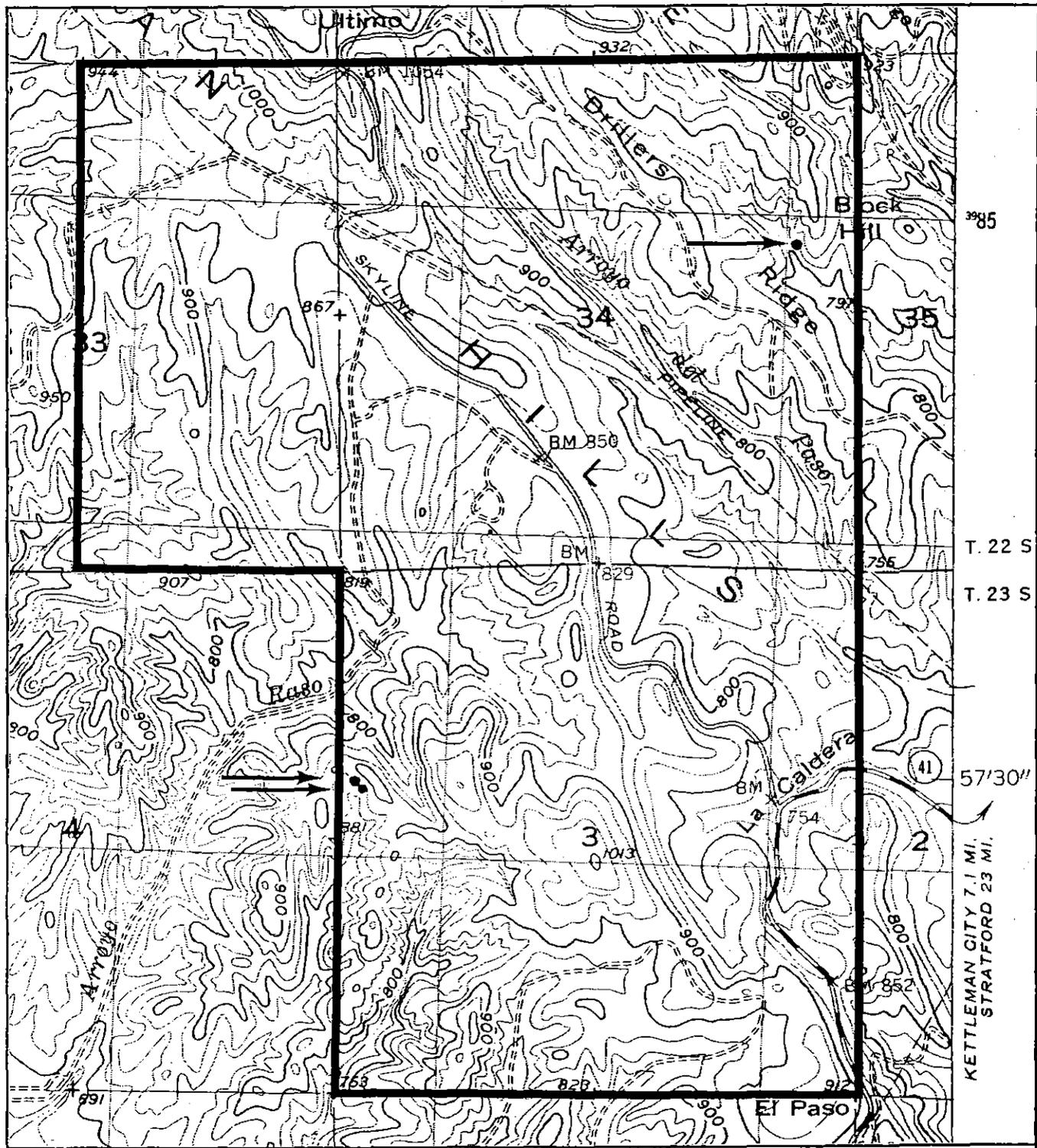
3.3 RARE PLANTS WITHIN THE EXISTING CHEMICAL WASTE MANAGEMENT, INC. PROPERTY

Six species of possible regulatory concern were discovered during the course of our 1991 field studies of the 800+ ac Kettleman Hills facility. At this point we wish to interject that Chemical Waste Management, Inc. allowed our team free access to all areas of the facility including the active sites. Coupled with the excellent rainfall experienced earlier in the spring, we were able to add significantly to the body of knowledge reported on earlier by Taylor et al. (1988). More significantly, we were able to shed important insight into probable seed storage within the natural habitat of Hoover's woollystar and in fact, clarify the natural distribution of this species within its mountain refugium (see discussion).

Sensitive plants observed onsite were *Eriastrum hooveri*, "Hoover's woollystar" — CNPS List 1B, federally threatened; *Delphinium gypsophilum* Ewan ssp. *gypsophilum*, "gypsum loving larkspur" — CNPS List 4; *Eriogonum gossypinum* Curran, "cottony buckwheat" — CNPS List 4; *Hemizonia pallida*, "Kern tarplant" — CNPS List 4, *Hollisteria lanatum*, "hollisteria" — CNPS List 4, and *Trichostema ovatum*, "San Joaquin woolly blue-curls" — CNPS List 4 [table 1].

One of the two least common of these species on the property was the gypsum loving larkspur which is a probable interspecific hybrid according to Lewis and Epling (1959). Distribution of *Delphinium gypsophilum* followed the general pattern illustrated in Taylor et al., 1988 i.e. we did not add significantly to its known occurrence on the property. It is a species which favors N facing clayey slopes with evaporite accumulations of calcium sulfate (gypsum). Other S facing gypsum slopes were nearly devoid of vegetation and gypsophiles did not occur there.

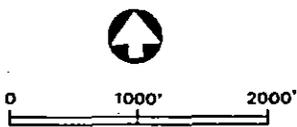
Cottony buckwheat, the other least common species, was confined to specific areas on the property. It seemed to favor lower clayey slopes and was found at two sites (Figure 3).



LEGEND

- *Eriogonum gossypinum*
- Chemical waste facility boundary

Figure 3. On-site distribution of *Eriogonum gossypinum*.



Base maps: USGS 7.5' Kettleman Plain Quad.

Prepared by BioSystems Analysis, Inc.

Commonly known as the San Joaquin bluecurls, *Trichostema ovatum* had a scattered distribution on the property. *Hollisteria lanata* displayed a similar syndrome insofar that both species favored disturbed sites, particularly on the more clayey soils. Neither species was scarce on the site. We did not map the occurrence of these two species.

By far the most abundant populations of sensitive plants were Hoover's woollystar and the Kern tarplant. The latter species formed almost continuous stands within undisturbed portions of the property particularly on SW facing slopes having a more rocky substrate, i.e. slopes of the weathering San Joaquin Formation. Compared with the maps presented in Taylor et al. (1988), the Kern tarplant's distribution was several-fold over that found in 1988. This may be directly attributable to the higher rainfall experienced on the site during the spring of 1991.

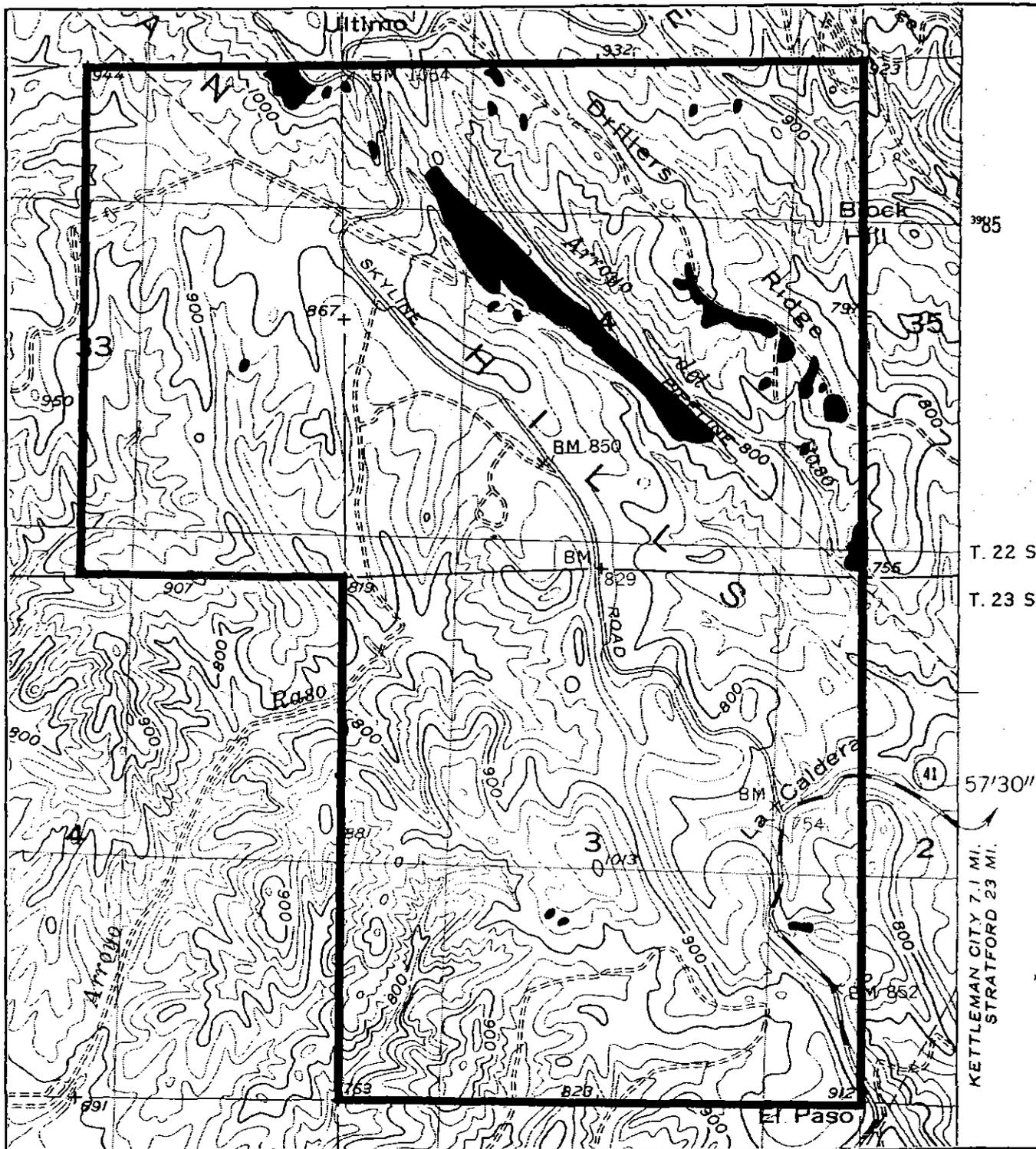
Hoover's woollystar was found in several populations on the property (Figure 4). The smallest mappable patches had more than 500 individual plants while the largest populations were composed of hundreds of thousands of individual plants. We reached this conclusion by counting the plants within a 1 m square area and extrapolating this figure to include the general areas reconnoitered.

In some cases the species was found growing with *Eriastrum pluriflorum* (Heller) Mason, commonly known as the many-flowered woollystar. The two species are however, completely distinct when in flower. Hoover's woollystar possesses small white corollas (Plate 1B) reminiscent of the pale blue flowered species, *E. abramsii* (Elmer) Mason, a species found from San Benito County northward to the Santa Cruz Mountains, but the former species possesses recurved bracts (Plate 1B) and the latter does not. *Eriastrum hooveri* cannot be confused by *E. pluriflorum* var. *pluriflorum* since the latter species has larger blue corollas and erect inflorescence bracts.

Generally, Hoover's woollystar in the Kettleman Hills is confined to units of the San Joaquin Formation, particularly on sandstone outcrops but also occurring at lower elevations on sands and silts derived from these formations. We were able to discern boundaries of populations of the species by concentrating our search on outcrops of these sandstones and by following outwash slopes and alluvium downhill from apparent, respective root populations to downslope subpopulations.

3.4 SURVEY OF RARE PLANTS ON OFFSITE FIRE PROTECTION STRIPS

The south side of the Chemical Waste Management, Inc. property is bordered by lands managed by the Bureau of Land Management and private concerns. A fire-break has been maintained for a number of years through periodic, annual vegetation disturbance through plowing and disking. A portion of our effort was expended on a reconnaissance level search for sensitive plants in these areas.



3985
T. 22 S
T. 23 S
57'30"
KETTLEMAN CITY 7.1 MI.
STRATFORD 23 MI.

LEGEND

-  *Eriastrum hooveri*
-  Chemical waste facility boundary

Figure 4. On-site distribution of *Eriastrum hooveri*.

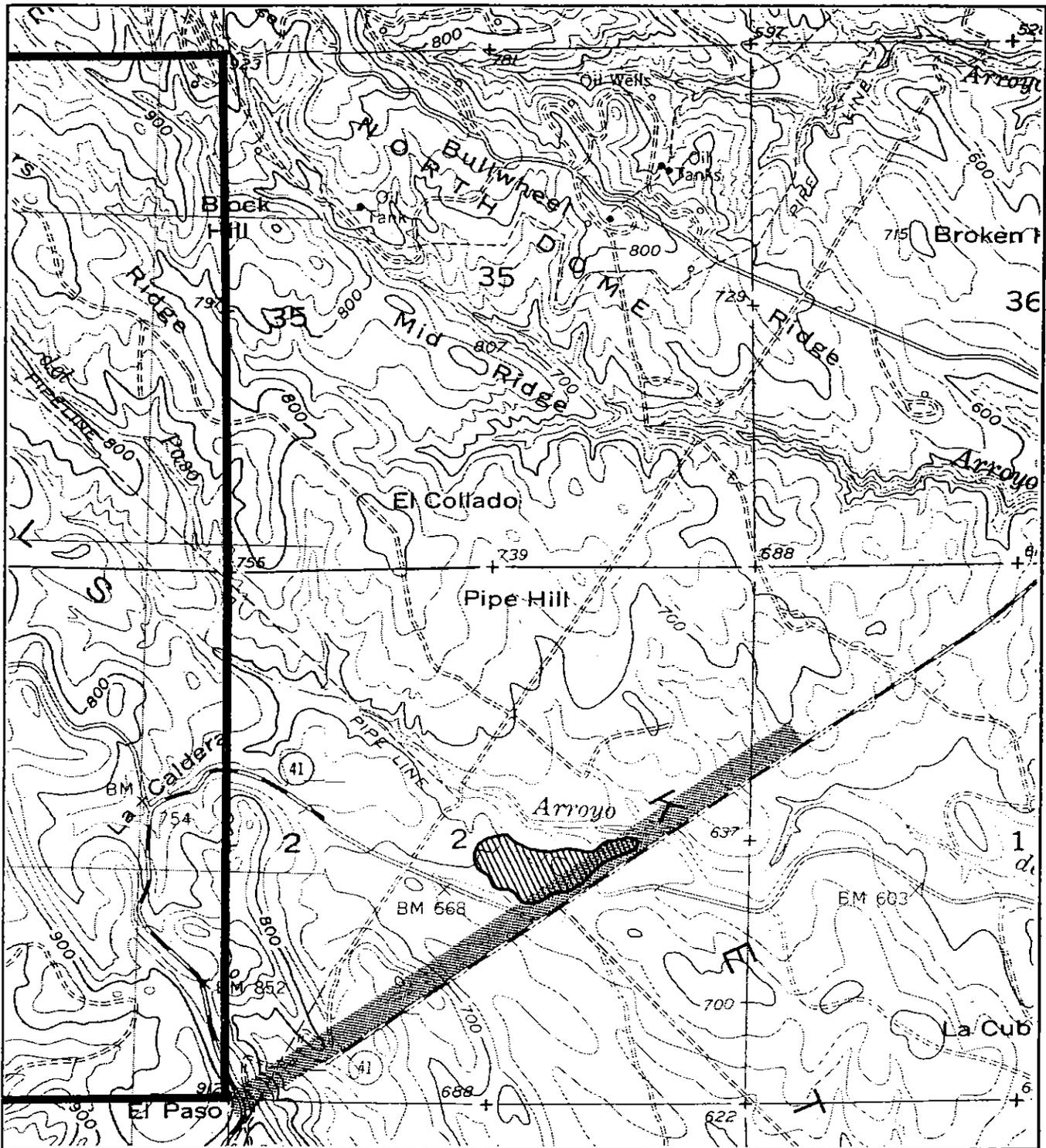


0 1000' 2000'

Base maps: USGS 7.5' Kettleman Plain Quad.

Prepared by BioSystems Analysis, Inc.

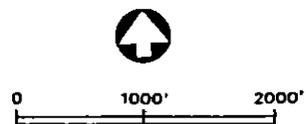
A large population of *Eriastrum hooveri* was found within and adjoining the fire protection strip just described (Figure 5). While the density of plants did not approach that of the parent populations found on sandstone outcrops of the higher mountain slopes, subpopulations of Hoover's woollystar were nonetheless common in the fire-break. Other sensitive plants listed in table 1 were not found in these areas.



LEGEND

-  *Eriastrum hooveri*
-  Firebreak
-  Chemical waste facility boundary

Figure 5. Distribution of *Eriastrum hooveri* along off-site firebreak.



Base maps: USGS 7.5' La Cima Quad and 7.5' Kettleman Plain Quad.

Prepared by BioSystems Analysis, Inc.

4.0 DISCUSSION AND RECOMMENDATIONS

4.1 LEGAL STATUS OF HOOVER'S WOOLLYSTAR

Based on a herbarium and field survey, Taylor and Davilla (1986) recommended listing of *Eriastrum hooveri*. Accordingly, the species now enjoys federal status as a threatened species and as a CNPS List 1B taxon. At this point it is important to discuss the history behind the discovery of *Eriastrum hooveri* and explore our understanding of the natural situation which led to the recommendation for listing.

Eriastrum hooveri was originally described from plants collected in the lowlands of the San Joaquin Valley. At that time nothing was known of the actual distribution of the species until Twisselmann collected it in the Temblor Range (e.g. Twisselmann 4466, CAS; Twisselmann 17808, CAS; Taylor & Davilla, 1986). In 1967, Twisselmann in A Flora of Kern County, California reports that *Eriastrum hooveri* was "scarce around sandstone outcrops or on shale banks in the Temblor Range.....it is rare in the valley where apparently it grows only in wet years".

After having found this species in extraordinary abundance in the Kettleman Hills following the 1991 wet spring, it seems possible that Hoover's woollystar is not a rare species at all. It is not uncommon for species such as this to produce seeds that remain stored in the soil or attached (by the seed mucilage) to the rock substrate for a number of years until the right combination of rainfall and temperature triggers renewal of the seed bank.

In the case of *Eriastrum hooveri*, its discovery and eventual listing may be directly attributable to chance discovery during an exceptionally wet spring by early twentieth century field botanists who had no road access to habitats in the Temblor Range, Kettleman, and Elk Hills. It was not known at the time that the species was indigenous to sandstone outcrops in these mountain ranges where Twisselmann collected it. Taylor and Davilla recognized that the species occurred in the Temblor Range (1986) but could not access private lands in order to verify Twisselmann's findings. It was not until BioSystem's botanists visited the Kettleman Hills, Elk Hills and the sandstone hills northwest of Coalinga along Los Gatos Creek in 1991, that the true extent of the natural distribution of *Eriastrum hooveri* became known. Our present work demonstrates that the species may not be worthy of federal protection under the Endangered Species Act.

4.2 AVOIDANCE AND RESOURCE MANAGEMENT RECOMMENDATIONS

Proposed Water Pipeline. Since the water pipeline will be installed near the edge of an existing tar seal road, impacts toward natural vegetation may be minimized. Care should be taken to keep vehicles on the road and in existing devegetated turnouts. Pipe should be stacked in those areas within the fifty foot buffer that is already devegetated by sheep overgrazing, oil/gas resource extraction, or vehicular traffic.

Public lands should be avoided unless a special use permit is granted. The single population of *Lembertia congdonii* which occurs on BLM land, should be carefully marked by the consulting botanist and/or agency person, and responsible parties should take measures to (1) fence the population, (2) educate the contractors and subcontractors on techniques of avoidance, and (3) provide financial resources for some monitoring to be determined by the relevant regulatory agencies in the United States Department of the Interior (Fish & Wildlife Service and Bureau of Land Management). We emphasize that since this federally listed species occurs on BLM land, the full force of the Endangered Species Act applies.

It is our opinion that all other listed species along the proposed water pipeline route deserve no special monitoring, nor are mitigative measures needed since the impact on natural habitat is negligible.

Chemical Waste Management, Inc. Facility. Despite the paralegal status of federally listed taxa on private property, the most prudent course of action regarding List 1B plants (i.e. *Eriastrum hooveri*) is to plan and implement the expansion of the waste disposal areas so as to avoid impact (through excavation, grading, and devegetation activities) to the sandstone outcrops of the San Joaquin Formation. The mountain refugium of Hoover's woollystar should be preserved in its unaltered state in order to ensure that the species does not truly become threatened or endangered. This course of action is appropriate until such time that relevant federal agencies change the legal/paralegal status of this plant.

List 4 species found on the private lands belonging to Chemical Waste Management, Inc. enjoy no legal or paralegal status under either the federal Endangered Species Act or the California Environmental Quality Act (CEQA). Our recommendation is to avoid habitats where the least common of the list 4 species were found. Specifically we suggest that mapped areas where *Delphinium gypsophilum* occurs (see Taylor et al., 1988) or areas shown on Figure 2 for *Eriogonum gossypinum* be avoided.

5.0 LITERATURE CITED

- Abrams, L. 1951. Illustrated Flora of the Pacific States, Vol. III. Stanford: Stanford University Press.
- Lewis, H. and C. Epling. 1959. *Delphinium gypsophilum*, a diploid species of hybrid origin. Evolution 13: 511-525.
- Munz, P. A. 1959. A California Flora. Berkeley: University of California Press (with 1968 Supplement).
- Munz, P. A. 1974. A Flora of Southern California. Berkeley: University of California Press.
- Smith, James Payne, Jr. and K. Berg. 1988. California Native Plant Society's Inventory of rare and Endangered Vascular Plants of California. CNPS Special Publication No. 1, Fourth ed.
- Taylor, D. 1989. Status Survey for San Joaquin Woolly-threads (*Lembertia congdonii*). BioSystems Analysis, Inc. Tech. Report J-346.
- Taylor, D., R. Palmer, R. Buck and G. Clifton. 1988. Rare Plant Study of the Kettleman Hills Facility, Chemical Waste Management, Inc. Facility. BioSystems Analysis, Inc. Tech. Report No. J-354.
- Taylor, D. and W. Davilla. 1986. Status Survey of Three Plants Endemic to the San Joaquin Valley. BioSystems Analysis, Inc. Tech. Report No. 14-16-001-85092.
- Twisselmann, E. 1967. A flora of Kern County, California. Wasmann Journal of Biology 25 (1, 2): 1-395.
- United States Fish and Wildlife Service. 1990a. Endangered and Threatened Wildlife and Plants; Review of Plant Taxa for Listing as Endangered or Threatened Species; Notice of Review. Federal Register 55(35): 21 February.
- United States Fish and Wildlife Service. 1990b. Endangered and Threatened Wildlife and Plants; Determination of Endangered or Threatened Status for Five Plants from the Southern San Joaquin Valley. Federal Register 55(139): 19 July.

**RESULTS OF A SENSITIVE SPECIES SURVEY
ON THE WASTE MANAGEMENT SITE,
KETTLEMAN HILLS FACILITY**

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Kettleman City, CA.

June 2000

**RESULTS OF A SENSITIVE SPECIES SURVEY
ON THE WASTE MANAGEMENT SITE, KETTLEMAN HILLS FACILITY**

INTRODUCTION

Waste Management, Inc. is planning to expand an existing borrow area into a location where native vegetation exists. The proposed borrow site lies within the Waste Management's Kettleman Hills facility approximately 5 miles west of Kettleman City, Kings County, California (Figure 1). The entire facility has previously been permitted through the United States Fish and Wildlife Service (USFWS) and California Department of Fish and Game (CDFG). The proposed borrow area will hereafter be referred to as the "site" while the entire Waste Management facility will hereafter be referred to as the "facility".

The facility is within rolling foothills on the east side of the Coast Range at an elevation of approximately 900 feet. Vegetation communities that exist in the area are Valley Grassland and Valley Saltbush Scrub. The proposed borrow area is on a site that is approximately 50 acres in size (Figure 2). The dominant shrubs on the site are *Atriplex polycarpa*, *Gutierrezia bractiata*, and *Isacoma acradenius*. The site has been disturbed by past borrow activities and disturbance by heavy earth moving equipment is widespread (approaching 75 to 80 percent) throughout the site and surrounding area. Disturbances are up to two or three years old; some are as recently as this year. Soils are fine alkali, draining or sloping to the north. There is an artificial pond to the south end of the site. The outer perimeter of the site is characterized by rolling hills.

The site lies in an area that historically contained, and may still harbor, several sensitive plant and wildlife species. There are 8 sensitive plant species and 12 sensitive wildlife species that could potentially occur on the site and potentially be impacted by the proposed activities, given its current condition and vegetative association (Table 1). Sensitive species issues were addressed during the permitting process through the wildlife agencies resulting in the facility being entirely fenced with a chain-link fencing that is buried and all gate openings modified so as to exclude foxes and other large

mammals. We surveyed the area to determine current presence of sensitive plant and wildlife on the site.



Figure 1. General location map of the Waste Management facility.

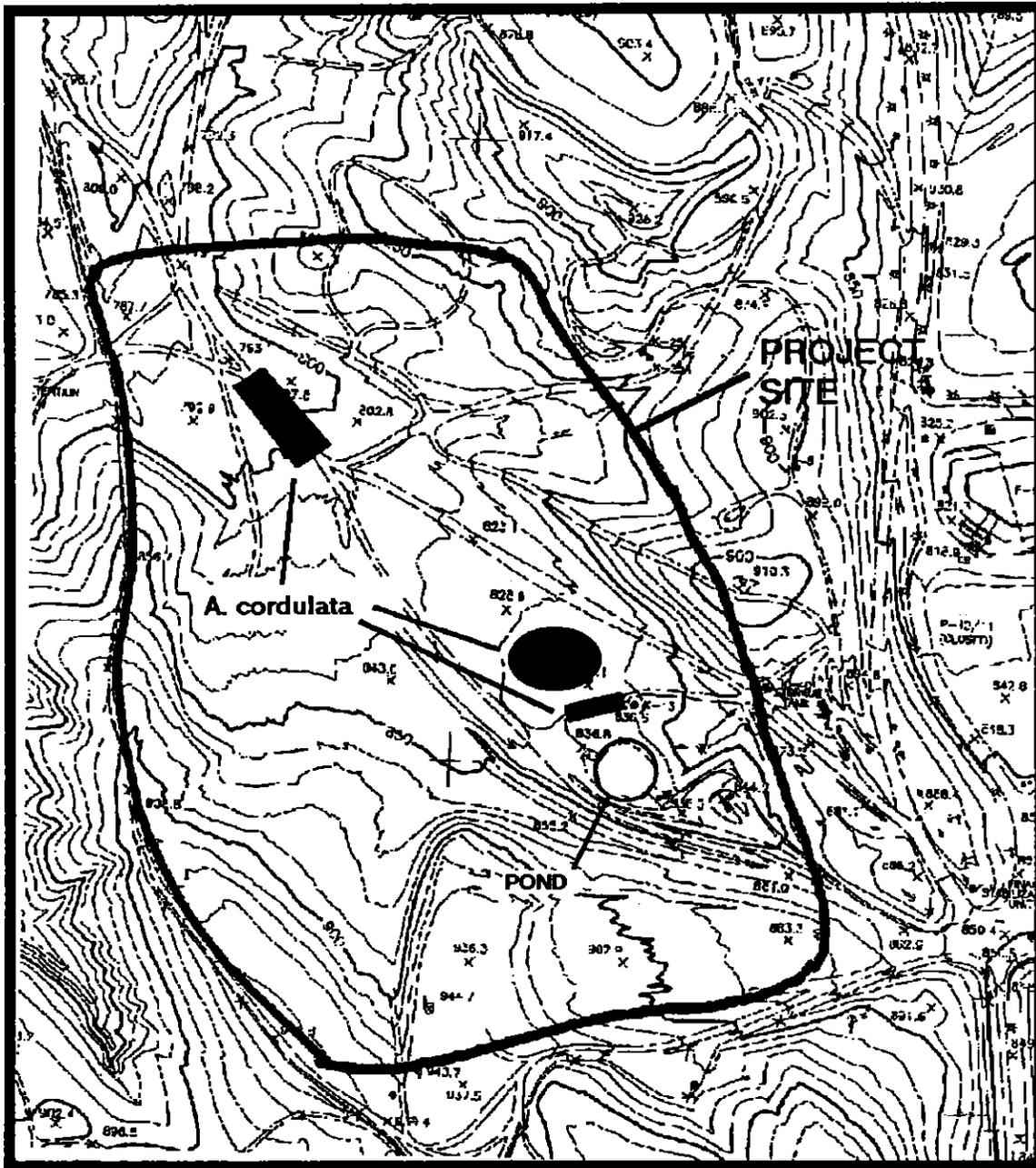


Figure 2. Map of the site showing locations of pond and locations where *Atriplex cordulata* were found.

Table 1. List of sensitive plant and wildlife species potentially occurring on the Waste Management site, Kettleman Hills.

Scientific Name	Common Name	Status		
		Federal	State	Other
Plants				
<i>Amsinckia vernicosa</i> var. <i>furcata</i>	forked fiddleneck	SC	-	CNPS 4
<i>Atriplex cordulata</i>	heart-leaved saltbush	SC	SP	CNPS 1B
<i>Atriplex vallicola</i>	Lost Hills saltbush	SC	SP	CNPS 1B
<i>Caulanthus californicus</i>	California jewelflower	E	E	CNPS 1B
<i>Delphinium recurvatum</i>	recurved larkspur	SC	-	CNPS 1B
<i>Eriastrum hooveri</i>	Hoover's woolly-star	T	-	CNPS 1B
<i>Eremalche parryi</i> ssp. <i>kernensis</i>	Kern mallow	E	--	CNPS 1B
<i>Lembertia congdonii</i>	San Joaquin woolly-threads	E		CNPS 1B
Amphibians				
<i>Scaphiopus hammondii hammondii</i>	western spadefoot toad	SC	SSC	-
Reptiles				
<i>Gambelia sila</i>	blunt-nosed leopard lizard	E	E, P	-
<i>Masticophis flagellum ruddocki</i>	San Joaquin coachwhip	SC	SSC	-
<i>Phrynosoma coronatum frontale</i>	California horned lizard	SC	SSC	-
Birds				
<i>Circus cyaneus</i>	northern harrier	-	SSC	-
<i>Athene cunicularia hypugea</i>	western burrowing owl	SC	SSC	MBTA
<i>Charadrius montanus</i>	mountain plover	C	SSC	MBTA
<i>Lanius ludovicianus</i>	loggerhead shrike		SSC	
Mammals				
<i>Ammospermophilus nelsoni</i>	San Joaquin antelope squirrel	SC	T	-
<i>Dipodomys nitratoides brevinasus</i>	short-nosed kangaroo rat	SC	SSC	-
<i>Taxidea taxus</i>	American badger	-	SA	-
<i>Vulpes macrotis mutica</i>	San Joaquin kit fox	E	T	-

Status: Federal: E = endangered, T = threatened, C = candidate (species for which there is insufficient information on biological vulnerability and threat(s) to support listing), SC = species of concern.

State: E = endangered; T = threatened, SSC = species of concern, P = protected, SP = special plant, SA = special animal.

Other: CNPS = California Native Plant Society; 1B = plants rare and endangered in California and elsewhere, 4 = plants of limited distribution – a watch list; MBTA = birds protected under the Migratory Bird Treaty Act.

METHODS

Generally, surveys for sensitive plants and animals follow standardized protocols established by the CDFG or USFWS. However, because the site is located within an area that has been fenced in excess of 5 years and because the site has been so highly disturbed, it was inappropriate to conduct full survey protocols. Generally, modifications to protocols are agreed upon during consultation with the wildlife agencies. This project does not require consultation because appropriate permitting has already been obtained. These surveys were conducted solely to document potential impacts as required in the project mitigation measures prior to expansion into new areas.

Our surveys consisted of walking the proposed 50-acre project site for 8 days within the time, temperature, and seasonal constraints (morning hours, air temperatures between 25 and 35 degrees C, soil temperatures between 35 and 50 degrees C, and between 15 April and 30 June) imposed by standard survey protocols for the Blunt-nosed leopard lizard. Meandering transects were walked on 22 through 26 May and 30 May through 1 June 2000 at intervals of approximately 50 feet, which provided 100 percent coverage of the site. During these surveys, all sign and sighting of wildlife were recorded and a list of plants encountered on the site was prepared (Appendix 1).

RESULTS

A total of 34 plant species and 21 wildlife species were observed on the site (Appendix 1, Table 2). Below is a brief description of each sensitive species that were identified as potentially occurring on the site, the observed or suspected occurrence on the site, and the potential impacts to each species that is expected to occur as a result of utilizing the site as a borrow area.

Table 2. List and number of individuals of wildlife observed at the proposed Waste Management borrow site, Kettleman Hills facility.

SPECIES	DATE (22 through 31 May and 1 June)							
	22	23	24	25	26	30	31	1
Reptiles								
side-blotched lizard	10	2	7		6	9		2
California whiptail	2	3	3		2	5		
rattlesnake			1					
Birds								
common raven	2		2	2	26		2	
red-tailed hawk								1
northern harrier				1		1		1
California quail	6	4	6		4	15	11	
mourning dove	2	4			2		1	2
barn swallow								1
cliff swallow								1
western meadowlark				2	2	1		1
western kingbird			2	4	3	1		
Brewers blackbird								>10
red-winged blackbird					5			
loggerhead shrike								1
Anna's hummingbird	1							
Mammals								
Deer mouse (sign)								>10
kangaroo rat					1			
pocket gopher								1
cottontail							1	
jackrabbit	3	4		3	3	2	2	1

Sensitive Plants

Forked fiddleneck

Natural history – This rare species was considered by Munz and Keck (1973), CNPS (Skinner and Pavlik 1994) and Hickman et al (1993) to be a variety of the more common and widespread *A. vernicosa*. This plant is recognized by its relatively large (12-18 mm) orange corolla. It has smooth nutlets and postulate leaves. It is often associated with shale or talus slopes and appears to be cyclic at some of the known population sites.

Occurrence at the project site and potential impacts – Although the site would normally be considered marginal habitat for this plant, the heavy disturbance precludes its presence. No impacts to this species are expected from the project.

Heart-leaved saltbush

Natural history – This is a gray-scurfy plant that is characterized by sessile, ovate and mostly basally cordate leaves. It is a variable species with at least 2 races evident in the southern portion of its range. It is an erect rigid annual herb, simple or branched from its base, and entire.

Occurrence at the project area and potential impacts – This plant was found in 3 areas on the project site totaling approximately 1,000 square feet. It occurs in a 100 foot roughly circular area in the southern half of the site, on a dirt road on the southern portion of the site (an area approximately 100 feet long) and at one small location in the north of the site (Figure 2). It is estimated that there are greater than 1,000 plants present in these 3 areas. This project will eliminate this species from the site. It is recommended that topsoil containing seeds be stripped from the site and relocated to a suitable location prior to project grading.

Lost Hills saltbush

Natural history – This species was considered by Abrams (1951) to be a subspecies of *A. cordulata*, but Munz and Keck (1973) and Hickman (1993) consider it to be a separate species. This is a soft gray-green scurfy annual, with tiny white bran-like scales on its

stems and leaves. Stems are slender and spreading. Depending on rainfall in any given year, plants can range from 1-inch tall (or not germinate at all) to 8 inches tall. This plant is known from alkali Playa/Saltbush Scrub habitats.

Occurrence on the project site and potential impacts. – Although the site contains alkaline soils, the habitat is not alkali Playa/Saltbush Scrub. The associated species of spiny saltbush, seepweed, iodine bush, and *frankenian* are not present on the site, making its occurrence there unlikely. Similarly, the high level of disturbance is unfavorable for this species. Impacts to this species are not expected to occur as a result of this project.

California jewelflower

Natural history – The California jewelflower is an erect annual reaching a height of 6 to 15 inches. Foliage is gray-green, with heart-shaped clasping stem leaves and wavy-margined strap-shaped basal leaves. Unopened flowers appear deep maroon in color. Open flowers are white to greenish-yellow. Suitable habitat for this species is non-alkaline to slightly alkaline sandy loam soils of relatively undisturbed grassland communities below an elevation of 3,000 feet.

Historically, the range of the species included the upper San Joaquin and adjacent valleys from Coalinga in the northwest to the Cuyama Valley in the southwest. Of 41 historical locations, only two are known to support extant populations, one in the Upper Cuyama Valley of Santa Barbara County and one on the Carrizo Plain (Taylor and Davilla 1986). Recently, extant populations have been found on the Carrizo Plain in San Luis Obispo County, and in the Kreyenhagen Hills of Fresno County. An attempt has been made to establish an artificial population at the Paine Wildflower Preserve, Kern County.

Occurrence on the project site and potential impacts – This plant was not found on the project site and it is not expected to occur there. Accordingly, the proposed project is not expected to cause any impacts to this species.

Recurved larkspur

Natural history – This very showy species is characterized by strongly bicolored flowers with a spur that is recurved at maturity. It has erect reddish to purple stems that range from 8 to 24 inches in height. Stems are slightly hairy below and glabrous in the inflorescence. Leaves are several, 0.6 to 1.2 inches long, palmatifid into few-parted divisions, and hairy beneath. The inflorescence supports 15-24 flowers that have light blue sepals and cream to white petals.

Recurved larkspur grows in sub-alkaline soils supporting shrubby or grassland habitats of the western Central Valley from Contra Costa County to Kern County. Co-occurring species include saltbush, brome grass, and wild oats. Much of the original habitat of recurved larkspur has been lost to agriculture. Many of the historic populations have either been extirpated or lack modern field confirmations. Most extant populations occur in the lower foothills of the western San Joaquin Valley, and are usually found on north-facing slopes

Occurrence on the project site and potential impacts – This plant was not found on the project site and it is not expected to occur there. Accordingly, the proposed project would not cause any impacts to this species.

Hoover's woolly-star

Natural history – Hoover's eriastrum is a small annual species that reaches a height of 4 to 6 inches. Stems typically support erect branches. Leaves are entire and linear to three-cleft with two lateral lobes. The small and inconspicuous flowers are organized into small heads. Corollas range in color from pale bluish to white or cream yellow. Capsules are oblong-ellipsoid with two to four seeds each. Flowers usually appear in mid- to late spring (April to May).

The habitat for Hoover's eriastrum is valley grassland with scattered saltbush (*Atriplex polycarpa* or *A. spinifera*). The plants are often found in openings in Atriplex Scrub

where cryptogamic crusts have developed on the soil surface. Associated species include red brome, annual fescue, and goldfields (*Lasthenia californica*).

Hoover's eriastrum is known to occur from Fresno County and Kern County (Bakersfield area and west and northwest of Bakersfield). It is also known from the Carrizo Plain (San Luis Obispo County) and the Cuyama Valley (Santa Barbara County). It is apparently not found in the Tulare Lake Basin (Kings County) between Fresno County and Kern County (Taylor and Davilla 1986).

This small, ephemeral, annual species was once fairly widespread on the crusty alkaline soils of the San Joaquin Valley. Much of its native habitat has been converted to agriculture. It was known to be extant at 23 sites throughout the valley, based on a 1986 study funded by the USFWS (Taylor and Davilla 1986). The species has subsequently been found at many sites bordering the Elk Hills in Kern County.

Occurrence on the project site and potential impacts – This plant was not found on the project site and it is not expected to occur there. Accordingly, the proposed project is not expected to cause any impacts to this species.

Kern mallow

Natural history – Kern mallow is a species of limited distribution, listed as endangered by both the State of California and USFWS. A similar species, *Eremalche parryi parryi*, is sympatric with *E. parryi kernensis* and there is intergradation of some of the morphological characters of the two species. A third species, *E. caerulea*, was suggested by Leonelli (1986); however, its status as a valid taxon has been questioned (Taylor and Davilla 1986) and it is not currently recognized. Various floristic manuals (Munz and Keck 1973; Abrams 1951) describe *E. parryi kernensis* (listed as *Malvastrum kernensis*) as having white to lavender petals and the petals of *E. parryi parryi* as pinkish to purple. If the petals are white or only slightly tinged, it is safe to assign the plant to *E. parryi kernensis*. In a 1992 survey we found a full range of flower color and therefore additional characteristics were needed for positive identification (Stebbins et al. 1992).

Many of the morphological characteristics used to distinguish *E. parryi kernensis* from *E. parryi parryi* were evaluated by Taylor and Davilla (1986) and Taylor. They found (and comparable studies agree) that there is enough variation in some of the characters that the value in separating the two species is questionable. For example, the calyx lobes of *E. parryi kernensis* are described as lance-attenuate and those of *E. parryi parryi* as abrupt acuminate (Wiggins 1951). During the 1992 study cited above we found a full range of shapes in-between these two as did (Taylor and Davilla 1986). Calyx lobe shape was used only when it fit precisely and only if other characters supported it.

Both *E. parryi kernensis* and *E. parryi parryi* have stellate pubescence (star-like hairs) in which there exists a varying number of rays. The range of stellae rays for *E. parryi kernensis* is 5-7 and for *E. parryi parryi* 10-20. This characteristic was evaluated by (Taylor and Davilla 1986) and found to be reliable. We used this feature extensively in 1992 and believe it to be consistent and valid for taxonomic purposes. Carpel number was used by Wolf (1938) to separate *E. parryi kernensis* from *E. parryi parryi*, the former having 8-13 carpels and the latter 14-18. Neither Leonelli (1986) or (Taylor and Davilla 1986) quantitatively evaluated this feature, however Taylor suggests that it may be of value. We used this difference and found it to support other stable morphological features. These characteristics are backed by more variable features such as petiole length, leaf shape and size, and calyx lobe characteristics when possible. A minimum of three features that are consistent for one species and not the other were used for the final identification of all specimens. Bates (1992) placed all individuals of *E. parryi* having pistillate flowers only into the subspecies *kernensis* regardless of other characteristics.

Occurrence on the project site and potential impacts – This plant was not found on the project site and it is not expected to occur there. Accordingly, the proposed project is not expected cause any impacts to this species.

San Joaquin woolly-threads

Natural history – San Joaquin woolly threads is a small, inconspicuous annual which may be 1 to 10 inches in height at maturity. Stems are multiple, decumbent and often somewhat succulent. Leaves and stems are typically loosely floccose to woolly-haired. Leaves are 1.5 inches long by about 0.25 inch wide with wavy margins. Individual flowers are arranged in heads that are clustered towards the ends of branches. Each head has four to seven phyllaries that are commonly black-tipped. Tiny yellow ray and disk flowers appear in late February or March. Ray flowers and their akenes are clearly distinguished from those of the disk.

San Joaquin woolly threads are found in valley grassland habitat types with silty sand or sandy loam soils at elevations ranging from 400 feet to 1,200 feet. Valley saltbush is often the dominant shrub in these habitat types. The preferred microhabitat for this species consists of areas with reduced annual grass competition. It is not found where annual grasses are extremely dense and tall (Taylor 1987). This species is somewhat prostrate that allows it to persist under very heavy grazing pressure. Known populations in Fresno County occur in the Kettleman and Panoche Hills, Lost Hills, Panoche Valley, Silver Creek in the Panoche Region, on the Mendota Plain, and on the Arroyo Hondo Plain.

This species was once fairly common in the San Joaquin Valley. Jepson (1923) described it as being much more common during years of high spring rainfall, an observation that is consistent with other reports. Various land conversion activities have eliminated most of its habitat, which is why it was recently listed by the USFWS as an endangered species.

Occurrence on the project site and potential impacts – This plant was not found on the project site and it is not expected to occur there. Accordingly, the proposed project is not expected to cause any impacts to this species.

Sensitive Wildlife

Western spadefoot toad

Natural history – Western spadefoot toads are small (1.5 -2.5 inches long) members of the family Pelobatidae. Pelobatids are easily distinguished from true toads (family Bufonidae) by the presence of "spades" on the hind feet, elliptical pupils, comparatively smooth skin, and by the absence of paratoid glands. *S. h. hammondi* are dusky or gray-green above, with four irregular, light-colored stripes on the back. The wedge-shaped, thickened, glossy black "spade" on each hind foot aids in digging. They burrow by backing into the ground and pushing aside dirt with the "spades," using a circular motion. They are inactive during the dry season, retreating to self-made burrows, or those of pocket gophers, ground squirrels, or kangaroo rats. During the wet season, spadefoot toads feed primarily on aquatic invertebrates. They breed during the winter and spring (January through May) in pools that form after heavy rains, or in slow streams, reservoirs, or irrigation ditches. Breeding in larger pools may confer fitness advantages (Morey 1993). They aestivate after the waters have receded.

Western spadefoot toads are known from the Great Valley, bordering foothills, and Coast Ranges south of San Francisco Bay, into northwestern Baja California. Spadefoot toads are a species of the lowlands, frequenting washes, river floodplains, alluvial fans, playas, and alkali flats, but they also range into the foothills and mountains. They prefer areas of open vegetation and short grasses, where the soil is sandy or gravelly, but may also be found in open chaparral, and pine-oak woodlands (Stebbins 1985).

Spadefoot toads are now extinct throughout much of lowland southern California (Stebbins 1985). Agricultural conversion and loss of marshes, streams and vernal pools on the valley floor have caused the elimination of this species from much of its former range.

Occurrence on the project site and potential impacts – This amphibian was not found on the project site and it is not expected to occur there because of the lack of moist areas and the highly disturbed nature of the site. The pond that exists on the site is lined with 40

mil HDPE (high density polyethylene) and it is very biologically sterile. We did not find spadefoots at the pond and it is not likely that they occur there. Accordingly, the proposed project is not expected to cause any impacts to this species.

Blunt-nosed leopard lizard

Natural history – The blunt-nosed leopard lizard is a relatively robust lizard with a large head and blunt snout. It was historically distributed over the San Joaquin Valley and adjacent lower foothills, plains, and valleys (Montanucci 1965). Adult snout-vent length is approximately 3.5 to 5 inches (USFWS 1985), and total length may reach up to 13 inches. Coloration consists of a light grayish, tan, or brown background with a conspicuous pattern of dark overlaying spots and/or pale crossbars. During the spring courtship season both sexes may develop reddish markings on the sides, tail, and ventral surfaces. Juveniles usually show a similar, but more yellowish color pattern.

Approximately two to three eggs are laid in excavated chambers at the end of rodent burrows. Hatchlings emerge in early August (USFWS 1985).

Blunt-nosed leopard lizards are active during the day. Peak daily activity usually occurs when air temperatures are between 75 and 95 degrees Fahrenheit. Most annual activity occurs between the months of April and early October. Animals overwinter underground in rodent burrows (USFWS 1985). Food consists primarily of insects such as grasshoppers, although smaller lizards may also be consumed.

Leopard lizards occur on sparsely vegetated plains, lower canyon slopes, on valley floors, and in washes. Associated vegetation may include a variety of grasses, saltbush, golden bush, iodine bush, and seepweed (*Suaeda fruticosa*) (USFWS 1985). Results of systematic inventories for blunt-nosed leopard lizards on federal lands in the San Joaquin Valley have demonstrated that this species has an affinity for open habitats and wash systems with relatively level topography (Chesemore 1980; Jones 1980; O'Farrell 1980; O'Farrell et al. 1981).

Population densities of blunt-nosed leopard lizards are highly variable. Chesemore (1980), in a study of two sites near Taft (Kern County), estimated densities of between 0.1 and 0.5 lizards per acre. Densities of blunt-nosed leopard lizards at Pixley National Wildlife Refuge (Tulare County) ranged from 0.12 to 4.14 lizards per acre (Uptain et al. 1985).

Habitat loss is the principal reason for both state and federal listing of this species as endangered. Much of the historical habitat of this lizard has been converted to agricultural production. Data generated by the CDFG show that approximately 93 percent of wildlands present in the San Joaquin Valley were lost by 1979; under present rates of development, remaining habitats (exclusive of those receiving current protection) will be lost by 1996 (USFWS 1985). In addition to agricultural development, other secondary factors affecting the available habitat for this species include petroleum development, livestock grazing, and pesticide application (USFWS 1985).

Occurrence on the project site and potential impacts – Although blunt-nosed leopard lizards have been observed in the project area in past years, none have been sighted on the facility for the past several years, despite regular surveys (Paul Turek, pers. comm.). We did not observe any leopard lizards during our surveys. Habitat on the site seems to be suitable, except for the intensive disturbance and a lack of small mammal burrows that could be used for refugia. It is unlikely that blunt-nosed leopard lizards are present on the site and the proposed project is not expected to cause any impacts to this species.

San Joaquin coachwhip

Natural history – The San Joaquin coachwhip is a large, smooth scaled, slender snake. Its dorsal surface is olive-brown, tan-yellow, or buffy citrine and without lengthwise stripes. It is distinctive from other coachwhips in that it lacks dark neck bands.

Life history information of this subspecies is largely unknown, but information is available for other subspecies and is used to describe the San Joaquin coachwhip. The coachwhip is a swift, diurnal snake that maintains a high activity level (Sullivan 1981)

and a voluntarily higher body temperature than other snakes. (Brattstrom 1965; Hammerson 1977). They tend to remain in burrows until temperatures reach 28 degrees C (Hammerson 1989) resulting in emergence being late in the season, usually April or early May, and late in the morning. As temperatures warm through the season the Coachwhip becomes bimodal in its activity. Mating occurs in May and oviposition occurs in June or July. Clutch size is between 4 and 20 (Stebbins 1985). The primary prey of Coachwhips include small lizards and snakes, birds eggs, small mammals, and carrion (Cunningham 1959).

The San Joaquin Coachwhip occur in open, dry vegetation associations with little or no tree cover (Morafka and Banta 1976). They are endemic to the San Joaquin Valley and occur from Colusa County in the north to the Grapevine in southern Kern County. They are limited in distribution to the east by the Sierra Nevada and they occur to the west into the inner Coast Ranges. They have been found to an elevation of about 900 meters (Jennings and Hayes 1994).

Occurrence on the project site and potential impacts – We did not observe any coachwhips during our surveys. Habitat on the site seems to be suitable, except for the intensive disturbance and a lack of small mammal burrows that could be used as refugia. It is unlikely that coachwhips are present on the site, except as incidentals moving through the area from nearby habitat. The proposed project is not expected to cause any impacts to this species.

California horned lizard

Natural history –The California horned lizard is a flat bodied lizard that is up to 6 inches in length. It has a large crown of spines on the posterior portion of its head. The cranial spines of the California horned lizard tend to be similar in size, whereas the central two spines tend to be longer in the other subspecies. There are large dark spots on the side of its neck and there are two rows of pointed scales at the fringe of its trunk. Coloration is reddish, brown, yellow, or grey with dark blotches on the back. This lizard lays a clutch

of 6 to 12 eggs in May or June, and hatchlings emerge in July or September. Their main food source is ants.

This lizard is diurnal and will inflate with air when frightened so as to avoid predation. It will also threaten would-be enemies with an open mouth and hissing noises, and will tilt its head to expose the cranial spines. It will also bite and spray blood from the corner of its eyes as defensive measures.

The California horned lizard occurs along the coast north of San Francisco Bay to Los Angeles, and inland into the Sacramento and San Joaquin valleys. It inhabits open areas of sandy soil and low sparse vegetation

Occurrence on the project site and potential impacts – We did not observe any horned lizards during our surveys. Habitat on the site seems to be suitable, except for the intensive disturbance and a lack of small mammal burrows that could be used as refugia. The site also lacks native ants, which are the preferred food source of horned lizards. It is unlikely that horned lizards are present on the site and the proposed project is not expected to cause any impacts to this species.

Northern harrier

Natural history – The Northern Harrier is a medium-sized (length = 17-24 inches; wing span = 38-48 inches), relatively slender hawk that is most easily recognized by its conspicuous white rump. Wings are comparatively long, as in falcons, but are more rounded. This raptor is unusual in that sexual dichromatism is pronounced: females are mostly brown above and white with brown streaks below, whereas males are generally grayish above, white below, and the wing tips are black. Also diagnostic is the erratic flight of leisurely wing beats and swift glides, usually low to the ground, and with wing tips up-turned. Harriers also often perch close to the ground.

Northern Harriers range throughout North America, and in California they are usually year-round residents (some southern California birds may be over-winter visitors).

Formerly known as the marsh hawk, these birds inhabit marshes, fields, and prairies. Diet consists primarily of small rodents, though frogs, reptiles, and insects are also taken (Bent 1961).

Occurrence on the project site and potential impacts – We had a total of 3 sightings of harriers on the project site and suspect that this represents a male and female pair. The harriers were observed foraging over the site and it is unlikely that the site provides breeding or nesting habitat. Accordingly, impacts from the projects would be limited to loss of foraging habitat and are not considered significant.

Western burrowing owl

Natural history – Adult burrowing owls are sandy colored over the head, back, and wings, with barring on the breast and belly. During summer months females usually appear darker than males (Farrand 1983). Juveniles are smaller, and buffy below. Burrowing owls are medium-sized (body length averages 9.5 inches), yellow-eyed owls with disproportionately long legs. The tail is very short; the head is rounded and lacks ear tufts. The long, exposed lower legs, and the characteristic "bowing" behavior that the bird displays when approached or otherwise disturbed, quickly distinguish this owl from all other small owls (Farrand 1983). During the nesting season, the burrowing owl often perches on a low post or at the entrance to a burrow. Calls are often synchronized with bowing behavior. When approached or flushed, both sexes commonly give a sharp "chatter" call. A rasping call, similar to a rattlesnake's rattle, may be given from inside the burrow when the bird is disturbed (Farrand 1983).

The burrowing owl breeds in midwestern and western North America, and also in south-central Florida. They winter throughout their breeding range and south to Central America. Several breeding populations exist in the Central Valley. Burrowing owls often wander outside their breeding range in the winter.

These owls use burrows throughout the year and although there is evidence that they will dig their own burrows (Thomsen 1971), they more commonly use old burrows dug by

mammals. Resident burrowing owls begin pair formation as early as December, and migratory birds begin upon their arrival in the breeding area, usually in March and April. Six to eleven eggs are laid during late March to early May. Incubation lasts about four weeks. The young emerge from the burrow at about two weeks of age and are able to fly well at about six weeks (Zarn 1974). Nests are generally located in bare, level ground in abandoned mammal burrows (Verner and Boss 1980). Nest chambers in the southern San Joaquin Valley are usually 2 feet or more beneath the surface at the end of a burrow that may be from 5 to 18 feet in length (JHA 1992).

Burrowing owls inhabit dry, open grasslands, rolling hills, desert floors, prairies, savannas, agricultural land, and other areas of open, bare ground. This species prefers lower elevation habitats (Verner and Boss 1980). These owls will also inhabit open areas near human habitation, such as airports, golf courses, shoulders of roads, railroad embankments, and the banks of irrigation ditches and reservoirs.

Burrowing owls forage during any time of the day or night in areas adjacent to burrows and nest sites. Zarn (1974), Marti (1969, 1974), and Thomsen (1971) have thoroughly studied the food habits of burrowing owls and agree that these small owls feed primarily on insects and other arthropods, small birds, and mammals. They will take whatever prey species are most abundant in their area, including a wide variety of mice species, other rodents, frogs, toads, crayfish, birds, or reptiles. In the southern San Joaquin Valley, some of their major invertebrate prey include large beetles (*Eleodes* spp.), grasshoppers, crickets, centipedes, and scorpions (Small 1974).

Burrowing owls were formerly a common, even locally abundant, permanent resident throughout much of California. A decline noticeable in the Fresno area by the early 1900's (Miller 1903, Tyler 1916) and statewide by the 1940s (Grinnell and Miller 1944) has continued through to the present (Remsen 1978). In recent years, burrowing owl numbers have been declining throughout California. For example, Remsen (1978) reported that there had been an estimated 70 percent reduction in suitable habitat in Tulare County between 1968 and 1978.

Conversion of grasslands and pasturelands to agriculture, increasing urban development, and destruction of ground squirrel colonies have been the main factors causing the decline of the burrowing owl population (Zarn 1974). Assimilation of poisons applied to ground squirrel colonies has probably also taken a toll (Remsen 1978). The propensity for nesting in roadside banks makes burrowing owls particularly vulnerable to roadside shooting, being hit by cars, road maintenance operations, and general harassment.

Burrowing owls are usually tolerant of human activity, but are vulnerable to predation by domestic cats and dogs. They are also vulnerable to burrow loss, so construction or maintenance activity that compacts soil or otherwise destroys burrows should be avoided.

Occurrence on the project site and potential impacts – We found no burrowing owls inhabiting the project site and found no sign that is characteristic of this species (burrows, white wash, feathers, pellets, remains). The high level of disturbance and low level of prey likely combine to preclude them from the site. Accordingly, impacts to this species are not expected.

Mountain plover

Natural history – The large (body length averages 8 to 9 inches), long-legged mountain plover is the plainest of North American plovers. Mountain plovers are sandy-brown above and creamy-white below; the breast is washed with gray-buff. These birds are fast runners and do not often fly. If disturbed, they will take off and fly low, with alternate flapping and soaring, with wings down-curved.

The breeding range of this species is entirely outside of California. Mountain plovers breed in parts of Montana, Wyoming, New Mexico, and Oklahoma, with a primary breeding area in northeastern Colorado. Mountain plovers winter in flocks in the Sacramento and San Joaquin valleys, in central and south-coastal California, east locally to the southwestern deserts, and south to central Mexico (Farrand 1983). In winter (mid-October to March) flocks are regularly found on the Carrizo Plain, other parts of San Luis Obispo County, and along the western edge of Kern, Kings, Tulare, and Fresno counties.

The mountain plover is one of few shorebirds that lives mainly away from water in arid regions (Terres 1980). On winter range in the Tulare Basin, mountain plovers favor arid, sparsely vegetated grasslands, alkaline flats, sprouting grain fields, grazed pastures, fallow agricultural land, and freshly plowed fields (Terres 1980). During the winter, mountain plovers feed almost exclusively on insects such as grasshoppers, crickets, beetles, and flies (Terres 1980). In freshly plowed fields during the winter, small flocks of mountain plovers may be observed in the company of gulls, horned larks, and water pipits as they forage for newly unearthed terrestrial insects like crickets, grubs, and grasshoppers. It is not unusual to see foraging mountain plovers following a tractor and disc.

The USFWS and CDFG are concerned about declining numbers of mountain plovers in the Tulare Basin and in neighboring portions of the San Joaquin Valley and Carrizo Plain. Current research on this species is intended to determine whether declining populations are the result of a restricted breeding range, pathogens or parasites, or a loss of foraging habitat on the species' wintering grounds. Market hunting prior to 1915 certainly had a direct impact on the number of wintering birds. The major threat to mountain plover in the Tulare Basin is the loss of foraging habitat through the conversion of native grassland and scrub communities to incompatible land uses. Conversion and fragmentation of extensive agricultural land (grazed pasture) to irrigated row crops, conversion of rotated, cultivated field crops (including grain) to permanent crops (orchards and vineyards), and conversion of suitable agricultural foraging areas to urban uses further reduces the available foraging habitat. In addition, pesticides and shooting (Tyler 1916) may have contributed to their decline.

Occurrence on the project site and potential impacts – No mountain plovers were observed on the project site, but the surveys were conducted during a time inappropriate to determine their presence. However, the habitat that is present and its condition indicate that mountain plovers would not tend to congregate on the site. Accordingly, impacts to this species from the project would not be considered significant.

loggerhead shrike

Natural history – The loggerhead shrike is a robin-sized bird (length = 9 inches) with a raptor-like, hooked bill. Dorsal coloration is bluish-gray, and ventral coloration is whitish, with very faint barring. Juveniles are more brownish. Most distinctive is the black eye mask, and in flight, the white wing patches on the contrasting dark wings. Distinguished from the northern mockingbird, which it resembles in flight, by darker wing and smaller white wing patches.; also, the mockingbird lacks conspicuous eye patch and hooked bill, and has slower wing beats.

This shrike occurs over most of the U.S., Mexico, and central Canada. In California, the shrike occurs as a resident over most of the state, being absent from high mountain regions. Habitat consists of open areas such as savannas and deserts, where bushes, small trees, or other perch sites are available. Also called the "butcher bird," the loggerhead shrike is an impressive predator that characteristically impales its prey on thorns, barbed wire, or other sharp projections. Lacking talons, the shrike impales its prey to facilitate feeding, or to store it for future consumption. Diet includes a variety of insects and spiders, small reptiles, rodents, and small birds (Bent 1958).

The primary threat to the loggerhead shrike in the San Joaquin Valley is the loss of suitable habitat through conversion to agriculture, urbanization, and petroleum development.

Occurrence on the project site and potential impacts – Loggerhead shrikes were observed foraging over and adjacent to the project site during our surveys. It is not likely that this bird breeds on the site. This project would result in the elimination of low quality foraging habitat, but this would not be considered a significant impact.

San Joaquin antelope squirrel

Natural history – The San Joaquin antelope squirrel is a smallish yellow-brown squirrel with two characteristic white stripes along the dorsal side beginning just at the base of the neck and extending the length of the body. In contrast to most other southern San

Joaquin native mammals, San Joaquin antelope squirrels are diurnal and are active year-round. Information on reproduction is sparse, but young are apparently born in March and appear above ground in early April (Kakiba-Russell et al. 1991). The average home range for the squirrel is estimated variously as 11 ac (4.5 ha) (Hawbecker 1958 in Kakiba-Russell et al. 1991) and 12-50 ac (5-20 ha) (Harris and Stearns 1990).

Hawbecker's earlier studies indicated that prime habitat might support 4 to 11 squirrels per hectare, but the more recent study by Harris and Stearns (1990) generally found 2 to 5 animals per hectare. One conclusion may be that much of the higher quality habitat has been lost or degraded and that currently San Joaquin antelope squirrels are occupying more marginal quality habitats (Kakiba-Russell et al. 1991).

San Joaquin antelope squirrels are most often found in grasslands or open shrublands (Harris and Stearns 1990). Associated shrubs include saltbush, ephedra, bladder pod (*Cleome isomeris*), goldenbush (*Isocoma acradenius* = *Haplopappus a.*), snakeweed (*Gutierrezia bracteata*), and others. Low density populations have also been located in communities dominated by iodine bush and spiny saltbush and that have alkaline soils (CDFG 1989). Moderate densities of San Joaquin antelope squirrels have been found in areas lacking shrubs, but containing populations of giant kangaroo rats (CDFG 1990). It appears that San Joaquin antelope squirrels rarely occupy burrows they have dug; instead, they tend to use burrows dug by kangaroo rats. In grassy, shrubless areas, Harris and Stearns (1990) found San Joaquin antelope squirrels only in areas with high kangaroo rat densities.

Hawbecker (1958 in Kakiba-Russell et al. 1991) believed that San Joaquin antelope squirrels avoided alkaline soils. However, more recent data indicate that antelope squirrels occur in alkaline soil situations, such as valley sink scrub and valley saltbush scrub on the Carrizo Plain, although they are less common in these areas than in the others discussed above. This is true for all burrowing species, and is possibly the result of alkalinity or more importantly, the high water table and periodic inundations of these low-lying communities (Kakiba-Russell et al. 1991).

San Joaquin antelope squirrels are omnivorous, with a diet consisting primarily of grass and herb seeds and insects (CDFG 1989). Hawbecker's 1947 study described the primary plants eaten as red-stem filaree and red brome (Kakiba-Russell et al. 1991). Other species reported as being eaten were ephedra seeds, clover (*Trifolium* spp.), newly sprouted locoweed (*Astragalus oxyphysus*), fiddleneck, and even turpentine weed (*Trichostema lanceolatum*). Insects reported as being consumed by the squirrel include crickets, large beetles, and grasshoppers (Kakiba-Russell et al. 1991). They are also known to eat carrion (Uptain, pers. obs.)

The San Joaquin antelope squirrel originally occurred on the western side of the San Joaquin Valley from southern Merced County south to Kern County, the Carrizo Plain in San Luis Obispo County, and the Cuyama Valley in San Luis Obispo and Santa Barbara counties (CDFG 1980). Prior to cultivation of the San Joaquin Valley, the San Joaquin antelope squirrel occupied approximately 3,456,000 acres (Williams 1980). More than 80 percent of this estimated original geographic range is now under cultivation, with this species having been nearly extirpated on the eastern side of the San Joaquin Valley (Williams 1980). No large tracts of prime habitat remain, and only about 15 percent of the remaining habitat is considered to be good to fair in quality. San Joaquin antelope squirrels now occur only in the Tulare Lake Basin and in adjacent valleys to the west (Williams 1980).

Loss of habitats to agricultural development and other habitat alteration continues to threaten antelope squirrel populations throughout their range. Poor habitat quality and fragmentation of habitat are significant concerns for the long-term persistence of this species on the floor of the Valley (Harris and Stearns 1990). Rodenticides may be responsible for major population declines. Overgrazing by livestock constitutes a great long-term threat to populations due to habitat degradation, erosion, and the consequent reduction in carrying capacity (Kakiba-Russell et al. 1991). In addition, exotic animals may spread disease or out-compete the squirrel. Feral cats and dogs or the red fox may place an abnormal predation burden on the antelope squirrel (Kakiba-Russell et al. 1991). In addition to the non-native competitors, the California ground squirrel tends to displace

the San Joaquin ground squirrel from its burrow systems and surrounding food caches. On small habitat fragments surrounded by disturbed or agricultural lands, the potential for California ground squirrels to have a negative impact on San Joaquin antelope squirrels may be significant (Harris and Stearns 1990).

Occurrence on the project site and potential impacts – Although San Joaquin antelope ground squirrels have been observed on the Waste Management's facility, they have not been observed in the project site, even during our surveys. The habitat conditions on the site (high level of disturbance and lack of small mammal burrows) have likely acted to exclude them. Accordingly, the proposed project will not result in significant impacts to this species.

short-nosed kangaroo rat

Natural history – The short-nosed kangaroo rat is a small species of the genus *Dipodomys*, measuring up to 9 inches in total length. It is one of three recognized subspecies of the San Joaquin kangaroo rat (*Dipodomys nitratoides*). Overall appearance is that of a compact rodent, with a flattened head, small ears, short neck, and cylindrical body. The hind legs are elongated and serve as the principal means of locomotion. The long tufted tail, comprising about one-half of the total length of the animal, provides balance. Coloration is brownish above, changing to whitish ventrally. The underside of the tail is also white in coloration. The presence of four toes on the feet of this taxon helps to distinguish it from other sympatric kangaroo rat species (Uptain 1989). It is best distinguished from its closest relatives, the Tipton kangaroo rat and Fresno kangaroo rat, by hind foot length (Booolootian 1954).

Short-nosed kangaroo rats excavate shallow burrows from which animals emerge at night to forage for seeds. Often, all or a significant portion of the nightly harvest is cached for later use. When foraging, kangaroo rats hold seeds in fur-lined pouches on the sides of the mouth. Little information is available on the population densities of short-nosed kangaroo rats. The species is reported as breeding throughout the year. Known litters have consisted of two young (Jameson and Peeters 1986).

Short-nosed kangaroo rats are generally found on flat and gently sloping terrain and on hill tops in scrub vegetation (primarily saltbush). They are found on friable, sometimes alkaline soils. Small populations occur on dikes that are secure from winter flooding, then move into seasonally flooded iodine bush (*Allenrolfea occidentalis*) shrublands during the summer months when at least some individuals reproduce. Light to moderate grazing by livestock probably enhances habitat for short-nosed kangaroo rats (Williams 1986).

Short-nosed kangaroo rats are found on the western side of the San Joaquin Valley, from near Los Banos, Merced County, southward west of the San Joaquin River in a line approximately coincident with the Kettleman Hills, Lost Hills, and Elk Hills of the southern end of the Valley. They also occur in the Panoche Valley, San Benito County, the Sunflower Valley, Kings County, the Antelope Plain in Kern County, the Carrizo Plain in San Luis Obispo County, the Cuyama Valley in San Luis Obispo and Santa Barbara counties, and at the edge of the valley floor around the southern end of the San Joaquin Valley from the vicinity of Maricopa on the west, to east of Bakersfield on the east (Hall 1981, Williams 1985, and unpubl. data. in Williams 1986).

Loss of habitat has been extensive throughout the range of the short-nosed kangaroo rat, particularly on flatter lands in the Cuyama, San Joaquin and Panoche valleys, and on the Antelope and Carrizo plains. Cultivation of native communities has been the principal reason for loss of habitat. Relatively small, isolated populations are found on the southern Antelope Plain west of Buttonwillow and in the vicinity of Taft and Maricopa, Kern County, on uncultivated sites in the Kettleman Hills, and in and around oil fields near Coalinga, Fresno County. They also occur west of Interstate Highway 5 on un-irrigated lands at the edge of the valley in Fresno County, and around Soda Lake on the Carrizo Plain, San Luis Obispo County. Where they are found they are typically common. A major cause for concern is that virtually all of the areas where short-nosed kangaroo rats are still found are privately owned and have moderate to good potential for cultivation. Only the lack of irrigation water has prevented cultivation of most areas until now.

Recent surveys by Williams in 1985 and earlier indicate that areas that previously supported healthy populations of the short-nosed kangaroo rat appear to no longer support this species (Kakiba-Russell et al. 1991). Loss of habitat is the principal cause of reduction in the range and abundance of the short-nosed kangaroo rat.

Occurrence on the project site and potential impacts – One kangaroo rat was observed during our surveys. Although this kangaroo rat was not captured and positively identified, it was very likely a young Heermann's kangaroo rat (*D. herrmanni*). Because this animal was young and we found no small mammal burrows or other sign on the site, and because there is suitable habitat nearby, outside of the fenced area, we feel that this animal emigrated from adjacent habitat. It is not likely that it was reared on the site. The lack of small mammal burrows and lack of any additional sign of kangaroo rats (burrows, scat, tail drags, etc) indicate that impacts to this species from the proposed project would not be considered significant.

American badger

Natural history – American badgers are low, squat animals with conspicuous silver-tipped pelage dorsally and a short, black-tipped tail. The most striking visual feature of this species is its striped face, consisting of a median white stripe proceeding from the tip of its nose to the back of its head. This stripe is flanked by alternating white and dark stripes giving way to bright, white-outlined ears. The badger's wide flattened body is supported by short but powerful legs. The front feet are fitted with noticeably long claws that are especially well-suited for digging out the burrows of the rodents on which it feeds. Badgers are solitary animals. They usually forage for burrowing prey such as gophers, ground squirrels, marmots, and kangaroo rats, although they are known to take a variety of nesting mammals, reptiles, and birds

Historically, badgers are thought to have been fairly widespread in the open grassland habitats of the lower San Joaquin Valley. Their modern San Joaquin Valley distribution is essentially restricted to the limited, often isolated and remote tracts of native grassland and shrubland habitats. Cultivated lands have been reported to provide little usable

habitat for this species, and badgers are believed to be declining throughout California (Williams 1986).

Badger densities are variable and some reports have suggested that there is little difference between the home range requirements of males and females. Other reports have shown that a seasonal difference in the home range of individual animals exists (Sargent and Warner 1972; and Messick and Hornocker 1981).

In California, badgers range throughout the state except for the humid coastal forests of northwestern California in Del Norte County, and the northwestern portion of Humboldt County (Williams 1986). Badger populations have declined drastically within California over the past century (Grinnel et al. 1937). Grinnel et al. (1937) noted that badgers were reduced in numbers throughout California, but were still numerous within the San Joaquin Valley. Badgers now survive in low numbers in the San Joaquin Valley on the periphery of the valley and adjacent lowlands to the west in eastern Monterey, San Benito, and San Luis Obispo counties (Williams 1986).

The principal cause of the decline in American badger populations is the conversion of native grassland habitats to modern agricultural uses. Although no specific estimates are available, American badgers doubtless have suffered a similar reduction in suitable habitat as have other wildlife species resident on the valley floor. Deliberate killing, as well as direct and secondary mortality from rodent poisoning, have also contributed to their decline.

Occurrence on the project site and potential impacts – One very old badger digging was found on the site during our surveys – no dens were found. The entire facility has been fenced with a fox-proof fence for several years. This fence is buried 2 feet under ground and also acts to exclude badgers. Accordingly, we suspect that there is no current foraging or denning by badgers on the site. Any impacts to this species from the proposed project would not be considered significant.

San Joaquin kit fox

Natural history – The San Joaquin kit fox is one of the eight recognized subspecies of kit fox. It resembles a small lanky dog in appearance, with disproportionately large ears containing an abundance of large, white inner guard hairs. The San Joaquin kit fox is the largest subspecies of kit fox, with adults weighing 4.5 to 5 lbs (2-2.3 kg). Total length is about 32 inches, including up to a 12-inch black-tipped tail. Coloration ranges from light buff to grayish along the back and tail, gray, rust, or yellowish along the sides, and white along the belly (O'Farrell 1983).

San Joaquin kit foxes are generally nocturnal, and are opportunistic carnivores. They feed on rodents, lagomorphs, birds, reptiles and insects, as well as on carrion such as road kills. Studies indicate that the primary food items may vary geographically and seasonally (Kakiba-Russell et al. 1991).

Dens are typically excavated in loose soil (O'Farrell 1983), but also occur in harder clay soils in the northern portion of their range. Dens are not found in saturated soils or in areas subjected to periodic flooding (Kakiba-Russell et al. 1991). Individual animals may utilize from 3 to 24 separate dens (Morrell 1972). Individual den entrances may range from 1 to 36 (O'Farrell 1983), and may extend into several individual tunnels and chambers reaching depths of up to 10 feet (O'Farrell and Scrivner 1987). Most dens are vacant at any given time. During times when dens are unoccupied by kit fox, they may be occupied by other burrowing animals such as badger, ground squirrels, skunks, and burrowing owls (Kakiba-Russell et al. 1991). Although occupied dens may show freshly excavated soil, scats, and prey remains (O'Farrell and Scrivner 1987), such obvious sign may also be inconspicuous or absent (Hall 1983). Typical den entrances are characteristically higher than wide, and are sufficiently small to prevent access by large carnivores such as coyotes. Den entrance hole dimensions are generally about 8 to 10 inches in height and less than 8 inches in width (O'Farrell and Scrivner 1987), but may be as small as 4 inches in width. Burrows of other animals, particularly California ground squirrels (*Spermophilus beecheyi*), are opportunistically enlarged and utilized as den sites by San Joaquin kit foxes (Balestreri 1981). Most dens are found in areas with slope

angles of less than 40 degrees, and natal and pupping dens are found more frequently on gentle slopes or in flat terrain. Man-made structures such as culverts and pipes may also be used as dens (O'Farrell 1983).

Individual San Joaquin kit foxes have an average home range of 1 to 2 square miles (Knapp 1978; Morrell 1972). Courtship and mating occur in December and January. Pups are typically born in February and March, and begin to disperse at around five months of age (Morrell 1972; O'Farrell 1983). Survival rates of kit fox pups are low, as about 75 percent die before the age of eight months (O'Farrell 1984).

San Joaquin kit foxes occur in valley saltbush scrub, valley sink scrub, Interior Coast Range saltbush scrub, upper sonoran sub-shrub scrub, non-native grassland, and valley sacaton grassland. In general, kit fox are not found in densely wooded areas, wetland areas, or areas subject to frequent periodic flooding. Habitats altered by agricultural and urban developments are unsuitable for long-term kit fox inhabitation (Kakiba-Russell et al. 1991).

The San Joaquin kit fox was historically distributed over a large portion of central California, extending roughly from southeastern Contra Costa County south along the eastern flanks of the Interior Coast Range to the southern San Joaquin Valley, including major portions of western Kern County and Tulare County. San Joaquin kit fox were also distributed through adjacent valleys, foothills, and plains, including portions of San Luis Obispo County, Monterey County, and the Santa Clara Valley on the western-side of the Interior Coast Range (Morrell 1975).

Habitat conversion for agricultural and a variety of urban uses has been the principal cause of significant kit fox population declines, and the reason for both state and federal listing of this species. O'Farrell (1983) estimated that approximately 42 percent of suitable kit fox habitat was lost as a result of such developments. Since that estimate was made, substantial additional habitat loss has occurred. Mortality of kit foxes has been documented from attacks by coyotes, road kills, conversion of habitat, shooting,

drowning, entombment, pneumonia, and starvation (Morrell 1975; Knapp 1978; O'Farrell et al. 1986; Berry et al. 1987). Additionally, the use of rodenticides has resulted in secondary mortality, since kit foxes are vulnerable to poisoning through consumption of poisoned rodents.

Occurrence on the project site and potential impacts – No potential dens, scat, tracks, or other sign of kit foxes were observed during our surveys. Although foxes are known to occur in the general vicinity of the facility and, in fact, used to occur on the facility, the fox-proof fence that surrounds the area has effectively excluded them from the project site. No significant impacts are expected to occur to San Joaquin kit foxes from the proposed project.

CONCLUSIONS AND RECOMMENDATIONS

One sensitive plant and three sensitive wildlife species were observed during our surveys; *Atriplex cordulata*, northern harrier, loggerhead shrike, and American badger (Table 2). The site is unsuitable for the remaining sensitive species, with the exception of short-nosed kangaroo rats. Small mammal trapping would be required to positively determine the presence of this mammal. However, the lack of small mammal burrows, scat, track, or tail drags of kangaroo rats indicate that, even if present, they would be in extremely low numbers. Accordingly, project impacts to kangaroo rats would not be considered significant. Impacts to the other wildlife species found are considered insignificant.

Impacts to *Atriplex cordulata* would be significant. It is our recommendation that the areas that contain this species be avoided. If avoidance is not possible, then the topsoil that contains the seed bank (the top 6 inches of soil) of *A. cordulata* should be salvaged and re-spread in a suitable area prior to the site being disturbed. No other actions are warranted, except a pre-construction survey immediately prior to grading.

REFERENCES

Abrams, L. 1951. Illustrated Flora of the Pacific States. Vols. 1-4. Stanford Press.

Balestreri, A.N. 1981. Status of the San Joaquin kit fox at Camp Roberts, California, 1981. Prepared for the Department of the Army, Directorate of Facilities Engineering, Fort Ord, California. Contract No. DAKF03-81-M-C73

Bates, D.M. 1992. Gynodioecy, endangerment, and status of *Eremalche kernensis* (Malvaceae). *Phytology* 72:48-54.

Bent, A. C. 1958. Life histories of North American blackbirds, orioles, tanagers, and their allies. U.S. Nat. Mus. Bull. 211. Washington, DC

Bent, A. C. 1961. Life histories of North American birds of prey. Dover publications, Inc., New York, New York, USA

Berry, W.H., J.H. Scrivner, T.P. O'Farrell, C.E. Harris, T.T. Kato, and P.M. McCue. 1987. Sources and rates of mortality of the San Joaquin kit fox, Naval Petroleum Preserve #1, Kern County, California. Department of Energy Topical Report, EG&G Energy Measurements Group, Goleta, CA. Report No. EGG 10282-2154

Bolootian, R.A. 1954. An analysis of the subspecific variation in *Dipodomys nitratoides*. *Journal of Mammalogy*, 55:570-577

Brattstrom, B.H. 1965. Body temperature of reptiles. *The American Midland Naturalist* 73(2):376-422.

California Department of Fish and Game. 1980. At the crossroads: a report on California's endangered and rare fish and wildlife. Sacramento, California

California Department of Fish and Game. 1989. 1988 annual report on the status of California's state listed threatened and endangered plants and animals. The Resources Agency, Department of Fish and Game, Sacramento. 129 pp

California Department of Fish and Game. 1990. Survey methodologies for San Joaquin kit fox, blunt-nosed leopard lizard, San Joaquin antelope ground squirrel, Tipton kangaroo rat, giant kangaroo rat. Unpubl. report prepared by Ron Rempel and Gail Presley, presented at the San Joaquin Valley endangered wildlife technical workshop for professional field biologists. The Wildlife Society.

Chesemore, D.L. 1980. Impact of oil and gas development on blunt-nosed leopard lizards. Final report, U.S. Bureau of Land Management, Bakersfield, Ca. 74pp.

Cunningham, J.D. 1959. Reproduction and food of some California snakes. *Herpetologica* 15(1):17-19.

Farrand, J., Jr., ed. 1983. The Audubon Society master guide to birding, Vol. 3. Alfred A. Knopf, Inc., New York, NY. 399 pp.

Grinnell, J., and A.H. Miller. 1944. Distribution of the birds of California. Pac. Coast Avifauna No. 27. 608 pp

Grinnell, J., J.S. Dixon, and J.M. Linsdale 1937. Fur-bearing mammals of California: their natural history, systematic status, and relations to man. University of California Press, Berkeley, CA. 763 pp

Hall, R.R. 1981. The mammals of North America. 2 Vols. John Wiley and Sons. 1,271 pp.

Hall, F.A. 1983. Status of the San Joaquin kit fox *Vulpes macrotis mutica* at the Bethany Wind Turbine Generation (WTG) Project site, Alameda, California. California Dept. of Fish and Game Bay-Delta Fishery Project. Prepared for the California Department of Water Resources

Hammerson, G.A. 1977. Head-body temperature differences monitored by telemetry in the snake *Masticophis flagellum piceus*. Comparative Biochemistry and Physiology 57(4A): 399-402.

Hammerson, G. A. 1989. Effects of weather and feeding on body temperature and activity in the snake *Masticophis flagellum*. Journal of Thermal Biology 14(4):219-224.

Harris, John H. and Danielle Stearns. 1990. Population density and census methods, habitat relationships and home range of the San Joaquin antelope squirrel, 1988-89. California Department of Fish and Game, Sacramento, CA. 56 pp.

Hawbecker, A.C. 1958. Survival and home range in the Nelson antelope ground squirrel. J. Mammalogy 39(2): 207-215

Hickman, J. C.(ed). 1993. The Jepson Manual. University of California Press, Berkeley, CA. 1400pp.

Jameson, E.W. Jr., and Hans J. Peeters. 1988. California mammals. University of California Press, Berkeley. 403 pp

Jennings, M.R. and M.P. Hayes. 1994. Amphibian and reptile species of special concern in California. Calif. Dept. of Fish and Game, Inland Fisheries Division, Rancho Codova, CA. 255pp

Jepson, W.L. 1923. A manual of the flowering plants of California. U.C. Press, Berkeley, Ca.

Jean Hopkins and Associates, Inc. 1992. Unpublished Administrative Draft Habitat Conservation Plan for the Kern Fan Element, prepared for the Department of Water Resources, ARCO Western Energy, and Kern County Water Agency. Jean Hopkins and Associates, Inc., Bethesda, MD.

Jones, L. 1980. Distributional study of the blunt-nosed leopard lizard, *Gambelia silus*, in the southern San Joaquin Valley, California. Contract No. YA-512-CT9-97. U.S. Bureau of Land Management, Bakersfield, Ca. 71pp.

Kakiba-Russell, Karyn, Elizabeth Hubert, and Linda Spiegel. 1991. Carrizo Plain Natural Area Biological Resources Inventory: sensitive species accounts. California Energy Commission: Sacramento, CA. 93 pp.

Knapp, D.K. 1978. Effects of agricultural development in Kern County, California, on the San Joaquin kit fox in 1977. Calif. Dept. of Fish and Game

Leonelli, S. 1986. An investigation of the taxonomic status of *Eremalche kernensis* C.B. Wolf (Malvaceae). M.S. thesis, Calif. State Univ. Lang Beach.

Marti, C.D. 1974. Feeding ecology of four sympatric owls. *Condor*, 73:162-176.

Marti, C.D. 1969. Some comparisons of the feeding ecology of four owls in north-central Colorado. *Southwestern Nat.*, 14:163-176.

Messick J.P. and M.G. Hornocker. 1981. Ecology of the badger in southwestern Idaho. *Wildlife Monographs*, (76): 1-53

Miller, J.M. 1903. Notes on the bird conditions of the Fresno district. *Condor*, 5:89-90.

Montanucci, R.R. 1965. Observations on the San Joaquin leopard lizard, *Crotophytus wislizenii silus*. *Stejneger. Herpetologica*, 21:270-283.

Morafka, D.J. and B.H. Banta. 1976. Ecological relationships of the recent herpetofauna of Pinnacles National Monument, Monterey and sSan Benito counties, California. *The Wassman Journal of Biology* 34(2):304-324.

Morey, S.R. 1993. Consequences of variation in larval environment on terrestrial growth in western spadefoot toad, *Scaphiopus hammondi*. 1993 conference of the western section of The Wildlife Society, February 23-27, Monterey, California, Abstract No. 55.

Morrell, S. 1975. San Joaquin kit fox distribution and abundance in 1975. Calif. Dept. Fish and Game. *Wildl. Mgmt. Rept. No. 75-3*. 25 pp

Morrell, S. 1972. Life history of the San Joaquin kit fox. *Calif. Fish and Game*. 58(3):162-74.

Munz, P. A. and D. D. Keck. 1973. A California Flora and Supplement. University of California Press, Berkeley, CA.

O'Farrell, T.P. 1980. Elk Hills endangered and threatened species program – phase 1 progress summary. Contract No. DE-ACVOB-76NV01183, U.S. Dept. of Energy, office of Naval Petroleum and Oil Shale Reserves, Washington, D.C.

O'Farrell, T.P. 1983. San Joaquin kit fox recovery plan. Prepared for the U.S. Fish and Wildlife Service, Portland, OR

O'Farrell, T.P. 1984. Conservation of the San Joaquin kit fox, *Vulpes macrotis mutica*, on the Naval Petroleum Reserves, California. Acta Zool. Fenn., 172:207-208

O'Farrell, T.P., P. McCue, and T. Katol. 1981. Potential of BLM lands in western Fresno and eastern San Benito and Monterey counties, California, as critical habitat for the endangered San Joaquin kit fox and blunt-nosed leopard lizard. Contract No. CA-010-IA1-11, U.S. Dept. of Energy, Nevada Operations.

O'Farrell, T.P., C.E. Harris, T.T. Kato, and P.M. McCue. 1986. Biological assessment of the effects of petroleum production at maximum efficient rate, Naval Petroleum Reserve #1 (Elk Hills), Kern County, California, on the endangered San Joaquin kit fox, *Vulpes macrotica mutica*. U.S. Dept. of Energy Final Report, EG&G Energy Measurements Group, Goleta, California. Report No. EGG 10282-2107.

O'Farrell, T.P. and J.H. Scrivner. 1987. Distribution of the endangered giant kangaroo rat, *Dipodomys ingens*, on the Naval Petroleum Reserves, Kern County California. (EGG 10282-2173) Energy Measurements Group. Goleta, CA. Prepared for U.S. Department of Energy

Remsen, J.V., Jr. 1978. Bird species of special concern *in*: California: an annotated list of declining or vulnerable bird species. Calif. Dept. of Fish and Game. Wildlife Mgt. Branch Admin. Rep. 78-1. Sacramento, CA. 54 pp

Sargeant, A.B. and D.W. Warner. 1972. Movements and denning habits of a badger. Journal of Mammalogy, 53(1):207

Skinner, M. & B. Pavlik,. 1994. Inventory of rare and endangered vascular plants of California. Special Publication No. 1 (5'th ed.). California Native Plant Society, Sacramento, Calif.

Small, A. 1974. The birds of California. Winchester Press, New York, NY. 310 pp

Stebbins, R.C. 1985. A field guide to western reptiles and amphibians. Houghton Mifflin Co, Boston. 336pp.

Stebbins, J.C., T.E. Mallory, W. Trayler, and G. Moise. 1992. Botanical resource report; California Aqueduct San Joaquin Field Division. Report prepared for Dept. of Water Resources, Sacramento.

Sullivan, B.K. 1981. Distribution and relative abundance of snakes along a transect in California. *Journal of Herpetology* 15(2):247-248.

Taylor, D.W. 1987. Status survey for San Joaquin woolly-threads (*Lembertia congonii*) (draft). Prepared for Jim Bartel, Office of endangered species, US Fish and Wildlife Service, Sacramento, CA.

Taylor, D.W. and W.B. Davilla. 1986. Status survey of three plants endemic to the San Joaquin Valley and adjacent areas, California. Prepared for Jim Bartel, office of endangered species, US Fish and Wildlife Service, Sacramento, CA.

Terres, J. K. 1980. The Audubon Society encyclopedia of North American birds. Alfred A. Knopf, Inc., New York, NY. 1,109 pp

Thomsen, L. 1971. Behavior and ecology of burrowing owls on the Oakland Municipal Airport. *The Condor*, 73:177-172.

Tyler, J. G. 1916. Migration and field notes from Fresno County, California. *Condor*, 18: 167-169

United States fish and Wildlife Service. 1985. Formal consultation Biological Opinion regarding limited use of aerially applied sodium monoflouracetate at Camp Roberts and Fort Hunter Liggett, Monterey County, California. Biological Opinion rendered to the Dept. of Army on July 2, 1985.

Uptain, C.E. 1989. Survey for Tipton kangaroo rats (*Dipodomys nitratoides nitratoides*) on the proposed Delano prison site, Kern County, California. Report prepared for the California Dept. of Corrections, Sacramento, California. 11 pp

Uptain, C.E., W.a. Clark, and S.M. Juarez. 1985. Mark-recapture estimates and visitation indices for the blunt-nosed leopard lizard (*Gambelia silus*) at the Pixley National Wildlife Refuge, Tulare County, California. Contract Nos. 10181-9810(js) and 10181-4672-4, U.S. Fish and Wildlife Service, Sacramento, Ca. 79pp.

Verner, J. and A. S. Boss (tech. coord.). 1980. California wildlife and their habitats: Western Sierra Nevada. USDA Forest Service GTR-PSW-37, Pacific Southwest Range Experiment Station. 439 pp.

Wiggins, I. L. 1951. Malvaceae. Pp 82-112 *In* L.Abrams, Illustrated flora of the Pacific States Vol. III. Stanford Press.

Williams, D.F. 1980. Distribution and population status of the San Joaquin antelope squirrel and giant kangaroo rat. Calif. Dept. Fish and Game, Nongame Wildl. Unpublished report

Williams, D.F. 1985. A review of the population status of the Tipton kangaroo rat, *Dipodomys nitratoides nitratoides*. U.S. Fish and Wildlife Service, Sacramento Endangered Species Office, California. Final report prepared under Order No. 10181-4861(ts) 1984. 44 pp.

Williams, D.F. 1986. Mammalian species of special concern in California. Calif. Dept. of Fish and Game, Wildl. Manag. Div. Admin. Rept. 86-1. 111 pp

Wolf, C.B. 1938. California plant notes II. Occasional papers Rancho Santa Ana Botanic Gardens, Series 1, NO. 2:64-68.

Zarn, Mark. 1974. Habitat Management Series for Unique or Endangered Species. Burrowing Owl (*Speotyto cumicularia hypugea*). W.S.D. 1., B.L.M., T-N-250, Report No. 11:1-25.

Appendix 1. List of plant species observed on the Waste Management site, Kettleman Hills facility.

Common Name	Scientific Name
Asteraceae	
Tocalote	<i>Centaurea melitensis</i>
Horse weed	<i>Conyza bonariensis</i>
matchweed	<i>Gutierrezia bracteata</i>
Kellog's tarweed	<i>Hemizonia kelloggii</i>
Kern tarplant	<i>Hemizonia pallida</i>
tarplant	<i>Holocarpha heermanii</i>
golden bush	<i>Isocoma acradenius</i> ssp. <i>bracteosus</i>
prickly lettuce	<i>Lactuca serriola</i>
lessingia	<i>Lessingia</i> ssp.
butterweed	<i>Senecio vulgaris</i>
sow thistle	<i>Sonchus oleraceus</i>
Boraginaceae	
fiddleneck	<i>Amsinckia intermedia</i>
Brassicaceae	
Western tansy mustard	<i>Descurainia pinnata</i>
London rocket	<i>Sisymbrium irio</i>
	<i>Sisymbrium orientale</i>
Chenopodiaceae	
Heartscale	<i>Atriplex cordulata</i> *
saltbush	<i>Atriplex polycarpa</i>
tumbling oracle	<i>Atriplex rosea</i>
five-hook bassia	<i>Bassia hyssopifolia</i>
spearscale	<i>Endolepis covellii</i>
poverty weed	<i>Monolepsis nuttalliana</i>
Russian thistle	<i>Salsola tragus</i>
Euphorbiaceae	
dove weed	<i>Chamaesyce ocellata</i> var. <i>ocellata</i>
	<i>Eremocarpus setigeris</i>
Fabaceae	
Tomcat clover	<i>Lotus wrangelianus</i>
	<i>Trifolium willdenovii</i>
Geranaceae	
fillaree	<i>Erodium cicutarium</i>
Poaceae	
Ripgut brome	<i>Bromus diandrus</i>

red brome
barley
Arabian grass

Bromus madritensis ssp. *rubens*
Hordeum murinum ssp. *leperinum*
Schismus arabicus

Plantaginaceae
plantago

Plantago ovata

Solanaceae
Jimson weed
Tree tobacco

Datura wrightii
Nicotiana glauca

**2002 Special-Status Species Report
for the
Proposed Expansion Project,
Kettleman Hills Facility,
Chemical Waste Management,
Kings County, California**

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October 2002

**2002 Special-Status Species Report
for the
Proposed Expansion Project,
Kettleman Hills Facility,
Chemical Waste Management,
Kings County, California**

Introduction

The Kettleman Hills Facility (KHF), which has been owned and operated by Chemical Waste Management, Inc. (CWMI) since 1979, is a waste treatment, storage, and disposal facility in western Kings County, California. The KHF is located west of Interstate 5, approximately 3.5 miles southwest of Kettleman City, and 6.5 miles southeast of the City of Avenal (Figure 1). A total of 499 acres of the approximately 1,600-acre KHF are permitted by Kings County through a Conditional Use Permit (CUP) for ongoing waste treatment and disposal operations.

As part of its ongoing operation of the KHF, CWMI proposes the expansion of waste disposal activities for hazardous waste, designated waste, and municipal waste (i.e., proposed project). The proposed project involves development of an additional Class I/Class II landfill (designated as Unit B-20) for hazardous and designated wastes, and an additional Class II/Class III landfill (designated as Unit B-17) for designated and municipal solid wastes. The proposed project also includes a vertical and lateral expansion of the existing Class I landfill (designated as Unit B-18).

The proposed project will not affect ongoing operations at the KHF. In accordance with existing permits, the KHF will continue to receive hazardous waste, designated waste, and municipal solid waste, and will continue to operate regardless of whether the proposed project is approved and permitted. Figure 2 shows the locations of the existing waste management units at the KHF, while Figure 3 shows the proposed waste management units and boundary of the modified operations area.

The expansion of Unit B-18 and construction of Unit B-17 would occur primarily within the 499-acre operations area currently permitted under the Kings County CUP. It should be noted that the 499-acre operations area (including the Unit B-17 and B-18 areas) has been subject to previous and ongoing disturbance from KHF operations. However, Unit B-20 would be constructed outside of the permitted 499-acre operations area. This area is undisturbed with the exception of several dirt roads and monitoring wells, and occurs outside of the exclusionary chain-link fence that was constructed around the 499-acre active portion of the KHF.

This report summarizes the results of surveys and available data review conducted in 2002 for special-status species of plants and wildlife that may be affected by CWMI's proposed construction and operation of the Unit B-20 Class I landfill site (i.e., Unit B-20 study area). The Unit B-20 study area is located on assessor's parcel numbers (APN)

038-330-001, 038-330-019, and 038-330-020 within the boundaries of the KHF and includes the proposed footprint of the landfill as well as surrounding natural lands that may be affected during construction and operation of the facility (Figure 4). Specifically, the report presents the results of a preliminary habitat evaluation conducted to determine which local special-status species may be supported by the vegetation types/habitat types on the Unit B-20 study area, a review of available data on special-status plant species that occur on and in the immediate vicinity of the Unit B-20 study area, reconnaissance-level surveys for special-status wildlife species, focused surveys for blunt-nosed leopard lizard (*Gambelia sila*), and an evaluation of the likelihood of occurrence on the Unit B-20 study area for each of the special-status species evaluated in the report. The data presented in the report is intended to support California Environmental Quality Act (CEQA) and state and federal Endangered Species Act (ESA) compliance as it relates to potential effects to special-status species on the Unit B-20 study area.

It should be noted that no surveys or available data review were conducted for those portions of the proposed project that are located inside of the KHF's currently permitted 499-acre operations area (i.e., inside the exclusionary fence) since these lands have been addressed by previous biological survey reports, environmental documents, permitting processes, and compensatory mitigation. These latter documents and processes include the Biological Opinion (No. 1-1-90-F-18) issued by the United States Fish and Wildlife Service (USFWS, 1991) and Memorandum of Understanding (Reference No. 9101) issued by the California Department of Fish and Game (CDFG, 1994) in regards to potential effects to San Joaquin kit fox (*Vulpes macrotis mutica*) and blunt-nosed leopard lizard from activities within the 499-acre operations area.

Preliminary Habitat Evaluation

The Unit B-20 study area was visited on May 30, 2002 by Randi McCormick (McCormick Biological, Inc.) to conduct a preliminary habitat evaluation within the footprint of the proposed Unit B-20 Class I landfill site as well as surrounding lands designated by CWMI as the Unit B-20 study area. The purpose of the preliminary habitat evaluation was to identify and evaluate the existing vegetation types and habitat features within the Unit B-20 study area to determine what focused biological surveys (if any) would be necessary for the proposed project's CEQA and ESA compliance.

It was determined during the preliminary habitat evaluation that the Unit B-20 study area supports two primary natural vegetation communities (i.e., non-native grassland and saltbush scrub). In addition, the Unit B-20 study area is relatively undisturbed (i.e., existing ground disturbance consists primarily of several unimproved roads given that there are no regular KHF activities conducted on the site). Therefore, the Unit B-20 study area has the potential to support several special-status plant and wildlife species that occur in the region.

Based on the preliminary habitat evaluation, it was decided that reconnaissance-level surveys would be appropriate for all special-status wildlife species that may occur on the Unit B-20 study area other than blunt-nosed leopard lizard (*Gambelia sila*). This species

typically occurs in low densities and can be difficult to document with only reconnaissance-level surveys. Therefore, focused surveys for blunt-nosed leopard lizard were subsequently conducted.

It was also determined that focused surveys for early-season special-status plant species that may occur on the Unit B-20 study area would be inappropriate given that the flowering phenology of these species is typically March to May in the area and surveys could not be initiated until June 2002. In addition, the area experienced below-average rainfall during the 2002 winter/spring and many species (particularly annuals) either did not germinate or exhibited reduced growth and senesced early. However, previous surveys at the KHF in 1988 and 1991 (BioSystems) were conducted during near-average or above-average rainfall years. These latter surveys provide the best available data on the presence of special-status plant species on the KHF and represent a conservative baseline for the presence of special-status plant species on the Unit B-20 study area. Therefore, a review of the available data on special-status plant species in the area was conducted in lieu of surveys for early-season species, while a reconnaissance-level survey was conducted on June 25, 2002 for late-season species. The data review and surveys conducted for special-status species are further described below.

Available Data Review

California Natural Diversity Data Base

A standard nine-quadrangle California Natural Diversity Data Base/Rarefind 2 report was generated for the Unit B-20 study area (i.e., query of the USGS 7.5-minute topographic quadrangle in which the Unit B-20 study area is found as well as the immediate eight surrounding topographic quadrangles). The California Natural Diversity Data Base (CNDDDB, 2002) contains records for special-status species, as well as sensitive natural communities, which have been reported to the CDFG. The Rarefind 2 report for the Unit B-20 study area is provided in Appendix A. Each of the species identified in the Rarefind 2 report was evaluated in terms of its likelihood of occurrence within the Unit B-20 study area. This evaluation considered the known distribution and habitat requirements of the species such that one of the following findings was prepared:

- **Known to Occur** – species was observed within the Unit B-20 study area during the May 30, June 25 to 30, and August 1 to 6, 2002 surveys or has previously been documented within the Unit B-20 study area.
- **High Potential** – species has not been documented within or immediately adjacent to the Unit B-20 study area, but should be expected on more than 50% of visits to suitable habitat on the Unit B-20 study area during the appropriate season and time of day.
- **Moderate Potential** – species has not been documented within or immediately adjacent to the Unit B-20 study area, but should be expected on less than 50% of visits to suitable habitat on the Unit B-20 study area during the appropriate season and time of day.

- Low Potential – species has not been documented within or immediately adjacent to the Unit B-20 study area nor is it likely to occur on the Unit B-20 study area, but its presence cannot be completely discounted due to incomplete information on the taxon’s distribution or habitat requirements.
- No Potential – species does not occur within the Unit B-20 study area due to the lack of required habitat features for the species, or the known range of the species is well defined and does not include the Unit B-20 study area.

The findings for each of the species identified in the Rarefind 2 report are presented in this report.

General Literature Review

Other sources of information on special-status species in California were also reviewed as the CNDDDB is not inclusive of all special-status species that may occur in an area. A review of the CDFG’s List of Special Animals (June 2002) and List of Special Plants (June 2002) was also conducted to determine if any special-status species not identified in the Rarefind 2 report have the potential to occur on the Unit B-20 study area. This review was based on the professional experience of Michael Bumgardner (Bumgardner Biological Consulting) and Randi McCormick within the region and elsewhere in California, but also included review of other published sources of information on special-status species in California. These sources include the following:

- California Native Plant Society Inventory of Rare and Endangered Vascular Plants of California, 6th Edition (2001).
- The Jepson Manual (Hickman, 1993).
- Amphibian and Reptile Species of Special Concern in California (Jennings and Hayes, 1994).
- Bird Species of Special Concern in California (Remsen, 1978).
- California Birds: Their Status and Distribution (Small, 1994).
- The Distribution of the Birds of California (Grinnell and Miller, 1944).
- California’s Wildlife Volume II Birds (Zeiner et al., 1990).
- Mammalian Species of Special Concern in California (Williams, 1986).
- Mammals of the Pacific States: California, Oregon, and Washington (Ingles, 1978).
- Recovery Plan for Upland Species of the San Joaquin Valley, California (USFWS, 1998).

Species that are known or expected to occur in the vicinity of the Unit B-20 study area were then further evaluated for this report.

Special-Status Plants Data Review

A search of the available literature found that two previous plant surveys that included the Unit B-20 study area have been conducted on the KHF. The results of these surveys have been documented in the *Rare Plant Survey of Kettleman Hills Hazardous Waste*

Disposal Facility (BioSystems, 1988) and *Rare Plant Survey of the Chemical Waste Management, Inc. Kettleman Hills Facility* (BioSystems, 1991). These reports document that plant surveys of the entire KHF were conducted during the spring and early summer of 1988 and spring of 1991 (BioSystems, 1988 and 1991). Specifically, surveys were conducted during the expected flowering phenology of all special-status plants addressed by this report other than San Joaquin blue curls. This latter species flowers from July to October. In addition, the surveys were conducted subsequent to near-average or above-average rainfall years. Consequently, the results of these surveys represent the best available data on the presence of special-status plant species on the Unit B-20 study area or other portions of the KHF.

An additional survey report, *Results of a Sensitive Species Survey on the Waste Management Site, Kettleman Hills Facility* (Uptain et al., 2000), was prepared for an area on the KHF located north of the proposed Unit B-20 landfill in the vicinity of the Unit B-17 borrow area. This report contains findings that are particularly pertinent to one of the special-status plants that is considered to have some potential to occur on the KHF site (i.e., heart-leaved saltbush – a late-season species), but that has not been documented on the Unit B-20 study area. The survey was conducted during May (i.e., within the published flowering phenology of heart-leaved saltbush) and subsequent to a near-average rainfall year (National Oceanic and Atmospheric Administration, 2002). Consequently, the species would have been expected during the survey if it occurs on the study area. The survey was also conducted within the published flowering phenology of each of the other special-status plant species addressed by this report (with the exception of San Joaquin blue curls [*Trichostema ovatum*]). However, May occurs at the end of the flowering phenology for many of the early-season species addressed by this report. Therefore, the *Results of a Sensitive Species Survey on the Waste Management Site, Kettleman Hills Facility* has limited utility in regard to early-season special-status species since many of these species could have germinated, bloomed, and senesced prior to May.

The surveys conducted by BioSystems in 1988 and 1991 resulted in observations of the following special-status plant species on and in the vicinity of the proposed Unit B-20 landfill: gypsum-loving larkspur (*Delphinium gypsophilum* ssp. *gypsophilum*), Hoover's woolly-star (*Eriastrum hooveri*), cottony buckwheat (*Eriogonum gossypinum*), and San Joaquin blue curls. In addition, two species that were considered special-status species at the time of these surveys were also observed on the Unit B-20 study area: Kern tarplant (*Hemizonia pallida*) and Hollisteria (*Hollisteria lanata*). Although these latter species were included in past editions of the *Inventory of Rare and Endangered Vascular Plants of California*, both the Fifth Edition (CNPS, 1994) and Sixth Edition (CNPS, 2001) indicate that the species were considered, but rejected as special-status species because they are too common. Therefore, these plants are not addressed further in this 2002 report.

Although not documented during previous surveys, seven other special-status plant species were identified as having some potential to occur on the Unit B-20 study area (based on review of the CNDDB and reported suitable vegetation types, microhabitats, and range of the species in the available literature). These species include heart-leaved

saltbush (*Atriplex cordulata*), California jewelflower (*Caulanthus californicus*), Temblor buckwheat (*Eriogonum temblorense*), pale-yellow layia (*Layia heterotricha*), San Joaquin woollythreads (*Monolopia congdonii*), showy madia (*Madia radiata*), and slender nemacladus (*Nemacladus gracilis*).

The results of the above three surveys (i.e., BioSystems, 1988 and 1991; Uptain, 2000) represent the best available information on special-status plant species on the KHF (including the proposed Unit B-20 study area). In addition, given the area addressed by these surveys, time of year the surveys were conducted, thoroughness of the surveys, and that near-average to above-average rainfall occurred during the winter/spring prior to these surveys, each of the special-status plant species addressed by this 2002 report should have been detected by the previous surveys within the KHF if it occurs on the site.

Special-Status Plant Surveys

The Unit B-20 study area was surveyed for late-season special-status plant species during the preliminary habitat evaluation (May 30, 2002) and reconnaissance level surveys (June 25, 2002). These surveys consisted of random meander transects throughout all portions of the Unit B-20 study area with the exception of the extremely steep portions of the southwestern corner of the site. The species that were the focus of the surveys included heart-leaved saltbush (*Atriplex cordulata*), Lost Hills crownscale (*Atriplex vallicola*), and San Joaquin blue curls. It should be noted that the two *Atriplex* sp. are identifiable to genus during their early growth. Thus, the special-status plant surveys were conducted during a period of time when annual *Atriplex* spp., if present, should have been identifiable to at least genus. If annual *Atriplex* spp. had been observed, these individuals or stands of the species would have then been revisited later in the season when they are identifiable to species. However, no annual *Atriplex* spp. were observed during either survey.

Special-Status Wildlife Surveys

Reconnaissance-Level Surveys

Reconnaissance-level surveys were conducted on the Unit B-20 study area for several special-status wildlife species. These species include San Joaquin coachwhip (*Masticophis flagellum ruddocki*), burrowing owl (*Athene cunicularia*), San Joaquin antelope squirrel (*Ammospermophilus nelsoni*), giant kangaroo rat (*Dipodomys ingens*), San Joaquin kit fox (*Vulpes macrotis mutica*), and American badger (*Taxidea taxus*). The surveys, which consisted of random meander transects, were conducted by staff from Bumgardner Biological Consulting and McCormick Biological, Inc. from June 25 to 30 and August 1 to 6, 2002. It should be noted that the random meander transects were conducted throughout the Unit B-20 study area such that the entire site was surveyed. However, some steeper portions of the Unit B-20 study area (particularly in the southwestern corner of the site) were surveyed primarily with binoculars due to difficult access. It should also be noted that each of the special-status mammals on the Unit B-20 study area tends to be nocturnal (especially during mid-summer). Therefore, the surveys

for these species focused on sign of the species (e.g., dens, burrows, tracks, scat, bones, haystacks, etc.).

The reconnaissance-level surveys resulted in the observation of only one special-status wildlife species on the Unit B-20 study area (loggerhead shrike [*Lanius ludovicianus*]). However, sign of San Joaquin kit fox and American badger was also observed on the Unit B-20 study area. Loggerhead shrike was heard or observed during most of the survey days and appeared to be consistently localized to a small, dense stand of *Atriplex polycarpa* within the Unit B-20 study area (Figure 5). Given its consistent location, alarm calls, secretive behavior, and the time of year, it is possible that the species nested on the Unit B-20 study area. However, no more definitive evidence of nesting by this species was obtained during the survey.

Several burrow openings that meet the size and configuration requirements of San Joaquin kit fox dens (i.e., greater than four inches in diameter and higher than wide) were observed on the Unit B-20 study area. However, no definitive evidence that these dens are in use by San Joaquin kit fox was observed. Each of these potential kit fox dens was geo-referenced with a Garmin Etrex global positioning system (GPS) unit and later downloaded into MapTech's Terrain Navigator software such that they could be mapped. The locations of these potential San Joaquin kit fox dens are shown in Figure 6.

Several American badger dens, as well as diggings (i.e., locations where badgers have attempted to dig into rodent burrows), were also observed on the Unit B-20 study area. The dens, which are generally characterized by a dome-shaped configuration, also often had characteristic claw marks in the upper opening of the den. Each of the badger dens observed on the Unit B-20 study area was also geo-referenced using a GPS unit and later mapped (Figure 7).

Focused Blunt-Nosed Leopard Lizard Surveys

Surveys for blunt-nosed leopard lizard on the Unit B-20 study area were conducted consistent with the CDFG's May 8, 1990 *Approved Survey Methodologies for Sensitive Species* which addresses the species. Specifically, the protocol-level surveys were conducted by slowly walking 30 to 100-foot wide transects within all suitable habitat (i.e., open habitats on relatively flat areas and the gentle south and west-facing slopes of the northern and eastern portions of the Unit B-20 study area) while stopping frequently to scan with binoculars. The surveys were conducted for six consecutive days from June 25 to 30, 2002 on all suitable portions of the Unit B-20 study area other than the large soil stock pile located in the southeastern corner of the Unit B-20 study area. This latter area was not initially considered part of the Unit B-20 study area, but a later decision to utilize the soils associated with this site in the construction of the landfill resulted in the need to survey this area as well. The soil stock pile area was subsequently surveyed from August 1 to 6, 2002. It should be noted that the southwestern portion of the Unit B-20 study area is considered too steep to support blunt-nosed leopard lizard. In addition, some areas within the northern and eastern portions of the Unit B-20 study area support grassland canopies that are considered too dense for blunt-nosed leopard lizard. These

areas within the Unit B-20 study area are not considered suitable for the species and therefore were not surveyed. Lastly, in accordance with USFWS and CDFG protocol, the surveys were conducted from approximately 8:45 am to 12:15 pm when recorded air temperatures ranged between 25 and 35°C, and recorded ground temperatures ranged between 30 and 47°C (Table 1). Air temperatures were measured approximately 2 cm above ground with the thermometer shaded from the sun, while ground temperatures were measured approximately 2 cm below the surface in the shade.

The blunt-nosed leopard lizard survey resulted in no evidence (including tail drags or scat) that the species occurs on the Unit B-20 study area (Table 1). Other lizards were observed on the Unit B-20 study area. Side-blotched lizard (*Uta stansburiana*) was abundant throughout the Unit B-20 study area (i.e., 60+ observed each day), while western whiptail (*Cnemidophorus tigris*) was common (i.e., 5 to 20 observed each day) during the early survey period, but disappeared from the surface by August 3, 2002. The only other lizard observed on the Unit B-20 study area was a single desert spiny lizard (*Sceloporus magister*) seen on the southeastern corner of the soil stock pile on August 3, 2002.

Status of Special-Status Species on the Unit B-20 Study Area

Special-Status Plant Species (Early-Season Plants)

The available data review on early-season special-status plant species determined that two species are known to occur on the Unit B-20 study area, while seven additional species have some potential to occur on the site. The species that are known to occur on the Unit B-20 study area include gypsum-loving larkspur and Hoover's wooly-star. The species that are considered to have some potential to occur on the Unit B-20 study area are California jewelflower, Temblor buckwheat, cottony buckwheat, pale-yellow layia, San Joaquin wooly-threads, showy madia, and slender nemacladus. Each of the above species, as well as other special-status plant species that have been documented in the vicinity of the Unit B-20 study area, is evaluated in Table 2. Those early-season species that are known to occur or considered to have some potential to occur on the Unit B-20 study area are further described below.

Gypsum-loving larkspur is designated a California Native Plant Society (CNPS) List 4 species (plant with limited distribution - a watch list species). This species has been found in six small areas in the western-most quarter-sections of Section 3 on the KHF (BioSystems, 1988). Specifically, one of these populations occurs within the southwest corner of the Unit B-20 study area (Figure 8). The species is a perennial in the buttercup family and reaches a height of up to four feet. It has a white, inconspicuous flower within generally white sepals along the flowering raceme. The flowering period for this plant is February through May. As its name implies, gypsum-loving larkspur frequently occurs on gypsum-rich soils in chenopod scrub and grassland habitats. However, in favorable years, it sometimes occurs on north-facing slopes with other soil types. It is found throughout the inner Coast Range from Alameda and San Joaquin counties south through Kern and San Luis Obispo counties. In Kern County the species extends to the

east into the lower Sierra Nevada and Tehachapi Mountains.

Hoover's eriastrum (or Hoover's wooly-star) is listed as federally threatened and designated a CNPS List 4 species. The species has been recorded in two small areas within the northern portion of the Unit B-20 study area (Figure 8) (BioSystems, 1991). The species reaches a height of up to 6 inches. Stems typically support erect branches. Leaves are entire and linear, and are three-cleft with two lateral lobes. The small and inconspicuous flowers are organized into small heads. The corollas range in color from pale bluish to white or cream yellow. The capsules are oblong-ellipsoid with two to four seeds each. Flowers usually appear in mid to late spring (April to May). Suitable habitat for Hoover's wooly-star consists of valley grassland with scattered saltbush (*A. polycarpa* or *A. spinifera*). The species is often found in openings in saltbush scrub where cryptogamic crusts have developed on the soil surface. Associated species include red brome (*Bromus madritensis* ssp. *rubens*), goldfields (*Lasthenia californica*), many-flowered eriastrum (*Eriastrum pluriflorum*), and red-stemmed filaree (*Erodium cicutarium*) (USFWS, 1998). Hoover's eriastrum is known to occur from Fresno County south to Kern County along the western San Joaquin Valley and low foothills. It is also known from the Carrizo Plain in San Luis Obispo County and the Cuyama Valley in Santa Barbara County. The species has subsequently been found at many sites bordering the Elk Hills in Kern County and is in the process of being delisted by the federal government (USFWS, 2001).

California jewelflower is state and federally listed as endangered. In addition, the species is designated by the CNPS as a List 1b species (i.e., plant that is rare, threatened, or endangered in California and elsewhere). This species is an annual that reaches a height of 6 to 15 inches. The foliage is gray-green with heart-shaped clasping stem leaves and wavy margined strap-shaped basal leaves. Unopened flowers appear deep maroon in color. Open flowers are white to greenish-yellow and generally appear from February to May. Suitable habitat for this species occurs on non-alkaline to slightly alkaline sandy loam soils within relatively undisturbed chenopod scrub, pinyon and juniper woodland, and grassland communities below an elevation of 3,000 feet. Historically, the species occurred in the upper San Joaquin Valley and adjacent valleys in the Coast Range from Coalinga to the Cuyama Valley. Over 35 historical populations have been extirpated (CNPS, 2001). Recently, extant populations have been found on the Carrizo Plain in San Luis Obispo County, and in the Kreyenhagen Hills in Fresno County. Thus, only three areas are known to support this species (i.e., Santa Barbara Canyon near the upper Cuyama Valley, Santa Barbara County; the Carrizo Plain, San Luis Obispo County; and the Kreyenhagen Hills, Fresno County) (USFWS, 1998). This species has not been observed on the KHF. However, given that the Unit B-20 study area provides suitable habitat for the species and the species has been documented slightly more than six miles west of the site in the Kreyenhagen Hills, it is considered to have some potential, albeit low, to occur on the Unit B-20 study area.

Temblor buckwheat is designated a CNPS List 1b plant. This annual species ranges from 4 to 30 inches in height with height being largely dependent on the amount of rainfall that occurs during the winter and spring. The leaves are primarily basal, and are covered with

matted hairs. The plants produce very small, white flowers that are clustered inside a cup-like structure. Flowering typically occurs from May through September. Temblor buckwheat occurs from Fresno County south to the Elkhorn Plain in San Luis Obispo County in eight primary areas (USFWS, 1998). However, the species was not observed by BioSystems during surveys conducted in the springs of 1988 and 1991 (even though rainfall was considered near-average and above-average respectively during these years). It should be noted however that the lack of observations of an annual species such as Temblor buckwheat does not necessarily mean that the species is absent from suitable habitat. The seeds of annual species can sometimes lie in the soil for many years before the right conditions of temperature and moisture stimulate the species to germinate. Therefore, given records for the species in the region and the presence of suitable habitat on the Unit B-20 study area, this species is considered to have some potential, albeit low, to occur on the Unit B-20 study area.

Cottony buckwheat, a CNPS List 4 plant, was previously found within four small stands within the KHF (BioSystems, 1988 and 1991). Three of these stands occur immediately to the west of the Unit B-20 Study Area. This species is a small, annual buckwheat with woolly, gray-green leaves and a conspicuous cottony inflorescence. White to rose glandular flowers appear between March and September. The species grows on exposed clay hills that are typically south-facing. These latter exposures often exhibit "badland" topography and support little other plant cover. Its general distribution includes the southwestern San Joaquin Valley and low foothills of the Greenhorn Range.

Pale-yellow layia, a CNPS List 1b plant, is an annual herb that occurs on alkaline and clay soils in valley and foothill grasslands. It can grow to 35 inches in height with white to cream colored flowers. The species flowers from March to June. Historically, it was fairly widespread and known to occur in San Luis Obispo, Ventura, San Benito, Santa Barbara, Monterey, Kings, Kern, and Fresno counties. The species was not observed by BioSystems during surveys conducted in the springs of 1988 and 1991. However, given records for the species in the region (i.e., approximately seven miles west in the Kreyenhagen Hills and eight miles south in the Pyramid Hills) and the presence of suitable habitat on the Unit B-20 study area, this species is considered to have some potential, albeit low, to occur on the Unit B-20 study area.

San Joaquin woolly-threads is federally listed as endangered and designated a CNPS List 1b species. This species is a small, inconspicuous annual which may be 1 to 10 inches in height at maturity. Stems are multiple, decumbent, and often somewhat succulent. Leaves and stems are typically loosely floccose to woolly-haired. Leaves are 1.5 inches long by about 0.25 inches wide with wavy margins. Individual flowers are arranged in heads that are clustered towards the ends of branches. Each head has four to seven phyllaries that are commonly black tipped. Tiny yellow ray and disk flowers appear in late February or March and in favorable rainfall years may be visible through May. San Joaquin woolly threads is found in valley grassland habitat types with silty-sand or sandy-loam soils at elevations ranging from 400 to 1,200 feet. Valley saltbush is often the dominant shrub in these habitat types. The preferred microhabitat for this species consists of areas with reduced annual grass competition. It is generally not found where

annual grasses are extremely dense and tall (Taylor, 1987). This species is somewhat prostrate, allowing it to persist under grazing pressure. Although the species was not observed on the Unit B-20 study area during the surveys conducted in the springs of 1988 and 1991 (BioSystems, 1988 and 1991), it has been found scattered throughout the region (see locations for SJW-1, 10, 12, 13, 23, 26, and 29 on Figure 9; locations for SJW-2 through 5, 14, 15, 17 through 20, 30, and 31 on Figure 10; and SJW-7 through 9, 22, 24, and 25 on Figure 11). Consequently, given the number of records for the species in the region and the presence of suitable habitat on the Unit B-20 study area, this species is considered to have a moderate potential to occur on the Unit B-20 study area.

Showy madia is designated a CNPS List 1b species. This species occurs in cismontane woodlands and valley and foothill grasslands of the western San Joaquin Valley and inner Coast Range north to the eastern San Francisco Bay area (mostly on adobe clay). It is an upright annual with glandular stems and leaves with a short-bristly surface. It can grow to 35 inches tall. The species has yellow flowers and blooms from March through May. The species has not been observed on the Unit B-20 study area during previous surveys (BioSystems, 1988 and 1991). In addition, only one record from the project vicinity has been reported to the CNDDDB (2002). The location for this record is in Tar Canyon in the Kreyenhagen Hills approximately 8.5 miles west of the Unit B-20 study area. However, given suitable habitat on the Unit B-20 study area this annual species is considered to have some potential, albeit low, to occur on the site.

Slender nemacladus, a CNPS List 4 plant, is an annual with spreading branches and basal leaves up to three inches in length. Leaves along the stem are inconspicuous. It produces tiny (less than 1/10 inch) flowers from March to May. This species is found in sand or gravelly soils of cismontane woodlands and valley and foothill grasslands in Fresno, Kings, Kern Los Angeles, and Merced counties. The species was not observed during surveys conducted in the springs of 1988 and 1991 (BioSystems, 1988 and 1991). However, given records for the species in the region and the presence of suitable habitat on the Unit B-20 study area, this species is considered to have some potential, albeit low, to occur on the Unit B-20 study area.

Special-Status Plant Species (Late-Season Plants)

The available data review on late-season special-status plant species determined that one species is known to occur on the Unit B-20 study area, while one additional species has some potential to occur on the site. These species are heart-leaved saltbush and San Joaquin blue curls. Both species, as well as other special-status plant species that have been documented in the vicinity of the Unit B-20 study area, are evaluated in Table 2. In addition, heart-leaved saltbush and San Joaquin blue curls are further described below.

San Joaquin blue curls is designated a CNPS List 4 species. The species is a pungent, hairy annual that grows to 32 inches in height. The leaves are ovate in shape and the two-lipped flower is lavender. The species typically flowers from July through October. However, the species is distinctive even when not in flower. San Joaquin blue curls occurs in chenopod scrub and valley and foothill grassland within Fresno, Kings, Kern,

and Tulare counties. The species was observed during the 1991 survey at locations scattered throughout the KHF (including the Unit B-20 study area) (BioSystems, 1991).

Heart-leaved saltbush is designated a CNPS List 1b plant. The species is a small annual herb in the family Chenopodiaceae that blooms from April through October. It has one to a few stems originating from its base that support scaly, gray branches. The leaves are ovate in shape and range from 6 to 15 mm in size. This species occurs on alkaline flats and scalds in chenopod scrub, meadow, and valley and foothill grassland in the Central Valley from Butte and Glenn counties south to Kern County. The species was not observed on the Unit B-20 study area during the surveys conducted in the springs of 1988 and 1991 (BioSystems, 1988 and 1991). However, these surveys may have been conducted too early in the year for this species. The species was observed just north of the Unit B-20 study area in 2000 on an active portion of the KHF (Uptain et al., 2000). It should be noted that the 2000 survey included the Unit B-20 study area, but no individuals of this species were observed on the Unit B-20 study area. However, given the presence of populations of this species in similar habitat in close proximity to the Unit B-20 study area, the species is considered to have a moderate potential to occur on the Unit B-20 study area.

Special-Status Wildlife Species

The only special-status wildlife species that was observed on the Unit B-20 study area is loggerhead shrike. However, sign of San Joaquin kit fox and American badger was also observed on the Unit B-20 study area. Although not observed or otherwise documented on the Unit B-20 study area, eight other special-status wildlife species are also considered to have some potential to occur on the Unit B-20 study area. These species include golden eagle (*Aquila chrysaetos*), burrowing owl, blunt-nosed leopard lizard, California horned lizard (*Phrynosoma coronatum frontale*), San Joaquin coachwhip, San Joaquin pocket mouse (*Perognathus inornatus inornatus*), short-nosed kangaroo rat (*Dipodomys nitratoides brevinasus*), and San Joaquin antelope squirrel. Each of the above species, as well as other special-status wildlife species that have been documented in the vicinity of the Unit B-20 study area, is evaluated in Table 2. Those species that are known to occur or that have some potential to occur on the Unit B-20 study area are further described below.

Loggerhead shrike is a federal species of concern and California species of special concern that was recorded on the Unit B-20 study area. The species generally occurs in a variety of open grassland, oak savannah, shrubland, and other similar habitats where it feeds primarily on large insects (e.g., grasshoppers). However, the species may also occasionally take small reptiles, birds, and mammals. Loggerhead shrikes nest from March to June with young becoming independent during July or August. The nest is generally well-concealed on a stable branch in a densely-foliaged shrub or tree. Nest territories have been found to range in size from 11 to 40 acres (Miller, 1931). In areas of year-round residence (such as much of lowland California) members of a pair are known to defend adjoining territories during the non-breeding season and then defend a single nesting territory comprised of the adjoining winter territories during the breeding season

(Lefranc, 1997). Given this latter aspect of the species' ecology, as well as the observed behaviors of the individual observed on the Unit B-20 study area (see location for LS1 on Figure 5), the species may have nested on the Unit B-20 study area during 2002.

San Joaquin kit fox has a moderate potential to occur on the Unit B-20 study area. This taxon is state listed as threatened and federally listed as endangered. The taxon historically occurred throughout the southern portion of the San Joaquin Valley, along the eastern edge of the San Joaquin Valley, and in the dry interior valleys of the Coast Ranges (USFWS, 1998). San Joaquin kit fox occurs in a variety of open grassland, oak savannah, and shrub vegetation types/habitats. However, in the southern portion of its range it is generally found in sparse annual grassland and scrub communities (e.g., valley sink scrub, saltbush scrub). A population also occurs within and on the periphery of urbanized areas in the city of Bakersfield and some smaller communities (e.g., Taft). However, these populations, which have been documented feeding on garbage, are atypical of the taxon across its range. San Joaquin kit fox densities vary over the range of the species, but the taxon was found to have densities of between 0.39 to 0.62 individuals per square mile on the Carrizo Plain Natural Area (White and Ralls, 1993). Den characteristics of the taxon vary across its range. In the southern portion of its range the taxon often creates dens with two entrances. Natal dens typically have multiple entrances. Entrances are usually 8 to 10 inches in diameter and are normally higher than wide, but kit foxes can utilize dens with entrances as small as four inches in diameter. San Joaquin kit foxes often change dens on a regular basis. One kit fox was tracked to 70 dens during a two-year study (USFWS, 1998). Home ranges for the taxon have been reported by several authors to range from 1 to 12 square miles (USFWS, 1998). No irrefutable evidence of the taxon was observed during the 2002 wildlife surveys. However, several burrows that meet the size and configuration requirements for use by kit foxes were found on the Unit B-20 study area (see locations for KF1 through 13 on Figure 6). Therefore, given the presence of suitable habitat on the Unit B-20 study area, records of San Joaquin kit fox in the region, size of home ranges, and mobility of the taxon, there is some potential, albeit moderate, for the taxon to occur on the Unit B-20 study area.

American badger does not have a designated status, but is still included on the CDFG's special animals list (June 2002). Suitable habitat for badgers is characterized by herbaceous, shrub, and open stages of most habitats with dry, friable soils. Home range estimates vary geographically and seasonally, but tend to range between 338 and 1549 acres (Messick and Hornocker, 1981; Lindzey, 1978). Badgers mate in summer and early fall, and most young are born in March and April (Long, 1973). Several dens were observed on the Unit B-20 study area (see locations for B1 through 13 on Figure 7). These dens exhibited typical characteristics of use by American badger (e.g., dome-shaped, claw marks in the upper portion of the exterior opening). In addition, a substantial number of recent badger diggings were observed on the Unit B-20 study area. Therefore, the species is known to occur on the Unit B-20 study area.

The three special-status reptiles that have some potential to occur on the Unit B-20 study area are blunt-nosed leopard lizard, California horned lizard, and San Joaquin coachwhip.

Blunt-nosed leopard lizard is state and federally listed as endangered. The species inhabits open, sparsely vegetated areas of low relief (particularly annual and perennial grasslands, alkali scrub, and saltbush scrub). It is absent from areas of steep slope, dense vegetation, or seasonal flooding. The current range of the species includes undeveloped parcels in the southern-most portion of the San Joaquin Valley (Tulare and Kings counties south to Kern County), valley floor in the vicinity of western Madera County, and along the western edge of the valley from Merced County south to Ventura County. Its range also extends into the Carrizo Plain and Cuyama Valley west of the southwestern end of the San Joaquin Valley (in Santa Barbara and San Luis Obispo counties). Estimated densities in occupied habitat have varied from 0.1 to 8.5 lizards per acre (Uptain et al., 1985; Williams and Germano, 1991; Williams et al., 1993; Germano et al., 1994). Individuals use small rodent burrows for shelter from predators and temperature extremes. The burrows are usually abandoned ground squirrel tunnels, or occupied or abandoned kangaroo rat tunnels (Montanucci, 1965). Seasonal above-ground activity is correlated with weather conditions (primarily temperature). Optimal activity occurs when air temperatures are between 23.5 and 40 °C and ground temperatures are between 22 and 36 °C (USFWS, 1985). Adults are active above ground in the spring months, from March or April through June or July, with the level of activity decreasing until approximately late June when most adults cease above-ground activity. At this latter time, only subadult and hatchling individuals generally continue to be active. By August or September, the adults have retreated to burrows to begin over-wintering. Hatchlings may be active until mid-October or November. The results of 2002 protocol surveys on the Unit B-20 study area resulted in no evidence that the species occurs on the site. However, given scattered records throughout the Kettleman Hills (see locations for BLL-4, 5, 6, 8, 10, 11, and 16 on Figure 9; locations BLL-2, 3, 15 through 17, and 21 on Figure 10; and locations BLL-12 and 13 on Figure 11) and that the Unit B-20 study area provides areas of suitable habitat, there is some potential, albeit low, for the species to occur on the site.

California horned lizard is a California species of special concern and federal species of concern that occurs in a variety of open habitats that provide sites for basking, sandy or sandy-loam substrates in which night-time burial can occur, and a suitable prey base (the species feeds almost exclusively on ants). It was historically distributed throughout the Central Valley and Coast Range, but now occurs at scattered disjunct locations within this range. Suitable habitat for the species is located throughout the Unit B-20 study area. Therefore, even though the species was not observed during the wildlife survey, the Unit B-20 study area has some potential to support the species. It should be noted, however, that the current patchiness of extant populations suggests that the species has only a low potential to occur on the Unit B-20 study area.

San Joaquin coachwhip is a California species of special concern and federal species of concern that occurs in a variety of open, dry vegetation types with little or no tree cover. The current range of the subspecies includes the eastern and far southern edges of the San Joaquin Valley, and dry interior valleys of the Coast Range. Given that a disjunct population occurs at the Sutter Buttes in the Sacramento Valley, the species likely had a more extensive range in the Central Valley prior to agricultural conversions. Typical

vegetation types inhabited by this taxon in the western San Joaquin Valley include annual grassland and saltbush scrub communities. The presence of fossorial mammals is also a likely indicator of suitable habitat since the taxon utilizes the burrows of these species for refuge, egg-laying sites, and foraging. This snake generally emerges from over-wintering during April or early May and tends to be diurnally active during the warmer parts of the day. Surface activity by this snake may, however, become bimodal during mid-summer when mid-day temperatures become extreme. It begins to disappear from the surface by early August. The subspecies was not recorded on the Unit B-20 study area. However, it has been recorded in the project vicinity (Jennings and Hayes, 1994). In addition, Michael Bumgardner observed an individual crossing Interstate 5 approximately two miles north of Kettleman Junction on July 20, 2002. Therefore, given that the Unit B-20 study area provides habitat that is suitable for the taxon, it is considered to have a moderate potential to occur on the Unit B-20 study area.

Golden eagle occurs as an uncommon breeding resident throughout the state with the exception of the valley floor of the Central Valley. The species is a fully protected species within California (under §3511 of the California Fish and Game Code). As such, the species cannot be taken at any time, and permits authorizing take cannot be issued. Nest sites are generally located on secluded cliffs or in large trees in rugged, open canyons or on escarpments. Nesting occurs from January through August with peak activity occurring from March through July. Nest territories have been documented ranging in size from 22 to 74 square miles. The size of nest territories is probably a function of prey density and the openness of the habitat surrounding the nest site (which affects prey availability during hunting). Although the species was not observed on or in the vicinity of the Unit B-20 study area, it has some potential, albeit low, to occur on the Unit B-20 study area during the winter when various species of wintering raptors move into the area.

Burrowing owl is a California species of special concern and federal species of concern. Within California, the species is found throughout the Central Valley, in the San Francisco Bay area, at scattered locations along the coast, and in portions of the desert regions. The species is a year-round resident in annual and perennial grasslands or other vegetation communities that support little to no tree or shrub cover. Documented population declines have occurred in the state since at least the 1970s. In California, the species is typically found in close association with California ground squirrels (*Spermophilus beecheyi*). This latter species creates burrows that are used by burrowing owls as year-round shelter and seasonal nesting habitat. However, burrowing owls also use human-made structures such as culverts, corrugated metal pipes, debris piles, or openings beneath pavement as shelter and nesting habitat (CDFG, 1995). No burrowing owls or sign of the species (e.g., castings [undigested hair, feathers, and bone] or urates [whitewash] at the openings of suitable burrows) was observed during surveys conducted on the Unit B-20 study area. However, the species has been documented within the project vicinity. The nearest records reported to the CNDDDB are located approximately 4 and 10.5 miles from the Unit B-20 study area (see locations for BO-1 on Figure 9 and BO-2 on Figure 11). The species is therefore considered to have a moderate potential to

occur on the Unit B-20 study area given records in the surrounding region, the presence of suitable habitat, and the mobility of the species.

Short-nosed kangaroo rat is a California species of special concern and federal species of concern. The subspecies historically occurred within the western half of the San Joaquin Valley and adjacent foothills of the Coast Range from Merced County south to the foothills of the Tehachapi Mountains. The current range is extremely fragmented with populations scattered at several locations along the western edge of the valley and within the Carrizo Plain and Cuyama Valley. It occurs in arid grassland and shrub communities on friable soils. These soils are typically located on flat areas, gentle slopes, and hilltops. The current range of the subspecies is not well known since there has not been a comprehensive survey for the taxon. However, the subspecies has been recorded within the northern Kettleman Hills (USFWS, 1998). Therefore, it is considered to have some potential, albeit low, to occur on the Unit B-20 study area given the known historic and current range of the subspecies and presence of suitable habitat on the site.

San Joaquin pocket mouse is a California species of special concern and federal species of concern that occurs primarily in annual grasslands and blue oak savannah. The subspecies has a relatively wide, but scattered distribution in the San Joaquin Valley and southern Sacramento Valley. In addition, it has been recorded from a small number of locations in the Kettleman Hills north of the Unit B-20 study area (see locations for SJPM-1, 2, 3, and 5 on Figure 10). The nearest of these occurrences is approximately four miles north of the Unit B-20 study area. Little additional information is available on the ecology of this subspecies. However, Hawbecker (1951) found that the taxon was most common on shrubby ridgetops and hillsides. Therefore, given the distribution of the taxon in the project vicinity and suitable habitat on the Unit B-20 study area (e.g., vegetation types, soils, and slopes), the subspecies is considered to have a moderate potential to occur on the site.

San Joaquin antelope squirrel is state listed as threatened and designated as a federal species of concern. The species historically occurred in the western and southern portions of the Tulare Basin, San Joaquin Valley, and contiguous areas to the west in the upper Cuyama Valley and on the Carrizo and Elkhorn plains (USFWS, 1998). However, the current distribution is extremely fragmented due to agricultural conversions that have occurred during the last century. Thus, substantial populations now occur only around Lokern and Elk Hills in western Kern County, and on the Carrizo and Elkhorn plains in southeastern San Luis Obispo County. However, the species has been documented from a small number of locations north of the Unit B-20 study area in the Kettleman Hills (see locations for SJAS-2 and 3 on Figure 10). The nearest of these locations is approximately six miles northwest of the Unit B-20 study area. Within its occupied range the species inhabits arid annual grassland and shrubland communities and is most numerous in areas with a sparse to moderate cover of shrubs. Occupied habitat also typically occurs on open, gentle slopes with friable soils. Areas with high water tables, steep slopes, or broken, rocky upland terrain appear to be avoided by the species (USFWS, 1998). Habitats that are considered fair to good in quality typically support between 3 and 10 antelope squirrels per acre (USFWS, 1998). The species is primarily

diurnal and may be active throughout the day (with most activity occurring either early or late in the day). A potential indicator of habitat that is suitable for San Joaquin antelope squirrel is the presence of Heermann's kangaroo rat (*D. heermanni*). This latter species has been found to be common in most areas occupied by San Joaquin antelope squirrel (Williams, 1980). It should be noted that evidence of Heermann's kangaroo rat was observed within the Unit B-20 study area (e.g., large-diameter kangaroo rat burrows and haystacks). Therefore, given the occurrence of San Joaquin antelope squirrel in the Kettleman Hills and indicators of suitable habitat on the Unit B-20 study area, the species is considered to have some potential to occur on the site. However, given that no individuals were observed or heard during the 2002 wildlife surveys (during 12 days), this potential is considered low.

Conclusions

The surveys and available data review conducted in 2002 for special-status species of wildlife that may be affected by the proposed Unit B-20 Class I landfill resulted in the observation of one special-status species on the Unit B-20 study area (loggerhead shrike), two special-status species for which evidence of occupation was found on the site (San Joaquin kit fox and American badger), and eight species that are considered to have some potential to occur on the site. These species and their status are summarized in Table 3.

The surveys and available data review conducted in 2002 for special-status species of plants that may be affected by the proposed Unit B-20 Class I landfill resulted in the assessment that two species have been previously recorded on the Unit B-20 study area and nine species have some potential to occur on the site. These species and their status are summarized in Table 4.

No other special-status species are expected to occur on the Unit B-20 study area based on one of the following: (1) lack of suitable habitat on the site, (2) species' range is well known and does not include the project vicinity, or (3) species is only considered a special-status species during a portion of its life history that does not occur on the site (e.g., nesting period of special-status raptors).

Literature Cited

- BioSystems Analysis, Inc. (BioSystems). 1988. Rare Plant Survey of Kettleman Hills Hazardous Waste Disposal Facility.
- BioSystems Analysis, Inc. (BioSystems). 1991. Rare Plant Survey of the Chemical Waste Management, Inc. Kettleman Hills Facility. Tech. Report No. 596.
- California Department of Fish and Game (CDFG). 1990. Letter from George D. Nokes, Regional Manager (with attached *Approved Survey Methodologies for Sensitive Species*) describing recommended survey methodologies for San Joaquin kit fox, blunt-nosed leopard lizard, giant kangaroo rat, Tipton kangaroo rat, and San Joaquin antelope squirrel. Fresno, California.
- California Department of Fish and Game (CDFG). 1994. California Endangered Species Act Memorandum of Understanding by and between Chemical Waste Management, Inc. and California Department of Fish and Game regarding Kettleman Hills Hazardous Waste Facility (Ref. No. 9101).
- California Department of Fish and Game (CDFG). 1995. Memorandum from C. F. Raysbrook, Interim Director (with attached staff report on burrowing owl mitigation). Sacramento, California.
- California Department of Fish and Game (CDFG). 2002. California Natural Diversity Data Base.
- California Native Plant Society (CNPS). 1994. Inventory of Rare and Endangered Vascular Plants of California (5th Edition). M. W. Skinner and B. M. Pavlik, editors. California Native Plant Society. Sacramento, CA. vi + 338 pp.
- California Native Plant Society (CNPS). 2001. Inventory of Rare and Endangered Vascular Plants of California, 6th Edition. Rare Plant Scientific Advisory Committee, David P. Tibor, Convening Editor. California Native Plant Society. Sacramento, CA. x + 388 pp.
- Coffeen, M. 1993. Central Coast Wildflowers. EZ Nature Books, San Luis Obispo, California. 160 pp.
- Dole, J. W. and B. B. Rose. 1996. Shrubs and Trees of the Southern California Coastal Regions and Mountains. Foot-loose Press, North Hills, California. 184 pp.
- Germano, D. J., D. F. Williams, and W. Tordoff III. 1994. Effect of Drought on Blunt-Nosed Leopard Lizards (*Gambelia sila*). *Northwestern Naturalist* 75:11-19.

- Grinnell, J. and A. Miller. 1944. The Distribution of the Birds of California. Published by the Cooper Ornithological Society. Reprinted by Artemisia Press, April 1986. 617 pp.
- Hawbecker, A. C. 1951. Small Mammal Relationships in an Ephedra Community. *Journal of Mammalogy* 32:50-60.
- Hickman, L.R. (ed.). 1993. The Jepson Manual Higher Plants of California. University of California Press. Berkeley, CA. xvii + 1400 pp.
- Ingles, L. 1978. Mammals of the Pacific States: California, Oregon, and Washington. Stanford University Press, Stanford, California. 506 pp.
- Jennings, M. and M. Hayes. 1994. Amphibian and Reptile Species of Special Concern in California. Final report submitted to the California Department of Fish and Game, Inland Fisheries Division, Rancho Cordova, California, Contract No. 8023. 255 pp.
- Lefranc, N. 1997. Shrikes: A Guide to the Shrikes of the World. Yale University Press. New Haven and London. 192 pp.
- Lindzey, F. G. 1978. Movement Patterns of Badgers in Northwestern Utah. *Journal of Wildlife Management* 42:418-422.
- Long, C. A. 1973. *Taxidea taxus*. Mammal Species No. 26. 4 pp.
- Matthews, M. A.. 1997. An Illustrated Field Key to the Flowering Plants of Monterey County and Ferns, Fern Allies, and Conifers. CNPS Press, Sacramento, California. 401 pp.
- Messick, J. P. and M. G. Hornocker. 1981. Ecology of the Badger in Southwestern Idaho. *Wildlife Monogram* No.76. 53 pp.
- Millér, A.H. 1931. Systematic Revision and Natural History of the North American Shrikes (*Lanius*). *University of California Publications in Zoology* 38:11-242.
- Montanucci, R. R. 1965. Observations on the San Joaquin Leopard Lizard, *Crotaphytus wislizenii silus* Stejneger. *Herpetologica* 21:270-283.
- Remsen, J. 1978. Bird Species of Special Concern in California, An Annotated List of Declining and Vulnerable Species. Wildlife Management Branch Administrative Report No. 78-1. 54 pp.
- Small, W. 1994. California Birds: Their Status and Distribution. Ibis Publishing Company, Vista, California. 342 pp.

- Uptain, C., W., A. Clark, and S. M. Juarez. 1985. Mark-Recapture Population Estimates and Visitation Indices for the Blunt-Nosed Leopard lizard, *Gambelia silus*, at the Pixley National Wildlife Refuge, Tulare County, California. U. S. Fish and Wildlife Service, Delano, CA, Contract Nos. 10181-9810-3(js) and 10181-4672-4, 34 pp. + appendices.
- Uptain, C., R. Kokx, and S. Uptain. 2000. Results of a Sensitive Species Survey on the Waste Management Site, Kettleman Hills Facility. Unpubl. report prepared for Chemical Waste Management, Inc. Kettleman City, CA. 40 pp.
- U.S. Fish and Wildlife Service (USFWS). 1991. Formal Endangered Species Consultation on the Chemical Waste Management, Inc., Kettleman Hills Hazardous Waste Facilities Operation, Kings County, California (No. 1-1-90-F-18).
- U.S. Fish and Wildlife Service (USFWS). 1998. Recovery Plan for Upland Species of the San Joaquin Valley, California. Region 1, Portland, OR. 319 pp.
- U. S. Fish and Wildlife Service (USFWS). 2001. Endangered and Threatened Wildlife and Plants; Proposal to Delist *Eriastrum hooveri* (Hoover's wooly-star). Federal Register 66(4):13474-13480.
- White, P. J. and K. Ralls. 1994. Reproduction and Spacing Patterns of Kit Foxes Relative to Changing Prey Availability. *Journal of Wildlife Management* 57:861-867.
- Williams, D. 1980. Distribution and Population Status of the San Joaquin Antelope Squirrel and Giant Kangaroo Rat. California Department of Fish and Game, Sacramento, Non-game Wildlife Investigations, Final Report E-W-R, IV-10.0 48pp.
- Williams, D. 1986. Mammalian Species of Special Concern in California. Wildlife Management Division Administrative Report 86-1. 112 pp.
- Williams, D. F., D. J. Germano, and W. Tordoff III. 1993. Population Studies of Endangered Kangaroo Rats and Blunt-Nosed Leopard Lizards in the Carrizo Plain Natural Area, California. California Department of Fish and Game, Non-Game Bird and Mammal Section, Report 93-01:1-114.

Table 1
Results of the June and August, 2002
Blunt-nosed Leopard Lizard (BNLL) Surveys
on the Unit B-20 Study Area, Kettleman Hills Facility

Date	Survey Start	Survey End	Results
	Time Air Temperature (°C) Ground Temperature (°C)	Time Air Temperature (°C) Ground Temperature (°C)	
06/25/02	9:20 am 30 °C 32 °C	11:00 am 35 °C 42 °C	No BNLL
06/26/02	9:35 am 30 °C 35 °C	11:20 am 35 °C 47 °C	No BNLL
06/27/02	9:20 am 25 °C 32 °C	10:55 am 30 °C 41 °C	No BNLL
06/28/02	9:24 am 25 °C (not measured)	11:32 am 32 °C (not measured)	No BNLL
06/29/02	9:01 am 25 °C (not measured)	11:28 am 29 °C (not measured)	No BNLL
06/30/02	8:58 am 29 °C (not measured)	11:14 am 33 °C (not measured)	No BNLL
08/01/02	10:23 am 32 °C 38 °C	12:03 pm 34 °C 46 °C	No BNLL
08/02/02	8:48 am 28 °C 30 °C	10:25 am 30 °C 36 °C	No BNLL
08/03/02	9:16 am 27 °C 31 °C	11:06 am 30 °C 39 °C	No BNLL

Table 1
Results of the June and August, 2002
Blunt-nosed Leopard Lizard (BNLL) Surveys
on the Unit B-20 Study Area, Kettleman Hills Facility

Date	Survey Start	Survey End	Results
	Time Air Temperature (°C) Ground Temperature (°C)	Time Air Temperature (°C) Ground Temperature (°C)	
08/04/02	10:41 am 27 °C 37 °C	12:15 pm 31 °C 42 °C	No BNLL
08/05/02	9:20 am 25 °C 31 °C	10:51 am 28 °C 37 °C	No BNLL
08/06/02	9:45 am 27 °C 32 °C	11:38 am 29 °C 40 °C	No BNLL

TABLE 2
SPECIAL-STATUS SPECIES RECORDED OR POTENTIALLY OCCURRING
WITHIN THE VICINITY OF THE KETTLEMAN HILLS FACILITY, KINGS COUNTY

Genus/Species	Common Name	Status Federal/CA/Other	Habitats and Seasonal Distribution in California	Likelihood of Occurrence on Unit B-20 Study Area
PLANTS				
<i>Amsinckia vernicosa</i> var. <i>furcata</i>	Forked fiddleneck	none/none/CNPS 4	Forked fiddleneck is an annual found in cismontane woodland and valley and foothill grassland on loose, shaly slopes. It is known from Fresno, Kings, Kern, San Benito, and San Luis Obispo counties.	No Potential. This taxon has not been observed during previous surveys on the KHF that were conducted within the appropriate season and subsequent to good rainfall years (BioSystems, 1988 and 1991). In addition, the Unit B-20 study area does not provide suitable substrates for the plant. Therefore, the taxon has no potential to occur on the Unit B-20 study area.
<i>Atriplex cordulata</i>	Heart-leaved saltbush	none/none/CNPS 1b	This annual saltbush occurs in chenopod scrub, valley and foothill grassland, and vernal pools (typically on alkaline soils and frequently in scalded areas). It is known from Alameda, Contra Costa, Butte, Fresno, Glenn, Kings, Kern, Madera, Merced, San Joaquin, Solano, Stanislaus, Tulare, and Yolo counties.	Moderate Potential. Previous surveys on the Unit B-20 study area may have been conducted too early in the season to detect this annual. Reconnaissance-level surveys conducted in support of this report were conducted at an appropriate time, but 2002 was a poor rainfall year and the species was again not detected. However, suitable habitat for the species exists on the Unit B-20 study area and the species has been documented on other areas within the KHF

TABLE 2

SPECIAL-STATUS SPECIES RECORDED OR POTENTIALLY OCCURRING
 WITHIN THE VICINITY OF THE KETTLEMAN HILLS FACILITY, KINGS COUNTY

Genus/Species	Common Name	Status Federal/CA/Other	Habitats and Seasonal Distribution in California	Likelihood of Occurrence on Unit B-20 Study Area
				(Uptain et al., 2000). Therefore, the species is considered to have a moderate potential to occur on the Unit B-20 study area.
<i>Atriplex vallicola</i>	Lost Hills crownscale	none/none/CNPS 1b	This annual saltbush occurs in chenopod scrub, valley and foothill grassland, and vernal pools (typically on alkaline soils and frequently in scalded areas). It is known from Fresno, Kings, Kern, Merced, and San Luis Obispo counties. However, in the project vicinity it is only known from the Lost Hills in Kern County to extreme southern Kings County.	No Potential. Previous surveys on the Unit B-20 study area appear may have been conducted too early in the season to detect this annual. Reconnaissance-level surveys conducted in support of this report were conducted at an appropriate time, but 2002 was a poor rainfall year and the species was again not detected. The Unit B-20 study area is within the range of the species. However, typical associates of the species are not present and highly alkaline soil conditions typical of other sites where the species is found do not occur on the Unit B-20 study area. Therefore, the species is considered to have no potential to occur on the Unit B-20 study area.
<i>Caulanthus californicus</i>	California jewel-flower	FE/SE/CNPS 1b	This jewel-flower is an annual that blooms from February to May. It is found in chenopod scrub, pinyon and juniper woodlands, and valley and foothill grasslands. It has been recorded in Fresno, Kings, Kern, Santa	Low Potential. This taxon has not been observed during previous surveys on the KHF that were conducted within the appropriate season and subsequent to good rainfall years (BioSystems, 1988 and 1991). However, the Unit B-20 study area does

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WITHIN THE VICINITY OF THE KETTLEMAN HILLS FACILITY, KINGS COUNTY

Genus/Species	Common Name	Status Federal/CA/Other	Habitats and Seasonal Distribution in California	Likelihood of Occurrence on Unit B-20 Study Area
			Barbara, San Luis Obispo, Tulare, and Ventura counties.	provide suitable habitat for the plant. Therefore, the taxon has some potential, albeit low, to occur on the Unit B-20 study area.
<i>Delphinium gypsophilum</i> ssp. <i>gypsophilum</i>	Gypsum-loving larkspur	none/none/CNPS 4	This larkspur occurs in chenopod scrub, cismontane woodland, and valley and foothill grassland habitats. It is a perennial herb that is found in Alameda, Contra Costa, Fresno, Kings, Kern, Madera, Merced, Monterey, San Benito, San Joaquin, San Luis Obispo, Stanislaus, and Ventura counties.	Known to Occur. The taxon has been recorded during previous surveys on the KHF (BioSystems, 1988). These occurrences are associated with six small areas in the western-most ¼-sections of Section 3. One of these areas extends into the southwestern portion of the Unit B-20 study area. Therefore, it is known to occur on the Unit B-20 study area.
<i>Delphinium recurvatum</i>	Recurved larkspur	none/none/CNPS 1b	This plant is a perennial herb which blooms from March to May. It occurs on alkaline soils in chenopod scrub, cismontane woodland, and valley and foothill grasslands. Occurrences are known from Alameda, Contra Costa, Fresno, Kings, Kern, Merced, Monterey, San Luis Obispo, Solano, and Tulare counties. It is thought to be extirpated from Colusa County.	No Potential. This taxon has not been observed during previous surveys on the KHF that were conducted within the appropriate season and subsequent to good rainfall years (BioSystems, 1988 and 1991). In addition, the Unit B-20 study area does not provide suitable soils for the plant. Therefore, the taxon has no potential to occur on the Unit B-20 study area.

TABLE 2

**SPECIAL-STATUS SPECIES RECORDED OR POTENTIALLY OCCURRING
WITHIN THE VICINITY OF THE KETTLEMAN HILLS FACILITY, KINGS COUNTY**

Genus/Species	Common Name	Status Federal/CA/Other	Habitats and Seasonal Distribution in California	Likelihood of Occurrence on Unit B-20 Study Area
<i>Eriastrum hooveri</i>	Hoover's eriastrum	FT/none/CNPS 4	Hoover's eriastrum is an annual that blooms from April to August. It is found in chenopod scrub, pinyon and juniper woodlands, and valley and foothill grasslands. It is known from Kern, Fresno, Santa Barbara, Kings, San Benito, and San Luis Obispo counties. Although the majority of the known occurrences are on the San Joaquin and Cuyama valley floors, it has been found in substantial numbers at various other locations as well. It should be noted that the species has been proposed for delisting under the federal Endangered Species Act given that it has been found to be more widely distributed than was known when the species was listed.	Known to Occur. The species has been recorded during previous surveys on the KHF (BioSystems, 1991). These occurrences are associated with two small areas in the northern portion of the Unit B-20 study area. Therefore, it is known to occur on the Unit B-20 study area.
<i>Eriogonum gossypinum</i>	Cottony buckwheat	none/none/CNPS 4	This annual occurs in chenopod scrub and valley and foothill grasslands, typically on exposed clay soils. It is known from Fresno, Kern, Kings, and San Luis Obispo counties.	Moderate Potential. Three small stands of this species have been recorded immediately west of the Unit B-20 study area (BioSystems, 1988 and 1991). Therefore, it is considered to have a moderate potential to occur on similar

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Genus/Species	Common Name	Status Federal/CA/Other	Habitats and Seasonal Distribution in California	Likelihood of Occurrence on Unit B-20 Study Area
				"badland" topography in the Unit B-20 study area.
<i>Eriogonum temblorense</i>	Temblor buckwheat	none/none/CNPS 1b	Temblor buckwheat is an annual that occurs in valley and foothill grassland habitats on clay or sandstone soils. It is known from Kern, Monterey, and San Luis Obispo counties.	Low Potential. This taxon has not been observed during previous surveys on the KHF that were conducted within the appropriate season and subsequent to good rainfall years (BioSystems, 1988 and 1991). However, the Unit B-20 study area provides suitable habitat on the steep slopes of the western portion of the Unit B-20 study area. Therefore, the species has some potential, albeit low, to occur on the Unit B-20 study area.
<i>Layia heterotricha</i>	Pale-yellow layia	none/none/CNPS 1b	This species is an annual herb that occurs on alkaline and clay soils in cismontane woodlands, pinyon and juniper woodlands, and valley and foothill grasslands. It has been found in San Luis Obispo, Ventura, San Benito, Santa Barbara, Monterey, Kings, Kern, and Fresno counties.	Low Potential. This species has not been observed during previous surveys on the KHF that were conducted within the appropriate season and subsequent to good rainfall years (BioSystems, 1988 and 1991). However, the Unit B-20 study area does provide suitable habitat for the species. Therefore, it has some potential, albeit low, to occur on the Unit B-20 study area.

TABLE 2

SPECIAL-STATUS SPECIES RECORDED OR POTENTIALLY OCCURRING
 WITHIN THE VICINITY OF THE KETTLEMAN HILLS FACILITY, KINGS COUNTY

Genus/Species	Common Name	Status Federal/CA/Other	Habitats and Seasonal Distribution in California	Likelihood of Occurrence on Unit B-20 Study Area
<i>Lepidium jaredi</i>	Jared's peppergrass	none/none/CNPS 1b	Jared's peppergrass occurs in clay playas and washes in Fresno, Kings, Kern, San Benito, and San Luis Obispo counties.	No Potential. This species has not been observed during previous surveys on the KHF that were conducted within the appropriate season and subsequent to good rainfall years (BioSystems, 1988 and 1991). In addition, typical habitat for the species does not occur on the Unit B-20 study area. Therefore, the species is considered to have no potential to occur on the Unit B-20 study area.
<i>Monolopia congdonii</i>	San Joaquin woollythreads	FE/none/CNPS 1b	San Joaquin woollythreads (also known as <i>Lembertia congdonii</i>) occurs on sandy areas in chenopod scrub, and valley and foothill grasslands. It is an annual that blooms from February to May and has been found in Fresno, Kings, Kern, Santa Barbara, San Benito, San Luis Obispo, and Tulare counties.	Moderate Potential. Although this species has not been recorded on the Unit B-20 study area during previous surveys (BioSystems, 1988 and 1991), it has been recorded at scattered locations throughout the region. It also occurs at many scattered locations throughout the vicinity of the Unit B-20 study area. However, the presence of suitable habitat and several populations in the surrounding area suggests that this species has a moderate potential to occur on the Unit B-20 study area.
<i>Madia radiata</i>	Showy madia	none/none/CNPS 1b	This species is an annual herb that blooms from March to May. It has	Low Potential. This species has not been observed during previous surveys on the

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Genus/Species	Common Name	Status Federal/CA/Other	Habitats and Seasonal Distribution in California	Likelihood of Occurrence on Unit B-20 Study Area
			been found in Contra Costa, Fresno, Kings, Kern, Monterey, Santa Barbara, San Benito, San Joaquin, and San Luis Obispo counties. It occurs in cismontane woodlands, and valley and foothill grasslands.	KHF that were conducted within the appropriate season and subsequent to good rainfall years (BioSystems, 1988 and 1991). However, the Unit B-20 study area does provide suitable habitat for the plant. Therefore, the taxon has some potential, albeit low, to occur on the Unit B-20 study area.
<i>Nemacladus gracilis</i>	Slender nemacladus	none/none/CNPS 4	This species is known to occur in cismontane woodlands and valley and foothill grasslands in sandy or gravelly soils. Populations occur in Fresno, Kings, Kern, Los Angeles, and Merced counties.	Low Potential. This taxon has not been observed during previous surveys on the KHF that were conducted within the appropriate season and subsequent to good rainfall years (BioSystems, 1988 and 1991). However, the Unit B-20 study area does provide suitable habitat for the plant. Therefore, the taxon has some potential, albeit low, to occur on the Unit B-20 study area.
<i>Trichostema ovatum</i>	San Joaquin blue-curls	none/none/CNPS 4	San Joaquin bluecurls occurs in chenopod scrub and valley and foothill grassland habitats. It is an annual herb that is known from Fresno, Kings, Kern, and Tulare counties.	Known to Occur. This species is found scattered throughout the KHF (BioSystems, 1991). Due to the extent of the species' distribution on the KHF the occurrences were not mapped. However, the information presented in the BioSystems survey report indicates that occurrences

TABLE 2

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 WITHIN THE VICINITY OF THE KETTLEMAN HILLS FACILITY, KINGS COUNTY

Genus/Species	Common Name	Status Federal/CA/Other	Habitats and Seasonal Distribution in California	Likelihood of Occurrence on Unit B-20 Study Area
				were located within the Unit B-20 study area. Therefore, the species is known to occur on the Unit B-20 study area.
INVERTEBRATES				
<i>Coelus gracilis</i>	San Joaquin dune beetle	FSC/none/none	The species historically inhabited inland sand dunes from Antioch, Contra Costa County to the Kettleman Hills, Kings County. Currently, the species is restricted to small isolated sand dunes along the western edge of the San Joaquin Valley	No Potential. The nearest recorded occurrence for this species is slightly more than three miles to the east (just south of the intersection of Interstate 5 and State Highway 41). However, the Unit B-20 study area does not provide suitable habitat for the species. Therefore, it has no potential to occur on the Unit B-20 study area.
<i>Lytta molesta</i>	Molestan blister beetle	FSC/none/none	This species is distributed along the grassy plains and low foothills of the Sierra Nevada along the east side of the Central Valley, and throughout the Coast Ranges from Kern County to Brentwood in Contra Costa County. The species is found in grassland habitats (especially those associated with vernal pools).	No Potential. The biology of this species is not well understood. However, it appears to be loosely associated with vernal pools. This latter relationship and distance to the nearest known recorded occurrence (i.e., approximately 15 miles to the southeast) suggests that the species has no potential to occur on the Unit B-20 study area.

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Genus/Species	Common Name	Status Federal/CA/Other	Habitats and Seasonal Distribution in California	Likelihood of Occurrence on Unit B-20 Study Area
AMPHIBIANS				
<i>Scaphiopus hammondi</i>	Western spadefoot	FSC/CSC/none	Found in dry habitats (e.g., annual grassland, oak savannah and woodland, and coastal sage scrub) adjacent to vernal pools, stock ponds, and overflow channels of low-gradient drainages within the Central Valley and coastal California from Monterey County to San Diego County.	No Potential. There is no suitable aquatic natal habitat located on or immediately adjacent to the KHF (i.e., within several miles). Therefore, the species has no potential to occur on the Unit B-20 study area.
REPTILES				
<i>Gambelia sila</i>	Blunt-nosed leopard lizard	FE/SE/none	Found in the San Joaquin Valley from Merced County south to Ventura County. The species also occurs in the dry interior valleys adjacent to the southern San Joaquin Valley (i.e., Carrizo Plain and Cuyama Valley). Occurs in open, sparsely vegetated areas of low relief (typically in native or non-native grassland or alkali sink scrub).	Low Potential. The species has previously been recorded on the KHF near the administrative buildings. It has also been recorded at several other locations within the vicinity of the Unit B-20 study area (i.e., within three miles or less). Therefore, even though the 2002 surveys did not record this species on the Unit B-20 study area, there is some potential, albeit low, for the species to occur on the site.

TABLE 2

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Genus/Species	Common Name	Status Federal/CA/Other	Habitats and Seasonal Distribution in California	Likelihood of Occurrence on Unit B-20 Study Area
<i>Phrynosoma coronatum frontale</i>	California horned lizard	FSC/CSC/none	Found at scattered locations throughout coastal California from the San Francisco Bay area to Ventura and northern Los Angeles counties. Also occurs along the Sierra Nevada foothills in the Sacramento Valley and throughout the San Joaquin Valley. Requires open vegetation communities for basking, loose soils for burial, and ants as a prey base.	Low Potential. Unit B-20 study area provides open vegetation for basking and sandy substrates that may be used for night-time burial. In addition, colonies of granivorous ants (i.e., suitable food source) were observed on the Unit B-20 study area. Lastly, the species was once distributed widely in the region. However, the current patchiness of extant populations suggests that the Unit B-20 study area has only a low potential to support the species.
<i>Masticophis flagellum ruddocki</i>	San Joaquin coachwhip	FSC/CSC/none	With the exception of a disjunct population that occurs in the Sutter Buttes (Sutter County), the subspecies' current range includes the eastern and far southern edges of the San Joaquin Valley, and dry interior valleys of the Coast Range. It is found in open, dry vegetation types with little or no tree cover (typically annual grassland and saltbush scrub in the western San Joaquin Valley).	Moderate Potential. The subspecies has been recorded from several locations in the surrounding region (Jennings and Hayes, 1994). In addition, the subspecies was observed by Michael Bumgardner approximately two miles north of Kettleman Junction on July 20, 2002. Lastly, given that Unit B-20 study area provides suitable vegetation types, large numbers of small mammal burrows, and an adequate prey base, the subspecies has a moderate potential to occur on the Unit B-20 study area.

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Genus/Species	Common Name	Status Federal/CA/Other	Habitats and Seasonal Distribution in California	Likelihood of Occurrence on Unit B-20 Study Area
BIRDS				
<i>Aquila chrysaetos</i>	Golden eagle (nesting and wintering)	none/CFP/none	Found as a breeding resident throughout most of California (other than the valley floor of the Central Valley). Also found as a wintering species throughout most of California (other than the high Sierra Nevada). Species requires open terrain for hunting (e.g., grassland, oak savannah, and early successional stages of shrub and woodland habitats). Typically nests on secluded cliffs, but may also use large, isolated trees.	Low Potential. There is no suitable nesting habitat on the Unit B-20 study area for the species. Nor, has the species been documented nesting in the immediate vicinity of the Unit B-20 study area. However, the open habitats provided by the Unit B-20 study area and adjacent lands are suitable as foraging habitat for the species (particularly during the winter). Therefore, there is some potential, albeit low, for the species to occur on the Unit B-20 study area.
<i>Circus cyaneus</i>	Northern harrier (nesting)	none/CSC/none	Historically, the northern harrier was found as a nesting species within the Central Valley, central and northern coastal regions, and Modoc Plateau in California. The species is resident throughout California, but usually moves south during the winter months and concentrates in areas of favorable prey abundance such as the Central Valley.	No Potential. No suitable nesting habitat occurs on or in the immediate vicinity of the Unit B-20 study area. Therefore, the proposed project has no potential to affect the nesting habitat of the species.

TABLE 2

**SPECIAL-STATUS SPECIES RECORDED OR POTENTIALLY OCCURRING
WITHIN THE VICINITY OF THE KETTLEMAN HILLS FACILITY, KINGS COUNTY**

Genus/Species	Common Name	Status Federal/CA/Other	Habitats and Seasonal Distribution in California	Likelihood of Occurrence on Unit B-20 Study Area
			Suitable nesting habitat is provided by freshwater and coastal marshes, wet meadows, and dense grasslands.	
<i>Falco mexicanus</i>	Prairie falcon (nesting)	none/CSC/none	Found as a breeding resident within the inner Coast Range, Sierra Nevada foothills, and desert regions of California. Species requires open terrain for hunting (e.g., oak savannah, grassland, and early successional stages of shrub and woodland habitats). Typically nests on secluded cliff, bluff, or rock outcrop (particularly with southeastern exposure).	No Potential. No suitable nesting habitat occurs on or in the immediate vicinity of the Unit B-20 study area. Therefore, the proposed project has no potential to affect the nesting habitat of the species.
<i>Asio flammeus</i>	Short-eared owl (nesting)	none/CSC/none	Found as a nesting species within the central and northern coastal regions, Great Basin, San Francisco Bay area, and a small number of scattered sites in the Central Valley in California. The species winters throughout the Central Valley. Suitable nesting habitat is provided by freshwater and coastal marshes, coastal prairie and dunes, wet meadows, and dense grasslands.	No Potential. No suitable nesting habitat occurs on or in the immediate vicinity of the Unit B-20 study area. Therefore, the proposed project has no potential to affect the nesting habitat of the species.

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Genus/Species	Common Name	Status Federal/CA/Other	Habitats and Seasonal Distribution in California	Likelihood of Occurrence on Unit B-20 Study Area
<i>Athene cunicularia</i>	Burrowing owl (burrow sites)	FSC/CSC/none	The species is found throughout the Central Valley, in the San Francisco Bay Area, at scattered locations along the coast, and in portions of the desert regions. It is a year-round resident in annual and perennial grasslands or other vegetation communities that support sparse or non-existent tree or shrub canopies.	Moderate Potential. The Unit B-20 study area provides suitable habitat throughout the site. In addition, substantial numbers of potential burrows occur on the site that could be used by the species. Therefore, even though no evidence of the species (e.g., castings, urates, etc.) was found on the site, it has a moderate potential to occur on the Unit B-20 study area (particularly since individuals could move to the site from other locations in the region).
<i>Toxostoma lecontei</i>	San Joaquin Le Conte's thrasher	FSC/CSC/none	The northern-most fragment of remaining habitat for this subspecies in California occurs in the Kettleman Hills from State Highway 41 north to the northern edge of the hills south of Jayne Road. The eastern boundary of this fragment is Interstate 5, while the western boundary is the west edge of the Kettleman Hills immediately east of State Highway 33. The subspecies is found primarily in habitats dominated by saltbush (<i>Atriplex</i> spp.). It should be noted that a fire in 1996 destroyed most of the occupied habitat	No Potential. The Unit B-20 study area does not provide suitable habitat for the taxon since most of the site is covered with annual grassland. The saltbush scrub on the Unit B-20 study area is not extensive enough to be suitable for the taxon. Therefore, it has no potential to occur on the Unit B-20 study area.

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Genus/Species	Common Name	Status Federal/CA/Other	Habitats and Seasonal Distribution in California	Likelihood of Occurrence on Unit B-20 Study Area
			(almost 20,000 acres of saltbush habitat) on the Middle Dome of the Kettleman Hills leaving only the area north of Skyline Boulevard (approximately half of North Dome) as suitable habitat. An estimated 20 or fewer pairs were believed to be in this area in 1998. However, only one pair was recorded in 1999. No individuals have been recorded since 2001.	
<i>Lanius ludovicianus</i>	Loggerhead shrike	FSC/CSC/none	Found as resident and wintering species throughout the lower elevation portions of California in grasslands, saltbush scrub, chaparral, oak savannah, and other open woodland types (generally where there are trees with dense cover for nesting).	Known to Occur. The species was recorded on the Unit B-20 study area during the June and August 2002 surveys. In addition, the Unit B-20 study area provides foraging habitat (typically provided by grassland or open shrub communities) and nesting habitat for the species (in the dense <i>Atriplex</i> stands).
MAMMALS				
<i>Perognathus inornatus inornatus</i>	San Joaquin pocket mouse	FSC/none/none	This taxon typically occurs on fine-textured sandy soils on ridge tops and hillsides supporting grasslands or blue oak savannah. The species <i>P.</i>	Moderate Potential. The subspecies has been recorded from several locations in the Kettleman Hills (the nearest of which is approximately four miles north of the Unit

TABLE 2
SPECIAL-STATUS SPECIES RECORDED OR POTENTIALLY OCCURRING
WITHIN THE VICINITY OF THE KETTLEMAN HILLS FACILITY, KINGS COUNTY

Genus/Species	Common Name	Status Federal/CA/Other	Habitats and Seasonal Distribution in California	Likelihood of Occurrence on Unit B-20 Study Area
			<i>inornatus</i> is distributed within the Central Valley from Yolo and Sutter counties to the southern-most portions of the San Joaquin Valley and within and near the dry interior valleys of the Coast Range (e.g., Salinas and Cuyama valleys, and Carrizo Plain).	B-20 study area). In addition, the annual grassland and fine-textured soils on the Unit B-20 study area provide suitable habitat for the species. Therefore, the subspecies has a moderate potential to occur on the Unit B-20 study area.
<i>Dipodomys ingens</i>	Giant kangaroo rat	FE/SE/none	Found primarily on level, sandy-loam soils in annual grassland, but also occasionally occurs in alkali scrub. The species was historically distributed along the arid western edge of the southern San Joaquin Valley, on the Carrizo Plain, and within the upper Cuyama Valley. The species now occurs in six disjunct geographic regions. These regions include northwestern Fresno and eastern San Benito counties; the Kettleman Hills in Kings County; western Kern County near McKittrick, Taft, and Maricopa; Carrizo Plain in eastern San Luis Obispo County; Cuyama Valley in Santa Barbara and San Luis Obispo counties; and San Juan Creek Valley in San Luis Obispo County.	No Potential. This species has been recorded in the Kettleman Hills approximately eight miles south of the Unit B-20 study area. However, this species' distinctive burrows and haystacks often provide evidence of its presence. No such evidence was observed on the Unit B-20 study area. Therefore, it has no potential to occur on the Unit B-20 study area.

TABLE 2

**SPECIAL-STATUS SPECIES RECORDED OR POTENTIALLY OCCURRING
WITHIN THE VICINITY OF THE KETTLEMAN HILLS FACILITY, KINGS COUNTY**

Genus/Species	Common Name	Status Federal/CA/Other	Habitats and Seasonal Distribution in California	Likelihood of Occurrence on Unit B-20 Study Area
<i>Dipodomys nitratoides brevinasus</i>	Short-nosed kangaroo rat	FSC/CSC/none	The historical distribution of the subspecies included the western half of the San Joaquin Valley floor and the adjacent foothills of the Coast Range from Merced County south to the foothills of the Tehachapi Mountains. The range of the subspecies is now fragmented with the nearest populations to the Unit B-20 study area occurring in Pleasant Valley (Fresno County), and a few scattered locations in the Kettleman Hills (Kings County) and Lost Hills (Kern County). The subspecies is found on flat to gentle slopes in arid grassland or shrub communities (e.g., saltbush scrub).	Low Potential. This species has been recorded in the northern portion of the Kettleman Hills (USFWS, 1998). In addition, the Unit B-20 study area supports suitable habitat for the species (i.e., annual grassland and saltbush scrub on relatively flat areas or the bottom or banks of the arroyos). Therefore, the species has some potential, albeit low, to occur on the Unit B-20 study area.
<i>Ammospermophilus nelsoni</i>	San Joaquin antelope squirrel	FSC/ST/none	The historical distribution of the species included the western and southern portions of the Tulare Basin, San Joaquin Valley, and the contiguous areas to the west in the Upper Cuyama Valley and Carrizo and Elkhorn plains. The species occurs in arid annual grassland and shrubland communities	Low Potential. This species has been recorded approximately six miles northwest of the Unit B-20 study area in the Kettleman Hills. In addition, the Unit B-20 study area supports suitable habitat for the species (i.e., annual grassland). However, much of the Unit B-20 study area is characterized by relatively steep slopes and

TABLE 2
SPECIAL-STATUS SPECIES RECORDED OR POTENTIALLY OCCURRING
WITHIN THE VICINITY OF THE KETTLEMAN HILLS FACILITY, KINGS COUNTY

Genus/Species	Common Name	Status Federal/CA/Other	Habitats and Seasonal Distribution in California	Likelihood of Occurrence on Unit B-20 Study Area
			(e.g., saltbush). These communities are often on loam to sandy-loam soils on gentle slopes.	the species was not observed or heard during the 2002 surveys. Therefore, the species has some potential, albeit low, to occur on the Unit B-20 study area.
<i>Vulpes macrotis mutica</i>	San Joaquin kit fox	FE/ST/none	Found in the San Joaquin Valley from Contra Costa County south to Kern County. Also found in dry interior valleys of the Coast Range (e.g., Carrizo Plain, and Salinas and Cuyama valleys). Occurs in open, sparsely vegetated areas of low relief (typically in native or non-native grassland or alkali sink scrub).	Moderate Potential. The taxon has occasionally been recorded on and immediately adjacent to the KHF. It has not been recorded on the Unit B-20 study area. However, given that it occurs in the habitat types represented on the Unit B-20 study area, is a highly mobile species, and potential dens of the taxon were recorded on the study area, it has a moderate potential to occur on the Unit B-20 study area.
<i>Taxidea taxus</i>	American badger	none/SA/none	The species is found in a variety of open herbaceous and shrub vegetation types/habitats with dry, friable soils. It is widely distributed in California, with the exception of the humid coastal belt, occurring from sea-level to alpine meadows and coniferous forests.	Known to Occur. Sign of the species (e.g., dens and diggings) was recorded on the Unit B-20 study area during the 2002 survey. Therefore, the species is known to occur on the Unit B-20 study area.

TABLE 2

SPECIAL-STATUS SPECIES RECORDED OR POTENTIALLY OCCURRING
 WITHIN THE VICINITY OF THE KETTLEMAN HILLS FACILITY, KINGS COUNTY

Genus/Species	Common Name	Status Federal/CA/Other	Habitats and Seasonal Distribution in California	Likelihood of Occurrence on Unit B-20 Study Area
FEDERAL				
	FE	Federally listed as Endangered		
	FT	Federally listed as Threatened		
	FPE	Federally proposed as Endangered		
	FPT	Federally proposed as Threatened		
	FC	Federal Candidate Species (former Category 1 candidates)		
	FSC	U.S. Fish and Wildlife Service designated "Species of Concern" (former Category 2 Candidates for listing)		
	MNBMC	U.S. Fish and Wildlife Service designated "Migratory Non-game Bird of Management Concern"		
STATE				
	SE	State listed as Endangered		
	ST	State listed as Threatened		
	CFP	California Department of Fish and Game designated "Fully Protected"		
	CSC	California Department of Fish and Game designated "Species of Special Concern"		
	SA	California Department of Fish and Game designated "Special Animal"		
OTHER				
	CNPS List 1a	Plants presumed extinct in California		
	CNPS List 1b	Plants that are rare, threatened, or endangered in California and elsewhere		
	CNPS List 2	Plants that are rare, threatened, or endangered in California, but are 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		

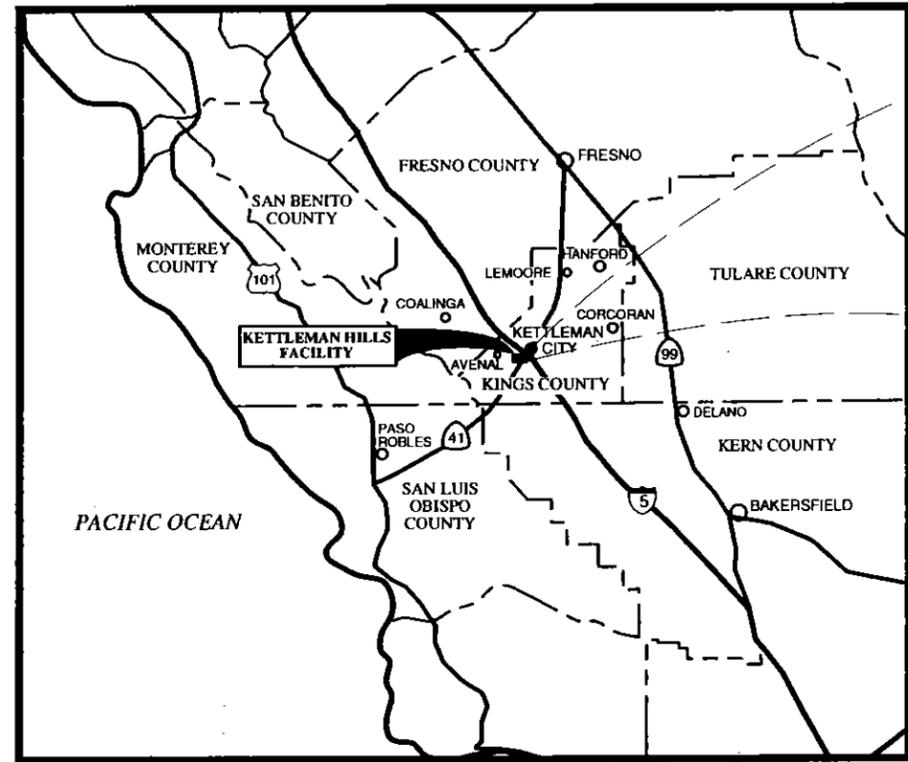
Table 3
Special-Status Wildlife Species with Potential to Occur
on the Unit B-20 Study Area, Kettleman Hills Facility

Genus/Species	Common Name	Likelihood of Occurrence on Unit B-20 Study Area
<i>Gambelia sila</i>	Blunt-nosed leopard lizard	Low Potential (though not recorded during protocol-level surveys during 2002)
<i>Phrynosoma coronatum frontale</i>	California horned lizard	Low Potential
<i>Masticophis flagellum ruddocki</i>	San Joaquin coachwhip	Moderate Potential (though not recorded during reconnaissance-level surveys during 2002)
<i>Aquila chrysaetos</i>	Golden eagle	Low Potential
<i>Athene cunicularia</i>	Burrowing owl	Moderate Potential (though not recorded during reconnaissance-level surveys during 2002)
<i>Lanius ludovicianus</i>	Loggerhead shrike	Recorded on Unit B-20 study area
<i>Perognathus inornatus inornatus</i>	San Joaquin pocket mouse	Moderate Potential
<i>Dipodomys nitratoides brevinasus</i>	Short-nosed kangaroo rat	Low Potential
<i>Ammospermophilus nelsoni</i>	San Joaquin antelope squirrel	Low Potential (though not recorded during reconnaissance-level surveys during 2002)
<i>Vulpes macrotis mutica</i>	San Joaquin kit fox	Moderate Potential (based on presence of suitable dens for taxon)
<i>Taxidea taxus</i>	American badger	Recorded on Unit B-20 study area (based on presence of suitable dens for species and recent diggings)

Notes: It should be noted that the results of the protocol-level surveys for blunt-nosed leopard lizard are only valid for the year in which they are conducted. Therefore, the species is considered to have a low potential to occur on the Unit B-20 study area even though it was not recorded during the 2002 protocol-level surveys on the site. A finding of absence may be prepared for the site in the future (prior to ground disturbance) if additional protocol-level surveys are conducted and no individuals are recorded.

Table 4
Special-Status Plant Species with Potential to Occur
on the Unit B-20 Study Area, Kettleman Hills Facility

Genus/Species	Common Name	Likelihood of Occurrence on Unit B-20 study area
<i>Atriplex cordulata</i>	Heart-leaved saltbush	Moderate Potential (recorded at nearby locations on KHF)
<i>Caulanthus californicus</i>	California jewel-flower	Low Potential
<i>Delphinium gypsophilum</i> ssp. <i>gypsophilum</i>	Gypsum-loving larkspur	Recorded on Unit B-20 study area
<i>Eriastrum hooveri</i>	Hoover's eriastrum	Recorded on Unit B-20 study area (however proposed for delisting)
<i>Eriogonum gossypinum</i>	Cottony buckwheat	Moderate Potential (recorded at nearby locations on KHF)
<i>Eriogonum temblorense</i>	Temblor buckwheat	Low Potential
<i>Layia heterotricha</i>	Pale-yellow layia	Low Potential
<i>Monolopia congdonii</i>	San Joaquin woollythreads	Moderate Potential (recorded at many locations in the Kettleman Hills)
<i>Madia radiata</i>	Showy madia	Low Potential
<i>Nemacladus gracilis</i>	Slender nemacladus	Low Potential
<i>Trichostema ovatum</i>	San Joaquin blue-curls	Recorded on Unit B-20 study area



REGIONAL LOCATION MAP



PROJECT LOCATION

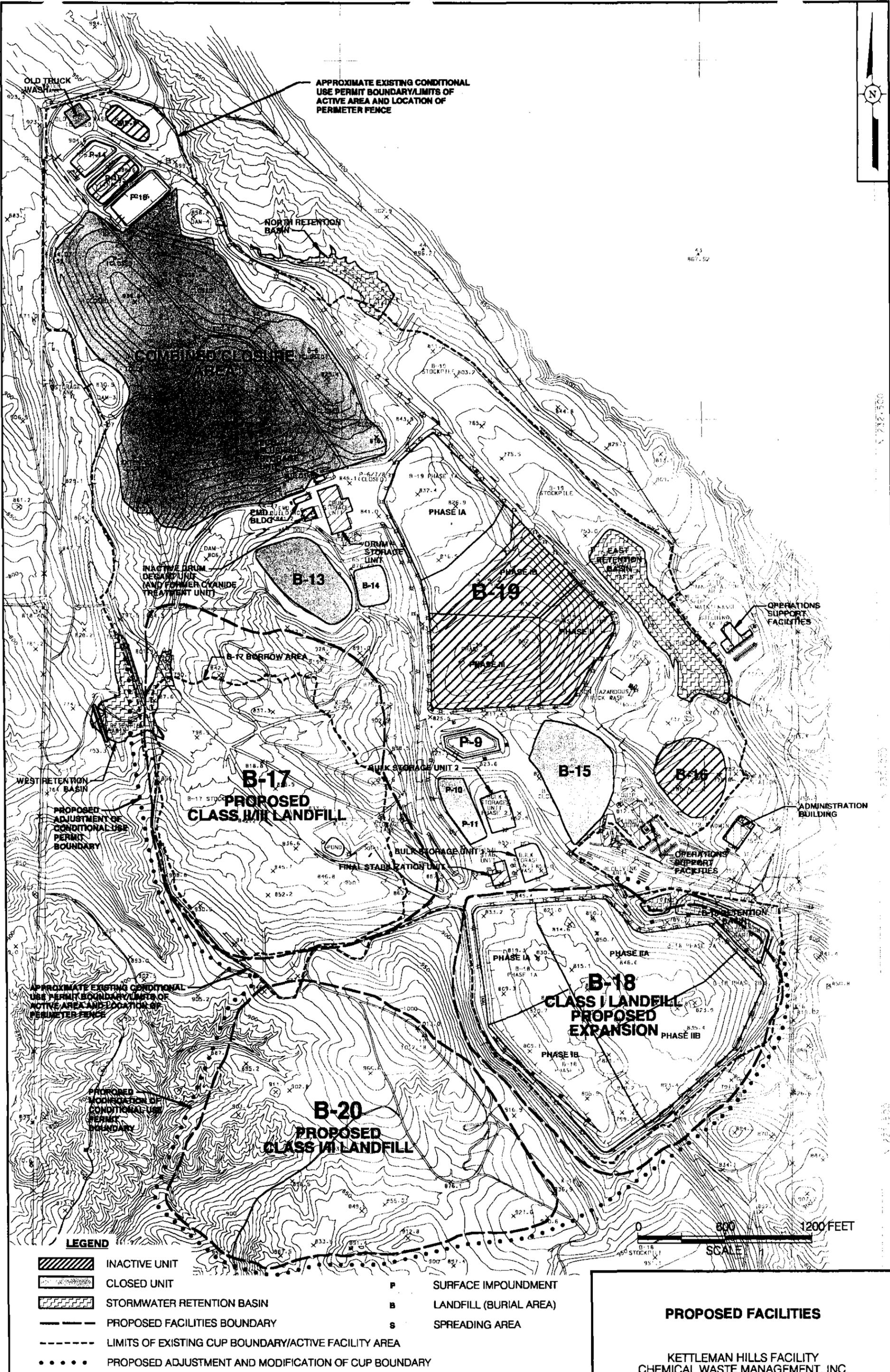
NOT TO SCALE

LOCATION MAP

KETTLEMAN HILLS FACILITY
CHEMICAL WASTE MANAGEMENT, INC.

FIGURE 1





APPROXIMATE EXISTING CONDITIONAL USE PERMIT BOUNDARY/LIMITS OF ACTIVE AREA AND LOCATION OF PERIMETER FENCE

43
867.52

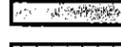
732.500

B-17
PROPOSED CLASS III LANDFILL

B-18
CLASS I LANDFILL PROPOSED EXPANSION

B-20
PROPOSED CLASS III LANDFILL

LEGEND

-  INACTIVE UNIT
-  CLOSED UNIT
-  STORMWATER RETENTION BASIN
-  PROPOSED FACILITIES BOUNDARY
-  LIMITS OF EXISTING CUP BOUNDARY/ACTIVE FACILITY AREA
-  PROPOSED ADJUSTMENT AND MODIFICATION OF CUP BOUNDARY
-  SURFACE IMPOUNDMENT
-  LANDFILL (BURIAL AREA)
-  SPREADING AREA



PROPOSED FACILITIES

KETTLEMAN HILLS FACILITY
CHEMICAL WASTE MANAGEMENT, INC.

FIGURE 3

PHOTOGRAMMETRY BY: AERIAL PHOTOMAPPING SERVICES, DATED JUNE 3, 2002.

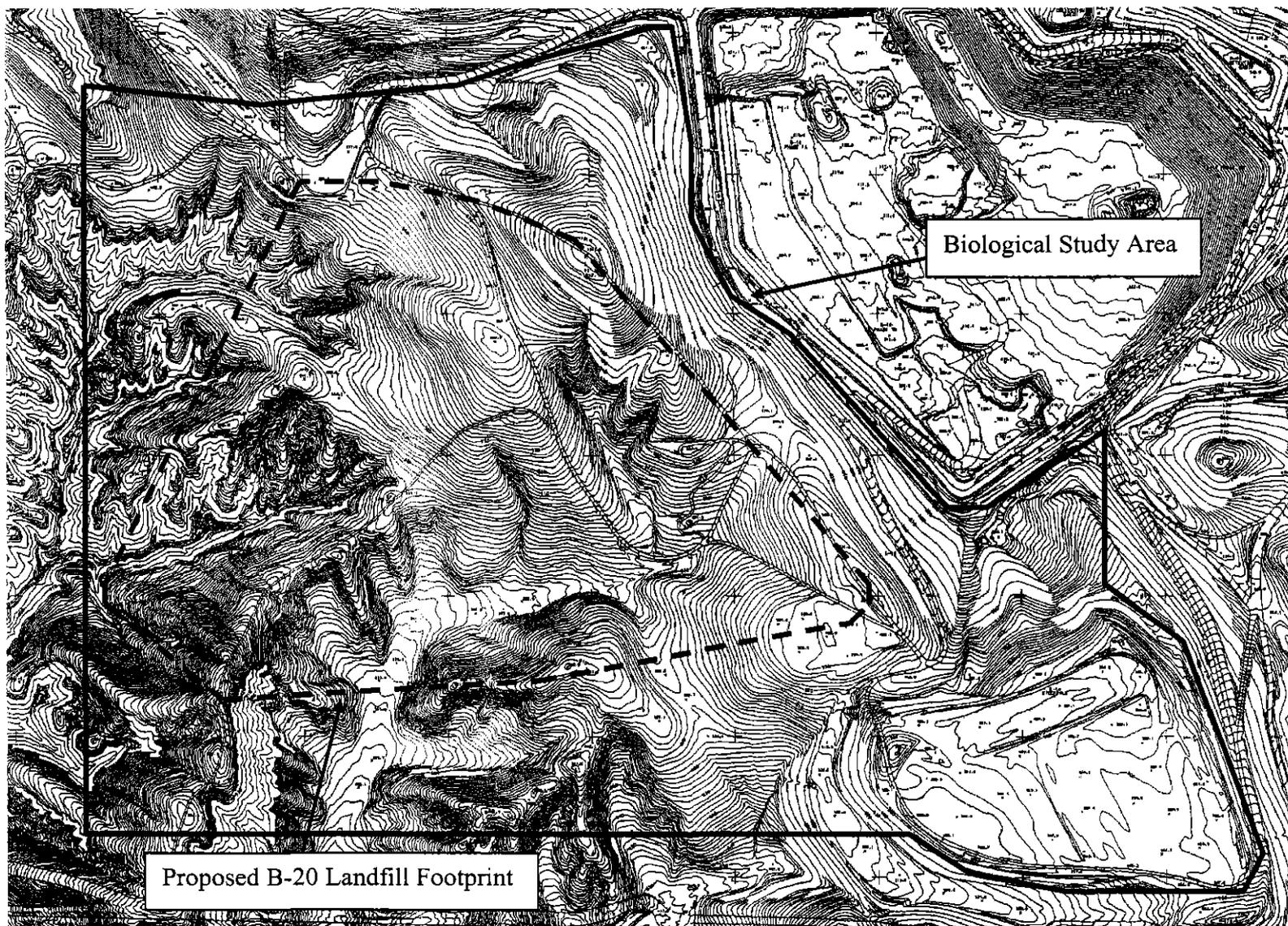


Figure 4
Proposed Unit B-20 Class I Landfill Footprint and Biological Study Area, Kettleman Hills Facility

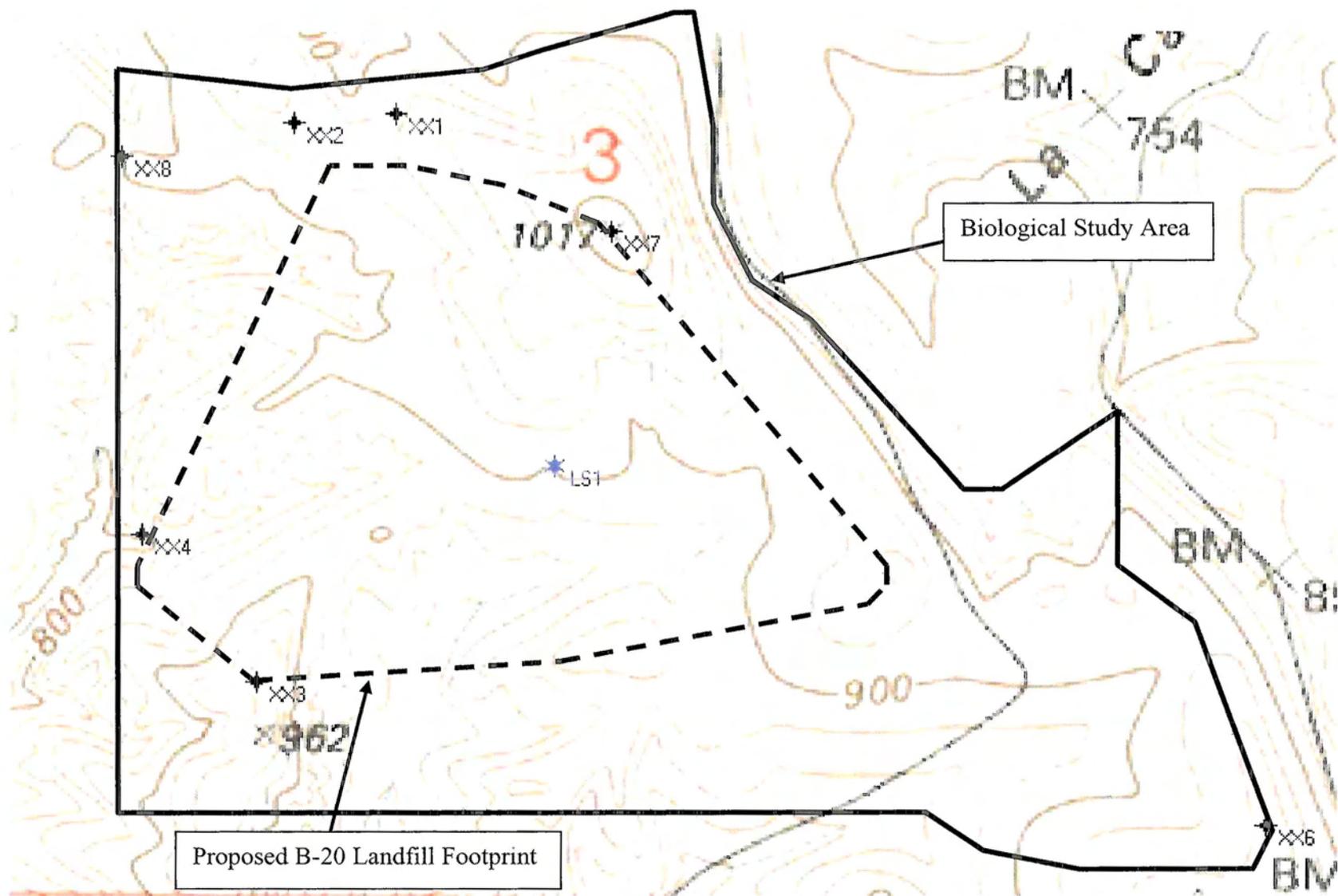


Figure 5
Loggerhead Shrike Occurrences on the
Unit B-20 Study Area, Kettleman Hills Facility

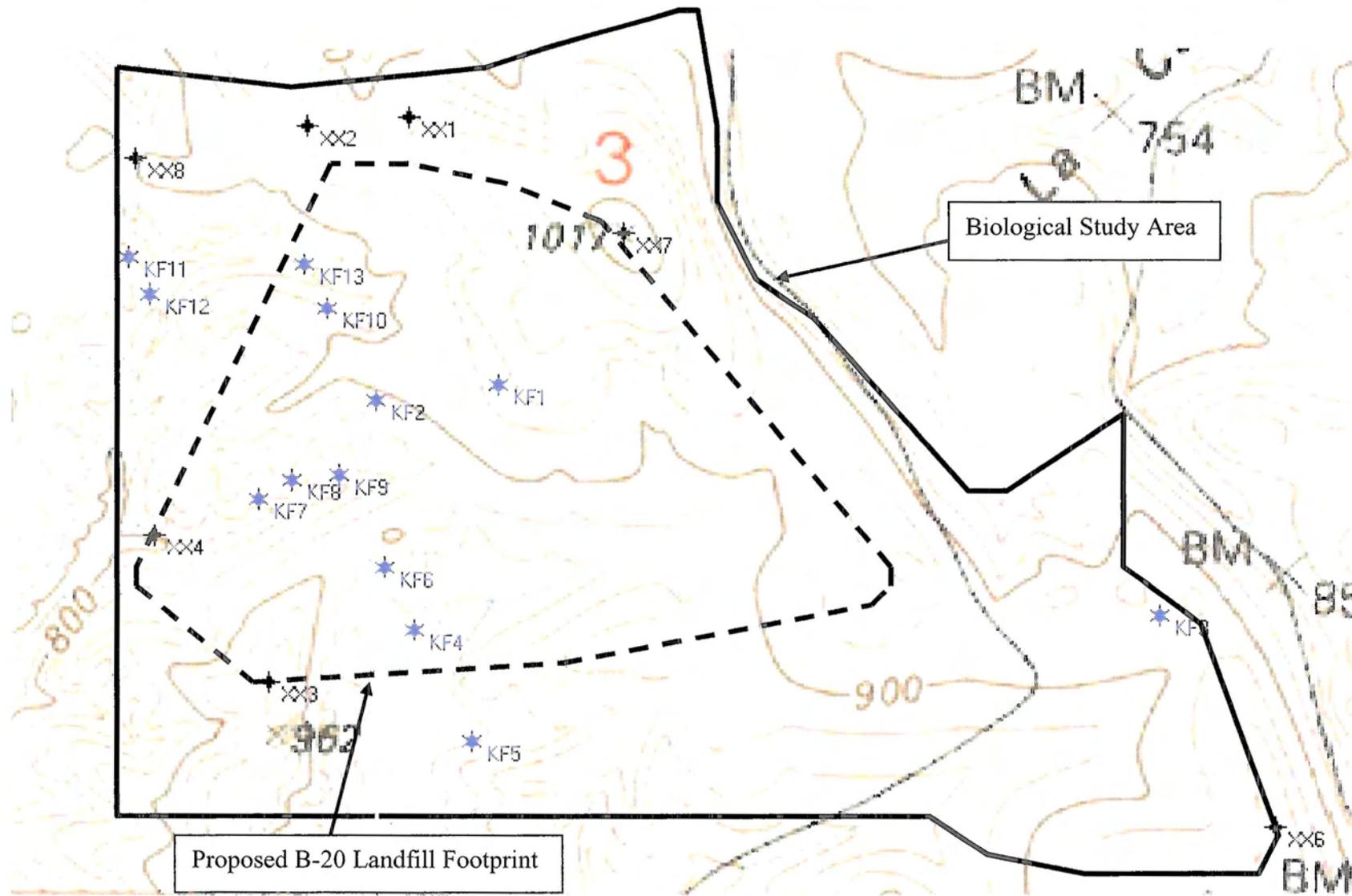


Figure 6
Potential San Joaquin Kit Fox Dens on the
Unit B-20 Study Area, Kettleman Hills Facility

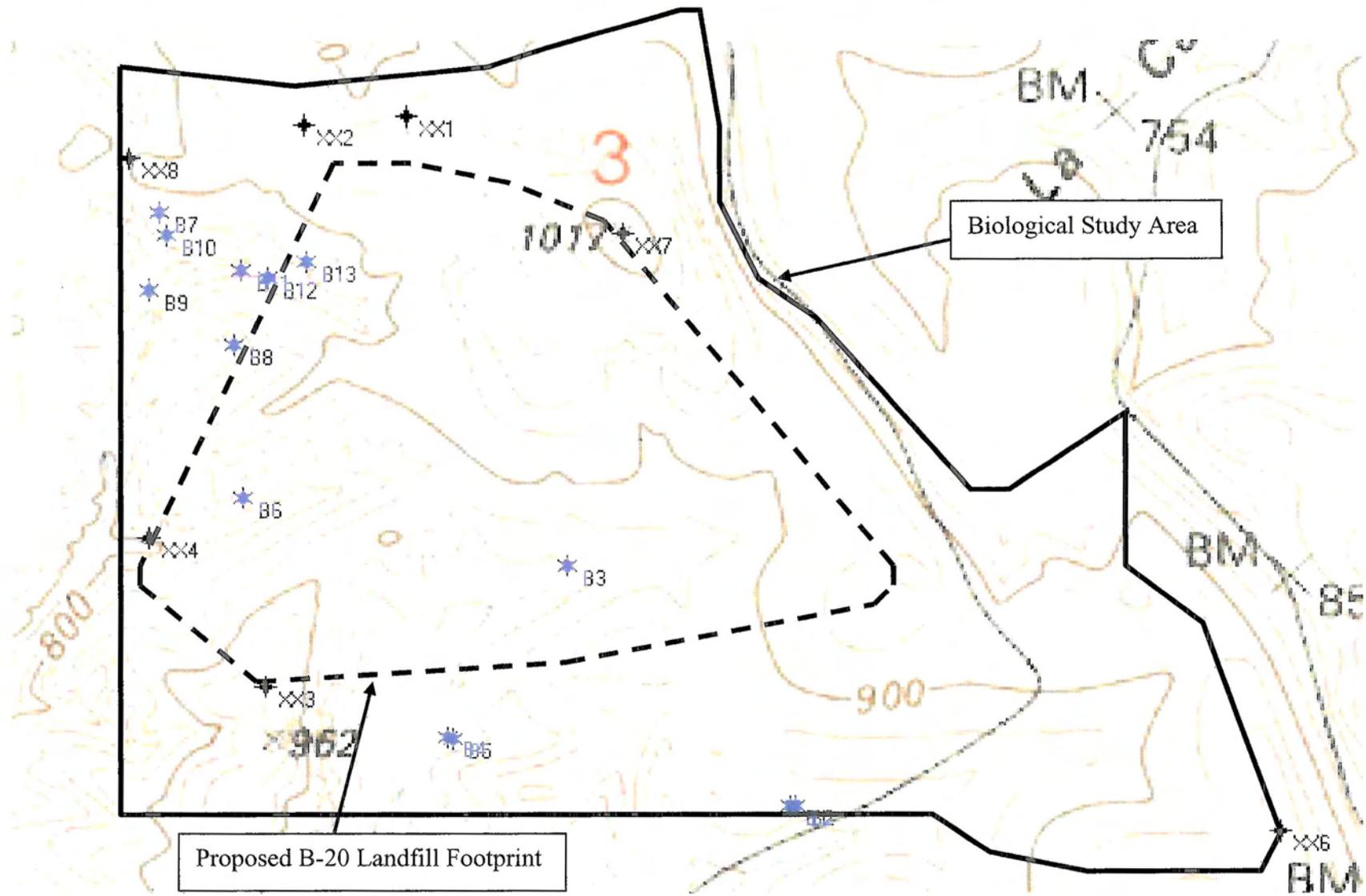


Figure 7
American Badger Dens on the
Unit B-20 Study Area, Kettleman Hills Facility

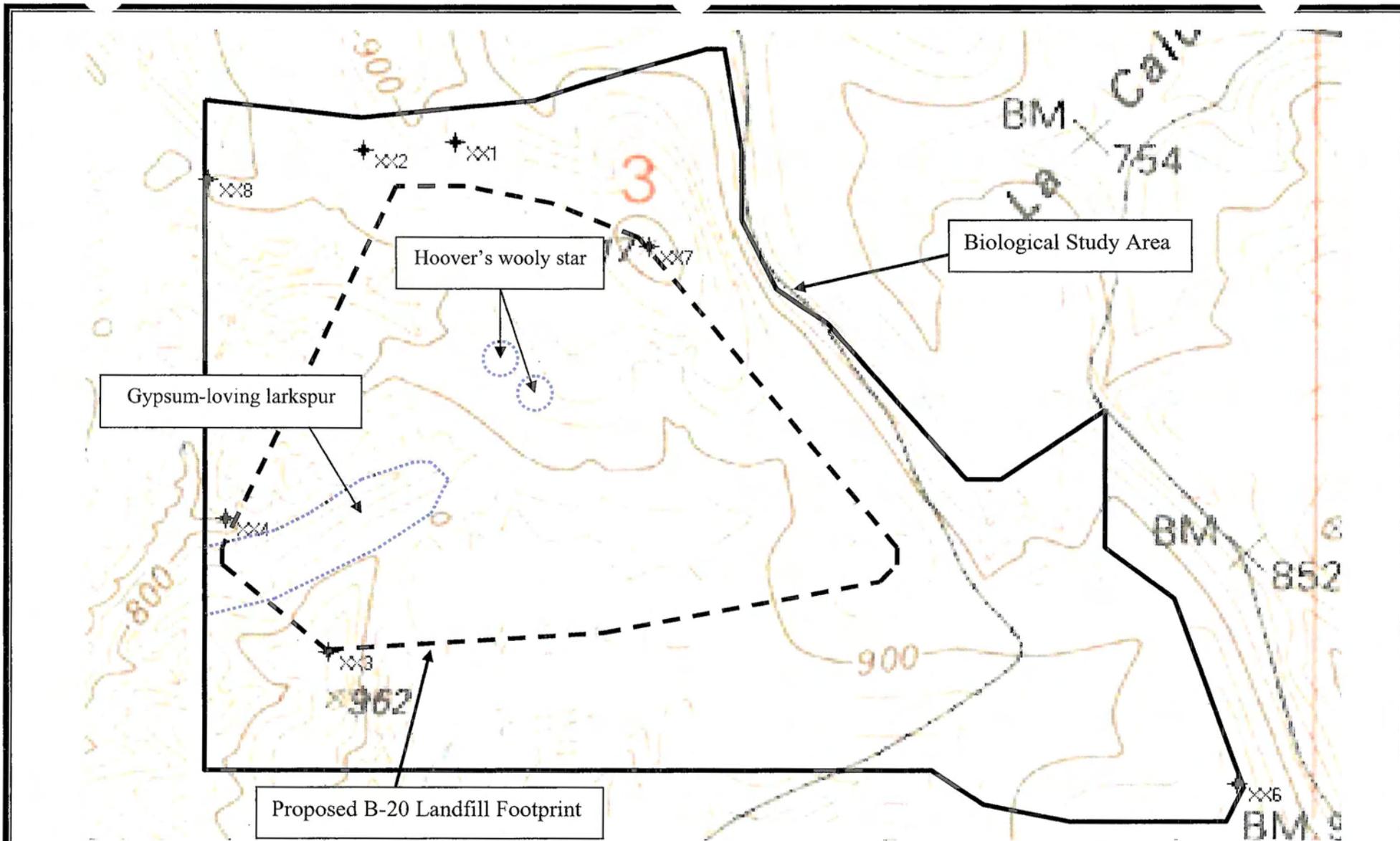


Figure 8
Special-Status Plant Species within the
Unit B-20 Study Area, Kettleman Hills Facility

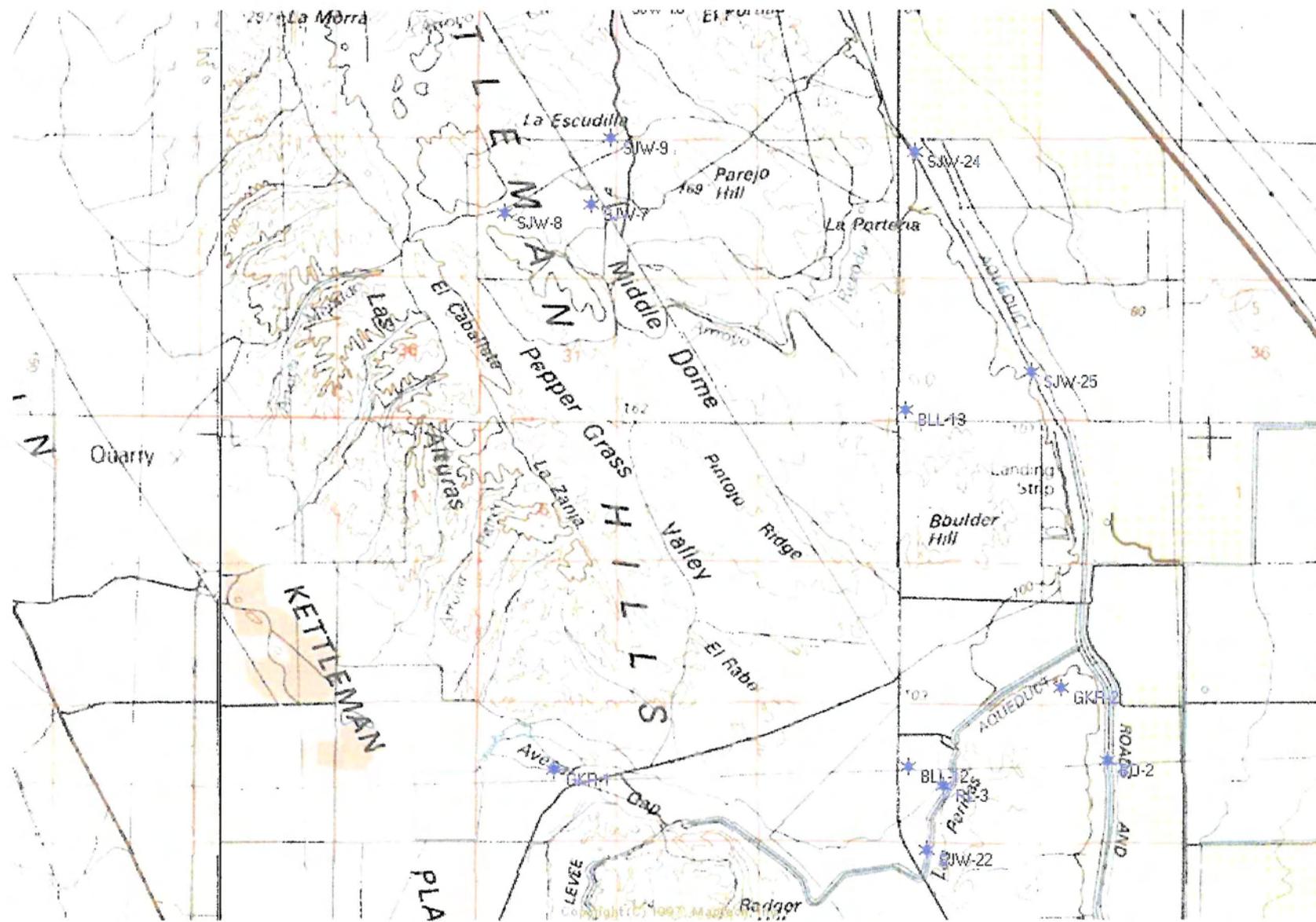


Figure 11

CNDDDB Special-Status Species Occurrences in the Vicinity of the Kettleman Hills Facility – Southern Kettleman Hills

Appendix A

**CNDDDB/Rarefind 2 Report
for
Proposed Expansion Project,
Kettleman Hills Facility,
Chemical Waste Management,
Kings County, California**

The Source
Occurrence Detail Report

PRAIRIE FALCON
FALCO MEXICANUS

Query ID: PF-1
Element Code: ABNKD06090

Federal: None State: None	Global Rank: G5 State Rank: S3	CDFG List: SC
Township: 25S Range: 16E Section: 11 Qtr: NE Elevation: 2120	Meridian: M Precision: NON-SPECIFIC Symbol Type: POINT Radius: 1 mile Map Index: 13861	Lat/Long: 35° 46' 21" / 120° 12' 56" UTM: Zone-10 N3962092 E751711 Element Last Seen: 1977-XX-XX Site Last Visited: 1977-XX-XX

County Summary: SAN LUIS OBISPO (SLO)
Quad Summary: TENT HILLS (3512072 / 291C)*, TENT HILLS (3512072 / 291C)
SNA Summary:
Owner/Manager: UNKNOWN

LOCATION DETAILS

BLUE PT, TEMBLOR RANGE.

OCCURRENCE INFORMATION

Occurrence No. 298
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: CDFG RAPTOR NEST FILES 1981 (PERS)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: (NESTING) INHABITS DRY, OPEN TERRAIN, EITHER LEVEL OR HILLY.
Micro: BREEDING SITES LOCATED ON CLIFFS. FORAGES FAR AFIELD, EVEN TO MARSHLANDS AND OCEAN SHORES.

COMMENTS

Distribution:
Ecological:
Threat:
General: TAKEN FROM FILES AT NONGAME WILDLIFE INVESTIGATIONS, CDFG (CA-SL-14-PR). NEST LOCATED IN A POTHOLE, 75 FT UP A BOULDER.

The Source
Occurrence Detail Report

PRAIRIE FALCON
FALCO MEXICANUS

Query ID: PF-2
Element Code: ABNKD06090

Federal: None State: None	Global Rank: G5 State Rank: S3	CDFG List: SC
Township: 25S Range: 18E Section: 20 Qtr: XX Elevation: 840	Meridian: M Precision: NON-SPECIFIC Symbol Type: POINT Radius: 1 mile Map Index: 14244	Lat/Long: 35° 44' 17" /120° 02' 59" UTM: Zone-10 N3958710 E766822 Element Last Seen: 1979-05-26 Site Last Visited: 1979-05-26

County Summary: KERN (KRN)
Quad Summary: SAWTOOTH RIDGE (3512061 / 267A)*, SAWTOOTH RIDGE (3512061 / 267A),
PYRAMID HILLS (3512071 / 291D)
SNA Summary:
Owner/Manager: UNKNOWN

LOCATION DETAILS

DEVILS DEN, ANTELOPE VALLEY.

OCCURRENCE INFORMATION

Occurrence No. 376
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: CDFG RAPTOR NEST FILES 1981 (PERS)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: (NESTING) INHABITS DRY, OPEN TERRAIN, EITHER LEVEL OR HILLY.
Micro: BREEDING SITES LOCATED ON CLIFFS. FORAGES FAR AFIELD, EVEN TO
MARSHLANDS AND OCEAN SHORES.

COMMENTS

Distribution:
Ecological:
Threat:
General: TAKEN FROM FILES AT NONGAME WILDLIFE INVESTIGATIONS, CDFG
(CA-KE-10-PR). OBSERVED BY SCHLORFF, WALKER, AND WALTON. SITE
FREQUENTLY ACTIVE BEFORE 1970; PAIRS OBSERVED IN 1972 AND 1975.

The Source
Occurrence Detail Report

PRAIRIE FALCON
FALCO MEXICANUS

Query ID: PF-3
Element Code: ABNKD06090

Federal: None State: None	Global Rank: G5 State Rank: S3	CDFG List: SC
Township: 25S Range: 17E Section: 13 Qtr: XX Elevation: 1000	Meridian: M Precision: NON-SPECIFIC Symbol Type: POINT Radius: 1 mile Map Index: 14174	Lat/Long: 35° 45' 07" /120° 05' 17" UTM: Zone-10 N3960147 E763308 Element Last Seen: 1978-XX-XX Site Last Visited: 1978-XX-XX

County Summary: KERN (KRN)
Quad Summary: PYRAMID HILLS (3512071 / 291D)*, SAWTOOTH RIDGE (3512061 / 267A),
PYRAMID HILLS (3512071 / 291D)
SNA Summary:
Owner/Manager: UNKNOWN

LOCATION DETAILS

INDIAN ROCKS, ANTELOPE VALLEY.

OCCURRENCE INFORMATION

Occurrence No. 379 Origin: Natural/Native occurrence
Occ Rank: Unknown Presence: Presumed Extant
Trend: Unknown
Main Source: CDFG RAPTOR NEST FILES 1981 (PERS)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: (NESTING) INHABITS DRY, OPEN TERRAIN, EITHER LEVEL OR HILLY.
Micro: BREEDING SITES LOCATED ON CLIFFS. FORAGES FAR AFIELD, EVEN TO
MARSHLANDS AND OCEAN SHORES.

COMMENTS

Distribution:
Ecological:
Threat:
General: TAKEN FROM FILES AT NONGAME WILDLIFE INVESTIGATIONS, CDFG
(CA-FE-11-PR). OBSERVED BY WALTON AND SILVERIA. NEST ACTIVE IN 1971,
1973, AND 1974-78.

The Source
Occurrence Detail Report

PRAIRIE FALCON
FALCO MEXICANUS

Query ID: PF-4
Element Code: ABNKD06090

Federal: None State: None	Global Rank: G5 State Rank: S3	CDFG List: SC
Township: 24S Range: 17E Section: 06 Qtr: XX Elevation:	Meridian: M Precision: NON-SPECIFIC Symbol Type: POINT Radius: 1 mile Map Index: 13975	Lat/Long: 35° 52' 08" / 120° 10' 02" UTM: Zone-10 N3972912 E755772 Element Last Seen: 1979-06-XX Site Last Visited: 1979-06-XX

County Summary: KINGS (KNG)
Quad Summary: TENT HILLS (3512072 / 291C)*, TENT HILLS (3512072 / 291C), GARZA PEAK (3512082 / 291B)
SNA Summary:
Owner/Manager: UNKNOWN

LOCATION DETAILS

AVENAL CREEK, SUNFLOWER VALLEY.

OCCURRENCE INFORMATION

Occurrence No. 398
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: CDFG RAPTOR NEST FILES 1981 (PERS)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: (NESTING) INHABITS DRY, OPEN TERRAIN, EITHER LEVEL OR HILLY.
Micro: BREEDING SITES LOCATED ON CLIFFS. FORAGES FAR AFIELD, EVEN TO MARSHLANDS AND OCEAN SHORES.

COMMENTS

Distribution:
Ecological:
Threat:
General: TAKEN FROM FILES AT NONGAME WILDLIFE INVESTIGATIONS, CDFG (CA-KI-01-PR). OBSERVED BY WALTON, ET. AL.; NEST ACTIVE 1975-77.

The Source
Occurrence Detail Report

PRAIRIE FALCON
FALCO MEXICANUS

Query ID: PF-5
Element Code: ABNKD06090

Federal: None State: None	Global Rank: G5 State Rank: S3	CDFG List: SC
Township: 23S Range: 17E Section: 31 Qtr: XX Elevation: 1240	Meridian: M Precision: NON-SPECIFIC Symbol Type: POINT Radius: 1 mile Map Index: 13965	Lat/Long: 35° 53' 05" / 120° 10' 22" UTM: Zone-10 N3974656 E755208 Element Last Seen: 1978-05-02 Site Last Visited: 1978-05-02

County Summary: KINGS (KNG)

Quad Summary: GARZA PEAK (3512082 / 291B)*, TENT HILLS (3512072 / 291C), GARZA PEAK (3512082 / 291B)

SNA Summary:

Owner/Manager: UNKNOWN

LOCATION DETAILS

CHALK BUTTES.

OCCURRENCE INFORMATION

Occurrence No. 403
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Main Source: CDFG RAPTOR NEST FILES 1981 (PERS)

Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: (NESTING) INHABITS DRY, OPEN TERRAIN, EITHER LEVEL OR HILLY.

Micro: BREEDING SITES LOCATED ON CLIFFS. FORAGES FAR AFIELD, EVEN TO MARSHLANDS AND OCEAN SHORES.

COMMENTS

Distribution:

Ecological:

Threat:

General: TAKEN FROM FILES AT NONGAME WILDLIFE INVESTIGATIONS, CDFG (CA-KI-02-PR). OBSERVED BY LEE, WALTON, AND SILVERIA; NEST LOCATED AT 125 FT IN AN OLD RAVEN NEST ON A DIRT BLUFF. NEST ACTIVE IN 1975 AND 1977.

The Source
Occurrence Detail Report

BURROWING OWL
ATHENE CUNICULARIA

Query ID: BO-1
Element Code: ABNSB10010

Federal: None State: None	Global Rank: G4 State Rank: S2	CDFG List: SC
Township: 22S Range: 17E Section: 25 Qtr: NE Elevation: 850	Meridian: M Precision: NON-SPECIFIC Symbol Type: POINT Radius: 1/5 mile Map Index: 14191	Lat/Long: 35° 59' 12" /120° 04' 55" UTM: Zone-10 N3986208 E763083 Element Last Seen: 1980-02-02 Site Last Visited: 1989-02-02

County Summary: KINGS (KNG)
Quad Summary: KETTLEMAN PLAIN (3512081 / 291A)*, KETTLEMAN PLAIN (3512081 / 291A)
SNA Summary:
Owner/Manager: UNKNOWN

LOCATION DETAILS

FOOTHILLS ON E SIDE OF KETTLEMAN PLAIN, APPROX 3 MI ESE OF AVENAL

OCCURRENCE INFORMATION

Occurrence No. 74
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Main Source: NICOLAI, N. 1989 (OBS)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: (BURROW SITES) OPEN, DRY ANNUAL OR PERENIAL GRASSLANDS, DESERTS & SCRUBLANDS CHARACTERIZED BY LOW-GROWING VEGETATION.
Micro: SUBTERRANEAN NESTER, DEPENDENT UPON BURROWING MAMMALS, MOST NOTABLY, THE CALIFORNIA GROUND SQUIRREL.

COMMENTS

Distribution:
Ecological: HABITAT IS NON-NATIVE GRASSLAND DOMINATED BY BROMUS RUBENS AND NASSELLA PULCHRA IN STEEP-SIDED GULLIES.
Threat: THREATS INCLUDE HEAVY CATTLE GRAZING AND VEHICULAR TRAFFIC (SEISMIC PROGRAM VEHICLES).
General: TWO BURROWING OWL BURROWS OBSERVED. TWO ACTIVE SAN JOAQUIN KIT FOX DENS NEARBY.

The Source
Occurrence Detail Report

BURROWING OWL
ATHENE CUNICULARIA

Query ID: BO-2
Element Code: ABNSB10010

Federal: None State: None	Global Rank: G4 State Rank: S2	CDFG List: SC
Township: 24S Range: 19E Section: 14 Qtr: NW Elevation: 310	Meridian: M Precision: SPECIFIC Symbol Type: POINT Radius: 80m Map Index: 39782	Lat/Long: 35° 50' 28" / 119° 53' 19" UTM: Zone-11 N3969995 E239085 Element Last Seen: 1996-06-04 Site Last Visited: 1996-06-04

County Summary: KINGS (KNG)
Quad Summary: AVENAL GAP (3511978 / 290C)*, AVENAL GAP (3511978 / 290C)
SNA Summary:
Owner/Manager: DWR-CALIFORNIA AQUEDUCT

LOCATION DETAILS

ON THE SECONDARY (SW) SIDE OF THE CALIFORNIA AQUEDUCT, 1 MILE SOUTH OF THE COASTAL BRANCH, IN THE KETTLEMAN HILLS.

OCCURRENCE INFORMATION

Occurrence No. 289
Occ Rank: Fair
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Main Source: BROWN, K. 1996 (OBS)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: (BURROW SITES) OPEN, DRY ANNUAL OR PERENIAL GRASSLANDS, DESERTS & SCRUBLANDS CHARACTERIZED BY LOW-GROWING VEGETATION.
Micro: SUBTERRANEAN NESTER, DEPENDENT UPON BURROWING MAMMALS, MOST NOTABLY, THE CALIFORNIA GROUND SQUIRREL.

COMMENTS

Distribution: BURROW IS LOCATED IN THE PROTECTIVE EMBANKMENTS ADJACENT TO THE AQUEDUCT, AT MILEAGE POST 185.55.
Ecological: HABITAT CONSISTS OF VALLEY SALTBUSH SCRUB MIXED WITH NON-NATIVE GRASSLAND; ADJACENT TO AGRICULTURE. SAN JOAQUIN KIT FOX, BLUNT-NOSED LEOPARD LIZARD, AND SHORT-NOSED K-RAT ALSO FOUND IN THE VICINITY.
Threat: POSSIBLE THREAT FROM AQUEDUCT MAINTENANCE ACTIVITIES.
General: A PAIR OF OWLS OBSERVED ON 4 JUNE 1996.

The Source
Occurrence Detail Report

BURROWING OWL
ATHENE CUNICULARIA

Query ID: BO-3
Element Code: ABNSB10010

Federal: None State: None	Global Rank: G4 State Rank: S2	CDFG List: SC
Township: 24S Range: 19E Section: 31 Qtr: SW Elevation: 450	Meridian: M Precision: SPECIFIC Symbol Type: POINT Radius: 80m Map Index: 39787	Lat/Long: 35° 47' 28" / 119° 57' 43" UTM: Zone-11 N3964654 E232300 Element Last Seen: 1996-06-03 Site Last Visited: 1996-06-03

County Summary: KINGS (KNG)
Quad Summary: AVENAL GAP (3511978 / 290C)*, AVENAL GAP (3511978 / 290C)
SNA Summary:
Owner/Manager: DWR-CALIFORNIA AQUEDUCT

LOCATION DETAILS

ALONG THE CALIFORNIA AQUEDUCT COASTAL BRANCH, JUST NORTH OF THE KINGS/KERN COUNTY LINE, ON THE EDGE OF KETTLEMAN PLAIN.

OCCURRENCE INFORMATION

Occurrence No. 290
Occ Rank: Fair
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: BROWN, K. 1996 (OBS)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: (BURROW SITES) OPEN, DRY ANNUAL OR PERENIAL GRASSLANDS, DESERTS & SCRUBLANDS CHARACTERIZED BY LOW-GROWING VEGETATION.
Micro: SUBTERRANEAN NESTER, DEPENDENT UPON BURROWING MAMMALS, MOST NOTABLY, THE CALIFORNIA GROUND SQUIRREL.

COMMENTS

Distribution: BURROWS ARE LOCATED IN THE SLOPE ABOVE THE CANAL LINING AND PROTECTIVE EMBANKMENT.
Ecological: HABITAT CONSISTS OF NON-NATIVE GRASSLAND, ADJACENT TO AGRICULTURAL LANDS. SAN JOAQUIN KIT FOX, SHORT-NOSED K-RAT, AND GOLDEN EAGLE ARE ALSO FOUND IN THE VICINITY.
Threat: POSSIBLE THREAT FROM AQUEDUCT MAINTENANCE ACTIVITIES.
General: ONE OWL OBSERVED AT MIEAGE POST 7.94 AND A SECOND OWL AT MILEAGE POST 8.10.

The Source
Occurrence Detail Report

BURROWING OWL
ATHENE CUNICULARIA

Query ID: BO-4
Element Code: ABNSB10010

Federal: None State: None	Global Rank: G4 State Rank: S2	CDFG List: SC
Township: 25S Range: 18E Section: 12 Qtr: NE Elevation: 510	Meridian: M Precision: SPECIFIC Symbol Type: POLYGON Area: 9.7 ac Map Index: 39789	Lat/Long: 35° 46' 15" / 119° 58' 37" UTM: Zone-11 N3962428 E230858 Element Last Seen: 1996-06-03 Site Last Visited: 1996-06-03

County Summary: KERN (KRN)
Quad Summary: AVENAL GAP (3511978 / 290C)*, AVENAL GAP (3511978 / 290C)
SNA Summary:
Owner/Manager: DWR-CALIFORNIA AQUEDUCT

LOCATION DETAILS

ALONG THE CALIFORNIA AQUEDUCT COASTAL BRANCH, 0.25 MILE SW OF BARKER ROAD,
IN THE ANTELOPE PLAIN

OCCURRENCE INFORMATION

Occurrence No. 291
Occ Rank: Fair
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: BROWN, K. 1996 (OBS)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: (BURROW SITES) OPEN, DRY ANNUAL OR PERENIAL GRASSLANDS, DESERTS &
SCRUBLANDS CHARACTERIZED BY LOW-GROWING VEGETATION.
Micro: SUBTERRANEAN NESTER, DEPENDENT UPON BURROWING MAMMALS, MOST
NOTABLY, THE CALIFORNIA GROUND SQUIRREL.

COMMENTS

Distribution: BURROW SITE IS LOCATED ON THE NW SIDE OF THE CANAL IN THE VICINITY
OF MILEAGE POST 9.85. BURROWS ARE FOUND IN THE SLOPE ABOVE THE
CANAL LINING AND PROTECTIVE EMBANKMENT.
Ecological: HABITAT CONSISTS OF NON-NATIVE GRASSLAND; ADJACENT TO
AGRICULTURAL AREAS.
Threat: POSSIBLE THREAT FROM AQUEDUCT MAINTENANCE ACTIVITIES.
General: 2 ADULT OWLS WERE OBSERVED AT MILEAGE POSTS 9.77 AND 9.87 IN OCT
1995. 1 ADULT OWL OBSERVED AT MILEAGE POST 9.85 ON 3 JUNE 1996.

The Source
Occurrence Detail Report

BURROWING OWL
ATHENE CUNICULARIA

Query ID: BO-5
Element Code: ABNSB10010

Federal: None State: None	Global Rank: G4 State Rank: S2	CDFG List: SC
Township: 25S Range: 18E Section: 12 Qtr: SE Elevation: 515	Meridian: M Precision: SPECIFIC Symbol Type: POINT Radius: 80m Map Index: 39797	Lat/Long: 35° 46' 01" / 119° 58' 46" UTM: Zone-11 N3962024 E230634 Element Last Seen: 1996-06-03 Site Last Visited: 1996-06-03

County Summary: KERN (KRN)
Quad Summary: AVENAL GAP (3511978 / 290C)*, AVENAL GAP (3511978 / 290C)
SNA Summary:
Owner/Manager: DWR-CALIFORNIA AQUEDUCT

LOCATION DETAILS

ALONG THE CALIFORNIA AQUEDUCT COASTAL BRANCH, 0.5 MILE SW OF BARKER ROAD,
ON THE ANTELOPE PLAIN.

OCCURRENCE INFORMATION

Occurrence No. 292
Occ Rank: Fair
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: BROWN, K. 1996 (OBS)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: (BURROW SITES) OPEN, DRY ANNUAL OR PERENIAL GRASSLANDS, DESERTS &
SCRUBLANDS CHARACTERIZED BY LOW-GROWING VEGETATION.
Micro: SUBTERRANEAN NESTER, DEPENDENT UPON BURROWING MAMMALS, MOST
NOTABLY, THE CALIFORNIA GROUND SQUIRREL.

COMMENTS

Distribution: BURROW IS LOCATED IN THE SLOPE ABOVE THE CANAL LINING AND
PROTECTIVE EMBANKMENT. OWLS WERE LOCATED AT MILEAGE POST 10.05,
ON BOTH RIGHT AND LEFT SIDES OF THE CANAL.
Ecological: HABITAT CONSISTS OF NON-NATIVE GRASSLAND; ADJACENT AGRICULTURAL
LANDS. SAN JOAQUIN KIT FOX, SHORT-NOSED KANGAROO RAT, AND
GOLDEN EAGLE ALSO FOUND IN THE VICINITY.
Threat: POSSIBLE THREAT FROM AQUEDUCT MAINTENANCE ACTIVITIES.
General: 2 ADULT OWLS OBSERVED ON 3 JUNE 1996.

The Source
Occurrence Detail Report

SAN JOAQUIN ANTELOPE SQUIRREL
AMMOSPERMOPHILUS NELSONI

Query ID: SJAS-1
Element Code: AMAFB04040

Federal: None State: Threatened	Global Rank: G2 State Rank: S2	CDFG List:
Township: 25S Range: 19E Section: 18 Qtr: NW Elevation: 483	Meridian: M Precision: NON-SPECIFIC Symbol Type: POINT Radius: 1/5 mile Map Index: 14367	Lat/Long: 35° 45' 19" / 119° 57' 43" UTM: Zone-11 N3960654 E232187 Element Last Seen: 19XX-XX-XX Site Last Visited: 19XX-XX-XX

County Summary: KERN (KRN)
Quad Summary: AVENAL GAP (3511978 / 290C)*, AVENAL GAP (3511978 / 290C)
SNA Summary:
Owner/Manager: UNKNOWN

LOCATION DETAILS

2 MI N TWISSELMAN RD ON HWY 33.

OCCURRENCE INFORMATION

Occurrence No. 65
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: WILLIAMS, D. 1980 (LIT)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: WESTERN SAN JOAQUIN VALLEY FROM 200-1200 FT ELEV. ON DRY, SPARSELY VEGETATED LOAM SOILS.
Micro: DIG BURROWS OR USE K-RAT BURROWS. NEED WIDELY SCATTERED SHRUBS, FORBS & GRASSES IN BROKEN TERRAIN WITH GULLIES & WASHES

COMMENTS

Distribution:
Ecological:
Threat:
General: OBS BY D.C. HOLLAND. FROM DRAFT REPORT SUBMITTED TO CDFG IN 1980.

The Source
Occurrence Detail Report

SAN JOAQUIN ANTELOPE SQUIRREL
AMMOSPERMOPHILUS NELSONI

Query ID: SJAS-2
Element Code: AMAFB04040

Federal: None State: Threatened	Global Rank: G2 State Rank: S2	CDFG List:
Township: 22S Range: 17E Section: 14 Qtr: SE Elevation: 960	Meridian: M Precision: NON-SPECIFIC Symbol Type: POINT Radius: 1/5 mile Map Index: 14123	Lat/Long: 36° 00' 15" /120° 06' 33" UTM: Zone-10 N3988080 E760581 Element Last Seen: 1982-06-03 Site Last Visited: 1982-06-03

County Summary: KINGS (KNG)
Quad Summary: LA CIMA (3612011 / 314D)*, LA CIMA (3612011 / 314D)
SNA Summary:
Owner/Manager: PVT

LOCATION DETAILS

1.4 MI NE OF AVENAL, BTWN HYDRIL RD AND PIPELINE, SW OF THE KETTLEMAN HILLS.

OCCURRENCE INFORMATION

Occurrence No. 154
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: BYRNE, S. 1982 (OBS)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: WESTERN SAN JOAQUIN VALLEY FROM 200-1200 FT ELEV. ON DRY, SPARSELY VEGETATED LOAM SOILS.
Micro: DIG BURROWS OR USE K-RAT BURROWS. NEED WIDELY SCATTERED SHRUBS, FORBS & GRASSES IN BROKEN TERRAIN WITH GULLIES & WASHES

COMMENTS

Distribution: ONE TRAPPED ON GENTLE SLOPE ALONG THE KETTLEMAN-MORRO BAY POWERLINE.
Ecological: CISMONTANE NON-NATIVE GRASSLAND DOMINATED BY ATRIPLEX POLYCARPA, BROMUS, AVENA, ERODIUM AND AMSINCKIA.
Threat: HEAVY SHEEP AND CATTLE GRAZING.
General:

The Source
Occurrence Detail Report

SAN JOAQUIN ANTELOPE SQUIRREL
AMMOSPERMOPHILUS NELSONI

Query ID: SJAS-3
Element Code: AMAFB04040

Federal: None State: Threatened	Global Rank: G2 State Rank: S2	CDFG List:
Township: 22S Range: 17E Section: 23 Qtr: NW Elevation: 920	Meridian: M Precision: NON-SPECIFIC Symbol Type: POINT Radius: 1/5 mile Map Index: 14148	Lat/Long: 36° 00' 51" /120° 05' 59" UTM: Zone-10 N3989204 E761378 Element Last Seen: 1982-06-14 Site Last Visited: 1982-06-14

County Summary: KINGS (KNG)
Quad Summary: LA CIMA (3612011 / 314D)*, LA CIMA (3612011 / 314D)
SNA Summary:
Owner/Manager: PVT

LOCATION DETAILS

0.8 MI E ON HYDRIL RD FROM JCT WITH SKYLINE BLVD AND CORCORCAN AVE, E OF AVENAL.

OCCURRENCE INFORMATION

Occurrence No. 155
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Main Source: BYRNE, S. 1982 (OBS)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: WESTERN SAN JOAQUIN VALLEY FROM 200-1200 FT ELEV. ON DRY, SPARSELY VEGETATED LOAM SOILS.
Micro: DIG BURROWS OR USE K-RAT BURROWS. NEED WIDELY SCATTERED SHRUBS, FORBS & GRASSES IN BROKEN TERRAIN WITH GULLIES & WASHES

COMMENTS

Distribution: OBS AT LEAST 12 INDIVS LIVING IN PILES OF BROKEN UP ASPHALT ALONG RD, NEAR POWERLINE.
Ecological: CISMONTAINE NON-NATIVE GRASSLAND. DOMINATED BY ATRIPLEX POLYCARPA, BROMUS, MONOLOPIA, ERIODIUM AND AMSINCKIA.
Threat: SITE USED OR ILLEGAL DUMPING, OFF ROAD VEHICLE ACTIVITY AND POSSIBLY SHOOTING.
General:

CNDDDB Version: Government Version issued Sep. 05, 2001
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The Source
Occurrence Detail Report

SAN JOAQUIN POCKET MOUSE
PEROGNATHUS INORNATUS INORNATUS

Query ID: SJPM-1
Element Code: AMAFD01061

Federal: None State: None	Global Rank: G4T2T3 State Rank: S2S3	CDFG List:
Township: 22S Range: 17E Section: 13 Qtr: SE Elevation:	Meridian: M Precision: NON-SPECIFIC Symbol Type: POINT Radius: 1 mile Map Index: 14196	Lat/Long: 36° 00' 29" /120° 04' 55" UTM: Zone-10 N3988580 E763012 Element Last Seen: 1962-09-09 Site Last Visited: 1962-09-09

County Summary: KINGS (KNG)
Quad Summary: LA CIMA (3612011 / 314D)*, KETTLEMAN PLAIN (3512081 / 291A), LA CIMA (3612011 / 314D)
SNA Summary:
Owner/Manager: UNKNOWN

LOCATION DETAILS

7 MI W KETTLEMAN CITY.

OCCURRENCE INFORMATION

Occurrence No. 28
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: BRIGGS, T. 1962 (MUS)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: TYPICALLY FOUND IN GRASSLANDS AND BLUE OAK SAVANNAS.
Micro: NEEDS FRIABLE SOILS.

COMMENTS

Distribution:
Ecological:
Threat:
General: MVZ #129664.

The Source
Occurrence Detail Report

SAN JOAQUIN POCKET MOUSE
PEROGNATHUS INORNATUS INORNATUS

Query ID: SJPM-2
Element Code: AMAFD01061

Federal: None State: None	Global Rank: G4T2T3 State Rank: S2S3	CDFG List:
Township: 21S Range: 17E Section: 25 Qtr: SW Elevation: 800	Meridian: M Precision: NON-SPECIFIC Symbol Type: POINT Radius: 1/5 mile Map Index: 14185	Lat/Long: 36° 04' 01" /120° 05' 08" UTM: Zone-10 N3995093 E762487 Element Last Seen: 1982-06-04 Site Last Visited: 1982-06-04

County Summary: KINGS (KNG)
Quad Summary: LA CIMA (3612011 / 314D)*, LA CIMA (3612011 / 314D)
SNA Summary:
Owner/Manager: UNKNOWN

LOCATION DETAILS

0.3 MI S OF KETTLEMAN COMPRESSOR STATION, ON SW SIDE OF HWY 5, APPROX 5 MI NE OF AVENAL.

OCCURRENCE INFORMATION

Occurrence No. 59
Occ Rank: Fair
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: BYRNE, S. 1982 (OBS)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: TYPICALLY FOUND IN GRASSLANDS AND BLUE OAK SAVANNAS.
Micro: NEEDS FRIABLE SOILS.

COMMENTS

Distribution: LOCATED ON THE EASTERN BASE OF THE KETTLEMAN HILLS, AREAS OF SUITABLE MICROHABITAT ARE LIMITED; DENSE ANNUAL GRASSLAND, SCATTERED ATRIPLEX.
Ecological:
Threat: THREATS ARE OIL DEVELOPMENTS (ALTHOUGH MOST WERE INACTIVE) AND HEAVY SHEEP GRAZING.
General: FAIR OVERALL SITE QUALITY; SITE USED FOR BREEDING AND FORAGING. 4 CAPTURES IN 117 TRAPNIGHTS.

CNDDDB Version: Government Version issued Sep. 05, 2001
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**The Source
Occurrence Detail Report**

**SAN JOAQUIN POCKET MOUSE
PEROGNATHUS INORNATUS INORNATUS**

**Query ID: SJPM-3
Element Code: AMAFD01061**

Federal: None	Global Rank: G4T2T3	CDFG List:
State: None	State Rank: S2S3	
Township: 21S	Meridian: M	Lat/Long: 36° 03' 21" / 120° 05' 07"
Range: 17E	Precision: NON-SPECIFIC	UTM: Zone-10
Section: 36	Symbol Type: POINT	N3993877 E762560
Qtr: SW	Radius: 1/5 mile	Element Last Seen: 1982-06-04
Elevation: 560	Map Index: 14184	Site Last Visited: 1982-06-04

County Summary: KINGS (KNG)
Quad Summary: LA CIMA (3612011 / 314D)*, LA CIMA (3612011 / 314D)
SNA Summary:
Owner/Manager: UNKNOWN

LOCATION DETAILS

1.1 MI S OF KETTLEMAN COMPRESSOR STATION, 4 MI NE OF AVENAL.

OCCURRENCE INFORMATION

Occurrence No. 60 **Origin:** Natural/Native occurrence
Occ Rank: Fair **Presence:** Presumed Extant
Trend: Unknown

Main Source: BYRNE, S. 1982 (OBS)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: TYPICALLY FOUND IN GRASSLANDS AND BLUE OAK SAVANNAS.
Micro: NEEDS FRIABLE SOILS.

COMMENTS

Distribution: AREAS OF SUITABLE MICROHABITAT LIMITED; SPARSE, LOW ANNUAL GRASSLAND WITH WIDELY-SCATTERED ATRIPLEX; GRAVELLY SAND LOAM; GENTLE WEST-FACING SLOPE.

Ecological:

Threat: THREATS ARE OIL FIELD DEVELOPMENTS (MOSTLY INACTIVE) AND HEAVY SHEEP GRAZING.

General: FAIR SITE QUALITY; 3 CAPTURES IN 117 TRAPNIGHTS.

The Source
Occurrence Detail Report

SAN JOAQUIN POCKET MOUSE
PEROGNATHUS INORNATUS INORNATUS

Query ID: SJPM-4
Element Code: AMAFD01061

Federal: None State: None	Global Rank: G4T2T3 State Rank: S2S3	CDFG List:
Township: 22S Range: 18E Section: 14 Qtr: SE Elevation: 450	Meridian: M Precision: SPECIFIC Symbol Type: POINT Radius: 80m Map Index: 38732	Lat/Long: 36° 00' 51" /119° 59' 33" UTM: Zone-11 N3989454 E230299 Element Last Seen: 1991-08-XX Site Last Visited: 1991-08-XX

County Summary: KINGS (KNG)
Quad Summary: KETTLEMAN CITY (3611918 / 313C)*, KETTLEMAN CITY (3611918 / 313C)
SNA Summary:
Owner/Manager: PVT

LOCATION DETAILS

1.5 MILES WNW OF KETTLEMAN CITY (FROM BM 288) AND 1 MILE SW OF KETTLEMAN HILLS COMPRESSOR STATION.

OCCURRENCE INFORMATION

Occurrence No. 68
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Main Source: PRESLEY, G. 1991 (OBS)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: TYPICALLY FOUND IN GRASSLANDS AND BLUE OAK SAVANNAS.
Micro: NEEDS FRIABLE SOILS.

COMMENTS

Distribution: KINGS TELEPHONE COMPANY PROPERTY.
Ecological: ANNUAL GRASSLAND. 1/4 AC DEVELOPED, REMAINDER OF SITE WILL BE REVEGETATED WITH STIPA AND ATRIPLEX AND FENCED FOR PROTECTION.
Threat: WILL BE BUILDING A CELLULAR TELEPHONE TOWER ON 1/4 ACRE OF A 3 ACRE SITE.
General: 1 CAPTURED, 1991.

The Source
Occurrence Detail Report

SAN JOAQUIN POCKET MOUSE
PEROGNATHUS INORNATUS INORNATUS

Query ID: SJPM-5
Element Code: AMAFD01061

Federal: None State: None	Global Rank: G4T2T3 State Rank: S2S3	CDFG List:
Township: 22S Range: 17E Section: 15 Qtr: SE Elevation: 860	Meridian: M Precision: NON-SPECIFIC Symbol Type: POLYGON Area: 157.1 ac Map Index: 38734	Lat/Long: 36° 00' 39" /120° 06' 53" UTM: Zone-10 N3988808 E760046 Element Last Seen: 1993-08-13 Site Last Visited: 1993-08-13

County Summary: KINGS (KNG)
Quad Summary: LA CIMA (3612011 / 314D)*, LA CIMA (3612011 / 314D)
SNA Summary:
Owner/Manager: CITY OF AVENAL

LOCATION DETAILS

AVENAL LANDFILL, NE OF AVENAL AND EAST OF ARROYO DEL CAMINO (SKYLINE BLVD),
WEST OF A PIPELINE.

OCCURRENCE INFORMATION

Occurrence No. 69
Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: HANSON, M. 1993 (OBS)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: TYPICALLY FOUND IN GRASSLANDS AND BLUE OAK SAVANNAS.
Micro: NEEDS FRIABLE SOILS.

COMMENTS

Distribution:
Ecological: DRY GRASSLAND VALLEY.
Threat: AREA USED AS LANDFILL, EXPANSION OF LANDFILL PROPOSED.
General: EVIDENCE OF AT LEAST 3 INDIVIDUALS WERE FOUND IN COYOTE SCATS AND OWL PELLETS, NO LIVE SPECIMENS CAUGHT. KIT FOX, BURROWING OWL AND DEER MICE ALSO FOUND IN THE AREA.

The Source
Occurrence Detail Report

GIANT KANGAROO RAT
DIPODOMYS INGENS

Query ID: GKR-1
Element Code: AMAFD03080

Federal: Endangered State: Endangered	Global Rank: G3 State Rank: S3	CDFG List:
Township: 24S Range: 19E Section: 18 Qtr: XX Elevation: 400	Meridian: M Precision: NON-SPECIFIC Symbol Type: POINT Radius: 1 mile Map Index: 14372	Lat/Long: 35° 50' 25" /119° 57' 31" UTM: Zone-11 N3970074 E232766 Element Last Seen: 19XX-XX-XX Site Last Visited: 1985-02-XX

County Summary: KINGS (KNG)
Quad Summary: AVENAL GAP (3511978 / 290C)*, AVENAL GAP (3511978 / 290C)
SNA Summary: Avenal Gap
Owner/Manager: PVT

LOCATION DETAILS

AVENAL GAP, KETTLEMAN HILLS.

OCCURRENCE INFORMATION

Occurrence No. 102
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: WILLIAMS, D. 1987 (PERS)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: ANNUAL GRASSLANDS ON THE WESTERN SIDE OF THE SAN JOAQUIN VALLEY,
MARGINAL HABITAT IN ALKALI SCRUB.
Micro: NEED LEVEL TERRAIN & SANDY LOAM SOILS FOR BURROWING.

COMMENTS

Distribution: COLONY(IES) VERIFIED IN 1979. AT THAT TIME THE COLONY & SEVERAL,
SMALL SATELLITE COLONIES COVERED APPROX 50 ACRES. BY 1985, ALL BUT
THIS "CORE" COLONY HAD DISAPPEARED. NOW ONLY APPROX 30
PRECINCTS OVER 2-3 ACRES.
Ecological:
Threat: ROAD CONSTRUCTION, OVERGRAZING, & AG CONVERSION ARE THREATS.
General:

The Source
Occurrence Detail Report

GIANT KANGAROO RAT
DIPODOMYS INGENS

Query ID: GKR-2
Element Code: AMAFD03080

Federal: Endangered State: Endangered	Global Rank: G3 State Rank: S3	CDFG List:
Township: 24S Range: 19E Section: 11 Qtr: XX Elevation: 350	Meridian: M Precision: NON-SPECIFIC Symbol Type: POINT Radius: 1 mile Map Index: 14486	Lat/Long: 35° 50' 55" / 119° 53' 40" UTM: Zone-11 N3970826 E238591 Element Last Seen: 1979-XX-XX Site Last Visited: 1979-XX-XX

County Summary: KINGS (KNG)
Quad Summary: AVENAL GAP (3511978 / 290C)*, AVENAL GAP (3511978 / 290C)
SNA Summary: Avenal Gap
Owner/Manager: PVT

LOCATION DETAILS

0.5 MI N, 0.5 MI E LAS PERILLAS PUMPING PLANT, KETTLEMAN HILLS.

OCCURRENCE INFORMATION

Occurrence No. 103
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Main Source: WILLIAMS, D. 1987 (PERS)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: ANNUAL GRASSLANDS ON THE WESTERN SIDE OF THE SAN JOAQUIN VALLEY,
MARGINAL HABITAT IN ALKALI SCRUB.
Micro: NEED LEVEL TERRAIN & SANDY LOAM SOILS FOR BURROWING.

COMMENTS

Distribution: COLONY(IES) VERIFIED (SOMETIME BTWN 1979 & 1986) AS INHABITED.
CURRENT STATUS OF COLONY UNKNOWN.

Ecological:
Threat:
General:

The Source
Occurrence Detail Report

SAN JOAQUIN KIT FOX
VULPES MACROTIS MUTICA

Query ID: SJKF-1
Element Code: AMAJA03041

Federal: Endangered State: Threatened	Global Rank: G4T2T3 State Rank: S2S3	CDFG List:
Township: 29S Range: 24E Section: XX Qtr: XX Elevation: 285	Meridian: S Precision: NON-SPECIFIC Symbol Type: POLYGON Area: 562926.2 ac Map Index: 23602	Lat/Long: 35° 40' 58" / 119° 19' 50" UTM: Zone-11 N3951055 E289081 Element Last Seen: 1998-08-24 Site Last Visited: 1998-08-24

County Summary: KERN (KRN), KINGS (KNG), TULARE (TUL)
Quad Summary: WASCO SW (3511954 / 264C)*, PASTORIA CREEK (3411887 / 189A), GRAPEVINE (3411888 / 189B), TEJON RANCH (3511816 / 213C), TEJON HILLS (3511817 / 214D), METTLER (3511818 / 214C), BEAR MOUNTAIN (3511826 / 213B), ARVIN (3511827 / 214A), WEED PATCH (3511828 / 214B), BENA (3511836 / 238C), EDISON (3511837 / 239D), LAMONT (3511838 / 239C), COAL OIL CANYON (3511911 / 215D), CONNER SW (3511912 / 215C), PENTLAND (3511913 / 216D), MARICOPA (3511914 / 216C), CONNER (3511921 / 215A), MILLUX (3511922 / 215B), MOUTH OF KERN (3511923 / 216A), TAFT (3511924 / 216B), GOSFORD (3511931 / 240D), STEVENS (3511932 / 240C), TUPMAN (3511933 / 241D), EAST ELK HILLS (3511934 / 241C), WEST ELK HILLS (3511935 / 242D), OILDALE (3511941 / 240A), ROSEDALE (3511942 / 240B), RIO BRAVO (3511943 / 241A), BUTTONWILLOW (3511944 / 241B), LOKERN (3511945 / 242A), BELRIDGE (3511946 / 242B), FAMOSO (3511952 / 263C), WASCO (3511953 / 264D), WASCO SW (3511954 / 264C), SEMITROPIC (3511955 / 265D), LOST HILLS (3511956 / 265C), MCFARLAND (3511962 / 263B), POND (3511963 / 264A), WASCO NW (3511964 / 264B), LOST HILLS NE (3511965 / 265A), LOST HILLS NW (3511966 / 265B), ANTELOPE PLAIN (3511967 / 266A), DELANO EAST (3511972 / 287C), DELANO WEST (3511973 / 288D), ALLENSWORTH (3511974 / 288C), HACIENDA RANCH (3511975 / 289D), LONE TREE WELL (3511976 / 289C), WEST CAMP (3511977 / 290D), AVENAL GAP (3511978 / 290C), PIXLEY (3511983 / 288A), ALPAUGH (3511984 / 288B), HACIENDA RANCH NE (3511985 / 289A), DUDLEY RIDGE (3511987 / 290A), LOS VIEJOS (3511988 / 290B), TIPTON (3611913 / 311D), TAYLOR WEIR (3611914 / 311C), CORCORAN (3611915 / 312D), EL RICO RANCH (3611916 / 312C), KETTLEMAN CITY (3611918 / 313C), TULARE (3611923 / 311A), PAIGE (3611924 / 311B), WAUKENA (3611925 / 312A), GUERNSEY (3611926 / 312B), STRATFORD (3611927 / 313A), GOSHEN (3611934 / 334C), REMNOY (3611935 / 335D), HANFORD (3611936 / 335C), LEMOORE (3611937 / 336D), TRAVER (3611944 / 334B), BURRIS PARK (3611945 / 335A), LATON (3611946 / 335B)

SNA Summary:
Owner/Manager: UNKNOWN

LOCATION DETAILS

AREA BETWEEN I-99 AND THE CALIFORNIA AQUEDUCT, NORTH TO LATON; SE TO THE GRAPEVINE; WEST TO MILE 175 OF THE AQUEDUCT.

CNDDDB Version: Government Version issued Sep. 05, 2001

Report: Source Detail

Date: 09/10/2002

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OCCURRENCE INFORMATION

Occurrence No. 2
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: PRUETT, PAUL E. (OBS)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: ANNUAL GRASSLANDS OR GRASSY OPEN STAGES WITH SCATTERED SHRUBBY VEGETATION.
Micro: NEED LOOSE-TEXTURED SANDY SOILS FOR BURROWING, AND SUITABLE PREY BASE.

COMMENTS

Distribution: NUMEROUS SITINGS THROUGHOUT THIS AREA BETWEEN 1973 AND 1998.
Ecological: ANNUAL GRASSLAND, VALLEY SALTBUH SCRUB, VALLEY SINK SCRUB, AGRICULTURE, AND DEVELOPED AREAS.
Threat: AGRICULTURE, GRAZING, DEVELOPMENT, COMPETITION FROM COYOTES AND RED FOX AND ROAD KILLINGS.
General: A LARGE AMOUNT OF INFORMATION ON THIS AREA IS IN THE VULPES MACROTIS MUTICA ELEMENT FILE.

The Source
Occurrence Detail Report

BLUNT-NOSED LEOPARD LIZARD
GAMBELIA SILA

Query ID: BLL-1
Element Code: ARACF07010

Federal: Endangered State: Endangered	Global Rank: G1 State Rank: S1	CDFG List:
Township: 21S Range: 17E Section: 09 Qtr: SW Elevation: 500	Meridian: M Precision: NON-SPECIFIC Symbol Type: POINT Radius: 1 mile Map Index: 14034	Lat/Long: 36° 06' 42" /120° 08' 34" UTM: Zone-10 N3999914 E757190 Element Last Seen: XXXX-XX-XX Site Last Visited: XXXX-XX-XX

County Summary: FRESNO (FRE)

Quad Summary: AVENAL (3612012 / 314C)*, AVENAL (3612012 / 314C), GUIJARRAL HILLS (3612022 / 314B)

SNA Summary:

Owner/Manager: UNKNOWN

LOCATION DETAILS

12 MI E, 2 MI S COALINGA.

OCCURRENCE INFORMATION

Occurrence No.: 5
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Main Source: BRODE, J. & D. STROUD 1974 (LIT)

Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: RESIDENT OF SPARSELY VEGETATED ALKALI AND DESERT SCRUB HABITATS, IN AREAS OF LOW TOPOGRAPHIC RELIEF.

Micro: SEEKSCOVER IN MAMMAL BURROWS, UNDER SHRUBS OR STRUCTURES SUCH AS FENCE POSTS; THEY DO NOT EXCAVATE THEIR OWN BURROWS.

COMMENTS

Distribution:

Ecological:

Threat:

General: KU SPECIMEN.

The Source
Occurrence Detail Report

BLUNT-NOSED LEOPARD LIZARD
GAMBELIA SILA

Query ID: BLL-2
Element Code: ARACF07010

Federal: Endangered State: Endangered	Global Rank: G1 State Rank: S1	CDFG List:
Township: 22S Range: 17E Section: 08 Qtr: SW Elevation: 900	Meridian: M Precision: NON-SPECIFIC Symbol Type: POINT Radius: 1/5 mile Map Index: 13998	Lat/Long: 36° 01' 37" / 120° 09' 27" UTM: Zone-10 N3990474 E756139 Element Last Seen: 1979-XX-XX Site Last Visited: 1979-XX-XX

County Summary: FRESNO (FRE), KINGS (KNG)
Quad Summary: AVENAL (3612012 / 314C)*, AVENAL (3612012 / 314C)
SNA Summary:
Owner/Manager: UNKNOWN

LOCATION DETAILS

2 MI NW OF AVENAL ON COUNTY LINE.

OCCURRENCE INFORMATION

Occurrence No. 16
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: JONES, L. 1979 (LIT)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: RESIDENT OF SPARSELY VEGETATED ALKALI AND DESERT SCRUB HABITATS, IN AREAS OF LOW TOPOGRAPHIC RELIEF.
Micro: SEEKSCOVER IN MAMMAL BURROWS, UNDER SHRUBS OR STRUCTURES SUCH AS FENCE POSTS; THEY DO NOT EXCAVATE THEIR OWN BURROWS.

COMMENTS

Distribution: 5 LIZARDS SEEN, DENSITY ESTIMATED AT 15.6 LIZARDS/100 ACRES.
Ecological: 55 ACRES GRAZED GRASSLAND (43 ACRES GRASS); 25 ACRES LARGE WASH (9 ACRES GRASS AND SALSOLA IBERICA); GRADUAL SLOPE.

Threat:
General:

The Source
Occurrence Detail Report

BLUNT-NOSED LEOPARD LIZARD
GAMBELIA SILA

Query ID: BLL-3
Element Code: ARACF07010

Federal: Endangered State: Endangered	Global Rank: G1 State Rank: S1	CDFG List:
Township: 22S Range: 17E Section: 10 Qtr: NE Elevation: 1050	Meridian: M Precision: NON-SPECIFIC Symbol Type: POINT Radius: 1/5 mile Map Index: 14097	Lat/Long: 36° 01' 38" /120° 07' 07" UTM: Zone-10 N3990599 E759635 Element Last Seen: 1979-XX-XX Site Last Visited: 1979-XX-XX

County Summary: KINGS (KNG)
Quad Summary: LA CIMA (3612011 / 314D)*, LA CIMA (3612011 / 314D)
SNA Summary:
Owner/Manager: UNKNOWN

LOCATION DETAILS

1 MI NNE OF AVENAL ON W SLOPE OF KETTLEMAN HILLS.

OCCURRENCE INFORMATION

Occurrence No. 17
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: JONES, L 1979 (LIT)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: RESIDENT OF SPARSELY VEGETATED ALKALI AND DESERT SCRUB HABITATS, IN AREAS OF LOW TOPOGRAPHIC RELIEF.
Micro: SEEKSCOVER IN MAMMAL BURROWS, UNDER SHRUBS OR STRUCTURES SUCH AS FENCE POSTS; THEY DO NOT EXCAVATE THEIR OWN BURROWS.

COMMENTS

Distribution: ONE INDIV OBS. DENSITY EST AT 0.23 LIZARDS/100 ACRES.
Ecological: 440 ACRE GRAZED GRASSLAND. MODERATE RELIEF, GRADUAL RISE FROM SW TO NE.
Threat: LIGHT OIL AND GAS DEVELOPMENT.
General: BNLL STUDY PLOT #3.

The Source
Occurrence Detail Report

BLUNT-NOSED LEOPARD LIZARD
GAMBELIA SILA

Query ID: BLL-4
Element Code: ARACF07010

Federal: Endangered State: Endangered	Global Rank: G1 State Rank: S1	CDFG List:
Township: 22S Range: 18E Section: 20 Qtr: XX Elevation: 1200	Meridian: M Precision: NON-SPECIFIC Symbol Type: POINT Radius: 1 mile Map Index: 14255	Lat/Long: 35° 59' 55" /120° 02' 52" UTM: Zone-10 N3987626 E766124 Element Last Seen: 1979-XX-XX Site Last Visited: 1979-XX-XX

County Summary: KINGS (KNG)

Quad Summary: KETTLEMAN PLAIN (3512081 / 291A)*, KETTLEMAN PLAIN (3512081 / 291A),
LA CIMA (3612011 / 314D)

SNA Summary:

Owner/Manager: UNKNOWN

LOCATION DETAILS

3 1/2 MI E OF AVENAL

OCCURRENCE INFORMATION

Occurrence No.: 18
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Main Source: JONES, L. 1979 (LIT)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: RESIDENT OF SPARSELY VEGETATED ALKALI AND DESERT SCRUB HABITATS, IN
AREAS OF LOW TOPOGRAPHIC RELIEF.

Micro: SEEKSCOVER IN MAMMAL BURROWS, UNDER SHRUBS OR STRUCTURES SUCH
AS FENCE POSTS; THEY DO NOT EXCAVATE THEIR OWN BURROWS.

COMMENTS

Distribution: 2-4 LIZARDS OBS.
Ecological: 640 ACRE GRAZED GRASSLAND.
Threat: LIGHT OIL AND GAS DEVELOPMENT.
General: BNLL STUDY PLOT #9.

The Source
Occurrence Detail Report

BLUNT-NOSED LEOPARD LIZARD
GAMBELIA SILA

Query ID: BLL-5
Element Code: ARACF07010

Federal: Endangered State: Endangered	Global Rank: G1 State Rank: S1	CDFG List:
Township: 22S Range: 17E Section: 24 Qtr: SE Elevation: 975	Meridian: M Precision: NON-SPECIFIC Symbol Type: POINT Radius: 1 mile Map Index: 14187	Lat/Long: 35° 59' 55" / 120° 05' 02" UTM: Zone-10 N3987527 E762868 Element Last Seen: 1979-XX-XX Site Last Visited: 1979-XX-XX

County Summary: KINGS (KNG)
Quad Summary: KETTLEMAN PLAIN (3512081 / 291A)*, KETTLEMAN PLAIN (3512081 / 291A),
LA CIMA (3612011 / 314D)
SNA Summary:
Owner/Manager: UNKNOWN

LOCATION DETAILS

1 1/2 MI E AVENAL, W SLOPE OF KETTLEMAN HILLS.

OCCURRENCE INFORMATION

Occurrence No. 19
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Main Source: JONES, L. 1979 (LIT)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: RESIDENT OF SPARSELY VEGETATED ALKALI AND DESERT SCRUB HABITATS, IN
AREAS OF LOW TOPOGRAPHIC RELIEF.
Micro: SEEKSCOVER IN MAMMAL BURROWS, UNDER SHRUBS OR STRUCTURES SUCH
AS FENCE POSTS; THEY DO NOT EXCAVATE THEIR OWN BURROWS.

COMMENTS

Distribution: 1 LIZARD OBS. STUDY PLOT INCLUDES MOST OF SEC 24.
Ecological: ELEV 810-1150 FT. 640 ACRE GRAZED GRASSLAND.
Threat: LIGHT OIL AND GAS DEVELOPMENT W/IN PLOTS #9 & #11.
General: BNLL STUDY PLOT #8.

The Source
Occurrence Detail Report

BLUNT-NOSED LEOPARD LIZARD
GAMBELIA SILA

Query ID: BLL-6
Element Code: ARACF07010

Federal: Endangered State: Endangered	Global Rank: G1 State Rank: S1	CDFG List:
Township: 23S Range: 18E Section: 02 Qtr: SW Elevation: 625	Meridian: M Precision: NON-SPECIFIC Symbol Type: POINT Radius: 1 mile Map Index: 14318	Lat/Long: 35° 56' 59" / 119° 59' 51" UTM: Zone-11 N3982326 E229626 Element Last Seen: 1979-XX-XX Site Last Visited: 1979-XX-XX

County Summary: KINGS (KNG)

Quad Summary: LOS VIEJOS (3511988 / 290B)*, LOS VIEJOS (3511988 / 290B), KETTLEMAN PLAIN (3512081 / 291A)

SNA Summary:

Owner/Manager: UNKNOWN

LOCATION DETAILS

3 1/2 MI NE OF REEF STATION, 3 1/2 MI SSW OF KETTLEMAN STATION.

OCCURRENCE INFORMATION

Occurrence No.: 41
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Main Source: JONES, L. 1979 (LIT)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: RESIDENT OF SPARSELY VEGETATED ALKALI AND DESERT SCRUB HABITATS, IN AREAS OF LOW TOPOGRAPHIC RELIEF.
Micro: SEEKSCOVER IN MAMMAL BURROWS, UNDER SHRUBS OR STRUCTURES SUCH AS FENCE POSTS; THEY DO NOT EXCAVATE THEIR OWN BURROWS.

COMMENTS

Distribution: 7 INDIVS OBS. DENSITY EST AT 10.42 LIZARDS/100 ACRES.
Ecological: TOTAL 320 ACRES GRAZED GRASSLAND (TOTAL 247 ACRES GRASS); PLOT #15 MILD RELIEF; PLOT #17 FLAT.
Threat:
General: BNLL STUDY PLOT #S 14-17. INCLUDES SECS 10 & 12. MORE DATA AVAILABLE IN REPORT.

The Source
Occurrence Detail Report

BLUNT-NOSED LEOPARD LIZARD
GAMBELIA SILA

Query ID: BLL-7
Element Code: ARACF07010

Federal: Endangered State: Endangered	Global Rank: G1 State Rank: S1	CDFG List:
Township: 27S Range: 18E Section: 31 Qtr: SW Elevation: 1825	Meridian: M Precision: NON-SPECIFIC Symbol Type: POINT Radius: 1 mile Map Index: 14186	Lat/Long: 35° 46' 52" /120° 04' 54" UTM: Zone-10 N3963401 E763789 Element Last Seen: 1946-06-26 Site Last Visited: 1946-06-26

County Summary: KERN (KRN), KINGS (KNG)
Quad Summary: PYRAMID HILLS (3512071 / 291D)*, PYRAMID HILLS (3512071 / 291D)
SNA Summary:
Owner/Manager: UNKNOWN

LOCATION DETAILS

3 MI N, 3 MI E ORCHARD PEAK.

OCCURRENCE INFORMATION

Occurrence No. 92
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: BRODE, J. & D. STROUD 1974 (LIT)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: RESIDENT OF SPARSELY VEGETATED ALKALI AND DESERT SCRUB HABITATS, IN AREAS OF LOW TOPOGRAPHIC RELIEF.
Micro: SEEKSCOVER IN MAMMAL BURROWS, UNDER SHRUBS OR STRUCTURES SUCH AS FENCE POSTS; THEY DO NOT EXCAVATE THEIR OWN BURROWS.

COMMENTS

Distribution:
Ecological:
Threat:
General: MVZ SPECIMEN.

The Source
Occurrence Detail Report

BLUNT-NOSED LEOPARD LIZARD
GAMBELIA SILA

Query ID: BLL-8
Element Code: ARACF07010

Federal: Endangered State: Endangered	Global Rank: G1 State Rank: S1	CDFG List:
Township: 22S Range: 19E Section: 30 Qtr: SE Elevation: 300	Meridian: M Precision: NON-SPECIFIC Symbol Type: POINT Radius: 1 mile Map Index: 14391	Lat/Long: 35° 58' 52" /119° 57' 00" UTM: Zone-11 N3985677 E234017 Element Last Seen: 1941-09-04 Site Last Visited: 1941-09-04

County Summary: KINGS (KNG)
Quad Summary: LOS VIEJOS (3511988 / 290B)*, LOS VIEJOS (3511988 / 290B)
SNA Summary:
Owner/Manager: UNKNOWN

LOCATION DETAILS

2 MI S KETTLEMAN CITY.

OCCURRENCE INFORMATION

Occurrence No.: 99
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Main Source: BRODE, J. & D. STROUD 1974 (LIT)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: RESIDENT OF SPARSELY VEGETATED ALKALI AND DESERT SCRUB HABITATS, IN AREAS OF LOW TOPOGRAPHIC RELIEF.
Micro: SEEKSCOVER IN MAMMAL BURROWS, UNDER SHRUBS OR STRUCTURES SUCH AS FENCE POSTS; THEY DO NOT EXCAVATE THEIR OWN BURROWS.

COMMENTS

Distribution:
Ecological:
Threat:
General: MVZ SPECIMEN.

The Source
Occurrence Detail Report

BLUNT-NOSED LEOPARD LIZARD
GAMBELIA SILA

Query ID: BLL-9
Element Code: ARACF07010

Federal: Endangered State: Endangered	Global Rank: G1 State Rank: S1	CDFG List:
Township: 24S Range: 19E Section: 35 Qtr: SW Elevation: 400	Meridian: M Precision: NON-SPECIFIC Symbol Type: POINT Radius: 1 mile Map Index: 14489	Lat/Long: 35° 47' 37" / 119° 53' 33" UTM: Zone-11 N3964718 E238586 Element Last Seen: 1974-04-16 Site Last Visited: 1974-04-16

County Summary: KERN (KRN), KINGS (KNG)
Quad Summary: AVENAL GAP (3511978 / 290C)*, WEST CAMP (3511977 / 290D), AVENAL GAP (3511978 / 290C)
SNA Summary:
Owner/Manager: UNKNOWN

LOCATION DETAILS

KETTLEMAN HILLS, S OF KETTLEMAN CITY

OCCURRENCE INFORMATION

Occurrence No. 100
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: BRODE, J. & D. STROUD 1974 (LIT)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: RESIDENT OF SPARSELY VEGETATED ALKALI AND DESERT SCRUB HABITATS, IN AREAS OF LOW TOPOGRAPHIC RELIEF.
Micro: SEEKSCOVER IN MAMMAL BURROWS, UNDER SHRUBS OR STRUCTURES SUCH AS FENCE POSTS; THEY DO NOT EXCAVATE THEIR OWN BURROWS.

COMMENTS

Distribution:
Ecological:
Threat:
General: CSCB SPECIMEN.

The Source
Occurrence Detail Report

BLUNT-NOSED LEOPARD LIZARD
GAMBELIA SILA

Query ID: BLL-10
Element Code: ARACF07010

Federal: Endangered State: Endangered	Global Rank: G1 State Rank: S1	CDFG List:
Township: 23S Range: 17E Section: 13 Qtr: NE Elevation: 675	Meridian: M Precision: NON-SPECIFIC Symbol Type: POINT Radius: 1 mile Map Index: 14193	Lat/Long: 35° 55' 59" /120° 04' 52" UTM: Zone-10 N3980261 E763336 Element Last Seen: XXXX-XX-XX Site Last Visited: XXXX-XX-XX

County Summary: KINGS (KNG)
Quad Summary: KETTLEMAN PLAIN (3512081 / 291A)*, KETTLEMAN PLAIN (3512081 / 291A)
SNA Summary:
Owner/Manager: UNKNOWN

LOCATION DETAILS

6 MI S AVENAL OFF HWY 33, KETTLEMAN PLAIN.

OCCURRENCE INFORMATION

Occurrence No. 101
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Main Source: BRODE, J. & D. STROUD 1974 (LIT)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: RESIDENT OF SPARSELY VEGETATED ALKALI AND DESERT SCRUB HABITATS, IN AREAS OF LOW TOPOGRAPHIC RELIEF.
Micro: SEEKSCOVER IN MAMMAL BURROWS, UNDER SHRUBS OR STRUCTURES SUCH AS FENCE POSTS; THEY DO NOT EXCAVATE THEIR OWN BURROWS.

COMMENTS

Distribution:
Ecological:
Threat:
General: KU SPECIMEN.

The Source
Occurrence Detail Report

BLUNT-NOSED LEOPARD LIZARD
GAMBELIA SILA

Query ID: BLL-12
Element Code: ARACF07010

Federal: Endangered State: Endangered	Global Rank: G1 State Rank: S1	CDFG List:
Township: 24S Range: 19E Section: 15 Qtr: W Elevation: 345	Meridian: M Precision: NON-SPECIFIC Symbol Type: POINT Radius: 1 mile Map Index: 14456	Lat/Long: 35° 50' 26" /119° 54' 49" UTM: Zone-11 N3969972 E236842 Element Last Seen: 1976-17-XX Site Last Visited: 1976-17-XX

County Summary: KINGS (KNG)
Quad Summary: AVENAL GAP (3511978 / 290C)*, AVENAL GAP (3511978 / 290C)
SNA Summary:
Owner/Manager: UNKNOWN

LOCATION DETAILS

KETTLEMEN HILLS. AVE 25 (KINGS RD) FROM DEVILS DEN AQUEDUCT TO JCT DEVILS DEN RD.

OCCURRENCE INFORMATION

Occurrence No. 103
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: BRODE, J. & D. STROUD 1974 (LIT)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: RESIDENT OF SPARSELY VEGETATED ALKALI AND DESERT SCRUB HABITATS, IN AREAS OF LOW TOPOGRAPHIC RELIEF.
Micro: SEEKSCOVER IN MAMMAL BURROWS, UNDER SHRUBS OR STRUCTURES SUCH AS FENCE POSTS; THEY DO NOT EXCAVATE THEIR OWN BURROWS.

COMMENTS

Distribution:
Ecological: ROLLING HILLS COVERED W/ANNUAL GRASSES AND SCATTERED STANDS OF ATRIPLEX POLYCARPA.
Threat: GRAZING SINCE 1900.
General: 2 OBS BY TOLLESTRUP.

The Source
Occurrence Detail Report

BLUNT-NOSED LEOPARD LIZARD
GAMBELIA SILA

Query ID: BLL-13
Element Code: ARACF07010

Federal: Endangered State: Endangered	Global Rank: G1 State Rank: S1	CDFG List:
Township: 23S Range: 19E Section: 34 Qtr: SW Elevation: 420	Meridian: M Precision: NON-SPECIFIC Symbol Type: POINT Radius: 1 mile Map Index: 14457	Lat/Long: 35° 52' 39" /119° 54' 50" UTM: Zone-11 N3974083 E236930 Element Last Seen: 1974-06-20 Site Last Visited: 1974-06-20

County Summary: KINGS (KNG)
Quad Summary: LOS VIEJOS (3511988 / 290B)*, AVENAL GAP (3511978 / 290C), LOS VIEJOS (3511988 / 290B)
SNA Summary:
Owner/Manager: UNKNOWN

LOCATION DETAILS

AVE 24 (KINGS ROAD), 4 MI S UTICA RD.

OCCURRENCE INFORMATION

Occurrence No.: 104
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: BRODE, J. & D. STROUD 1974 (LIT)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: RESIDENT OF SPARSELY VEGETATED ALKALI AND DESERT SCRUB HABITATS, IN AREAS OF LOW TOPOGRAPHIC RELIEF.
Micro: SEEKSCOVER IN MAMMAL BURROWS, UNDER SHRUBS OR STRUCTURES SUCH AS FENCE POSTS; THEY DO NOT EXCAVATE THEIR OWN BURROWS.

COMMENTS

Distribution:
Ecological:
Threat:
General: OBS BY TOLLESTRUP.

The Source
Occurrence Detail Report

BLUNT-NOSED LEOPARD LIZARD
GAMBELIA SILA

Query ID: BLL-14
Element Code: ARACF07010

Federal: Endangered State: Endangered	Global Rank: G1 State Rank: S1	CDFG List:
Township: 23S Range: 19E Section: 15 Qtr: NW Elevation: 260	Meridian: M Precision: NON-SPECIFIC Symbol Type: POINT Radius: 1/5 mile Map Index: 14467	Lat/Long: 35° 56' 05" / 119° 54' 28" UTM: Zone-11 N3980416 E237671 Element Last Seen: 1974-05-14 Site Last Visited: 1974-05-14

County Summary: KINGS (KNG)
Quad Summary: LOS VIEJOS (3511988 / 290B)*, LOS VIEJOS (3511988 / 290B)
SNA Summary:
Owner/Manager: UNKNOWN

LOCATION DETAILS

JCT UTICA AVE AND I-5 AND UTICA AVE 0.6 MI E I-5.

OCCURRENCE INFORMATION

Occurrence No. 106
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Main Source: BRODE, J. & D. STROUD 1974 (LIT)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: RESIDENT OF SPARSELY VEGETATED ALKALI AND DESERT SCRUB HABITATS, IN AREAS OF LOW TOPOGRAPHIC RELIEF.
Micro: SEEKSCOVER IN MAMMAL BURROWS, UNDER SHRUBS OR STRUCTURES SUCH AS FENCE POSTS; THEY DO NOT EXCAVATE THEIR OWN BURROWS.

COMMENTS

Distribution:
Ecological:
Threat:
General: OBS BY TOLLESTRUP.

The Source
Occurrence Detail Report

BLUNT-NOSED LEOPARD LIZARD
GAMBELIA SILA

Query ID: BLL-15
Element Code: ARACF07010

Federal: Endangered State: Endangered	Global Rank: G1 State Rank: S1	CDFG List:
Township: 21S Range: 17E Section: 18 Qtr: XX Elevation: 650	Meridian: M Precision: NON-SPECIFIC Symbol Type: POINT Radius: 1 mile Map Index: 13970	Lat/Long: 36° 05' 51" / 120° 10' 21" UTM: Zone-10 N3998264 E754559 Element Last Seen: 1980-06-00 Site Last Visited: 1981-06-10

County Summary: FRESNO (FRE)
Quad Summary: AVENAL (3612012 / 314C)*, AVENAL (3612012 / 314C)
SNA Summary:
Owner/Manager: UNKNOWN

LOCATION DETAILS

10 MI ESE OF COALINGA AT JCT OF GLENN AVE AND SKYLINE RD IN KETTLEMAN HILLS.

OCCURRENCE INFORMATION

Occurrence No. 158
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: CHESEMORE, D. 1981 (LIT)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: RESIDENT OF SPARSELY VEGETATED ALKALI AND DESERT SCRUB HABITATS, IN AREAS OF LOW TOPOGRAPHIC RELIEF.
Micro: SEEKSCOVER IN MAMMAL BURROWS, UNDER SHRUBS OR STRUCTURES SUCH AS FENCE POSTS; THEY DO NOT EXCAVATE THEIR OWN BURROWS.

COMMENTS

Distribution: 5 OBS FROM BNLL INVENTORY IN S 1/2 SEC. 1 OBS ON ABANDONED WELL PAD IN VICINITY.
Ecological: VEG: BROMUS, ATRIPLEX AND GUTIERREZIA.
Threat:
General: EST 95% SUITABLE BNLL HABITAT.

The Source
Occurrence Detail Report

BLUNT-NOSED LEOPARD LIZARD
GAMBELIA SILA

Query ID: BLL-16
Element Code: ARACF07010

Federal: Endangered State: Endangered	Global Rank: G1 State Rank: S1	CDFG List:
Township: 22S Range: 18E Section: 28 Qtr: XX Elevation: 1100	Meridian: M Precision: NON-SPECIFIC Symbol Type: POINT Radius: 1 mile Map Index: 14276	Lat/Long: 35° 59' 12" /120° 01' 49" UTM: Zone-10 N3986348 E767742 Element Last Seen: 1979-05-20 Site Last Visited: 1979-05-20

County Summary: KINGS (KNG)
Quad Summary: KETTLEMAN PLAIN (3512081 / 291A)*, KETTLEMAN PLAIN (3512081 / 291A), LA CIMA (3612011 / 314D)
SNA Summary:
Owner/Manager: UNKNOWN

LOCATION DETAILS

4.5 MI ESE OF AVENAL, KETTLEMAN HILLS.

OCCURRENCE INFORMATION

Occurrence No. 159
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: JONES, L. 1979 (LIT)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: RESIDENT OF SPARSELY VEGETATED ALKALI AND DESERT SCRUB HABITATS, IN AREAS OF LOW TOPOGRAPHIC RELIEF.
Micro: SEEKSCOVER IN MAMMAL BURROWS, UNDER SHRUBS OR STRUCTURES SUCH AS FENCE POSTS; THEY DO NOT EXCAVATE THEIR OWN BURROWS.

COMMENTS

Distribution:
Ecological: MODERATELY ROUGH TERRAIN. 640 AC GRAZED GRASSLAND.
Threat: GRAZING.
General: BNLL STUDY PLOT #10. ELEVATION 850-1200 FEET.

The Source
Occurrence Detail Report

BLUNT-NOSED LEOPARD LIZARD
GAMBELIA SILA

Query ID: BLL-17
Element Code: ARACF07010

Federal: Endangered State: Endangered	Global Rank: G1 State Rank: S1	CDFG List:
Township: 21S Range: 16E Section: 24 Qtr: XX Elevation: 800	Meridian: M Precision: NON-SPECIFIC Symbol Type: POINT Radius: 1 mile Map Index: 13930	Lat/Long: 36° 05' 13" /120° 11' 26" UTM: Zone-10 N3997045 E752967 Element Last Seen: 1980-06-00 Site Last Visited: 1980-06-00

County Summary: FRESNO (FRE)
Quad Summary: AVENAL (3612012 / 314C)*, AVENAL (3612012 / 314C)
SNA Summary:
Owner/Manager: UNKNOWN

LOCATION DETAILS

9.5 MI ESE COALINGA AND 3 MI N JCT SUTTER AVE AND HWY 33 IN KETTLEMAN HILLS.

OCCURRENCE INFORMATION

Occurrence No. 166
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: CHESEMORE, D. 1981 (LIT)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: RESIDENT OF SPARSELY VEGETATED ALKALI AND DESERT SCRUB HABITATS, IN AREAS OF LOW TOPOGRAPHIC RELIEF.
Micro: SEEKSCOVER IN MAMMAL BURROWS, UNDER SHRUBS OR STRUCTURES SUCH AS FENCE POSTS; THEY DO NOT EXCAVATE THEIR OWN BURROWS.

COMMENTS

Distribution: 7 OBS FROM BNLL INVENTORY IN WASH SYSTEMS OR NEAR OIL DEVELOPMENT AREAS.
Ecological: VEG: ATRIPLEX, SALSOLA, GUTIERREZIA, BROMUS, AND FESTUCA. EST 85% SUITABLE BNLL HABITAT.
Threat: OIL DEVELOPMENT.
General:

The Source
Occurrence Detail Report

BLUNT-NOSED LEOPARD LIZARD
GAMBELIA SILA

Query ID: BLL-18
Element Code: ARACF07010

Federal: Endangered State: Endangered	Global Rank: G1 State Rank: S1	CDFG List:
Township: 24S Range: 19E Section: 31 Qtr: SW Elevation: 500	Meridian: M Precision: NON-SPECIFIC Symbol Type: POINT Radius: 1 mile Map Index: 14360	Lat/Long: 35° 47' 30" / 119° 57' 56" UTM: Zone-11 N3964700 E231975 Element Last Seen: 1978-XX-XX Site Last Visited: 1978-XX-XX

County Summary: KERN (KRN), KINGS (KNG)
Quad Summary: AVENAL GAP (3511978 / 290C)*, AVENAL GAP (3511978 / 290C)
SNA Summary:
Owner/Manager: UNKNOWN

LOCATION DETAILS

W OF COASTAL AQUEDUCT AND DEVILS DEN RD JCT.

OCCURRENCE INFORMATION

Occurrence No. 176
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: TOLLESTRUP, K. 1978 (PERS)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: RESIDENT OF SPARSELY VEGETATED ALKALI AND DESERT SCRUB HABITATS, IN AREAS OF LOW TOPOGRAPHIC RELIEF.
Micro: SEEKCOVER IN MAMMAL BURROWS, UNDER SHRUBS OR STRUCTURES SUCH AS FENCE POSTS; THEY DO NOT EXCAVATE THEIR OWN BURROWS.

COMMENTS

Distribution:
Ecological:
Threat:
General: OBS IN SUMMER 1978 BY TOLLESTRUP. MUSEUM SPECIMEN LOCALITY.

The Source
Occurrence Detail Report

BLUNT-NOSED LEOPARD LIZARD
GAMBELIA SILA

Query ID: BLL-19
Element Code: ARACF07010

Federal: Endangered State: Endangered	Global Rank: G1 State Rank: S1	CDFG List:
Township: 21S Range: 16E Section: 27 Qtr: W Elevation: 655	Meridian: M Precision: NON-SPECIFIC Symbol Type: POINT Radius: 1 mile Map Index: 13837	Lat/Long: 36° 04' 18" /120° 13' 49" UTM: Zone-10 N3995248 E749438 Element Last Seen: 1979-05-09 Site Last Visited: 1979-05-09

County Summary: FRESNO (FRE)
Quad Summary: AVENAL (3612012 / 314C)*, AVENAL (3612012 / 314C)
SNA Summary:
Owner/Manager: UNKNOWN

LOCATION DETAILS

ZAPATO CHINO CYN - N OF GRAVEL PITS.

OCCURRENCE INFORMATION

Occurrence No. 210
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: BRODE, J. 1985 (PERS)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: RESIDENT OF SPARSELY VEGETATED ALKALI AND DESERT SCRUB HABITATS, IN AREAS OF LOW TOPOGRAPHIC RELIEF.
Micro: SEEKSCOVER IN MAMMAL BURROWS, UNDER SHRUBS OR STRUCTURES SUCH AS FENCE POSTS; THEY DO NOT EXCAVATE THEIR OWN BURROWS.

COMMENTS

Distribution:
Ecological: ANNUAL GRASS HABITAT.
Threat:
General: BLM WILDLIFE OBS REPT.

The Source
Occurrence Detail Report

BLUNT-NOSED LEOPARD LIZARD
GAMBELIA SILA

Query ID: BLL-20
Element Code: ARACF07010

Federal: Endangered State: Endangered	Global Rank: G1 State Rank: S1	CDFG List:
Township: 21S Range: 17E Section: 07 Qtr: XX Elevation: 560	Meridian: M Precision: NON-SPECIFIC Symbol Type: POINT Radius: 1 mile Map Index: 13983	Lat/Long: 36° 06' 49" /120° 10' 07" UTM: Zone-10 N4000061 E754857 Element Last Seen: 1979-06-01 Site Last Visited: 1979-06-01

County Summary: FRESNO (FRE)

Quad Summary: AVENAL (3612012 / 314C)*, AVENAL (3612012 / 314C), GUIJARRAL HILLS (3612022 / 314B)

SNA Summary:

Owner/Manager: UNKNOWN

LOCATION DETAILS

POLVADERO GAP W OF GLENN AVE.

OCCURRENCE INFORMATION

Occurrence No.: 211
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Main Source: BRODE, J. 1985 (PERS)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: RESIDENT OF SPARSELY VEGETATED ALKALI AND DESERT SCRUB HABITATS, IN AREAS OF LOW TOPOGRAPHIC RELIEF.
Micro: SEEKSCOVER IN MAMMAL BURROWS, UNDER SHRUBS OR STRUCTURES SUCH AS FENCE POSTS; THEY DO NOT EXCAVATE THEIR OWN BURROWS.

COMMENTS

Distribution:
Ecological: ANNUAL GRASS.
Threat: GRAZING AND AGRICULTURE.
General: ESSENTIAL HABITAT. BLM WILDLIFE OBS REPT.

The Source
Occurrence Detail Report

BLUNT-NOSED LEOPARD LIZARD
GAMBELIA SILA

Query ID: BLL-21
Element Code: ARACF07010

Federal: Endangered State: Endangered	Global Rank: G1 State Rank: S1	CDFG List:
Township: 21S Range: 17E Section: 20 Qtr: XX Elevation: 800	Meridian: M Precision: NON-SPECIFIC Symbol Type: POINT Radius: 1 mile Map Index: 14005	Lat/Long: 36° 05' 14" /120° 09' 23" UTM: Zone-10 N3997165 E756043 Element Last Seen: 1979-06-01 Site Last Visited: 1979-06-01

County Summary: FRESNO (FRE)
Quad Summary: AVENAL (3612012 / 314C)*, AVENAL (3612012 / 314C)
SNA Summary:
Owner/Manager: UNKNOWN

LOCATION DETAILS

N OF GLENN AVE AND SKYLINE RD JCT-WELL #6720J.

OCCURRENCE INFORMATION

Occurrence No. 212
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: DEPT. OF FISH && GAME 1985 (PERS)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: RESIDENT OF SPARSELY VEGETATED ALKALI AND DESERT SCRUB HABITATS, IN AREAS OF LOW TOPOGRAPHIC RELIEF.
Micro: SEEKSCOVER IN MAMMAL BURROWS, UNDER SHRUBS OR STRUCTURES SUCH AS FENCE POSTS; THEY DO NOT EXCAVATE THEIR OWN BURROWS.

COMMENTS

Distribution:
Ecological:
Threat:
General: BLM WILDLIFE OBS REPORT-WELL#6720J.

The Source
Occurrence Detail Report

SAN JOAQUIN DUNE BEETLE
COELUS GRACILIS

Query ID: SJDB-1
Element Code: IICOL4A020

Federal: None State: None	Global Rank: G1 State Rank: S1	CDFG List:
Township: 22S Range: 19E Section: XX Qtr: XX Elevation: 350	Meridian: M Precision: NON-SPECIFIC Symbol Type: POINT Radius: 1 mile Map Index: 14375	Lat/Long: 35° 58' 42" / 119° 57' 31" UTM: Zone-11 N3985393 E233231 Element Last Seen: XXXX-XX-XX Site Last Visited: XXXX-XX-XX

County Summary: KINGS (KNG)
Quad Summary: LOS VIEJOS (3511988 / 290B)*, LOS VIEJOS (3511988 / 290B)
SNA Summary:
Owner/Manager: UNKNOWN

LOCATION DETAILS

LOS MEDANOS ZONE, S 1/4 SEC 30, N 1/4 SEC 31.

OCCURRENCE INFORMATION

Occurrence No.: 4
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: FEDERAL REGISTER, 1978 (LIT)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: INHABITS FOSSIL DUNES ALONG THE WESTERN EDGE OF SAN JOAQUIN VALLEY;
EXTIRPATED FROM ANTIOCH DUNES (TYPE LOCALITY).
Micro: INHABITS SITES CONTAINING SANDY SUBSTRATES.

COMMENTS

Distribution:
Ecological:
Threat:
General: FEDERAL REGISTER 43(155):35642.

The Source
Occurrence Detail Report

MOLESTAN BLISTER BEETLE
LYTTA MOLESTA

Query ID: MBB-1
Element Code: IICOL4C030

Federal: None State: None	Global Rank: G2 State Rank: S2	CDFG List:
Township: 25S Range: 20E Section: 07 Qtr: XX Elevation: 360	Meridian: M Precision: NON-SPECIFIC Symbol Type: POINT Radius: 1 mile Map Index: 14531	Lat/Long: 35° 45' 52" / 119° 51' 59" UTM: Zone-11 N3961413 E240852 Element Last Seen: 19XX-XX-XX Site Last Visited: 19XX-XX-XX

County Summary: KERN (KRN)

Quad Summary: WEST CAMP (3511977 / 290D)*, WEST CAMP (3511977 / 290D), AVENAL GAP (3511978 / 290C)

SNA Summary:

Owner/Manager: PVT

LOCATION DETAILS

APPROX 10 MI N OF BLACKWELLS CORNER.

OCCURRENCE INFORMATION

Occurrence No. 10
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Main Source: SELANDER, R. 1960 (LIT)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: INHABITS THE CENTRAL VALLEY OF CALIFORNIA, FROM CONTRA COSTA TO KERN AND TULARE COUNTIES.

Micro:

COMMENTS

Distribution: FOUND IN THE CENTRAL VALLEY FROM CONTRA COSTA TO TULARE AND KERN COUNTIES.

Ecological:
Threat:

General: SEASONAL DISTRIBUTION: APRIL 3 TO JULY 1. 64 SPECIMENS COLLECTED IN APRIL; YEAR OF COLLECTION UNKNOWN.

The Source
Occurrence Detail Report

PALE-YELLOW LAYIA
LAYIA HETEROTRICHA

Query ID: PL-1
Element Code: PDAST5N070

Federal: None State: None	Global Rank: G1 State Rank: S1.1	CNPS List: 1B R-E-D Code: 3-3-3
Township: 22S Range: 17E Section: XX Qtr: XX Elevation: 900	Meridian: M Precision: NON-SPECIFIC Symbol Type: POLYGON Area: 161 ac Map Index: 31564	Lat/Long: 35° 58' 23" / 120° 08' 58" UTM: Zone-10 N3984516 E757050 Element Last Seen: 1941-03-24 Site Last Visited: 1941-03-24

County Summary: KINGS (KNG)
Quad Summary: GARZA PEAK (3512082 / 291B)*, GARZA PEAK (3512082 / 291B)
SNA Summary:
Owner/Manager: UNKNOWN

LOCATION DETAILS

TAR CANYON ROAD; FOOTHILLS SW OF AVENAL.

OCCURRENCE INFORMATION

Occurrence No. 13
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Main Source: HOOVER #4810 UC (HERB)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: PINYON-JUNIPER WOODLAND, VALLEY AND FOOTHILL GRASSLAND. MANY HISTORICAL, EXTIRPATED OCCURRENCES.
Micro: ALKALINE OR CLAY SOILS; OPEN AREAS. 270-1365 (2675)M.

COMMENTS

Distribution: MAPPED ALONG RD FROM KETTLEMAN PLAIN TO KREYENHAGEN HILLS.
Ecological:
Threat:
General: NONE.

The Source
Occurrence Detail Report

PALE-YELLOW LAYIA
LAYIA HETEROTRICHA

Query ID: PL-2
Element Code: PDAST5N070

Federal: None State: None	Global Rank: G1 State Rank: S1.1	CNPS List: 1B R-E-D Code: 3-3-3
Township: 25S Range: 16E Section: 02 Qtr: SW Elevation: 1800	Meridian: M Precision: NON-SPECIFIC Symbol Type: POINT Radius: 3/5 mile Map Index: 31589	Lat/Long: 35° 46' 43" / 120° 13' 26" UTM: Zone-10 N3962763 E750947 Element Last Seen: 1949-05-01 Site Last Visited: 1949-05-01

County Summary: SAN LUIS OBISPO (SLO)
Quad Summary: TENT HILLS (3512072 / 291C)*, TENT HILLS (3512072 / 291C)
SNA Summary:
Owner/Manager: UNKNOWN

LOCATION DETAILS

WEST SIDE OF COTTONWOOD PASS.

OCCURRENCE INFORMATION

Occurrence No. 23
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: HOOVER #7646 UC (HERB)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: PINYON-JUNIPER WOODLAND, VALLEY AND FOOTHILL GRASSLAND. MANY HISTORICAL, EXTIRPATED OCCURRENCES.
Micro: ALKALINE OR CLAY SOILS; OPEN AREAS. 270-1365 (2675)M.

COMMENTS

Distribution:
Ecological: IN LIGHT CLAY.
Threat:
General: MORE SURVEYS NEEDED. NO ELEVATION GIVEN ON LABEL.

The Source
Occurrence Detail Report

SHOWY MADIA
MADIA RADIATA

Query ID: SM-1
Element Code: PDAST650E0

Federal: None State: None	Global Rank: G2 State Rank: S2.1	CNPS List: 1B R-E-D Code: 2-3-3
Township: 23S Range: 17E Section: XX Qtr: XX Elevation: 1500	Meridian: M Precision: NON-SPECIFIC Symbol Type: POLYGON Area: 231.5 ac Map Index: 25133	Lat/Long: 35° 55' 45" / 120° 09' 57" UTM: Zone-10 N3979618 E755694 Element Last Seen: 1941-03-24 Site Last Visited: 1941-03-24

County Summary: KINGS (KNG)
Quad Summary: GARZA PEAK (3512082 / 291B)*, GARZA PEAK (3512082 / 291B)
SNA Summary:
Owner/Manager: UNKNOWN

LOCATION DETAILS

TAR CANYON, REEF RIDGE.

OCCURRENCE INFORMATION

Occurrence No. 13
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: HOOVER, R. #4815 UC #762522 (HERB)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: VALLEY AND FOOTHILL GRASSLAND, CISMONTANE WOODLAND, CHENOPOD SCRUB.
Micro: MOSTLY ON ADOBE CLAY IN GRASSLAND OR AMONG SHRUBS. 25-1125M.

COMMENTS

Distribution:
Ecological:
Threat:
General: TWO COLLECTIONS MADE BY HOOVER IN TAR CANYON, BOTH IN THE EARLY 1940'S. NEEDS FIELDWORK.

The Source
Occurrence Detail Report

SAN JOAQUIN WOOLLYTHREADS
MONOLOPIA CONGDONII

Query ID: SJW-1
Element Code: PDASTA8010

Federal: Endangered State: None	Global Rank: G3 State Rank: S3.2	CNPS List: 1B R-E-D Code: 2-2-3
Township: 23S Range: 18E Section: 16 Qtr: SE Elevation: 600	Meridian: M Precision: NON-SPECIFIC Symbol Type: POINT Radius: 1 mile Map Index: 14284	Lat/Long: 35° 55' 34" / 120° 01' 23" UTM: Zone-10 N3979641 E768605 Element Last Seen: 1962-03-25 Site Last Visited: 1988-XX-XX

County Summary: KINGS (KNG)
Quad Summary: KETTLEMAN PLAIN (3512081 / 291A)*, KETTLEMAN PLAIN (3512081 / 291A)
SNA Summary:
Owner/Manager: PVT

LOCATION DETAILS

ON KETTLEMAN PLAIN, 3 MI NE OF REEF CITY ON HWY 41.

OCCURRENCE INFORMATION

Occurrence No.: 1
Occ Rank: None
Origin: Natural/Native occurrence
Presence: Possibly Extirpated
Trend: Unknown

Main Source: BREEDLOVE, D. #2003 DS (HERB)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: CHENOPOD SCRUB AND VALLEY AND FOOTHILL GRASSLAND. ENDEMIC TO SAN JOAQUIN VALLEY.
Micro: ALKALINE OR LOAMY PLAINS; SANDY SOILS, OFTEN WITH GRASSES AND WITHIN CHENOPOD SCRUB. 60-800M.

COMMENTS

Distribution:
Ecological:
Threat:
General: ACCORDING TO 1989 REPORT BY D. TAYLOR, LITTLE UNCULTIVATED LAND REMAINS ON THE KETTLEMAN PLAINS.

The Source
Occurrence Detail Report

SAN JOAQUIN WOOLLYTHREADS
MONOLOPIA CONGDONII

Query ID: SJW-2
Element Code: PDASTA8010

Federal: Endangered State: None	Global Rank: G3 State Rank: S3.2	CNPS List: 1B R-E-D Code: 2-2-3
Township: 22S Range: 19E Section: 19 Qtr: NW Elevation: 250	Meridian: M Precision: NON-SPECIFIC Symbol Type: POINT Radius: 1 mile Map Index: 14374	Lat/Long: 36° 00' 17" / 119° 57' 34" UTM: Zone-11 N3988323 E233244 Element Last Seen: 1938-03-27 Site Last Visited: 1988-XX-XX

County Summary: KINGS (KNG)

Quad Summary: KETTLEMAN CITY (3611918 / 313C)*, LOS VIEJOS (3511988 / 290B),
KETTLEMAN CITY (3611918 / 313C)

SNA Summary:

Owner/Manager: PVT

LOCATION DETAILS

KETTLEMAN CITY.

OCCURRENCE INFORMATION

Occurrence No.: 4
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Main Source: HOOVER, R. #2912 JEPS (HERB)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: CHENOPOD SCRUB AND VALLEY AND FOOTHILL GRASSLAND. ENDEMIC TO SAN JOAQUIN VALLEY.

Micro: ALKALINE OR LOAMY PLAINS; SANDY SOILS, OFTEN WITH GRASSES AND WITHIN CHENOPOD SCRUB. 60-800M.

COMMENTS

Distribution:

Ecological:

Threat:

General: LITTLE NATIVE HABITAT EXISTS IN THE VICINITY OF KETTLEMAN CITY. A SMALL (80 ACRE) PARCEL OF POTENTIAL HABITAT ON THE EDGE OF TOWN WAS SEARCHED IN 1987 AND 1988, BUT NO PLANTS WERE FOUND.

The Source
Occurrence Detail Report

SAN JOAQUIN WOOLLYTHREADS
MONOLOPIA CONGDONII

Query ID: SJW-3
Element Code: PDASTA8010

Federal: Endangered State: None	Global Rank: G3 State Rank: S3.2	CNPS List: 1B R-E-D Code: 2-2-3
Township: 22S Range: 18E Section: 08 Qtr: NE Elevation: 740	Meridian: M Precision: SPECIFIC Symbol Type: POLYGON Area: 4.4 ac Map Index: 31340	Lat/Long: 36° 01' 46" / 120° 02' 32" UTM: Zone-10 N3991055 E766531 Element Last Seen: 1991-04-17 Site Last Visited: 1991-04-17

County Summary: KINGS (KNG)
Quad Summary: LA CIMA (3612011 / 314D)*, LA CIMA (3612011 / 314D)
SNA Summary:
Owner/Manager: BLM

LOCATION DETAILS

0.7 MI SW OF INTERSECTION OF SHELL ROAD AND INTERSTATE 5, E SIDE OF SHELL ROAD.

OCCURRENCE INFORMATION

Occurrence No.: 47
Occ Rank: Poor
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: LOPEZ && LOPEZ 1991 (OBS)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: CHENOPOD SCRUB AND VALLEY AND FOOTHILL GRASSLAND. ENDEMIC TO SAN JOAQUIN VALLEY.
Micro: ALKALINE OR LOAMY PLAINS; SANDY SOILS, OFTEN WITH GRASSES AND WITHIN CHENOPOD SCRUB. 60-800M.

COMMENTS

Distribution: SE 1/4 OF NE 1/4 OF SECTION 8.
Ecological: ASSOCIATED WITH LEPIDIUM, PHACELIA, CAMISSONIA, DELPHINIUM AND ERIOGONUM.
Threat: GRAZING THREATENS.
General: 100 PLANTS IN 1991.

The Source
Occurrence Detail Report

SAN JOAQUIN WOOLLYTHREADS
MONOLOPIA CONGDONII

Query ID: SJW-4
Element Code: PDASTA8010

Federal: Endangered State: None	Global Rank: G3 State Rank: S3.2	CNPS List: 1B R-E-D Code: 2-2-3
Township: 22S Range: 18E Section: 17 Qtr: SE Elevation: 1060	Meridian: M Precision: SPECIFIC Symbol Type: POINT Radius: 80m Map Index: 31341	Lat/Long: 36° 00' 27" / 120° 02' 44" UTM: Zone-10 N3988623 E766303 Element Last Seen: 1992-03-27 Site Last Visited: 1992-03-27

County Summary: KINGS (KNG)
Quad Summary: LA CIMA (3612011 / 314D)*, LA CIMA (3612011 / 314D)
SNA Summary:
Owner/Manager: PVT-CHEVRON USA

LOCATION DETAILS

KETTLEMAN HILLS; LA ALETA, 0.65 MI W OF SKYLINE RD.

OCCURRENCE INFORMATION

Occurrence No. 48
Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: LEWIS, R. 1992 (OBS)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: CHENOPOD SCRUB AND VALLEY AND FOOTHILL GRASSLAND. ENDEMIC TO SAN JOAQUIN VALLEY.
Micro: ALKALINE OR LOAMY PLAINS; SANDY SOILS, OFTEN WITH GRASSES AND WITHIN CHENOPOD SCRUB. 60-800M.

COMMENTS

Distribution: SW 1/4 OF SE 1/4 OF SECTION 17.
Ecological: ASSOCIATED WITH ERIASTRUM HOOVERI IN SANDY-LOAM SOIL.
Threat:
General: 26 PLANTS IN 1992.

US EPA ARCHIVE DOCUMENT

The Source
Occurrence Detail Report

SAN JOAQUIN WOOLLYTHREADS
MONOLOPIA CONGDONII

Query ID: SJW-5
Element Code: PDASTA8010

Federal: Endangered State: None	Global Rank: G3 State Rank: S3.2	CNPS List: 1B R-E-D Code: 2-2-3
Township: 22S Range: 17E Section: 10 Qtr: SE Elevation: 1060	Meridian: M Precision: SPECIFIC Symbol Type: POLYGON Area: 10.9 ac Map Index: 31338	Lat/Long: 36° 01' 43" /120° 07' 08" UTM: Zone-10 N3990765 E759606 Element Last Seen: 1993-04-05 Site Last Visited: 1993-04-05

County Summary: KINGS (KNG)
Quad Summary: LA CIMA (3612011 / 314D)*, LA CIMA (3612011 / 314D)
SNA Summary:
Owner/Manager: BLM

LOCATION DETAILS

KETTLEMAN HILLS; APPROX. 1.6 AIRMI N OF AVENAL, VICINITY OF ARROYO ESQUINADO.

OCCURRENCE INFORMATION

Occurrence No. 49
Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: CYPHER, E. 1993 (OBS)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: CHENOPOD SCRUB AND VALLEY AND FOOTHILL GRASSLAND. ENDEMIC TO SAN JOAQUIN VALLEY.
Micro: ALKALINE OR LOAMY PLAINS; SANDY SOILS, OFTEN WITH GRASSES AND WITHIN CHENOPOD SCRUB. 60-800M.

COMMENTS

Distribution: NEAR CENTER OF SECTION, JUST SE OF CENTER
Ecological: NONNATIVE GRASSLAND WITH BROMUS MADRITENSIS RUBENS, B. DIANDRUS, & VULPIA MYUROS.
Threat: CATTLE GRAZING AND OIL PRODUCTION ACTIVITIES THREATEN. EVIDENCE OF KANGAROO RATS BITING OFF TOPS OF LEMBERTIA PLANTS.
General: 155 PLANTS IN 1993.

The Source
Occurrence Detail Report

SAN JOAQUIN WOOLLYTHREADS
MONOLOPIA CONGDONII

Query ID: SJW-6
Element Code: PDASTA8010

Federal: Endangered State: None	Global Rank: G3 State Rank: S3.2	CNPS List: 1B R-E-D Code: 2-2-3
Township: 22S Range: 17E Section: 10 Qtr: SE Elevation: 1000	Meridian: M Precision: SPECIFIC Symbol Type: POLYGON Area: 8 ac Map Index: 31339	Lat/Long: 36° 01' 24" /120° 06' 58" UTM: Zone-10 N3990181 E759889 Element Last Seen: 1991-04-16 Site Last Visited: 1991-04-16

County Summary: KINGS (KNG)

Quad Summary: LA CIMA (3612011 / 314D)*, LA CIMA (3612011 / 314D)

SNA Summary:

Owner/Manager: BLM

LOCATION DETAILS

KETTLEMAN HILLS; ARROYO DEL CAMINO, APPROX. 1.2-1.4 MI N OF AVENAL.

OCCURRENCE INFORMATION

Occurrence No. 50

Occ Rank: Fair

Origin: Natural/Native occurrence

Presence: Presumed Extant

Trend: Unknown

Main Source: PRENDUSI, T. 1991 (OBS)

Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: CHENOPOD SCRUB AND VALLEY AND FOOTHILL GRASSLAND. ENDEMIC TO SAN JOAQUIN VALLEY.

Micro: ALKALINE OR LOAMY PLAINS; SANDY SOILS, OFTEN WITH GRASSES AND WITHIN CHENOPOD SCRUB. 60-800M.

COMMENTS

Distribution: W SIDE OF SKYLINE BLVD. PLANTS FOUND ALONG BOTH SIDES OF FENCELINE ADJACENT TO PIPELINE.

Ecological: DISTURBED ANNUAL GRASSLAND WITH LEPIDIUM NITIDUM, ERODIUM CICUTARIUM, AMSINCKIA, SALSOLA KALI, THELYPODIUM LASIOCARPUM, AND MONOLOPIA LANCEOLATA.

Threat: GRAZING AND OHVS THREATEN. ARROYO HIGHLY ERODED.

General: APPROX. 600 PLANTS IN 1991.

The Source
Occurrence Detail Report

SAN JOAQUIN WOOLLYTHREADS
MONOLOPIA CONGDONII

Query ID: SJW-7
Element Code: PDASTA8010

Federal: Endangered State: None	Global Rank: G3 State Rank: S3.2	CNPS List: 1B R-E-D Code: 2-2-3
Township: 23S Range: 19E Section: 30 Qtr: NE Elevation: 550	Meridian: M Precision: SPECIFIC Symbol Type: POLYGON Area: 17 ac Map Index: 31383	Lat/Long: 35° 53' 55" / 119° 57' 14" UTM: Zone-11 N3976533 E233397 Element Last Seen: 1995-02-27 Site Last Visited: 1995-02-27

County Summary: KINGS (KNG)
Quad Summary: LOS VIEJOS (3511988 / 290B)*, LOS VIEJOS (3511988 / 290B)
SNA Summary:
Owner/Manager: PVT

LOCATION DETAILS

KETTLEMAN HILLS; MIDDLE DOME. 3.3-3.5 AIRMI SW OF JUNCTION UTICA AVENUE AND I-5.

OCCURRENCE INFORMATION

Occurrence No. 51
Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: LEWIS, R. 1995 (OBS)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: CHENOPOD SCRUB AND VALLEY AND FOOTHILL GRASSLAND. ENDEMIC TO SAN JOAQUIN VALLEY.
Micro: ALKALINE OR LOAMY PLAINS; SANDY SOILS, OFTEN WITH GRASSES AND WITHIN CHENOPOD SCRUB. 60-800M.

COMMENTS

Distribution: MAPPED AS THREE POLYGONS AT CNDDB.
Ecological: ALLUVIUM-SILTY/LOAMY SOILS WITH ATRIPLEX POLYCARPA AND ANNUAL HERBS AND GRASSES. ERIASTRUM HOOVERI FOUND NEARBY.
Threat: SOME IMPACT POSSIBLE FROM CATTLE GRAZING.
General: AT LEAST 175 PLANTS SEEN IN 1995.

The Source
Occurrence Detail Report

SAN JOAQUIN WOOLLYTHREADS
MONOLOPIA CONGDONII

Query ID: SJW-8
Element Code: PDASTA8010

Federal: Endangered State: None	Global Rank: G3 State Rank: S3.2	CNPS List: 1B R-E-D Code: 2-2-3
Township: 23S Range: 19E Section: 30 Qtr: SW Elevation: 610	Meridian: M Precision: SPECIFIC Symbol Type: POINT Radius: 80m Map Index: 31384	Lat/Long: 35° 53' 52" / 119° 57' 53" UTM: Zone-11 N3976478 E232396 Element Last Seen: 1995-02-27 Site Last Visited: 1995-02-27

County Summary: KINGS (KNG)
Quad Summary: LOS VIEJOS (3511988 / 290B)*, LOS VIEJOS (3511988 / 290B)
SNA Summary:
Owner/Manager: PVT

LOCATION DETAILS

KETTLEMAN HILLS, 3.9 AIRMI SW OF JUNCTION UTICA AVENUE WITH I-5.

OCCURRENCE INFORMATION

Occurrence No.: 52
Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Main Source: LEWIS, R. 1995 (OBS)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: CHENOPOD SCRUB AND VALLEY AND FOOTHILL GRASSLAND. ENDEMIC TO SAN JOAQUIN VALLEY.
Micro: ALKALINE OR LOAMY PLAINS; SANDY SOILS, OFTEN WITH GRASSES AND WITHIN CHENOPOD SCRUB. 60-800M.

COMMENTS

Distribution: ALONG UNIMPROVED ROAD THROUGH SW 1/4 OF SECTION 30.
Ecological: ALLUVIUM-SILTY/LOAMY SOILS WITH ATRIPLEX POLYCARPA AND ANNUAL HERBS AND GRASSES. ERIASTRUM HOOVERI FOUND NEARBY.
Threat: SOME IMPACT POSSIBLE FROM CATTLE GRAZING.
General: 31 PLANTS IN 1995.

The Source
Occurrence Detail Report

SAN JOAQUIN WOOLLYTHREADS
MONOLOPIA CONGDONII

Query ID: SJW-9
Element Code: PDASTA8010

Federal: Endangered State: None	Global Rank: G3 State Rank: S3.2	CNPS List: 1B R-E-D Code: 2-2-3
Township: 23S Range: 19E Section: 30 Qtr: NE Elevation: 520	Meridian: M Precision: SPECIFIC Symbol Type: POINT Radius: 80m Map Index: 31385	Lat/Long: 35° 54' 20" / 119° 57' 05" UTM: Zone-11 N3977290 E233643 Element Last Seen: 1995-02-27 Site Last Visited: 1995-02-27

County Summary: KINGS (KNG)

Quad Summary: LOS VIEJOS (3511988 / 290B)*, LOS VIEJOS (3511988 / 290B)

SNA Summary:

Owner/Manager: PVT

LOCATION DETAILS

KETTLEMAN HILLS; MIDDLE DOME. 3 AIRMI SW OF JCT UTICA AVENUE AND I-5, 0.8 MI NW OF SUMMIT OF PAREJO HILL.

OCCURRENCE INFORMATION

Occurrence No. 53

Occ Rank: Good

Origin: Natural/Native occurrence

Presence: Presumed Extant

Trend: Unknown

Main Source: LEWIS, R. 1995 (OBS)

Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: CHENOPOD SCRUB AND VALLEY AND FOOTHILL GRASSLAND. ENDEMIC TO SAN JOAQUIN VALLEY.

Micro: ALKALINE OR LOAMY PLAINS; SANDY SOILS, OFTEN WITH GRASSES AND WITHIN CHENOPOD SCRUB. 60-800M.

COMMENTS

Distribution: NE 1/4 OF NE 1/4 SECTION 30.

Ecological: ALLUVIUM-SILTY/LOAMY SOILS WITH ATRIPLEX POLYCARPA AND ANNUAL HERBS AND GRASSES. ERIASTRUM HOOVERI FOUND NEARBY.

Threat: SOME IMPACT POSSIBLE FROM CATTLE GRAZING.

General: 77 PLANTS IN 1995.

CNDDDB Version: Government Version issued Sep. 05, 2001

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SAN JOAQUIN WOOLLYTHREADS
MONOLOPIA CONGDONII

Query ID: SJW-10
Element Code: PDASTA8010

Federal: Endangered State: None	Global Rank: G3 State Rank: S3.2	CNPS List: 1B R-E-D Code:2-2-3
Township: 23S Range: 19E Section: 19 Qtr: NE Elevation: 425	Meridian: M Precision: SPECIFIC Symbol Type: POLYGON Area: 6 ac Map Index: 31386	Lat/Long: 35° 55' 12" /119° 57' 01" UTM: Zone-11 N3978888 E233794 Element Last Seen: 1995-02-27 Site Last Visited: 1995-02-27

County Summary: KINGS (KNG)
Quad Summary: LOS VIEJOS (3511988 / 290B)*, LOS VIEJOS (3511988 / 290B)
SNA Summary:
Owner/Manager: PVT

LOCATION DETAILS

KETTLEMAN HILLS; 2.4 AIRMI SW OF JUNCTION UTICA AVENUE AND I-5. S SIDE OF ARROYO CULEBRINO AND S END OF LA LLANURA WASH.

OCCURRENCE INFORMATION

Occurrence No. 54
Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: LEWIS, R. 1995 (OBS)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: CHENOPOD SCRUB AND VALLEY AND FOOTHILL GRASSLAND. ENDEMIC TO SAN JOAQUIN VALLEY.
Micro: ALKALINE OR LOAMY PLAINS; SANDY SOILS, OFTEN WITH GRASSES AND WITHIN CHENOPOD SCRUB. 60-800M.

COMMENTS

Distribution: ALONG UNMARKED ROAD. ALONG BORDER OF SECTIONS 19 AND 20.
Ecological: ALLUVIUM-SILTY/LOAMY SOILS WITH ATRIPLEX POLYCARPA AND ANNUAL HERBS AND GRASSES. ERIASTRUM HOOVERI FOUND NEARBY.
Threat: SOME IMPACT POSSIBLE FROM CATTLE GRAZING.
General: 9 PLANTS IN 2 SUBPOPULATIONS IN 1995.

The Source
Occurrence Detail Report

SAN JOAQUIN WOOLLYTHREADS
MONOLOPIA CONGDONII

Query ID: SJW-11
Element Code: PDASTA8010

Federal: Endangered State: None	Global Rank: G3 State Rank: S3.2	CNPS List: 1B R-E-D Code: 2-2-3
Township: 23S Range: 19E Section: 18 Qtr: NE Elevation: 406	Meridian: M Precision: SPECIFIC Symbol Type: POINT Radius: 80m Map Index: 31387	Lat/Long: 35° 55' 45" / 119° 56' 58" UTM: Zone-11 N3979907 E233882 Element Last Seen: 1995-02-27 Site Last Visited: 1995-02-27

County Summary: KINGS (KNG)
Quad Summary: LOS VIEJOS (3511988 / 290B)*, LOS VIEJOS (3511988 / 290B)
SNA Summary:
Owner/Manager: PVT

LOCATION DETAILS

LOS VIEJOS; 2.15 AIRMI WSW OF JCT UTICA AVENUE AND I-5.

OCCURRENCE INFORMATION

Occurrence No. 55
Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: LEWIS, R. 1995 (OBS)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: CHENOPOD SCRUB AND VALLEY AND FOOTHILL GRASSLAND. ENDEMIC TO SAN JOAQUIN VALLEY.
Micro: ALKALINE OR LOAMY PLAINS; SANDY SOILS, OFTEN WITH GRASSES AND WITHIN CHENOPOD SCRUB. 60-800M.

COMMENTS

Distribution: ALONG UNMARKED RD. ON BORDER BETWEEN SECTIONS 17 AND 18.
Ecological: ALLUVIUM-SILTY/LOAMY SOILS WITH ATRIPLEX POLYCARPA AND ANNUAL HERBS AND GRASSES. ERIASTRUM HOOVERI NEARBY.
Threat: SOME IMPACT POSSIBLE FROM CATTLE GRAZING.
General: 6 PLANTS IN 1995.

The Source
Occurrence Detail Report

SAN JOAQUIN WOOLLYTHREADS
MONOLOPIA CONGDONII

Query ID: SJW-12
Element Code: PDASTA8010

Federal: Endangered State: None	Global Rank: G3 State Rank: S3.2	CNPS List: 1B R-E-D Code: 2-2-3
Township: 23S Range: 18E Section: 13 Qtr: N Elevation: 500	Meridian: M Precision: SPECIFIC Symbol Type: POLYGON Area: 17.5 ac Map Index: 31388	Lat/Long: 35° 55' 56" / 119° 58' 36" UTM: Zone-11 N3980319 E231439 Element Last Seen: 1993-03-23 Site Last Visited: 1993-03-23

County Summary: KINGS (KNG)
Quad Summary: LOS VIEJOS (3511988 / 290B)*, LOS VIEJOS (3511988 / 290B)
SNA Summary:
Owner/Manager: PVT

LOCATION DETAILS

KETTLEMAN HILLS; 1.0-1.35 AIRMI NE OF SUMMIT OF LA MORRA. ALONG ARROYO DEL CONEJO.

OCCURRENCE INFORMATION

Occurrence No. 56
Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: LEWIS, R. 1993 (LIT)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: CHENOPOD SCRUB AND VALLEY AND FOOTHILL GRASSLAND. ENDEMIC TO SAN JOAQUIN VALLEY.
Micro: ALKALINE OR LOAMY PLAINS; SANDY SOILS, OFTEN WITH GRASSES AND WITHIN CHENOPOD SCRUB. 60-800M.

COMMENTS

Distribution:
Ecological: WITH ATRIPLEX POLYCARPA, LASTHENIA SP, & SENECIO VULGARIS.
Threat:
General: 7000 PLANTS IN 3 SUBPOPULATIONS IN 1993.

The Source
Occurrence Detail Report

SAN JOAQUIN WOOLLYTHREADS
MONOLOPIA CONGDONII

Query ID: SJW-13
Element Code: PDASTA8010

Federal: Endangered State: None	Global Rank: G3 State Rank: S3.2	CNPS List: 1B R-E-D Code: 2-2-3
Township: 23S Range: 18E Section: 12 Qtr: XX Elevation: 600	Meridian: M Precision: SPECIFIC Symbol Type: POLYGON Area: 144.4 ac Map Index: 31389	Lat/Long: 35° 56' 41" / 119° 58' 51" UTM: Zone-11 N3981710 E231123 Element Last Seen: 1993-05-03 Site Last Visited: 1993-05-03

County Summary: KINGS (KNG)
Quad Summary: LOS VIEJOS (3511988 / 290B)*, LOS VIEJOS (3511988 / 290B)
SNA Summary:
Owner/Manager: BLM, PVT

LOCATION DETAILS

KETTLEMAN HILLS; ALONG ARROYO DEL CONEJO.

OCCURRENCE INFORMATION

Occurrence No. 57
Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: LEWIS, R. 1993 (LIT)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: CHENOPOD SCRUB AND VALLEY AND FOOTHILL GRASSLAND. ENDEMIC TO SAN JOAQUIN VALLEY.
Micro: ALKALINE OR LOAMY PLAINS; SANDY SOILS, OFTEN WITH GRASSES AND WITHIN CHENOPOD SCRUB. 60-800M.

COMMENTS

Distribution: ALSO IN SECTIONS 1, 2, AND 11. THREE POLYGONS AT CNDDDB; ONE LARGE ONE AND TWO SMALLER.
Ecological: ASSOCIATED WITH ATRIPLEX POLYCARPA, LASTHENIA SP., VULPIA MYUROS, BROMUS MADRITENSIS RUBENS, B. DIANDRUS, HORDEUM MURINUM, ERODIUM CICUTARIUM, AND HEMIZONIA KELLOGGII.
Threat: CATTLE GRAZING AND COMPETITION FROM EXOTICS THREATEN.
General: 26,000 PLANTS ESTIMATED IN 1993 IN SEVERAL CLUSTERS.

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SAN JOAQUIN WOOLLYTHREADS
MONOLOPIA CONGDONII

Query ID: SJW-14
Element Code: PDASTA8010

Federal: Endangered State: None	Global Rank: G3 State Rank: S3.2	CNPS List: 1B R-E-D Code: 2-2-3
Township: 21S Range: 17E Section: 28 Qtr: NE Elevation: 800	Meridian: M Precision: SPECIFIC Symbol Type: POLYGON Area: 55.1 ac Map Index: 31428	Lat/Long: 36° 04' 39" / 120° 08' 08" UTM: Zone-10 N3996139 E757960 Element Last Seen: 1991-04-26 Site Last Visited: 1991-04-26

County Summary: FRESNO (FRE)
Quad Summary: AVENAL (3612012 / 314C)*, AVENAL (3612012 / 314C)
SNA Summary:
Owner/Manager: BLM

LOCATION DETAILS

KETTLEMAN HILLS; JUST E OF ARROYO VADOSO. APPROX. 0.7-1.1 MI NE OF ELEPHANT HILL, NORTH OF AVENAL.

OCCURRENCE INFORMATION

Occurrence No. 72
Occ Rank: Fair
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: SCHOOLCRAFT, G. 1991 (OBS)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: CHENOPOD SCRUB AND VALLEY AND FOOTHILL GRASSLAND. ENDEMIC TO SAN JOAQUIN VALLEY.
Micro: ALKALINE OR LOAMY PLAINS; SANDY SOILS, OFTEN WITH GRASSES AND WITHIN CHENOPOD SCRUB. 60-800M.

COMMENTS

Distribution: S-FACING SANDY SLOPES USUALLY NEAR BOTTOM OF DRAINAGE. MAPPED AS 5 POLYGONS; 3 IN THE NE 1/4 OF SECTION 28, 1 IN THE SE CORNER OF SECTION 21, AND 1 IN THE SW 1/4 NW 1/4 SECTION 27.
Ecological: NONNATIVE GRASSLAND AND ATRIPLEX POLYCARPA DOMINATED SCRUB WITH PECTOCARYA, PLANTAGO, BROMUS MADRITENSIS RUBENS, ERODIUM CICUTARIUM, LOTUS, LEPIDIUM, CAMISSONIA, NEMACLADUS, AND MALACOTHRIX COULTERI.
Threat: SHEEP GRAZING AND OIL AND GAS EXPLORATION/DEVELOPMENT ACTIVITIES THREATEN.
General: ABOUT 500 PLANTS IN 1991 IN SEVERAL SUBPOPULATIONS.

The Source
Occurrence Detail Report

SAN JOAQUIN WOOLLYTHREADS
MONOLOPIA CONGDONII

Query ID: SJW-15
Element Code: PDASTA8010

Federal: Endangered State: None	Global Rank: G3 State Rank: S3.2	CNPS List: 1B R-E-D Code: 2-2-3
Township: 21S Range: 16E Section: 24 Qtr: NW Elevation: 725	Meridian: M Precision: SPECIFIC Symbol Type: POLYGON Area: 5.6 ac Map Index: 31426	Lat/Long: 36° 05' 28" / 120° 11' 34" UTM: Zone-10 N3997508 E752756 Element Last Seen: 1991-04-10 Site Last Visited: 1991-04-10

County Summary: FRESNO (FRE)
Quad Summary: AVENAL (3612012 / 314C)*, AVENAL (3612012 / 314C)
SNA Summary:
Owner/Manager: BLM

LOCATION DETAILS

KETTLEMAN HILLS; ALONG EL HOCICO HILLS. 0.3-0.4 MI E OF SUTTER AVE.

OCCURRENCE INFORMATION

Occurrence No.: 73
Occ Rank: Fair
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: PRENDUSI, T. & L. SASLAW 1991 (OBS)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: CHENOPOD SCRUB AND VALLEY AND FOOTHILL GRASSLAND. ENDEMIC TO SAN JOAQUIN VALLEY.
Micro: ALKALINE OR LOAMY PLAINS; SANDY SOILS, OFTEN WITH GRASSES AND WITHIN CHENOPOD SCRUB. 60-800M.

COMMENTS

Distribution: ON W SIDE OF DRAINAGE. NE 1/4 OF NW 1/4 OF SECTION 24.
Ecological: ASSOCIATED WITH BROMUS MADRITENSIS RUBENS, ERODIUM CICUTARIUM, BRASSICA, SCHISMUS ARABICUS, & CALANDRINIA CILIATA.
Threat: SHEEP GRAZING AND ROAD MAINTENANCE ACTIVITIES COULD THREATEN. DRAINAGE USED AS TRASH DUMP.
General: AT LEAST 50 PLANTS IN 1991.

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SAN JOAQUIN WOOLLYTHREADS
MONOLOPIA CONGDONII

Query ID: SJW-16
Element Code: PDASTA8010

Federal: Endangered State: None	Global Rank: G3 State Rank: S3.2	CNPS List: 1B R-E-D Code: 2-2-3
Township: 21S Range: 17E Section: 18 Qtr: SE Elevation: 675	Meridian: M Precision: SPECIFIC Symbol Type: POLYGON Area: 6.9 ac Map Index: 31427	Lat/Long: 36° 05' 44" / 120° 10' 03" UTM: Zone-10 N3998069 E755028 Element Last Seen: 1991-04-09 Site Last Visited: 1991-04-09

County Summary: FRESNO (FRE)
Quad Summary: AVENAL (3612012 / 314C)*, AVENAL (3612012 / 314C)
SNA Summary:
Owner/Manager: BLM

LOCATION DETAILS

NORTH END OF KETTLEMAN HILLS; 0.1 MI W OF GLENN AVE. 1.55-1.9 MI NE OF LA LUNETA.

OCCURRENCE INFORMATION

Occurrence No. 74
Occ Rank: Fair
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: SASLAW & PRENDUSI 1991 (OBS)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: CHENOPOD SCRUB AND VALLEY AND FOOTHILL GRASSLAND. ENDEMIC TO SAN JOAQUIN VALLEY.
Micro: ALKALINE OR LOAMY PLAINS; SANDY SOILS, OFTEN WITH GRASSES AND WITHIN CHENOPOD SCRUB. 60-800M.

COMMENTS

Distribution: MOSTLY SOUTH OF PIPELINE.
Ecological: SANDY LOAM SOILS IN ANNUAL GRASSLAND WITH SOME SALTBUSH SCRUB IN DRAINAGES. WITH ERODIUM, BROMUS MADRITENSIS RUBENS, SCHISMUS ARABICUS, BRASSICA, AMSINCKIA, AND HORDEUM.
Threat: GRAZING AND OIL/GAS DEVELOPMENT ACTIVITIES THREATEN. MANY WEEDY SPECIES PRESENT.
General: FEWER THAN 15 PLANTS IN 1991.

The Source
Occurrence Detail Report

SAN JOAQUIN WOOLLYTHREADS
MONOLOPIA CONGDONII

Query ID: SJW-17
Element Code: PDASTA8010

Federal: Endangered State: None	Global Rank: G3 State Rank: S3.2	CNPS List: 1B R-E-D Code: 2-2-3
Township: 22S Range: 17E Section: 06 Qtr: SW Elevation: 775	Meridian: M Precision: SPECIFIC Symbol Type: POLYGON Area: 4.5 ac Map Index: 31431	Lat/Long: 36° 02' 32" / 120° 10' 24" UTM: Zone-10 N3992132 E754673 Element Last Seen: 1991-04-12 Site Last Visited: 1991-04-12

County Summary: FRESNO (FRE)
Quad Summary: AVENAL (3612012 / 314C)*, AVENAL (3612012 / 314C)
SNA Summary:
Owner/Manager: PVT?

LOCATION DETAILS

KETTLEMAN PLAIN; 1.4 MI SE OF KETTLEMAN STATION.

OCCURRENCE INFORMATION

Occurrence No. 75
Occ Rank: Poor
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: FRANKLIN, A. & B. DELGADO 1991 (OBS)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: CHENOPOD SCRUB AND VALLEY AND FOOTHILL GRASSLAND. ENDEMIC TO SAN JOAQUIN VALLEY.
Micro: ALKALINE OR LOAMY PLAINS; SANDY SOILS, OFTEN WITH GRASSES AND WITHIN CHENOPOD SCRUB. 60-800M.

COMMENTS

Distribution: JUST SOUTH OF CENTER OF SECTION 6.
Ecological: ASSOCIATED WITH ERODIUM CICUTARIUM, LEPIDIUM, BROMUS MADRITENSIS RUBENS, CALANDRINIA, PECTOCARYA, TROPIDOCARPUM, AND CRASSULA.
Threat: CATTLE GRAZING AND OIL/GAS DEVELOPMENT ACTIVITIES THREATEN.
General: UNKNOWN HOW MANY PLANTS SEEN IN 1991.

The Source
Occurrence Detail Report

SAN JOAQUIN WOOLLYTHREADS
MONOLOPIA CONGDONII

Query ID: SJW-18
Element Code: PDASTA8010

Federal: Endangered State: None	Global Rank: G3 State Rank: S3.2	CNPS List: 1B R-E-D Code: 2-2-3
Township: 21S Range: 17E Section: 32 Qtr: SE Elevation: 1100	Meridian: M Precision: SPECIFIC Symbol Type: POLYGON Area: 13.6 ac Map Index: 36687	Lat/Long: 36° 03' 05" / 120° 09' 10" UTM: Zone-10 N3993204 E756476 Element Last Seen: 1991-04-12 Site Last Visited: 1991-04-12

County Summary: FRESNO (FRE)
Quad Summary: AVENAL (3612012 / 314C)*, AVENAL (3612012 / 314C)
SNA Summary:
Owner/Manager: BLM, PVT-CHEVRON USA

LOCATION DETAILS

KETTLEMAN HILLS; NORTH DOME, 2.2-2.7 MILES EAST OF KETTLEMAN STATION, NORTH OF AVENAL.

OCCURRENCE INFORMATION

Occurrence No. 76
Occ Rank: Poor
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: FRANKLIN, A. & B. DELGADO 1991 (OBS)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: CHENOPOD SCRUB AND VALLEY AND FOOTHILL GRASSLAND. ENDEMIC TO SAN JOAQUIN VALLEY.
Micro: ALKALINE OR LOAMY PLAINS; SANDY SOILS, OFTEN WITH GRASSES AND WITHIN CHENOPOD SCRUB. 60-800M.

COMMENTS

Distribution: ALONG DIRT ROAD IN S 1/2 SE 1/4 SECTION 32 AND INTO THE NE 1/4 NW 1/4 SECTION 5.
Ecological: IN SANDY ALLUVIUM WITH GUTIERREZIA BRACTEATA, ERODIUM CICUTARIUM, LEPIDIUM NITIDUM, BROMUS MADRITENSIS RUBENS, CALANDRINIA, TROPIDOCARPUM, PECTOCARYA, HOLOCAPRPHA HEERMANI AND CRASSULA.
Threat: CATTLE GRAZING AND OIL/GAS DEVELOPMENT ACTIVITIES THREATEN. SEVERAL WEEDY SPECIES PRESENT.
General: 200 PLANTS REPORTED BY FRANKLIN AND DELGADO IN 1991; 60+ PLANTS REPORTED BY STEBBINS IN 1991.

The Source
Occurrence Detail Report

SAN JOAQUIN WOOLLYTHREADS
MONOLOPIA CONGDONII

Query ID: SJW-19
Element Code: PDASTA8010

Federal: Endangered State: None	Global Rank: G3 State Rank: S3.2	CNPS List: 1B R-E-D Code: 2-2-3
Township: 22S Range: 17E Section: 04 Qtr: SW Elevation: 1100	Meridian: M Precision: SPECIFIC Symbol Type: POLYGON Area: 16.4 ac Map Index: 31430	Lat/Long: 36° 02' 30" / 120° 08' 29" UTM: Zone-10 N3992157 E757536 Element Last Seen: 1991-04-18 Site Last Visited: 1991-04-18

County Summary: FRESNO (FRE), KINGS (KNG)
Quad Summary: AVENAL (3612012 / 314C)*, AVENAL (3612012 / 314C)
SNA Summary:
Owner/Manager: BLM

LOCATION DETAILS

KETTLEMAN HILLS; NORTH DOME AREA, NEAR EL PITON, ALONG ARROYO LARGUITO.

OCCURRENCE INFORMATION

Occurrence No. 77
Occ Rank: Fair
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: PRENDUSI, T. 1991 (OBS)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: CHENOPOD SCRUB AND VALLEY AND FOOTHILL GRASSLAND. ENDEMIC TO SAN JOAQUIN VALLEY.
Micro: ALKALINE OR LOAMY PLAINS; SANDY SOILS, OFTEN WITH GRASSES AND WITHIN CHENOPOD SCRUB. 60-800M.

COMMENTS

Distribution:
Ecological: WITH LEPIDIUM NITIDUM, AMSINCKIA, MONOLOPIA LANCEOLATA, ERODIUM CICUTARIUM, PHACELIA CILIATA, CALANDRINIA, AND PECTOCARYA.
Threat: GRAZING AND OIL/GAS DEVELOPMENT ACTIVITIES THREATEN.
General: AT LEAST 1000 PLANTS IN SEVERAL SUBPOPULATIONS IN 1991.

The Source
Occurrence Detail Report

SAN JOAQUIN WOOLLYTHREADS
MONOLOPIA CONGDONII

Query ID: SJW-20
Element Code: PDASTA8010

Federal: Endangered State: None	Global Rank: G3 State Rank: S3.2	CNPS List: 1B R-E-D Code: 2-2-3
Township: 22S Range: 17E Section: 08 Qtr: NE Elevation: 900	Meridian: M Precision: SPECIFIC Symbol Type: POINT Radius: 80m Map Index: 31432	Lat/Long: 36° 01' 47" /120° 09' 01" UTM: Zone-10 N3990808 E756781 Element Last Seen: 1991-04-15 Site Last Visited: 1991-04-15

County Summary: KINGS (KNG)
Quad Summary: AVENAL (3612012 / 314C)*, AVENAL (3612012 / 314C)
SNA Summary:
Owner/Manager: BLM

LOCATION DETAILS

KETTLEMAN PLAIN; ALONG ARROYO LARGUITO, 0.9 MI NE OF WHERE HWY 33 CROSSES FRESNO/KINGS COUNTY LINE.

OCCURRENCE INFORMATION

Occurrence No. 78
Occ Rank: Poor
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: SCHOOLCRAFT, G. & D. JOHNSON 1991 (OBS)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: CHENOPOD SCRUB AND VALLEY AND FOOTHILL GRASSLAND. ENDEMIC TO SAN JOAQUIN VALLEY.
Micro: ALKALINE OR LOAMY PLAINS; SANDY SOILS, OFTEN WITH GRASSES AND WITHIN CHENOPOD SCRUB. 60-800M.

COMMENTS

Distribution: SE 1/4 OF NE 1/4 OF SECTION 8.
Ecological: SANDY SLOPES OF DRAINAGE WITH LEPIDIUM, BROMUS, ERODIUM, AMSINCKIA, AND PECTOCARYA.
Threat: GRAZING AND ENCROACHMENT BY NONNATIVE PLANT SPECIES THREATENS.
General: APPROX. 500 PLANTS IN 1991.

The Source
Occurrence Detail Report

SAN JOAQUIN WOOLLYTHREADS
MONOLOPIA CONGDONII

Query ID: SJW-21
Element Code: PDASTA8010

Federal: Endangered State: None	Global Rank: G3 State Rank: S3.2	CNPS List: 1B R-E-D Code: 2-2-3
Township: 24S Range: 19E Section: 36 Qtr: NW Elevation: 310	Meridian: M Precision: SPECIFIC Symbol Type: POINT Radius: 80m Map Index: 31462	Lat/Long: 35° 48' 02" / 119° 52' 32" UTM: Zone-11 N3965441 E240128 Element Last Seen: 1992-03-21 Site Last Visited: 1992-03-21

County Summary: KINGS (KNG)
Quad Summary: AVENAL GAP (3511978 / 290C)*, WEST CAMP (3511977 / 290D), AVENAL GAP (3511978 / 290C)
SNA Summary:
Owner/Manager: UNKNOWN

LOCATION DETAILS

NEAR SOUTH DOME AREA OF KETTLEMAN HILLS, 2.5 AIRMI SE OF OYSTER HILL.

OCCURRENCE INFORMATION

Occurrence No. 84
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: STEBBINS, J. ET AL 1992 (LIT)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: CHENOPOD SCRUB AND VALLEY AND FOOTHILL GRASSLAND. ENDEMIC TO SAN JOAQUIN VALLEY.
Micro: ALKALINE OR LOAMY PLAINS; SANDY SOILS, OFTEN WITH GRASSES AND WITHIN CHENOPOD SCRUB. 60-800M.

COMMENTS

Distribution: ON EAST SIDE OF AQUEDUCT, WITHIN RIGHT-OF-WAY.
Ecological: IN MAN-MADE DRAINAGE BASIN OR BORROW PIT WITH CLAY SOIL. WITH AMSINCKIA SP., ERODIUM CICUTARIUM, SENECIO VULGARIS, AND ESCHSCHOLZIA CALIFORNICA.
Threat: AQUEDUCT MAINTENANCE ACTIVITIES AND FLOODING COULD THREATEN.
General: APPROX. 100 PLANTS IN 1992.

The Source
Occurrence Detail Report

SAN JOAQUIN WOOLLYTHREADS
MONOLOPIA CONGDONII

Query ID: SJW-22
Element Code: PDASTA8010

Federal: Endangered State: None	Global Rank: G3 State Rank: S3.2	CNPS List: 1B R-E-D Code: 2-2-3
Township: 24S Range: 19E Section: 22 Qtr: NW Elevation: 360	Meridian: M Precision: SPECIFIC Symbol Type: POINT Radius: 80m Map Index: 31461	Lat/Long: 35° 49' 55" /119° 54' 41" UTM: Zone-11 N3969016 E237012 Element Last Seen: 1992-03-13 Site Last Visited: 1992-03-13

County Summary: KINGS (KNG)
Quad Summary: AVENAL GAP (3511978 / 290C)*, AVENAL GAP (3511978 / 290C)
SNA Summary:
Owner/Manager: UNKNOWN

LOCATION DETAILS

KETTLEMAN HILLS; LAS PERILLAS REGION. 1 AIRMI NNE OF OYSTER HILL.

OCCURRENCE INFORMATION

Occurrence No. 85
Occ Rank: Fair
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: STEBBINS, J. ET AL 1992 (LIT)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: CHENOPOD SCRUB AND VALLEY AND FOOTHILL GRASSLAND. ENDEMIC TO SAN JOAQUIN VALLEY.
Micro: ALKALINE OR LOAMY PLAINS; SANDY SOILS, OFTEN WITH GRASSES AND WITHIN CHENOPOD SCRUB. 60-800M.

COMMENTS

Distribution: PLANTS FOUND NEAR JCT CA AQUEDUCT AND LIGHT-DUTY ROAD. NW 1/4 OF NW 1/4 OF SECTION 22.
Ecological: ON GENTLY ROLLING HILLS IN FINE SANDY SOILS WITH LASTHENIA CHRYSOSTOMA, LEPIDIUM NITIDUM, DICHELOSTEMMA PULCHELLA, ERIASTRUM HOOVERI (ALSO RARE), AND SALSOLA PESTIFERA.
Threat: GRAZING THREATENS.
General: APPROX 50 PLANTS IN 1992.

US EPA ARCHIVE DOCUMENT

The Source
Occurrence Detail Report

SAN JOAQUIN WOOLLYTHREADS
MONOLOPIA CONGDONII

Query ID: SJW-23
Element Code: PDASTA8010

Federal: Endangered State: None	Global Rank: G3 State Rank: S3.2	CNPS List: 1B R-E-D Code: 2-2-3
Township: 23S Range: 19E Section: 05 Qtr: NE Elevation: 300	Meridian: M Precision: SPECIFIC Symbol Type: POLYGON Area: 22.5 ac Map Index: 31472	Lat/Long: 35° 57' 34" / 119° 56' 17" UTM: Zone-11 N3983247 E235025 Element Last Seen: 1996-02-26 Site Last Visited: 1996-02-26

County Summary: KINGS (KNG)
Quad Summary: LOS VIEJOS (3511988 / 290B)*, LOS VIEJOS (3511988 / 290B)
SNA Summary:
Owner/Manager: UNKNOWN

LOCATION DETAILS

2.6 AIRMI SE OF KETTLEMAN STATION; AT JUNCTION OF AQUEDUCT, I-5, AND 25TH AVENUE.

OCCURRENCE INFORMATION

Occurrence No. 86
Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: STEBBINS, J. ET AL 1992 (LIT)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: CHENOPOD SCRUB AND VALLEY AND FOOTHILL GRASSLAND. ENDEMIC TO SAN JOAQUIN VALLEY.
Micro: ALKALINE OR LOAMY PLAINS; SANDY SOILS, OFTEN WITH GRASSES AND WITHIN CHENOPOD SCRUB. 60-800M.

COMMENTS

Distribution: 2 SUBPOPULATIONS.
Ecological: DISTURBED SALT BUSH SCRUB IN SANDY LOAM SOIL WITH ERIA STRUM HOOVERI, ATRIPLEX POLYCARPA, ERODIUM CICUTARIUM, ASTRAGALUS SP., LASTHENIA CHRYSOSTOMA, AND AMSINCKIA MENZIESII.
Threat: AGRICULTURE AND DEVELOPMENT THREATEN.
General: 300-400 PLANTS SEEN IN 1992. SUB-POPULATION AT JUNCTION OF AVE. 25 AND AQUEDUCT ACCESS RD HAS BEEN DISKED, LIKELY EXTIRPATED.

The Source
Occurrence Detail Report

SAN JOAQUIN WOOLLYTHREADS
MONOLOPIA CONGDONII

Query ID: SJW-24
Element Code: PDASTA8010

Federal: Endangered State: None	Global Rank: G3 State Rank: S3.2	CNPS List: 1B R-E-D Code: 2-2-3
Township: 23S Range: 19E Section: 21 Qtr: SE Elevation: 315	Meridian: M Precision: SPECIFIC Symbol Type: POLYGON Area: 117.7 ac Map Index: 31476	Lat/Long: 35° 54' 15" / 119° 54' 46" UTM: Zone-11 N3977052 E237126 Element Last Seen: 1992-03-16 Site Last Visited: 1992-03-16

County Summary: KINGS (KNG)
Quad Summary: LOS VIEJOS (3511988 / 290B)*, LOS VIEJOS (3511988 / 290B)
SNA Summary:
Owner/Manager: UNKNOWN

LOCATION DETAILS

5.8-8.0 AIRMI SE OF KETTLEMAN STATION, ON WEST SIDE OF AQUEDUCT.

OCCURRENCE INFORMATION

Occurrence No. 87
Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: STEBBINS, J. ET AL 1992 (LIT)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: CHENOPOD SCRUB AND VALLEY AND FOOTHILL GRASSLAND. ENDEMIC TO SAN JOAQUIN VALLEY.
Micro: ALKALINE OR LOAMY PLAINS; SANDY SOILS, OFTEN WITH GRASSES AND WITHIN CHENOPOD SCRUB. 60-800M.

COMMENTS

Distribution: ALSO IN NW 1/4 OF SECTION 27.
Ecological: GENTLE SLOPES AT THE BASE OF ROLLING HILLS IN SANDY LOAM TO CLAY LOAM. WITH ERODIUM CICUTARIUM, BROMUS MADRITENSIS RUBENS, DICHELOSTEMMA PULCHELLA, HORDEUM GLAUCA, HEMIZONIA SP., LASTHENIA CHRYSOSTOMA, ASTRAGALUS SP., & ATRIPLEX POLYCARPA.
Threat: GRAZING THREATENS.
General: 1000'S OF PLANTS IN 1992.

The Source
Occurrence Detail Report

SAN JOAQUIN WOOLLYTHREADS
MONOLOPIA CONGDONII

Query ID: SJW-25
Element Code: PDASTA8010

Federal: Endangered State: None	Global Rank: G3 State Rank: S3.2	CNPS List: 1B R-E-D Code: 2-2-3
Township: 23S Range: 19E Section: 34 Qtr: SE Elevation: 325	Meridian: M Precision: SPECIFIC Symbol Type: POINT Radius: 80m Map Index: 31477	Lat/Long: 35° 52' 53" / 119° 53' 53" UTM: Zone-11 N3974468 E238373 Element Last Seen: 1992-03-16 Site Last Visited: 1992-03-16

County Summary: KINGS (KNG)
Quad Summary: LOS VIEJOS (3511988 / 290B)*, LOS VIEJOS (3511988 / 290B)
SNA Summary:
Owner/Manager: UNKNOWN

LOCATION DETAILS

9.1 AIRMI SE OF KETTLEMAN STATION, ON W SIDE OF AQUEDUCT.

OCCURRENCE INFORMATION

Occurrence No. 88
Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: STEBBINS, J. ET AL 1992 (LIT)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: CHENOPOD SCRUB AND VALLEY AND FOOTHILL GRASSLAND. ENDEMIC TO SAN JOAQUIN VALLEY.
Micro: ALKALINE OR LOAMY PLAINS; SANDY SOILS, OFTEN WITH GRASSES AND WITHIN CHENOPOD SCRUB. 60-800M.

COMMENTS

Distribution: NE 1/4 OF SE 1/4 OF SECTION 34.
Ecological: AGRICULTURAL LAND IN SANDY SOIL WITH SALSOLA PESTIFERA, AMSINCKIA INTERMEDIA, CALANDRINIA CILIATA, LUPINUS BICOLOR, AND ASTRAGALUS SP.
Threat: GRAZING AND AGRICULTURE THREATEN.
General: 100-150 PLANTS IN 1992.

The Source
Occurrence Detail Report

SAN JOAQUIN WOOLLYTHREADS
MONOLOPIA CONGDONII

Query ID: SJW-26
Element Code: PDASTA8010

Federal: Endangered State: None	Global Rank: G3 State Rank: S3.2	CNPS List: 1B R-E-D Code:2-2-3
Township: 23S Range: 19E Section: 16 Qtr: NW Elevation: 310	Meridian: M Precision: SPECIFIC Symbol Type: POINT Radius: 80m Map Index: 31473	Lat/Long: 35° 55' 58" /119° 55' 45" UTM: Zone-11 N3980251 E235744 Element Last Seen: 1992-03-16 Site Last Visited: 1992-03-16

County Summary: KINGS (KNG)
Quad Summary: LOS VIEJOS (3511988 / 290B)*, LOS VIEJOS (3511988 / 290B)
SNA Summary:
Owner/Manager: UNKNOWN

LOCATION DETAILS

4.5 AIRMI SE OF KETTLEMAN STATION; APPROX. 0.1 MI S OF LA SALIDA ON W SIDE OF
AQUEDUCT.

OCCURRENCE INFORMATION

Occurrence No. 89
Occ Rank: Poor
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: STEBBINS, J. ET AL 1992 (LIT)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: CHENOPOD SCRUB AND VALLEY AND FOOTHILL GRASSLAND. ENDEMIC TO SAN
JOAQUIN VALLEY.
Micro: ALKALINE OR LOAMY PLAINS; SANDY SOILS, OFTEN WITH GRASSES AND WITHIN
CHENOPOD SCRUB. 60-800M.

COMMENTS

Distribution:
Ecological: SANDY LOAM SOIL WITH AMSINCKIA MENZIESII, ERODIUM CICUTARIUM,
ATRIPLEX POLYCARPA, HORDEUM GLAUCA, BROMUS MADRITENSIS
RUBENS, AND DICHELOSTEMMA PULCHELLA.
Threat: GRAZING AND AQUEDUCT MAINTENANCE THREATEN.
General: 1 PLANT IN 1992.

The Source
Occurrence Detail Report

SAN JOAQUIN WOOLLYTHREADS
MONOLOPIA CONGDONII

Query ID: SJW-27
Element Code: PDASTA8010

Federal: Endangered State: None	Global Rank: G3 State Rank: S3.2	CNPS List: 1B R-E-D Code: 2-2-3
Township: 23S Range: 19E Section: 16 Qtr: SW Elevation: 310	Meridian: M Precision: SPECIFIC Symbol Type: POINT Radius: 80m Map Index: 31474	Lat/Long: 35° 55' 39" / 119° 55' 32" UTM: Zone-11 N3979656 E236041 Element Last Seen: 1992-03-16 Site Last Visited: 1992-03-16

County Summary: KINGS (KNG)
Quad Summary: LOS VIEJOS (3511988 / 290B)*, LOS VIEJOS (3511988 / 290B)
SNA Summary:
Owner/Manager: UNKNOWN

LOCATION DETAILS

4.9 AIRMI SE OF KETTLEMAN STATION; 0.5 MI S OF LA SALIDA ON W SIDE OF AQUEDUCT.

OCCURRENCE INFORMATION

Occurrence No. 90
Occ Rank: Poor
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: STEBBINS, J. ET AL 1992 (LIT)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: CHENOPOD SCRUB AND VALLEY AND FOOTHILL GRASSLAND. ENDEMIC TO SAN JOAQUIN VALLEY.
Micro: ALKALINE OR LOAMY PLAINS; SANDY SOILS, OFTEN WITH GRASSES AND WITHIN CHENOPOD SCRUB. 60-800M.

COMMENTS

Distribution:
Ecological: SALTBUUSH SCRUB/NONNATIVE GRASSLAND IN SANDY LOAM SOILS. WITH AMSINCKIA MENZIESII, ERODIUM CICUTARIUM, ATRIPLEX POLYCARPA, HORDEUM GLAUCA, BROMUS MADRITENSIS RUBENS, AND DICHELOSTEMMA PULCHELLA.
Threat: GRAZING AND AQUEDUCT ACTIVITIES THREATEN.
General: 1 PLANT IN 1992.

The Source
Occurrence Detail Report

SAN JOAQUIN WOOLLYTHREADS
MONOLOPIA CONGDONII

Query ID: SJW-28
Element Code: PDASTA8010

Federal: Endangered State: None	Global Rank: G3 State Rank: S3.2	CNPS List: 1B R-E-D Code: 2-2-3
Township: 23S Range: 19E Section: 16 Qtr: S Elevation: 310	Meridian: M Precision: SPECIFIC Symbol Type: POLYGON Area: 9.7 ac Map Index: 31475	Lat/Long: 35° 55' 17" /119° 55' 21" UTM: Zone-11 N3978989 E236302 Element Last Seen: 1992-03-16 Site Last Visited: 1992-03-16

County Summary: KINGS (KNG)
Quad Summary: LOS VIEJOS (3511988 / 290B)*, LOS VIEJOS (3511988 / 290B)
SNA Summary:
Owner/Manager: UNKNOWN

LOCATION DETAILS

5.2 AIRMI SE OF KETTLEMAN STATION; 0.8-1.0 MI S OF LA SALIDA ON W SIDE OF
AQUEDUCT.

OCCURRENCE INFORMATION

Occurrence No. 91
Occ Rank: Fair
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: STEBBINS, J. ET AL 1992 (LIT)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: CHENOPOD SCRUB AND VALLEY AND FOOTHILL GRASSLAND. ENDEMIC TO SAN
JOAQUIN VALLEY.
Micro: ALKALINE OR LOAMY PLAINS; SANDY SOILS, OFTEN WITH GRASSES AND WITHIN
CHENOPOD SCRUB. 60-800M.

COMMENTS

Distribution: ON BOTH SIDES OF EL PORTILLO.
Ecological: SALTBUSH SCRUB/NONNATIVE GRASSLAND IN SANDY LOAM SOILS WITH
AMSINCKIA MENZIESII, ERODIUM CICUTARIUM, HORDEUM GLAUCA,
ATRIPLEX POLYCARPA, BROMUS MADRITENSIS RUBENS, AND
DICHELOSTEMMA PULCHELLA.
Threat: GRAZING AND AQUEDUCT MAINTENANCE ACTIVITIES THREATEN.
General: 500 PLANTS IN 1992.

The Source
Occurrence Detail Report

SAN JOAQUIN WOOLLYTHREADS
MONOLOPIA CONGDONII

Query ID: SJW-29
Element Code: PDATA8010

Federal: Endangered State: None	Global Rank: G3 State Rank: S3.2	CNPS List: 1B R-E-D Code: 2-2-3
Township: 23S Range: 17E Section: 13 Qtr: N Elevation: 700	Meridian: M Precision: NON-SPECIFIC Symbol Type: POINT Radius: 1 mile Map Index: 31471	Lat/Long: 35° 55' 56" / 120° 04' 58" UTM: Zone-10 N3980152 E763183 Element Last Seen: 1925-03-25 Site Last Visited: 1988-04-XX

County Summary: KINGS (KNG)
Quad Summary: KETTLEMAN PLAIN (3512081 / 291A)*, KETTLEMAN PLAIN (3512081 / 291A)
SNA Summary:
Owner/Manager: UNKNOWN

LOCATION DETAILS

KETTLEMAN PLAIN; 6 MI S OF AVENAL. MAPPED ON W SIDE OF HWY 33, 0.25 MI S OF JCT WITH UTICA AVE.

OCCURRENCE INFORMATION

Occurrence No. 92
Occ Rank: None
Origin: Natural/Native occurrence
Presence: Possibly Extirpated
Trend: Unknown
Main Source: TAYLOR, D. 1989 (LIT)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: CHENOPOD SCRUB AND VALLEY AND FOOTHILL GRASSLAND. ENDEMIC TO SAN JOAQUIN VALLEY.
Micro: ALKALINE OR LOAMY PLAINS; SANDY SOILS, OFTEN WITH GRASSES AND WITHIN CHENOPOD SCRUB. 60-800M.

COMMENTS

Distribution: LOCATION ON LABEL READS "8 MI S OF AVENAL" BUT MAPPED IN SANDY WASH 6 MI S OF AVENAL.
Ecological: SANDY DESERT WASH.
Threat:
General: COLLECTED HERE BY LEWIS ROSE (#35,063 UC). ACCORDING TO TAYLOR, NATIVE HABITAT HAS BEEN VIRTUALLY ELIMINATED BY AGRICULTURE FROM KETTLEMAN PLAINS S OF AVENAL. SEARCH IS NEEDED IN REMAINING SMALL ENCLAVES OF RUDERAL GRASSLAND IN THIS AREA.

CNDDDB Version: Government Version issued Sep. 05, 2001
Report: Source Detail
Date: 09/10/2002

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The Source
Occurrence Detail Report

SAN JOAQUIN WOOLLYTHREADS
MONOLOPIA CONGDONII

Query ID: SJW-30
Element Code: PDASTA8010

Federal: Endangered State: None	Global Rank: G3 State Rank: S3.2	CNPS List: 1B R-E-D Code: 2-2-3
Township: 21S Range: 17E Section: 27 Qtr: NE Elevation: 600	Meridian: M Precision: SPECIFIC Symbol Type: POINT Radius: 80m Map Index: 38745	Lat/Long: 36° 04' 39" / 120° 06' 50" UTM: Zone-10 N3996207 E759897 Element Last Seen: 1991-XX-XX Site Last Visited: 1991-XX-XX

County Summary: FRESNO (FRE)
Quad Summary: LA CIMA (3612011 / 314D)*, LA CIMA (3612011 / 314D)
SNA Summary:
Owner/Manager: UNKNOWN

LOCATION DETAILS

ARROYO LARGO, ABOUT 0.7 MILE WEST OF LASSEN AVE. AT I-5, KETTLEMAN HILLS.

OCCURRENCE INFORMATION

Occurrence No. 96
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Main Source: STEBBINS, J. 1991 (OBS)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: CHENOPOD SCRUB AND VALLEY AND FOOTHILL GRASSLAND. ENDEMIC TO SAN JOAQUIN VALLEY.
Micro: ALKALINE OR LOAMY PLAINS; SANDY SOILS, OFTEN WITH GRASSES AND WITHIN CHENOPOD SCRUB. 60-800M.

COMMENTS

Distribution: ALONG NORTHWEST SIDE OF ARROYO NEAR MOUTH; MAPPED WITHIN THE NE 1/4 NE 1/4 SECTION 27.
Ecological: STABILIZED DUNE AT EDGE OF AGRICULTURE. SALSOLA PESTIFERA DOMINANT WITH CALANDRINIA CILIATA, ERODIUM CICUTARIUM, BROMUS RUBENS, AND HOLOCARPHA HEERMANII. MARGINAL HABITAT FOR LEMBERTIA NEARBY (CNDDDB HAS MAP).
Threat: AGRICULTURE.
General: 15 PLANTS OBSERVED IN 1991.

The Source
Occurrence Detail Report

SAN JOAQUIN WOOLLYTHREADS
MONOLOPIA CONGDONII

Query ID: SJW-31
Element Code: PDASTA8010

Federal: Endangered State: None	Global Rank: G3 State Rank: S3.2	CNPS List: 1B R-E-D Code: 2-2-3
Township: 21S Range: 17E Section: 31 Qtr: NE Elevation: 975	Meridian: M Precision: SPECIFIC Symbol Type: POINT Radius: 80m Map Index: 38747	Lat/Long: 36° 03' 36" /120° 09' 54" UTM: Zone-10 N3994111 E755364 Element Last Seen: 1991-XX-XX Site Last Visited: 1991-XX-XX

County Summary: FRESNO (FRE)
Quad Summary: AVENAL (3612012 / 314C)*, AVENAL (3612012 / 314C)
SNA Summary:
Owner/Manager: UNKNOWN

LOCATION DETAILS

NORTH SIDE OF ARROYO CORTO, ABOUT 0.6 MILE SOUTH OF BOOSTER STATION, WEST SLOPE OF NORTH DOME, KETTLEMAN HILLS.

OCCURRENCE INFORMATION

Occurrence No. 97
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: STEBBINS, J. 1991 (OBS)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: CHENOPOD SCRUB AND VALLEY AND FOOTHILL GRASSLAND. ENDEMIC TO SAN JOAQUIN VALLEY.
Micro: ALKALINE OR LOAMY PLAINS; SANDY SOILS, OFTEN WITH GRASSES AND WITHIN CHENOPOD SCRUB. 60-800M.

COMMENTS

Distribution: ON RIDGE ABOVE TRIBUTARY TO ARROYO CORTO ALONG WEST-FACING SLOPE. MAPPED WITHIN THE SE 1/4 NE 1/4 SECTION 31.
Ecological: NON-NATIVE GRASSLAND IN SANDY SILT WITH ERODIUM CICUTARIUM, LEPIDIUM NITIDUM, AND SALSOLA PESTIFERA.
Threat: OVERGRAZING AND POSSIBLE OIL DEVELOPMENT.
General: FEWER THAN 10 PLANTS OBSERVED IN 1991.

The Source
Occurrence Detail Report

CALIFORNIA JEWEL-FLOWER
CAULANTHUS CALIFORNICUS

Query ID: CJ-1
Element Code: PDBRA31010

Federal: Endangered State: Endangered	Global Rank: G1 State Rank: S1.1	CNPS List: 1B R-E-D Code: 3-3-3
Township: 23S Range: 17E Section: 04 Qtr: SE Elevation: 1000	Meridian: M Precision: NON-SPECIFIC Symbol Type: POINT Radius: 1 mile Map Index: 14060	Lat/Long: 35° 57' 06" / 120° 07' 52" UTM: Zone-10 N3982192 E758763 Element Last Seen: 1940-03-23 Site Last Visited: 1986-XX-XX

County Summary: KINGS (KNG)
Quad Summary: GARZA PEAK (3512082 / 291B)*, KETTLEMAN PLAIN (3512081 / 291A),
GARZA PEAK (3512082 / 291B)
SNA Summary:
Owner/Manager: PVT

LOCATION DETAILS

NEAR TAR CANYON, FOOTHILLS W OF AVENAL, KREYENHAGEN HILLS.

OCCURRENCE INFORMATION

Occurrence No.: 5
Occ Rank: None
Origin: Natural/Native occurrence
Presence: Possibly Extirpated
Trend: Unknown
Main Source: HOOVER, R. #4283 (HERB)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: CHENOPOD SCRUB, VALLEY AND FOOTHILL GRASSLAND, PINYON JUNIPER WOODLAND.
Micro: HISTORICAL FROM VARIOUS VALLEY HABITATS IN BOTH CENTRAL V. AND CARRIZO PLAIN. 65-900M.

COMMENTS

Distribution:
Ecological:
Threat: AREA VERY HEAVILY GRAZED.
General:

The Source
Occurrence Detail Report

CALIFORNIA JEWEL-FLOWER
CAULANTHUS CALIFORNICUS

Query ID: CJ-2
Element Code: PDBRA31010

Federal: Endangered State: Endangered	Global Rank: G1 State Rank: S1.1	CNPS List: 1B R-E-D Code: 3-3-3
Township: 25S Range: 17E Section: 03 Qtr: NW Elevation: 960	Meridian: M Precision: NON-SPECIFIC Symbol Type: POINT Radius: 1 mile Map Index: 14077	Lat/Long: 35° 46' 51" / 120° 07' 40" UTM: Zone-10 N3963232 E759634 Element Last Seen: 1935-03-25 Site Last Visited: 1986-03-XX

County Summary: KERN (KRN), KINGS (KNG)
Quad Summary: PYRAMID HILLS (3512071 / 291D)*, PYRAMID HILLS (3512071 / 291D), TENT HILLS (3512072 / 291C)
SNA Summary:
Owner/Manager: PVT

LOCATION DETAILS

OPEN LOW HILLS, EAST END OF COTTONWOOD PASS. (ALONG HWY 41).

OCCURRENCE INFORMATION

Occurrence No. 6
Occ Rank: None
Origin: Natural/Native occurrence
Presence: Possibly Extirpated
Trend: Unknown
Main Source: EASTWOOD & HOWELL SN CAS (HERB)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: CHENOPOD SCRUB, VALLEY AND FOOTHILL GRASSLAND, PINYON JUNIPER WOODLAND.
Micro: HISTORICAL FROM VARIOUS VALLEY HABITATS IN BOTH CENTRAL V. AND CARRIZO PLAIN. 65-900M.

COMMENTS

Distribution:
Ecological: ANNUAL GRASSLAND HABITAT REMAINS IN THE VICINITY OF THE EAST BASE OF COTTONWOOD PASS.
Threat: MANY AREAS IN THE AREA ARE NOW ORCHARDS OR USED FOR DRYLAND GRAIN FARMING. UNCULTIVATED AREAS HEAVILY GRAZED.
General:

The Source
Occurrence Detail Report

CALIFORNIA JEWEL-FLOWER
CAULANTHUS CALIFORNICUS

Query ID: CJ-3
Element Code: PDBRA31010

Federal: Endangered State: Endangered	Global Rank: G1 State Rank: S1.1	CNPS List: 1B R-E-D Code: 3-3-3
Township: 21S Range: 16E Section: 34 Qtr: SW Elevation: 700	Meridian: M Precision: NON-SPECIFIC Symbol Type: POINT Radius: 1 mile Map Index: 13831	Lat/Long: 36° 03' 13" /120° 13' 52" UTM: Zone-10 N3993243 E749420 Element Last Seen: 1935-02-28 Site Last Visited: 1986-XX-XX

County Summary: FRESNO (FRE)
Quad Summary: AVENAL (3612012 / 314C)*, AVENAL (3612012 / 314C)
SNA Summary:
Owner/Manager: PVT

LOCATION DETAILS

MOUTH OF ZAPATO CHINO CREEK (ON THE E SLOPE OF DIABLO RANGE).

OCCURRENCE INFORMATION

Occurrence No.: 7
Occ Rank: None
Origin: Natural/Native occurrence
Presence: Possibly Extirpated
Trend: Unknown
Main Source: SHORT, L. #312 UC (HERB)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: CHENOPOD SCRUB, VALLEY AND FOOTHILL GRASSLAND, PINYON JUNIPER WOODLAND.
Micro: HISTORICAL FROM VARIOUS VALLEY HABITATS IN BOTH CENTRAL V. AND CARRIZO PLAIN. 65-900M.

COMMENTS

Distribution:
Ecological:
Threat: AGRICULTURE AND GRAZING MAY THREATEN.
General: HABITAT MODIFIED.

The Source
Occurrence Detail Report

CALIFORNIA JEWEL-FLOWER
CAULANTHUS CALIFORNICUS

Query ID: CJ-4
Element Code: PDBRA31010

Federal: Endangered State: Endangered	Global Rank: G1 State Rank: S1.1	CNPS List: 1B R-E-D Code: 3-3-3
Township: 22S Range: 16E Section: 08 Qtr: XX Elevation: 875	Meridian: M Precision: NON-SPECIFIC Symbol Type: POINT Radius: 1 mile Map Index: 13774	Lat/Long: 36° 01' 41" / 120° 15' 37" UTM: Zone-10 N3990328 E746875 Element Last Seen: 1952-04-03 Site Last Visited: 1986-03-XX

County Summary: FRESNO (FRE)
Quad Summary: KREYENHAGEN HILLS (3612013 / 315D)*, AVENAL (3612012 / 314C),
KREYENHAGEN HILLS (3612013 / 315D)
SNA Summary:
Owner/Manager: PVT

LOCATION DETAILS

KREYENHAGEN RANCH, ZAPATO CHINO CANYON, 5.4 MI W OF HWY 33.

OCCURRENCE INFORMATION

Occurrence No.: 37
Occ Rank: None
Origin: Natural/Native occurrence
Presence: Possibly Extirpated
Trend: Unknown
Main Source: TAYLOR, D. 1986 (LIT)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: CHENOPOD SCRUB, VALLEY AND FOOTHILL GRASSLAND, PINYON JUNIPER WOODLAND.
Micro: HISTORICAL FROM VARIOUS VALLEY HABITATS IN BOTH CENTRAL V. AND CARRIZO PLAIN. 65-900M.

COMMENTS

Distribution:
Ecological:
Threat: OVERGRAZING MAY HAVE ELIMINATED POPULATION.
General: EXTENSIVE GRASSLAND HABITAT EXISTS IN GENERAL AREA; A 1.5 MILE RADIUS AROUND RANCH SEARCHED IN 1986 AND NO PLANTS FOUND. TAYLOR'S SITE #34.

CNDDDB Version: Government Version issued Sep. 05, 2001
Report: Source Detail
Date: 09/10/2002

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The Source
Occurrence Detail Report

RECURVED LARKSPUR
DELPHINIUM RECURVATUM

Query ID: RL-1
Element Code: PDRAN0B1J0

Federal: None State: None	Global Rank: G2 State Rank: S2.2	CNPS List: 1B R-E-D Code:2-2-3
Township: 24S Range: 18E Section: 17 Qtr: XX Elevation: 790	Meridian: M Precision: NON-SPECIFIC Symbol Type: POINT Radius: 1 mile Map Index: 14242	Lat/Long: 35° 50' 12" /120° 03' 06" UTM: Zone-10 N3969646 E766316 Element Last Seen: 1956-03-23 Site Last Visited: 1956-03-23

County Summary: KINGS (KNG)
Quad Summary: PYRAMID HILLS (3512071 / 291D)*, PYRAMID HILLS (3512071 / 291D)
SNA Summary:
Owner/Manager: PVT

LOCATION DETAILS

IN THE PYRAMID HILLS, NEAR GILLILAND OIL COMPANY TANK FARM.

OCCURRENCE INFORMATION

Occurrence No. 4
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: TWISSELMANN, E. #2574 CAS (HERB)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: CHENOPOD SCRUB, VALLEY AND FOOTHILL GRASSLAND, CISMONTANE WOODLAND. MANY HISTORICAL AND DEGRADED SITES.
Micro: ON ALKALINE SOILS; OFTEN IN VALLEY SALT BUSH OR VALLEY CHENOPOD SCRUB. 3-685M.

COMMENTS

Distribution:
Ecological: IN ALKALI SOIL AMONG ATRIPLEX SHRUBS.
Threat:
General: SMALL COLONY.

The Source
Occurrence Detail Report

RECURVED LARKSPUR
DELPHINIUM RECURVATUM

Query ID: RL-2
Element Code: PDRAN0B1J0

Federal: None State: None	Global Rank: G2 State Rank: S2.2	CNPS List: 1B R-E-D Code: 2-2-3
Township: 25S Range: 17E Section: 03 Qtr: NW Elevation: 960	Meridian: M Precision: NON-SPECIFIC Symbol Type: POINT Radius: 1 mile Map Index: 14077	Lat/Long: 35° 46' 51" / 120° 07' 40" UTM: Zone-10 N3963232 E759634 Element Last Seen: 1935-04-17 Site Last Visited: 1935-04-17

County Summary: KERN (KRN), KINGS (KNG)
Quad Summary: PYRAMID HILLS (3512071 / 291D)*, PYRAMID HILLS (3512071 / 291D), TENT HILLS (3512072 / 291C)

SNA Summary:
Owner/Manager: PVT

LOCATION DETAILS

DIABLO RANGE, AVENAL RIDGE, NEAR BORDER WITH KINGS CO.

OCCURRENCE INFORMATION

Occurrence No. 19
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Main Source: WOLF, C. #6443, DH AT CAS (HERB)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: CHENOPOD SCRUB, VALLEY AND FOOTHILL GRASSLAND, CISMONTANE WOODLAND. MANY HISTORICAL AND DEGRADED SITES.
Micro: ON ALKALINE SOILS; OFTEN IN VALLEY SALTBUUSH OR VALLEY CHENOPOD SCRUB. 3-685M.

COMMENTS

Distribution:
Ecological: GROWING IN CLAY SHALE, ROLLING GRASSLAND AT MOUTH OF COTTONWOOD CANYON, ELEVATION: 1000 FEET.

Threat:
General:

The Source
Occurrence Detail Report

RECURVED LARKSPUR
DELPHINIUM RECURVATUM

Query ID: RL-3
Element Code: PDRAN0B1J0

Federal: None State: None	Global Rank: G2 State Rank: S2.2	CNPS List: 1B R-E-D Code: 2-2-3
Township: 24S Range: 19E Section: 15 Qtr: SW Elevation: 350	Meridian: M Precision: SPECIFIC Symbol Type: POLYGON Area: 10.5 ac Map Index: 31612	Lat/Long: 35° 50' 19" / 119° 54' 33" UTM: Zone-11 N3969754 E237230 Element Last Seen: 1992-04-17 Site Last Visited: 1992-04-17

County Summary: KINGS (KNG)
Quad Summary: AVENAL GAP (3511978 / 290C)*, AVENAL GAP (3511978 / 290C)
SNA Summary:
Owner/Manager: DWR-CALIFORNIA AQUEDUCT

LOCATION DETAILS

COASTAL BRANCH OF THE CALIFORNIA AQUEDUCT, WEST OF LAS PERILLAS.

OCCURRENCE INFORMATION

Occurrence No.: 52
Occ Rank: Fair
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: STEBBINS, J. 1992 (LIT)
Source Codes: DFG81U03

HABITAT ASSOCIATIONS

General: CHENOPOD SCRUB, VALLEY AND FOOTHILL GRASSLAND, CISMONTANE WOODLAND. MANY HISTORICAL AND DEGRADED SITES.
Micro: ON ALKALINE SOILS; OFTEN IN VALLEY SALTBUSH OR VALLEY CHENOPOD SCRUB. 3-685M.

COMMENTS

Distribution: TWO COLONIES ALONG THE WEST SIDE OF THE AQUEDUCT AT MILE POSTS 1.6 AND 1.75. WITHIN THE NE 1/4 OF THE SW 1/4 OF SECTION 15.
Ecological: NON-NATIVE GRASSLAND ON SANDY-LOAM SOIL. ASSOCIATED WITH LASTHENIA CHRYSOSTOMA, BROMUS RUBENS, SALSOLA PESTIFERA, LEPIDIUM NITIDUM, DICHELOSTEMMA PULCHELLA, AND ERODIUM CICUTARIUM.
Threat: OVERGRAZING.
General: FEWER THAN 20 PLANTS OBSERVED IN 1992.

CNDDDB Version: Government Version issued Sep. 05, 2001
Report: Source Detail
Date: 09/10/2002

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**Blunt-Nosed Leopard Lizard Survey Report
for Chemical Waste Management's
Proposed Road Realignment Project at the
Kettleman Hills Waste Management Facility,
Kings County, California**

Prepared for:

Chemical Waste Management, Inc.
35251 Old Skyline Road
Kettleman City, CA 93239

Prepared by:

Bumgardner Biological Consulting
11571 Prospect Hill Drive
Gold River, CA 95670-8216

and

TRC
21 Technology Drive
Irvine, CA 92618

March 18, 2004

**Blunt-Nosed Leopard Lizard Survey and
Endangered Species Act Compliance Report for the
Proposed Road Realignment Project, Kettleman Hills Facility,
Chemical Waste Management, Kings County, California**

Introduction

The Kettleman Hills Facility (KHF), which has been owned and operated by Chemical Waste Management, Inc. (CWMI) since 1979, is a waste treatment, storage, and disposal facility in western Kings County, California. The KHF is located west of Interstate 5, approximately 3.5 miles southwest of Kettleman City, and 6.5 miles southeast of the City of Avenal (Figure 1). A total of 499 acres of the approximately 1,600-acre KHF are permitted by Kings County through a Conditional Use Permit (CUP) for ongoing waste treatment and disposal operations.

CWMI has proposed to realign a portion of the entrance road into the KHF to facilitate transportation operations within the facility. The realignment (i.e., proposed project) would result in the northward relocation of the roadway segment located west of the security kiosk and east of the operations support facilities building (within less than 100 feet of the existing alignment).

This report summarizes the results of surveys and available data review conducted in 2003 for blunt-nosed leopard lizard (*Gambelia sila*) in the immediate vicinity of the proposed project (i.e., within 100 feet of ground-disturbing activities associated with the proposed project). Furthermore, the report provides an assessment of whether the proposed project may affect the latter species. Thus, the data and analysis presented in the report are intended to support California Environmental Quality Act (CEQA) and state and federal Endangered Species Act (ESA) compliance as they relate to potential effects to blunt-nosed leopard lizard from the proposed project.

It should be noted that no surveys or available data review were conducted for lands located inside of the KHF's currently permitted 499-acre operations area (i.e., inside the exclusionary fence) since these lands have been addressed by previous biological survey reports, environmental documents, permitting processes, and compensatory mitigation. These latter documents and processes include the Biological Opinion (No. 1-1-90-F-18) issued by the United States Fish and Wildlife Service (USFWS, 1991) and Memorandum of Understanding (Reference No. 9101) issued by the California Department of Fish and Game (CDFG, 1994).

Available Data Review

California Natural Diversity Data Base

The California Natural Diversity Data Base (CNDDDB, 2003) contains records for special-status species, as well as sensitive natural communities, which have been reported to the CDFG. Consequently, a standard nine-quadrangle California Natural Diversity Data Base/Rarefind 2 report was generated for the vicinity of the proposed project (i.e., query of the USGS 7.5-minute topographic quadrangle in which the proposed road realignment is found as well as the immediate eight surrounding topographic quadrangles) to identify local recorded occurrences for blunt-nosed leopard lizard. The Rarefind 2 report for the proposed project is provided in Appendix A.

General Literature Review

Other sources of information on the natural history and presence of blunt-nosed leopard lizard in the project vicinity were also reviewed. These sources included:

- Recovery Plan for Upland Species of the San Joaquin Valley, California (USFWS, 1998).
- Formal Endangered Species Consultation on the Chemical Waste Management, Inc., Kettleman Hills Hazardous Waste Facilities Operation, Kings County, California (No. 1-1-90-F-18) (USFWS, 1991).
- Results of a Sensitive Species Survey on the Kettleman Hills Facility (Uptain et al., 2000).
- Threatened and Endangered Amphibians and Reptiles Species Account, Blunt-nosed Leopard Lizard. USFWS, Sacramento.
http://sacramento.fws.gov/es/animal_spp_acct/blunt_nosed_lizard.htm.
- California's Wildlife, Amphibians and Reptiles, Blunt-nosed Leopard Lizard. California Wildlife Habitat Relationships System, (CDFG, 1982).
<http://www.dfg.ca.gov/whdab/html/R019.html>.
- Blunt-nosed Leopard Lizard Biology, Distribution. Endangered Species Project, California Department of Pesticides Regulation
<http://www.cdpr.ca.gov/docs/es/espdfs/bnl11.pdf>.

Focused Surveys

Surveys for blunt-nosed leopard lizard within and immediately adjacent to the project site were conducted consistent with a negotiated protocol that is a compromise between the CDFG's May 8, 1990 *Approved Survey Methodologies for Sensitive Species* and April 2003 *Draft Approved Survey Methodology for the Blunt-nosed Leopard Lizard*. The protocol was approved by Annette Tennebo (CDFG) on May 27, 2003. Specifically, the protocol-level surveys were conducted by slowly walking 20 to 50-foot wide transects within all suitable habitat (i.e., open habitats on relatively flat areas or gentle slopes in the proposed project area and within 100 feet of the proposed project area) while stopping frequently to scan with binoculars. The surveys were conducted for six consecutive days from June 24 to 29, 2003. An additional six days of surveys were conducted in August and September (i.e., five consecutive days from August 21 to 25, 2003 and a single day on September 15, 2003). It should be noted that much of the land in the vicinity of the project site consists of buildings and other man-made structures, paved roads and a parking lot, and managed turf that cannot support blunt-nosed leopard lizard. These latter areas were not surveyed. In accordance with the CDFG protocol, air temperatures were measured approximately 2 cm above ground with the thermometer shaded from the sun, while ground temperatures were measured approximately 2 cm below the surface in the shade. A beginning and ending air and ground temperature was recorded for each survey (Table 1), while spot temperature readings were taken to ensure compliance with the CDFG's acceptable range of survey temperatures for the species. Lastly, the density of rodent burrows within the project site was estimated.

The surveys were conducted between approximately 7:00 am to 1:30 pm when recorded air temperatures ranged between 25 and 35°C (with two exceptions). These latter exceptions occurred on June 28 and August 25, 2003. The ending air temperature for the June 28, 2003 survey was 36°C. However, the ending ground temperature for the survey was 41°C (within the acceptable ground temperatures for the species [i.e., 35 to 50°C]) and therefore representative of conditions under which the species should be active. The ending air temperature for the August 25, 2003 survey was also 36°C, but the ending ground temperature for the survey was 45°C (again within the acceptable ground temperatures for the species). Therefore, this latter survey was also representative of conditions under which the species should be active.

The survey resulted in no evidence (including tail drags or scat) that the species occurs in or immediately adjacent to the project site (Table 1). In addition, the only lizard that was observed within the survey area was the side-blotched lizard (*Uta stansburiana*). This species was common (i.e., 20+ observed each day) within those portions of the survey area that provided rodent burrows and shrub cover. However, much of the survey area supported low densities of rodents (based on rodent burrow densities of 0 to 2 burrows per m²), and provided few refugia for side-blotched lizards or blunt-nosed leopard lizards.

Natural History and Distribution of Species

Blunt-nosed leopard lizard is state and federally listed as endangered. The species is also designated as a California fully protected species. The species inhabits open, sparsely vegetated areas of low relief (particularly annual and perennial grasslands, alkali scrub, and saltbush scrub). It is absent from areas of steep slope, dense vegetation, or seasonal flooding. The current range of the species includes undeveloped parcels in the southernmost portion of the San Joaquin Valley (Tulare and Kings counties south to Kern County), valley floor in the vicinity of western Madera County, and along the western edge of the valley from Merced County south to Ventura County. Its range also extends into the Carrizo Plain and Cuyama Valley west of the southwestern end of the San Joaquin Valley (in Santa Barbara and San Luis Obispo counties). Estimated densities in occupied habitat have varied from 0.1 to 8.5 lizards per acre (Uptain et al., 1985; Williams and Germano, 1991; Williams et al., 1993; Germano et al., 1994). Individuals use small rodent burrows for shelter from predators and temperature extremes. The burrows are usually abandoned ground squirrel tunnels, or occupied or abandoned kangaroo rat tunnels (Montanucci, 1965). Seasonal above-ground activity is correlated with weather conditions (primarily temperature). Optimal activity occurs when air temperatures are between 23.5 and 40 °C (USFWS, 1985). Adults are active above ground in the spring months, from March or April through June or July, with the level of activity decreasing until approximately late June when most adults cease above-ground activity. At this latter time, only subadult and hatchling individuals generally continue to be active. By August or September, the adults have retreated to burrows to begin overwintering. Hatchlings may be active until mid-October or November.

Status of Species in the Project Vicinity

A single blunt-nosed leopard lizard was observed carrying another lizard in the vicinity of the administrative buildings adjacent to the project site during the late 1980s (Paul Turek, CWMI, pers. comm., June 24, 2003). Blunt-nosed leopard lizards were again observed in the vicinity of the administrative buildings during April 1990 (USFWS, 1991). However, no other observations of the species in the immediate vicinity of the project site have occurred since these latter observations. Nonetheless, given that there are scattered records of the species from the vicinity of the Kettleman Hills (see locations for BLL-2, 3, 4, 6, 8, 9, and 14 on Figure 2), the species was considered to have some potential, albeit low, to occur on the site. Thus, protocol-level surveys were conducted for the species during 2003. These surveys resulted in no evidence that the species occurs within or immediately adjacent to the project site.

Regulatory Compliance Related to Species

The best available data suggests that blunt-nosed leopard lizard has not occurred within and immediately adjacent to the project site since 1990. Therefore, no effects to the species are anticipated from activities associated with the development of the road realignment project (as described) as long as construction is initiated prior to

April 1, 2004 (i.e., prior to the start of the 2004 activity season for the species). It should be noted that the “no effect” finding for the species is based on the results of the 2003 surveys and does not extend beyond this latter date since individuals could move onto the project site (e.g., from nearby overwintering sites) once the active season begins. Therefore, if development of the road realignment project is initiated after March 31, 2004, it will be necessary to conduct additional protocol surveys for the species consistent with the 2003 *Draft Approved Survey Methodology for the Blunt-nosed Leopard Lizard*.

Furthermore, CWMI should submit this report and a request for a concurrence letter to the CDFG and USFWS. The agencies’ letters, if issued, will provide concurrence with the “no effect” finding and that no further compliance with the California Fish and Game Code or federal Endangered Species Act (FESA) is required in regards to blunt-nosed leopard lizard. However, it is likely that the agencies will strongly recommend the implementation of a variety of measures to further ensure that “take” of blunt-nosed leopard lizards does not occur. These measures will be defined in the agencies’ concurrence letters, but are likely to include the following:

- Development of a Worker Endangered Species Awareness Program. The program would include a description of the species, its typical behaviors, and suitable habitat. The program would also include a brief orientation to the California Fish and Game Code and FESA, and the penalties associated with “take” of blunt-nosed leopard lizard under each of these statutes.
- Implementation of the Worker Endangered Species Awareness Program such that all workers operating within the limits of construction are aware of the measures necessary to avoid “take” of blunt-nosed leopard lizards and the potential penalties should a “take” occur.
- Avoidance of earth-disturbing activities or laydown of materials in areas containing high rodent burrow densities (if feasible).
- Construction and maintenance of an exclusionary fence that separates the project’s eastern limits of construction from adjacent habitat that may be suitable for blunt-nosed leopard lizard. Such fencing should be a minimum of 2 feet high (from the ground surface to the top of the fence), buried to at least 6 inches underground, and support a base of metal flashing that is a minimum of 12 inches high (such that lizards cannot climb over the fence). The fence should also have a T-end that extends out at least 4 feet from the end of the fence (i.e, 8-foot perpendicular segment) that minimizes the potential for lizards to travel along the fence, reach the end of the fence, move to the construction side of the fence, and then be trapped within the limits of construction.
- Enforcement of vehicle speed limitations within the limits of construction to no more than 10 mph.
- Utilization of escape ramps at the ends of any open trenches (if any) to allow trapped wildlife (including blunt-nosed leopard lizards) to passively escape. Such ramps should have a maximum 3:1 slope.

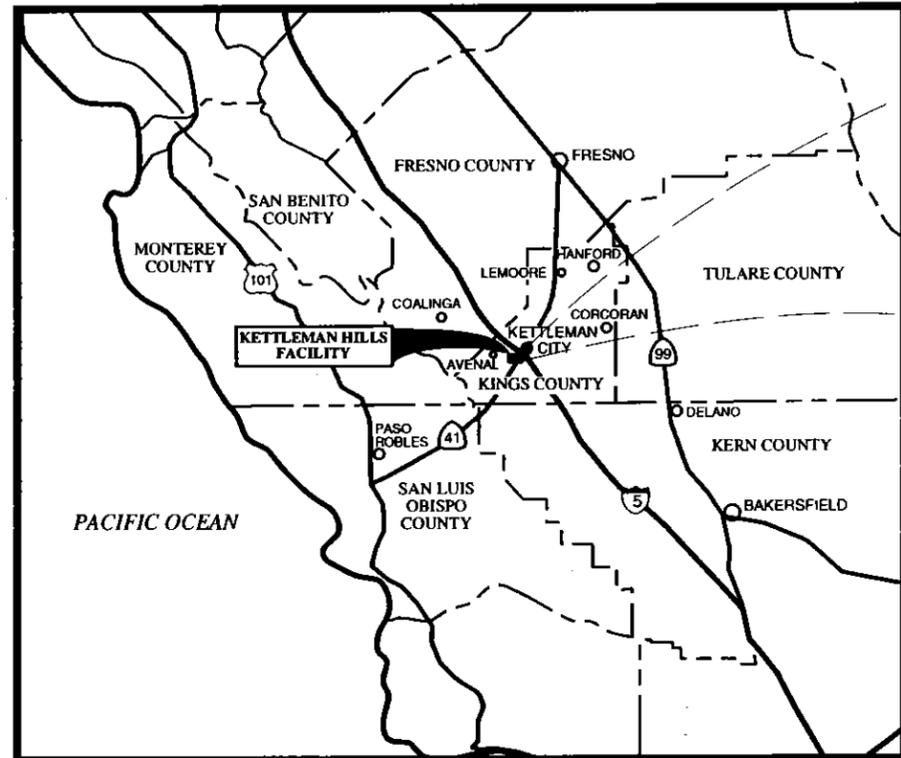
- Utilization of a qualified biological monitor to ensure that the above measures are fully and appropriately implemented.

Literature Cited

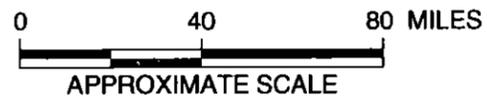
- California Department of Fish and Game (CDFG). 1990. Letter from George D. Nokes, Regional Manager (with attached *Approved Survey Methodologies for Sensitive Species*) describing recommended survey methodologies for San Joaquin kit fox, blunt-nosed leopard lizard, giant kangaroo rat, Tipton kangaroo rat, and San Joaquin antelope squirrel. Fresno, California.
- California Department of Fish and Game (CDFG). 1994. California Endangered Species Act Memorandum of Understanding by and between Chemical Waste Management, Inc. and California Department of Fish and Game regarding Kettleman Hills Hazardous Waste Facility (Ref. No. 9101).
- California Department of Fish and Game (CDFG). 2003. California Natural Diversity Data Base.
- Germano, D. J., D. F. Williams, and W. Tordoff III. 1994. Effect of Drought on Blunt-Nosed Leopard Lizards (*Gambelia sila*). *Northwestern Naturalist* 75:11-19.
- Montanucci, R. R. 1965. Observations on the San Joaquin Leopard Lizard, *Crotaphytus wislizenii silus* Stejneger. *Herpetologica* 21:270-283.
- TRC. 1997. Draft Subsequent Environmental Impact Report – Municipal Solid Waste Disposal Project, Kettleman Hills Facility (State Clearinghouse No. 97042028).
- Uptain, C., W., A. Clark, and S. M. Juarez. 1985. Mark-Recapture Population Estimates and Visitation Indices for the Blunt-Nosed Leopard lizard, *Gambelia silus*, at the Pixley National Wildlife Refuge, Tulare County, California. U. S. Fish and Wildlife Service, Delano, CA, Contract Nos. 10181-9810-3(js) and 10181-4672-4, 34 pp. + appendices.
- Uptain, C., W., R. Kokx, and S. Uptain. 2000. Results of a Sensitive Species Survey on the Waste Management Site, Kettleman Hills Facility. 40 pp.
- U.S. Fish and Wildlife Service (USFWS). 1991. Formal Endangered Species Consultation on the Chemical Waste Management, Inc., Kettleman Hills Hazardous Waste Facilities Operation, Kings County, California (No. 1-1-90-F-18).
- U.S. Fish and Wildlife Service (USFWS). 1998. Recovery Plan for Upland Species of the San Joaquin Valley, California. Region 1, Portland, OR. 319 pp.
- Williams, D. F., D. J. Germano, and W. Tordoff III. 1993. Population Studies of Endangered Kangaroo Rats and Blunt-Nosed Leopard Lizards in the Carrizo Plain Natural Area, California. California Department of Fish and Game, Non-Game Bird and Mammal Section, Report 93-01:1-114.

Table 1 Results of the Blunt-nosed Leopard Lizard (BNLL) Surveys Within the Proposed Road Widening Corridor, Kettleman Hills Facility			
Date	Survey Start	Survey End	Results
	Time Air Temperature (°C) Ground Temperature (°C)	Time Air Temperature (°C) Ground Temperature (°C)	
06/24/03	1:12 pm 27 °C 38 °C	1:24 pm 28 °C 38 °C	No BNLL
06/25/03	8:36 am 27 °C 28 °C	8:55 am 28 °C 31 °C	No BNLL
06/26/03	9:51 am 34 °C 37 °C	10:09 am 35 °C 38 °C	No BNLL
06/27/03	7:08 am 29 °C 30 °C	7:24 am 31 °C 32 °C	No BNLL
06/28/03	9:19 am 35 °C 39 °C	9:38 am 36 °C 41 °C	No BNLL
06/29/03	7:10 am 28 °C 28 °C	7:24 am 29 °C 30 °C	No BNLL
08/21/03	12:58 pm 32 °C 39 °C	1:23 pm 34 °C 39 °C	No BNLL
08/22/03	11:15 am 30 °C 38 °C	11:41 am 31 °C 42 °C	No BNLL
08/23/03	12:08 pm 31 °C 42 °C	12:29 pm 34 °C 40 °C	No BNLL

Table 1 Results of the Blunt-nosed Leopard Lizard (BNLL) Surveys Within the Proposed Road Widening Corridor, Kettleman Hills Facility			
Date	Survey Start	Survey End	Results
	Time Air Temperature (°C) Ground Temperature (°C)	Time Air Temperature (°C) Ground Temperature (°C)	
08/24/03	9:20 am 29 °C 34 °C	9:42 am 30 °C 36 °C	No BNLL
08/25/03	10:40 am 35 °C 45 °C	11:04 am 36 °C 45 °C	No BNLL
09/15/03	8:20 am 26 °C 30 °C	8:43 am 27 °C 33 °C	No BNLL



REGIONAL LOCATION MAP



PROJECT LOCATION

NOT TO SCALE

LOCATION MAP

KETTLEMAN HILLS FACILITY
CHEMICAL WASTE MANAGEMENT, INC.

FIGURE 1

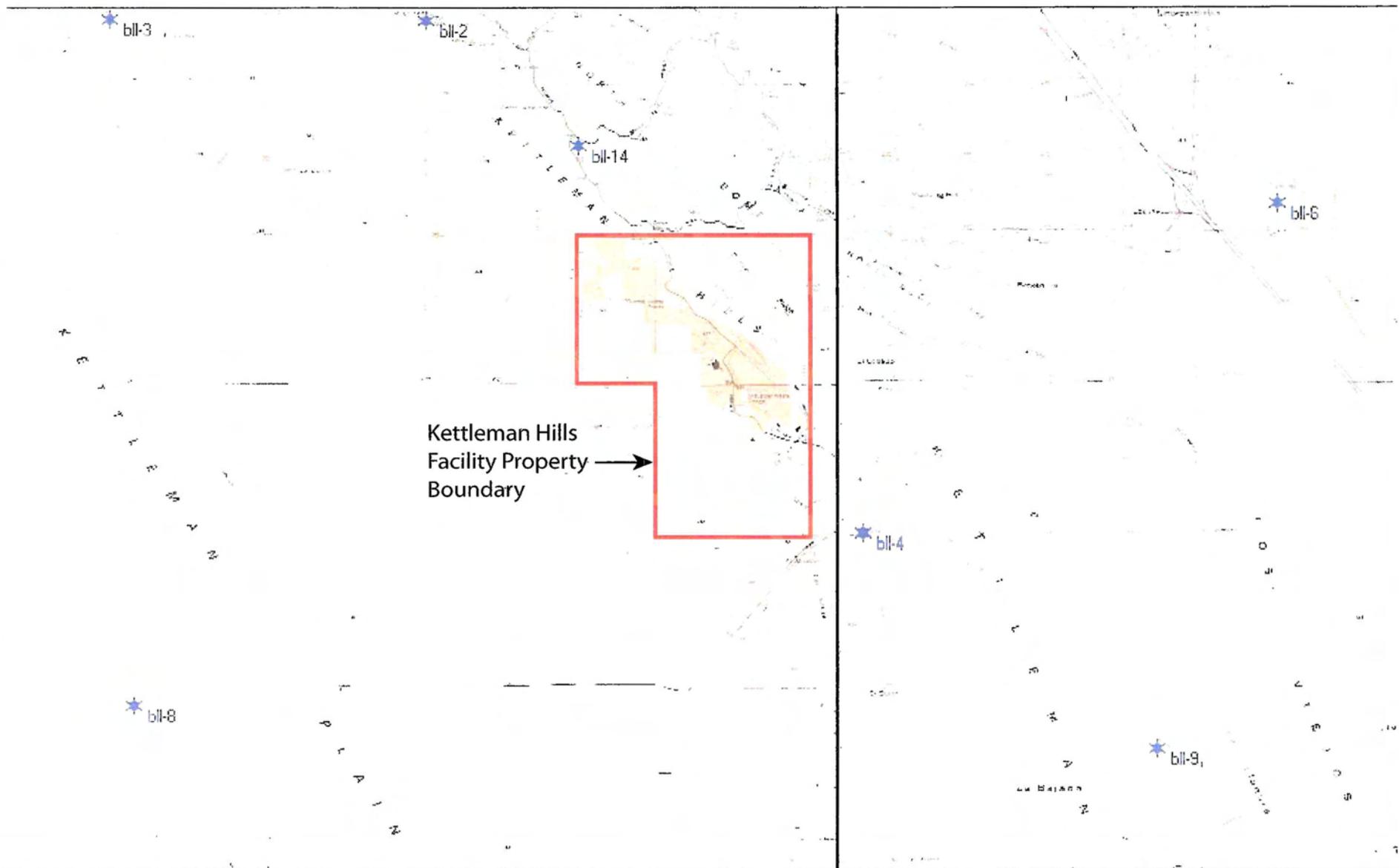


Figure 2

CNDDDB Records for Blunt-nosed Leopard Lizard
in the Vicinity of the Kettleman Hills Facility

Appendix A

**CNDDDB/Rarefind 2 Report
for
Proposed Road Realignment Project,
Kettleman Hills Facility,
Chemical Waste Management,
Kings County, California**

The Source
Occurrence Detail Report

blunt-nosed leopard lizard
Gambelia sila

Query ID: bli-1
Element Code: ARACF07010

Federal: Endangered State: Endangered	Global Rank: G1 State Rank: S1	CDFG List:
Township: 22S Range: 17E Section: 10 Qtr: NE Elevation: 1050	Meridian: M Precision: NON-SPECIFIC Symbol Type: POINT Radius: 1/5 mile Map Index: 14097	Lat/Long: 36.02708 /-120.11968 UTM: Zone-10 N3990791 E759541 Element Last Seen: 1979-XX-XX Site Last Visited: 1979-XX-XX

County Summary: KINGS (KNG)
Quad Summary: LA CIMA (3612011 / 314D)*, LA CIMA (3612011 / 314D)
SNA Summary:
Owner/Manager: UNKNOWN

LOCATION DETAILS

1 MI NNE OF AVENAL ON W SLOPE OF KETTLEMAN HILLS.

OCCURRENCE INFORMATION

Occurrence No. 17
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: JONES, L. 1979 (LIT)
Source Codes: JON79R01

HABITAT ASSOCIATIONS

General: RESIDENT OF SPARSELY VEGETATED ALKALI AND DESERT SCRUB HABITATS, IN AREAS OF LOW TOPOGRAPHIC RELIEF.
Micro: SEEKS COVER IN MAMMAL BURROWS, UNDER SHRUBS OR STRUCTURES SUCH AS FENCE POSTS; THEY DO NOT EXCAVATE THEIR OWN BURROWS.

COMMENTS

Distribution: ONE INDIV OBS. DENSITY EST AT 0.23 LIZARDS/100 ACRES.
Ecological: 440 ACRE GRAZED GRASSLAND. MODERATE RELIEF, GRADUAL RISE FROM SW TO NE.
Threat: LIGHT OIL AND GAS DEVELOPMENT.
General: BNLL STUDY PLOT #3.

CNDDDB Version: Sam Jones issued Dec. 08, 2003
Report: Source Detail
Date: 05/21/2004

Report 1 of 17
Page 1

The Source
Occurrence Detail Report

blunt-nosed leopard lizard
Gambelia sila

Query ID: bli-2
Element Code: ARACF07010

Federal: Endangered State: Endangered	Global Rank: G1 State Rank: S1	CDFG List:
Township: 22S Range: 18E Section: 20 Qtr: XX Elevation: 1200	Meridian: M Precision: NON-SPECIFIC Symbol Type: POINT Radius: 1 mile Map Index: 14255	Lat/Long: 35.99856 /-120.04875 UTM: Zone-10 N3987818 E766030 Element Last Seen: 1979-XX-XX Site Last Visited: 1979-XX-XX

County Summary: KINGS (KNG)

Quad Summary: KETTLEMAN PLAIN (3512081 / 291A)*, KETTLEMAN PLAIN (3512081 / 291A),
LA CIMA (3612011 / 314D)

SNA Summary:

Owner/Manager: UNKNOWN

LOCATION DETAILS

3 1/2 MI E OF AVENAL.

OCCURRENCE INFORMATION

Occurrence No. 18
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Main Source: JONES, L. 1979 (LIT)
Source Codes: JON79R01

HABITAT ASSOCIATIONS

General: RESIDENT OF SPARSELY VEGETATED ALKALI AND DESERT SCRUB HABITATS, IN
AREAS OF LOW TOPOGRAPHIC RELIEF.

Micro: SEEKS COVER IN MAMMAL BURROWS, UNDER SHRUBS OR STRUCTURES SUCH
AS FENCE POSTS; THEY DO NOT EXCAVATE THEIR OWN BURROWS.

COMMENTS

Distribution: 2-4 LIZARDS OBS.
Ecological: 640 ACRE GRAZED GRASSLAND.
Threat: LIGHT OIL AND GAS DEVELOPMENT.
General: BNLL STUDY PLOT #9.

CNDDDB Version: Sam Jones issued Dec. 08, 2003

Report: Source Detail

Date: 05/21/2004

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The Source
Occurrence Detail Report

blunt-nosed leopard lizard
Gambelia sila

Query ID: bil-3
Element Code: ARACF07010

Federal: Endangered State: Endangered	Global Rank: G1 State Rank: S1	CDFG List:
Township: 22S Range: 17E Section: 24 Qtr: SE Elevation: 975	Meridian: M Precision: NON-SPECIFIC Symbol Type: POINT Radius: 1 mile Map Index: 14187	Lat/Long: 35.99855 /-120.08486 UTM: Zone-10 N3987718 E762774 Element Last Seen: 1979-XX-XX Site Last Visited: 1979-XX-XX

County Summary: KINGS (KNG)

Quad Summary: KETTLEMAN PLAIN (3512081 / 291A)*, KETTLEMAN PLAIN (3512081 / 291A),
LA CIMA (3612011 / 314D)

SNA Summary:

Owner/Manager: UNKNOWN

LOCATION DETAILS

1 1/2 MI E AVENAL, W SLOPE OF KETTLEMAN HILLS.

OCCURRENCE INFORMATION

Occurrence No. 19
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Main Source: JONES, L. 1979 (LIT)
Source Codes: JON79R01

HABITAT ASSOCIATIONS

General: RESIDENT OF SPARSELY VEGETATED ALKALI AND DESERT SCRUB HABITATS, IN
AREAS OF LOW TOPOGRAPHIC RELIEF.
Micro: SEEKS COVER IN MAMMAL BURROWS, UNDER SHRUBS OR STRUCTURES SUCH
AS FENCE POSTS; THEY DO NOT EXCAVATE THEIR OWN BURROWS.

COMMENTS

Distribution: 1 LIZARD OBS. STUDY PLOT INCLUDES MOST OF SEC 24.
Ecological: ELEV 810-1150 FT. 640 ACRE GRAZED GRASSLAND.
Threat: LIGHT OIL AND GAS DEVELOPMENT W/IN PLOTS #9 & #11.
General: BNLL STUDY PLOT #8.

CNDDDB Version: Sam Jones issued Dec. 08, 2003
Report: Source Detail
Date: 05/21/2004

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Page 1

The Source
Occurrence Detail Report

blunt-nosed leopard lizard
Gambelia sila

Query ID: bli-4
Element Code: ARACF07010

Federal: Endangered State: Endangered	Global Rank: G1 State Rank: S1	CDFG List:
Township: 23S Range: 18E Section: 02 Qtr: SW Elevation: 625	Meridian: M Precision: NON-SPECIFIC Symbol Type: POINT Radius: 1 mile Map Index: 14318	Lat/Long: 35.94967 /-119.99846 UTM: Zone-11 N3982522 E229545 Element Last Seen: 1979-XX-XX Site Last Visited: 1979-XX-XX

County Summary: KINGS (KNG)
Quad Summary: LOS VIEJOS (3511988 / 290B)*, LOS VIEJOS (3511988 / 290B), KETTLEMAN PLAIN (3512081 / 291A)
SNA Summary:
Owner/Manager: UNKNOWN

LOCATION DETAILS

3 1/2 MI NE OF REEF STATION, 3 1/2 MI SSW OF KETTLEMAN STATION.

OCCURRENCE INFORMATION

Occurrence No. 41
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: JONES, L. 1979 (LIT)
Source Codes: JON79R01

HABITAT ASSOCIATIONS

General: RESIDENT OF SPARSELY VEGETATED ALKALI AND DESERT SCRUB HABITATS, IN AREAS OF LOW TOPOGRAPHIC RELIEF.
Micro: SEEKS COVER IN MAMMAL BURROWS, UNDER SHRUBS OR STRUCTURES SUCH AS FENCE POSTS; THEY DO NOT EXCAVATE THEIR OWN BURROWS.

COMMENTS

Distribution: 7 INDIVS OBS. DENSITY EST AT 10.42 LIZARDS/100 ACRES.
Ecological: TOTAL 320 ACRES GRAZED GRASSLAND (TOTAL 247 ACRES GRASS); PLOT #15 MILD RELIEF; PLOT #17 FLAT.
Threat:
General: BNLL STUDY PLOT #S 14-17. INCLUDES SECS 10 & 12. MORE DATA AVAILABLE IN REPORT.

CNDDDB Version: Sam Jones issued Dec. 08, 2003
Report: Source Detail
Date: 05/21/2004

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The Source
Occurrence Detail Report

blunt-nosed leopard lizard
Gambelia sila

Query ID: bli-5
Element Code: ARACF07010

Federal: Endangered State: Endangered	Global Rank: G1 State Rank: S1	CDFG List:
Township: 27S Range: 18E Section: 31 Qtr: SW Elevation: 1825	Meridian: M Precision: NON-SPECIFIC Symbol Type: POINT Radius: 1 mile Map Index: 14186	Lat/Long: 35.78107 /-120.08264 UTM: Zone-10 N3963593 E763695 Element Last Seen: 1946-06-26 Site Last Visited: 1946-06-26

County Summary: KERN (KRN), KINGS (KNG)

Quad Summary: PYRAMID HILLS (3512071 / 291D)*, PYRAMID HILLS (3512071 / 291D)

SNA Summary:

Owner/Manager: UNKNOWN

LOCATION DETAILS

3 MI N, 3 MI E ORCHARD PEAK.

OCCURRENCE INFORMATION

Occurrence No. 92

Origin: Natural/Native occurrence

Occ Rank: Unknown

Presence: Presumed Extant

Trend: Unknown

Main Source: BRODE, J. & D. STROUD 1974 (LIT)

Source Codes: JON79R01

HABITAT ASSOCIATIONS

General: RESIDENT OF SPARSELY VEGETATED ALKALI AND DESERT SCRUB HABITATS, IN AREAS OF LOW TOPOGRAPHIC RELIEF.

Micro: SEEKS COVER IN MAMMAL BURROWS, UNDER SHRUBS OR STRUCTURES SUCH AS FENCE POSTS; THEY DO NOT EXCAVATE THEIR OWN BURROWS.

COMMENTS

Distribution:

Ecological:

Threat:

General: MVZ SPECIMEN.

CNDDDB Version: Sam Jones issued Dec. 08, 2003

Report: Source Detail

Date: 05/21/2004

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The Source
Occurrence Detail Report

blunt-nosed leopard lizard
Gambelia sila

Query ID: bll-6
Element Code: ARACF07010

Federal: Endangered State: Endangered	Global Rank: G1 State Rank: S1	CDFG List:
Township: 22S Range: 19E Section: 30 Qtr: SE Elevation: 300	Meridian: M Precision: NON-SPECIFIC Symbol Type: POINT Radius: 1 mile Map Index: 14391	Lat/Long: 35.98105 /-119.95096 UTM: Zone-11 N3985874 E233936 Element Last Seen: 1941-09-04 Site Last Visited: 1941-09-04

County Summary: KINGS (KNG)
Quad Summary: LOS VIEJOS (3511988 / 290B)*, LOS VIEJOS (3511988 / 290B)
SNA Summary:
Owner/Manager: UNKNOWN

LOCATION DETAILS

2 MI S KETTLEMAN CITY.

OCCURRENCE INFORMATION

Occurrence No. 99
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: BRODE, J. & D. STROUD 1974 (LIT)
Source Codes: JON79R01

HABITAT ASSOCIATIONS

General: RESIDENT OF SPARSELY VEGETATED ALKALI AND DESERT SCRUB HABITATS, IN AREAS OF LOW TOPOGRAPHIC RELIEF.
Micro: SEEKS COVER IN MAMMAL BURROWS, UNDER SHRUBS OR STRUCTURES SUCH AS FENCE POSTS; THEY DO NOT EXCAVATE THEIR OWN BURROWS.

COMMENTS

Distribution:
Ecological:
Threat:
General: MVZ SPECIMEN.

CNDDDB Version: Sam Jones issued Dec. 08, 2003
Report: Source Detail
Date: 05/21/2004

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The Source
Occurrence Detail Report

blunt-nosed leopard lizard
Gambelia sila

Query ID: bli-7
Element Code: ARACF07010

Federal: Endangered State: Endangered	Global Rank: G1 State Rank: S1	CDFG List:
Township: 24S Range: 19E Section: 35 Qtr: SW Elevation: 400	Meridian: M Precision: NON-SPECIFIC Symbol Type: POINT Radius: 1 mile Map Index: 14489	Lat/Long: 35.79356 / -119.89347 UTM: Zone-11 N3964915 E238504 Element Last Seen: 1974-04-16 Site Last Visited: 1974-04-16

County Summary: KERN (KRN), KINGS (KNG)

Quad Summary: AVENAL GAP (3511978 / 290C)*, WEST CAMP (3511977 / 290D), AVENAL GAP (3511978 / 290C)

SNA Summary:

Owner/Manager: UNKNOWN

LOCATION DETAILS

KETTLEMAN HILLS, S OF KETTLEMAN CITY

OCCURRENCE INFORMATION

Occurrence No. 100
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Main Source: BRODE, J. & D. STROUD 1974 (LIT)
Source Codes: JON79R01

HABITAT ASSOCIATIONS

General: RESIDENT OF SPARSELY VEGETATED ALKALI AND DESERT SCRUB HABITATS, IN AREAS OF LOW TOPOGRAPHIC RELIEF.

Micro: SEEKS COVER IN MAMMAL BURROWS, UNDER SHRUBS OR STRUCTURES SUCH AS FENCE POSTS; THEY DO NOT EXCAVATE THEIR OWN BURROWS.

COMMENTS

Distribution:
Ecological:
Threat:
General: CSCB SPECIMEN.

CNDDDB Version: Sam Jones issued Dec. 08, 2003

Report: Source Detail

Date: 05/21/2004

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The Source
Occurrence Detail Report

blunt-nosed leopard lizard
Gambelia sila

Query ID: bli-8
Element Code: ARACF07010

Federal: Endangered State: Endangered	Global Rank: G1 State Rank: S1	CDFG List:
Township: 23S Range: 17E Section: 13 Qtr: NE Elevation: 675	Meridian: M Precision: NON-SPECIFIC Symbol Type: POINT Radius: 1 mile Map Index: 14193	Lat/Long: 35.93301 /-120.08209 UTM: Zone-10 N3980454 E763242 Element Last Seen: XXXX-XX-XX Site Last Visited: XXXX-XX-XX

County Summary: KINGS (KNG)

Quad Summary: KETTLEMAN PLAIN (3512081 / 291A)*, KETTLEMAN PLAIN (3512081 / 291A)

SNA Summary:

Owner/Manager: UNKNOWN

LOCATION DETAILS

6 MI S AVENAL OFF HWY 33, KETTLEMAN PLAIN.

OCCURRENCE INFORMATION

Occurrence No. 101 **Origin:** Natural/Native occurrence

Occ Rank: Unknown **Presence:** Presumed Extant

Trend: Unknown

Main Source: BRODE, J. & D. STROUD 1974 (LIT)

Source Codes: JON79R01

HABITAT ASSOCIATIONS

General: RESIDENT OF SPARSELY VEGETATED ALKALI AND DESERT SCRUB HABITATS, IN AREAS OF LOW TOPOGRAPHIC RELIEF.

Micro: SEEKS COVER IN MAMMAL BURROWS, UNDER SHRUBS OR STRUCTURES SUCH AS FENCE POSTS; THEY DO NOT EXCAVATE THEIR OWN BURROWS.

COMMENTS

Distribution:

Ecological:

Threat:

General: KU SPECIMEN.

CNDDDB Version: Sam Jones issued Dec. 08, 2003

Report: Source Detail

Date: 05/21/2004

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The Source
Occurrence Detail Report

blunt-nosed leopard lizard
Gambelia sila

Query ID: bli-9
Element Code: ARACF07010

Federal: Endangered State: Endangered	Global Rank: G1 State Rank: S1	CDFG List:
Township: 23S Range: 19E Section: 18 Qtr: NW Elevation: 550	Meridian: M Precision: NON-SPECIFIC Symbol Type: POINT Radius: 1 mile Map Index: 14366	Lat/Long: 35.92884 -119.96485 UTM: Zone-11 N3980119 E232507 Element Last Seen: 1974-08-02 Site Last Visited: 1974-08-02

County Summary: KINGS (KNG)
Quad Summary: LOS VIEJOS (3511988 / 290B)*, LOS VIEJOS (3511988 / 290B)
SNA Summary:
Owner/Manager: UNKNOWN

LOCATION DETAILS

UTICA AVE, 3.1 MI W OF INTERSECTION W/I-5.

OCCURRENCE INFORMATION

Occurrence No. 102
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: BRODE, J. & D. STROUD 1974 (LIT)
Source Codes: JON79R01

HABITAT ASSOCIATIONS

General: RESIDENT OF SPARSELY VEGETATED ALKALI AND DESERT SCRUB HABITATS, IN AREAS OF LOW TOPOGRAPHIC RELIEF.
Micro: SEEKS COVER IN MAMMAL BURROWS, UNDER SHRUBS OR STRUCTURES SUCH AS FENCE POSTS; THEY DO NOT EXCAVATE THEIR OWN BURROWS.

COMMENTS

Distribution:
Ecological:
Threat:
General: OBS BY TOLLESTRUP.

CNDDDB Version: Sam Jones issued Dec. 08, 2003
Report: Source Detail
Date: 05/21/2004

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The Source
Occurrence Detail Report

blunt-nosed leopard lizard
Gambelia sifa

Query ID: bli-10
Element Code: ARACF07010

Federal: Endangered State: Endangered	Global Rank: G1 State Rank: S1	CDFG List:
Township: 24S Range: 19E Section: 15 Qtr: W Elevation: 345	Meridian: M Precision: NON-SPECIFIC Symbol Type: POINT Radius: 1 mile Map Index: 14456	Lat/Long: 35.84040 /-119.91448 UTM: Zone-11 N3970169 E236760 Element Last Seen: 1976-17-XX Site Last Visited: 1976-17-XX

County Summary: KINGS (KNG)
Quad Summary: AVENAL GAP (3511978 / 290C)*, AVENAL GAP (3511978 / 290C)
SNA Summary:
Owner/Manager: UNKNOWN

LOCATION DETAILS

KETTLEMEN HILLS. AVE 25 (KINGS RD) FROM DEVILS DEN AQUEDUCT TO JCT DEVILS DEN RD.

OCCURRENCE INFORMATION

Occurrence No. 103
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: BRODE, J. & D. STROUD 1974 (LIT)
Source Codes: JON79R01

HABITAT ASSOCIATIONS

General: RESIDENT OF SPARSELY VEGETATED ALKALI AND DESERT SCRUB HABITATS, IN AREAS OF LOW TOPOGRAPHIC RELIEF.
Micro: SEEKS COVER IN MAMMAL BURROWS, UNDER SHRUBS OR STRUCTURES SUCH AS FENCE POSTS; THEY DO NOT EXCAVATE THEIR OWN BURROWS.

COMMENTS

Distribution:
Ecological: ROLLING HILLS COVERED W/ANNUAL GRASSES AND SCATTERED STANDS OF ATRIPLEX POLYCARPA.
Threat: GRAZING SINCE 1900.
General: 2 OBS BY TOLLESTRUP.

CNDDDB Version: Sam Jones issued Dec. 08, 2003
Report: Source Detail
Date: 05/21/2004

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The Source
Occurrence Detail Report

blunt-nosed leopard lizard
Gambelia sila

Query ID: bli-11
Element Code: ARACF07010

Federal: Endangered State: Endangered	Global Rank: G1 State Rank: S1	CDFG List:
Township: 23S Range: 19E Section: 34 Qtr: SW Elevation: 420	Meridian: M Precision: NON-SPECIFIC Symbol Type: POINT Radius: 1 mile Map Index: 14457	Lat/Long: 35.87744 / -119.91486 UTM: Zone-11 N3974280 E236848 Element Last Seen: 1974-06-20 Site Last Visited: 1974-06-20

County Summary: KINGS (KNG)

Quad Summary: LOS VIEJOS (3511988 / 290B)*, AVENAL GAP (3511978 / 290C), LOS VIEJOS (3511988 / 290B)

SNA Summary:

Owner/Manager: UNKNOWN

LOCATION DETAILS

AVE 24 (KINGS ROAD), 4 MI S UTICA RD.

OCCURRENCE INFORMATION

Occurrence No. 104
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Main Source: BRODE, J. & D. STROUD 1974 (LIT)
Source Codes: JON79R01

HABITAT ASSOCIATIONS

General: RESIDENT OF SPARSELY VEGETATED ALKALI AND DESERT SCRUB HABITATS, IN AREAS OF LOW TOPOGRAPHIC RELIEF.
Micro: SEEKS COVER IN MAMMAL BURROWS, UNDER SHRUBS OR STRUCTURES SUCH AS FENCE POSTS; THEY DO NOT EXCAVATE THEIR OWN BURROWS.

COMMENTS

Distribution:
Ecological:
Threat:
General: OBS BY TOLLESTRUP.

The Source
Occurrence Detail Report

blunt-nosed leopard lizard
Gambelia sila

Query ID: bli-12
Element Code: ARACF07010

Federal: Endangered State: Endangered	Global Rank: G1 State Rank: S1	CDFG List:
Township: 23S Range: 20E Section: 17 Qtr: NE Elevation: 195	Meridian: M Precision: NON-SPECIFIC Symbol Type: POINT Radius: 1/5 mile Map Index: 14600	Lat/Long: 35.93367 /-119.83065 UTM: Zone-11 N3980295 E244634 Element Last Seen: 1974-07-06 Site Last Visited: 1974-07-06

County Summary: KINGS (KNG)
Quad Summary: DUDLEY RIDGE (3511987 / 290A)*, DUDLEY RIDGE (3511987 / 290A)
SNA Summary:
Owner/Manager: UNKNOWN

LOCATION DETAILS

UTICA AVE, 3 TO 5 MI E OF I-5.

OCCURRENCE INFORMATION

Occurrence No. 105
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: BRODE, J. & D. STROUD 1974 (LIT)
Source Codes: JON79R01

HABITAT ASSOCIATIONS

General: RESIDENT OF SPARSELY VEGETATED ALKALI AND DESERT SCRUB HABITATS, IN AREAS OF LOW TOPOGRAPHIC RELIEF.
Micro: SEEKS COVER IN MAMMAL BURROWS, UNDER SHRUBS OR STRUCTURES SUCH AS FENCE POSTS; THEY DO NOT EXCAVATE THEIR OWN BURROWS.

COMMENTS

Distribution:
Ecological:
Threat:
General: OBS BY TOLLESTRUP.

The Source
Occurrence Detail Report

blunt-nosed leopard lizard
Gambelia sila

Query ID: bll-13
Element Code: ARACF07010

Federal: Endangered State: Endangered	Global Rank: G1 State Rank: S1	CDFG List:
Township: 23S Range: 19E Section: 15 Qtr: NW Elevation: 260	Meridian: M Precision: NON-SPECIFIC Symbol Type: POINT Radius: 1/5 mile Map Index: 14467	Lat/Long: 35.93467 /-119.90875 UTM: Zone-11 N3980613 E237589 Element Last Seen: 1974-05-14 Site Last Visited: 1974-05-14

County Summary: KINGS (KNG)
Quad Summary: LOS VIEJOS (3511988 / 290B)*, LOS VIEJOS (3511988 / 290B)
SNA Summary:
Owner/Manager: UNKNOWN

LOCATION DETAILS

JCT UTICA AVE AND I-5 AND UTICA AVE 0.6 MI E I-5.

OCCURRENCE INFORMATION

Occurrence No. 106
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: BRODE, J. & D. STROUD 1974 (LIT)
Source Codes: JON79R01

HABITAT ASSOCIATIONS

General: RESIDENT OF SPARSELY VEGETATED ALKALI AND DESERT SCRUB HABITATS, IN AREAS OF LOW TOPOGRAPHIC RELIEF.
Micro: SEEKS COVER IN MAMMAL BURROWS, UNDER SHRUBS OR STRUCTURES SUCH AS FENCE POSTS; THEY DO NOT EXCAVATE THEIR OWN BURROWS.

COMMENTS

Distribution:
Ecological:
Threat:
General: OBS BY TOLLESTRUP.

CNDDDB Version: Sam Jones issued Dec. 08, 2003
Report: Source Detail
Date: 05/21/2004

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The Source
Occurrence Detail Report

blunt-nosed leopard lizard
Gambelia sila

Query ID: bil-14
Element Code: ARACF07010

Federal: Endangered State: Endangered	Global Rank: G1 State Rank: S1	CDFG List:
Township: 22S Range: 18E Section: 28 Qtr: XX Elevation: 1100	Meridian: M Precision: NON-SPECIFIC Symbol Type: POINT Radius: 1 mile Map Index: 14276	Lat/Long: 35.98661 /-120.03125 UTM: Zone-10 N3986540 E767649 Element Last Seen: 1979-05-20 Site Last Visited: 1979-05-20

County Summary: KINGS (KNG)

Quad Summary: KETTLEMAN PLAIN (3512081 / 291A)*, KETTLEMAN PLAIN (3512081 / 291A),
LA CIMA (3612011 / 314D)

SNA Summary:

Owner/Manager: UNKNOWN

LOCATION DETAILS

4.5 MI ESE OF AVENAL, KETTLEMAN HILLS.

OCCURRENCE INFORMATION

Occurrence No. 159
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Main Source: JONES, L. 1979 (LIT)
Source Codes: JON79R01

HABITAT ASSOCIATIONS

General: RESIDENT OF SPARSELY VEGETATED ALKALI AND DESERT SCRUB HABITATS, IN
AREAS OF LOW TOPOGRAPHIC RELIEF.
Micro: SEEKS COVER IN MAMMAL BURROWS, UNDER SHRUBS OR STRUCTURES SUCH
AS FENCE POSTS; THEY DO NOT EXCAVATE THEIR OWN BURROWS.

COMMENTS

Distribution:
Ecological: MODERATELY ROUGH TERRAIN. 640 AC GRAZED GRASSLAND.
Threat: GRAZING.
General: BNLL STUDY PLOT #10. ELEVATION 850-1200 FEET.

CNDDDB Version: Sam Jones issued Dec. 08, 2003
Report: Source Detail
Date: 05/21/2004

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The Source
Occurrence Detail Report

blunt-nosed leopard lizard
Gambelia sila

Query ID: bll-15
Element Code: ARACF07010

Federal: Endangered State: Endangered	Global Rank: G1 State Rank: S1	CDFG List:
Township: 24S Range: 19E Section: 31 Qtr: SW Elevation: 500	Meridian: M Precision: NON-SPECIFIC Symbol Type: POINT Radius: 1 mile Map Index: 14360	Lat/Long: 35.79162 /-119.96653 UTM: Zone-11 N3964897 E231893 Element Last Seen: 1978-XX-XX Site Last Visited: 1978-XX-XX

County Summary: KERN (KRN), KINGS (KNG)
Quad Summary: AVENAL GAP (3511978 / 290C)*, AVENAL GAP (3511978 / 290C)
SNA Summary:
Owner/Manager: UNKNOWN

LOCATION DETAILS

W OF COASTAL AQUEDUCT AND DEVILS DEN RD JCT.

OCCURRENCE INFORMATION

Occurrence No. 176
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: TOLLESTRUP, K. 1978 (PERS)
Source Codes: JON79R01

HABITAT ASSOCIATIONS

General: RESIDENT OF SPARSELY VEGETATED ALKALI AND DESERT SCRUB HABITATS, IN AREAS OF LOW TOPOGRAPHIC RELIEF.
Micro: SEEKS COVER IN MAMMAL BURROWS, UNDER SHRUBS OR STRUCTURES SUCH AS FENCE POSTS; THEY DO NOT EXCAVATE THEIR OWN BURROWS.

COMMENTS

Distribution:
Ecological:
Threat:
General: OBS IN SUMMER 1978 BY TOLLESTRUP. MUSEUM SPECIMEN LOCALITY.

The Source
Occurrence Detail Report

blunt-nosed leopard lizard
Gambelia sila

Query ID: bli-16
Element Code: ARACF07010

Federal: Endangered State: Endangered	Global Rank: G1 State Rank: S1	CDFG List:
Township: 23S Range: 19E Section: 27 Qtr: NW Elevation: 320	Meridian: M Precision: SPECIFIC Symbol Type: POINT Radius: 80m Map Index: 52946	Lat/Long: 35.89963 /-119.91027 UTM: Zone-11 N3976730 E237336 Element Last Seen: 2002-04-25 Site Last Visited: 2002-04-25

County Summary: KINGS (KNG)
Quad Summary: LOS VIEJOS (3511988 / 290B)*, LOS VIEJOS (3511988 / 290B)
SNA Summary:
Owner/Manager: DWR-CALIFORNIA AQUEDUCT

LOCATION DETAILS

JUST SOUTH OF CALIFORNIA AQUEDUCT MILEMARKER 181.14, ON THE WEST SIDE, 2.5 MILES SOUTH OF AVENUE 25/UTICA AVENUE

OCCURRENCE INFORMATION

Occurrence No. 276
Occ Rank: Fair
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Main Source: VANCE, J. 2002 (OBS)
Source Codes: JON79R01

HABITAT ASSOCIATIONS

General: RESIDENT OF SPARSELY VEGETATED ALKALI AND DESERT SCRUB HABITATS, IN AREAS OF LOW TOPOGRAPHIC RELIEF.
Micro: SEEKS COVER IN MAMMAL BURROWS, UNDER SHRUBS OR STRUCTURES SUCH AS FENCE POSTS; THEY DO NOT EXCAVATE THEIR OWN BURROWS.

COMMENTS

Distribution: LOCATED ON TOP OF THE SECONDARY EMBANKMENT, ON THE "ROAD" OF THE CALIFORNIA AQUEDUCT.
Ecological: HABITAT CONSISTS OF DISTURBED VALLEY SALTBUUSH SCRUB, WITH A DENSE HERBACEOUS UNDERSTORY COMPOSED PRIMARILY OF RED BROME AND RIPGUT. SURROUNDED BY ORCHARDS EAST OF THE AQUEDUCT; EXCELLENT VALLEY SALTBUUSH SCRUB ADJACENT TO ROW ON THE WEST.
Threat: THREATENED BY DWR MAINTENANCE ACTIVITIES AND DENSE UNDERSTORY VEGETATION.
General: 1 ADULT MALE WITH BREEDING COLORATION OBSERVED ON 25 APR 2002 IN THE SHADE OF A VALLEY SALTBUUSH.

CNDDDB Version: Sam Jones issued Dec. 08, 2003
Report: Source Detail
Date: 05/21/2004

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The Source
Occurrence Detail Report

blunt-nosed leopard lizard
Gambelia sila

Query ID: bll-17
Element Code: ARACF07010

Federal: Endangered State: Endangered	Global Rank: G1 State Rank: S1	CDFG List:
Township: 24S Range: 19E Section: 19 Qtr: E Elevation: 480	Meridian: M Precision: SPECIFIC Symbol Type: POLYGON Area: 28.4 ac Map Index: 52951	Lat/Long: 35.82438 /-119.95359 UTM: Zone-11 N3968498 E233173 Element Last Seen: 2002-06-06 Site Last Visited: 2002-06-06

County Summary: KINGS (KNG)

Quad Summary: AVENAL GAP (3511978 / 290C)*, AVENAL GAP (3511978 / 290C)

SNA Summary:

Owner/Manager: DWR

LOCATION DETAILS

EAST SIDE OF THE COASTAL AQUEDUCT, FROM MILEMARKER 5.1 TO 5.61, SOUTH OF AVENAL GAP

OCCURRENCE INFORMATION

Occurrence No. 277
Occ Rank: Fair
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Main Source: DULIK, K. 2002 (OBS)
Source Codes: JON79R01

HABITAT ASSOCIATIONS

General: RESIDENT OF SPARSELY VEGETATED ALKALI AND DESERT SCRUB HABITATS, IN AREAS OF LOW TOPOGRAPHIC RELIEF.
Micro: SEEKS COVER IN MAMMAL BURROWS, UNDER SHRUBS OR STRUCTURES SUCH AS FENCE POSTS; THEY DO NOT EXCAVATE THEIR OWN BURROWS.

COMMENTS

Distribution:
Ecological: HABITAT CONSISTS OF NON-NATIVE GRASSLAND, DOMINATED BY AVENA FATUA, BROMUS MADRITENSIS RUBENS, BROMUS DIANDRUS, AND SALSOLA, WITH SPARSE ISOCOMA AND ATRIPLEX LENTIFORMIS; HEAVILY GRAZED OUTSIDE THE DWR RIGHT-OF-WAY.
Threat: THREATENED BY DWR MAINTENANCE ACTIVITIES, CHANGE IN LAND USE, AND OVERGRAZING OUTSIDE THE DWR RIGHT-OF-WAY.
General: 5 ADULTS OBSERVED BETWEEN MILEMARKER 5.1 AND 5.52; 1 ADULT FEMALE WITH BREEDING COLORATION OBSERVED AT MILEMARKER 5.61

CNDDDB Version: Sam Jones issued Dec. 08, 2003
Report: Source Detail
Date: 05/21/2004

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**Supplement to the
2002 Special-Status Species Report
for the
Proposed Expansion Project,
Kettleman Hills Facility,
Chemical Waste Management,
Kings County, California**

Prepared for:

Chemical Waste Management, Inc.
35251 Old Skyline Road
Kettleman City, CA 93239

Prepared by:

Bumgardner Biological Consulting
11571 Prospect Hill Drive
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and

TRC
21 Technology Drive
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May 2004

**Supplement to the
2002 Special-Status Species Report for the
Proposed Expansion Project, Kettleman Hills Facility,
Chemical Waste Management,
Kings County, California**

Introduction

This report summarizes the results of supplemental surveys conducted in 2003 for special-status species of plants and wildlife that may be affected by the proposed construction and operation of the Unit B-20 Class I landfill site (i.e., proposed project) at the Kettleman Hills Facility (KHF) in Kings County. The KHF is a waste treatment, storage, and disposal facility that is owned and operated by Chemical Waste Management, Inc. (CWMI). Surveys in support of the proposed project were initially conducted within the Unit B-20 study area during 2002. The results of these surveys are presented in the *2002 Special-Status Species Report for the Proposed Expansion Project, Kettleman Hills Facility, Chemical Waste Management, Kings County, California* (Bumgardner Biological Consulting, 2002).

Specifically, this report supplements and augments the *2002 Special-Status Species Report for the Proposed Expansion Project, Kettleman Hills Facility, Chemical Waste Management, Kings County, California* and is intended to be used in conjunction with the 2002 report. It presents the results of supplemental surveys on adjacent lands and updates the status of the Hoover's wooly-star (*Eriastrum hooveri*) which occurs within the study area, but was removed from the list of federally-threatened species on October 7, 2003 (USFWS, 2003). The need for the supplemental surveys is based on the expansion of the boundaries of the Unit B-20 study area. The expansion of the study area, which occurred during late 2002, is predicated on refinements to the proposed Unit B-20 landfill design that would result in disturbance outside of the originally defined study area. Thus, the expanded Unit B-20 study area encompasses additional lands to the south, west, and east of the original Unit B-20 study area that are within the perimeter fence of the KHF (Figure 1). These additional lands are hereafter referred to as the Unit B-20 expansion lands.

The focus of the supplemental surveys is to: (1) determine whether the state and federally-listed blunt-nosed leopard lizard (*Gambelia sila*) occupies any portion of the expanded Unit B-20 study area that was not surveyed during 2002; (2) determine whether special-status late-season *Atriplex* spp. occur within any portion of the Unit B-20 study area (including portions surveyed during 2002); and (3) evaluate the likelihood of occurrence of other special-status plant and wildlife species within those portions of the expanded Unit B-20 study area that were not surveyed during 2002.

Special-Status Plant Surveys

The Unit B-20 study area was surveyed for special-status late-season *Atriplex* spp. (i.e., heart-leaved saltbush [*A. cordulata*] and Lost Hills crownscale [*A. vallicola*]) on August 21, 2003. The survey, which was conducted by McCormick Biological Inc., consisted of random meander transects throughout all portions of the Unit B-20 study area with the exception of the extremely steep portions of the southwestern corner of the site. The survey resulted in no observations of special-status late-season *Atriplex* spp. within the Unit B-20 study area.

Special-Status Wildlife Surveys

Reconnaissance-Level Wildlife Surveys

Reconnaissance-level surveys were conducted on the Unit B-20 expansion lands during 2003 for special-status wildlife species that are known to occur in region. These species include, but are not limited to, San Joaquin coachwhip (*Masticophis flagellum ruddocki*), burrowing owl (*Athene cucularia*), San Joaquin antelope squirrel (*Ammospermophilus nelsoni*), giant kangaroo rat (*Dipodomys ingens*), San Joaquin kit fox (*Vulpes macrotis mutica*), and American badger (*Taxidea taxus*). The surveys, which consisted of random meander transects, were conducted by Michael Bumgardner (Bumgardner Biological Consulting) from June 24 to 29 and August 21 to 25, 2003. It should be noted that the random meander transects were conducted throughout the Unit B-20 expansion lands such that the entire area was surveyed. However, some steeper portions of the Unit B-20 expansion lands were surveyed primarily with binoculars due to difficult access. It should also be noted that most of the special-status mammals that occur in the project vicinity tend to be nocturnal (especially during summer). Therefore, the surveys for these species focused on sign of the species (e.g., dens, burrows, tracks, scat, haystacks, bones, etc.).

The reconnaissance-level surveys resulted in the observation of only three special-status wildlife species within or immediately adjacent to the Unit B-20 expansion lands. These species are prairie falcon (*Falco mexicanus*), loggerhead shrike (*Lanius ludovicianus*), and California horned lark (*Eremophila alpestris actia*). However, sign of San Joaquin kit fox and American badger was also observed on the Unit B-20 expansion lands.

A single prairie falcon was observed on June 26, 2003 roosting on a rock outcrop located approximately 100 yards due south of the southeastern-most corner of the Unit B-20 study area (outside of the KHF). Although the species is known to nest in the Coast Ranges to the west of the KHF, no suitable nesting habitat for this species occurs within the Unit B-20 study area.

Two loggerhead shrikes were heard or observed during most of the survey days in June 2003 and appeared to be consistently localized to small, dense stands of *Atriplex polycarpa* within the Unit B-20 expansion lands (Figure 2). Given their consistent location, alarm calls, secretive behavior, and the time of year, it is possible that these

individuals nested within the Unit B-20 expansion lands. However, no definitive evidence of nesting by this species was obtained during the survey. A single individual was also observed on August 24, 2003 along the eastern border of the KHF (Figure 2). No loggerhead shrikes had previously been recorded within this latter area.

Horned larks were heard calling while flying over the southeastern-most corner of the Unit B-20 study area on June 27, 2003. No other individuals of this species were recorded during the June 2003 surveys. The California horned lark (*E. a. actia*) is the only subspecies of horned lark that occurs as a nesting species in the project vicinity (Grinnell and Miller, 1944). In addition, the subspecies nests from March through July with a peak in May. Therefore, the horned larks that were heard have been conservatively assumed to be California horned larks. In addition, given the date of the record, these individuals may have nested on or immediately adjacent to the Unit B-20 study area. However, no definitive evidence of nesting by this taxon was obtained during the June 2003 surveys. Horned larks were again recorded within the Unit B-20 expansion lands during most of the survey days in August 2003. Individuals were heard and observed during these latter surveys at several locations within the Unit B-20 study area. These occurrences were not mapped given that these individuals represent post-breeding individuals (i.e., the California horned lark is only considered a special-status species when nesting) and may have been other subspecies of horned larks that migrate through or winter in the project vicinity.

Several burrow openings that meet the size and configuration requirements of San Joaquin kit fox dens (i.e., greater than four inches in diameter and higher than wide) were observed within the Unit B-20 expansion lands. However, no definitive evidence that these dens are in current use by San Joaquin kit fox was observed. Potential San Joaquin kit fox dens were not mapped given their abundance and distribution within the Unit B-20 expansion lands, and the United States Fish and Wildlife Service's (USFWS) and California Department of Fish and Game's (CDFG) requirement to identify potential dens and conduct den clearances immediately prior to construction activities.

Several American badger dens, as well as diggings (i.e., locations where badgers have attempted to dig into rodent burrows), were also observed within the Unit B-20 expansion lands. The dens, which are generally characterized by a dome-shaped configuration, also often had characteristic claw marks in the upper opening of the den. Potential badger dens were also not mapped given their abundance and distribution within the Unit B-20 expansion lands.

Focused Blunt-Nosed Leopard Lizard Surveys

Surveys for blunt-nosed leopard lizard within the Unit B-20 expansion lands were conducted consistent with a negotiated protocol that is a compromise between the CDFG's May 8, 1990 *Approved Survey Methodologies for Sensitive Species* and April 2003 *Draft Approved Survey Methodology for the Blunt-nosed Leopard Lizard*. The protocol was approved by Annette Tennebo (CDFG) on May 27, 2003. Specifically, the protocol-level surveys were conducted by slowly walking 30 to 100-foot wide transects

within all suitable habitat (i.e., open habitats on relatively flat areas or gentle slopes in the study area) while stopping frequently to scan with binoculars. The surveys were conducted for six consecutive days from June 24 to 29, 2003. An additional six days of surveys were conducted in August and September (i.e., five consecutive days from August 21 to 25, 2003 and a single day on September 15, 2003). It should be noted that portions of the Unit B-20 expansion lands are considered too steep to support blunt-nosed leopard lizard (see photographs in Appendix A). In addition, some areas within the Unit B-20 expansion lands support grassland canopies that are considered too dense for blunt-nosed leopard lizard (see photographs in Appendix A). These areas are not considered suitable for the species. Therefore, they were not surveyed. In accordance with the CDFG protocol, air temperatures were measured approximately 2 cm above ground with the thermometer shaded from the sun, while ground temperatures were measured approximately 2 cm below the surface in the shade. A beginning and ending air and ground temperature was recorded for each survey (Table 1), while spot temperature readings were taken to ensure compliance with the CDFG's acceptable range of survey temperatures for the species. Lastly, the density of rodent burrows within the project site was estimated.

The blunt-nosed leopard lizard survey resulted in no evidence (including tail drags or scat) that the species occurs within the Unit B-20 expansion lands (Table 1). However, other lizards were observed within the Unit B-20 expansion lands. Side-blotched lizard (*Uta stansburiana*) was abundant throughout the Unit B-20 expansion lands (i.e., 60+ observed each day), while western whiptail (*Cnemidophorus tigris*) was common (5 to 20 observed each day) during the early survey period, but was rare during the late survey period (only 2 individuals were observed during the latter survey period). The only other lizard species observed within the Unit B-20 expansion lands was desert spiny lizard (*Sceloporus magister*). Up to four individuals of this latter species were recorded in association with a south-facing rocky outcrop in the eastern-most portion of the expanded Unit B-20 study area.

Status of Special-Status Species on the Unit B-20 Expansion Lands

Special-Status Plant Species

The available data review on special-status plant species determined that only two species, gypsum-loving larkspur (*Delphinium gypsophilum*) and cottony buckwheat (*Eriogonum gossypinum*), are known to occur on the Unit B-20 expansion lands. A description of these species as well as information on their habitat requirements and range has been provided in the 2002 *Special-Status Species Report for the Proposed Expansion Project, Kettleman Hills Facility, Chemical Waste Management, Kings County, California* (Bumgardner Biological Consulting, 2002), while the distribution of these species on the Unit B-20 expansion lands is discussed below and provided in Table 2.

Additional species that have not been documented on the Unit B-20 expansion lands, but are considered to have some potential to occur on the Unit B-20 study area include

California jewelflower (*Caulanthus californicus*), Hoover's woolly-star (*Eriastrum hooveri*), Temblor buckwheat (*Eriogonum temblorense*), pale-yellow layia (*Layia heterotricha*), San Joaquin woollythreads (*Monolopia congdonii*), showy madia (*Madia radiata*), slender nemacladus (*Nemacladus gracilis*), heart-leaved saltbush (*Atriplex cordulata*), and San Joaquin blue curls (*Trichostema ovatum*). Each of the latter species has been described and evaluated in the 2002 *Special-Status Species Report for the Proposed Expansion Project, Kettleman Hills Facility, Chemical Waste Management, Kings County, California* (Bumgardner Biological Consulting, 2002). Therefore, these species are not addressed further in this supplemental report.

Gypsum-loving larkspur, a California Native Plant Society (CNPS) List 4 species (plant with limited distribution - a watch list species), has been found in six small areas in the western-most portions of Section 3 on the KHF (Figure 3) (BioSystems, 1988). Five of these populations occur only within the Unit B-20 expansion lands.

Cottony buckwheat, a CNPS List 4 plant, was also previously documented in the western-most portions of Section 3 on the KHF (Figure 3) (BioSystems, 1988 and 1991). Three small populations occur in nearly barren "badland" topography along the western border of the Unit B-20 expansion lands.

Special-Status Wildlife Species

The available data review on special-status wildlife species determined that four species have been observed or otherwise documented to occur on or immediately adjacent to the Unit B-20 expansion lands. These species include prairie falcon, loggerhead shrike, California horned lark, and American badger. The habitat requirements and range of these species (where not previously provided in the 2002 *Special-Status Species Report for the Proposed Expansion Project, Kettleman Hills Facility, Chemical Waste Management, Kings County, California* [Bumgardner Biological Consulting, 2002]), as well as their distribution on the Unit B-20 expansion lands, are discussed below and provided in Table 2.

Nine additional species are considered to have some potential to occur on the Unit B-20 expansion lands. These species include golden eagle (*Aquila chrysaetos*), burrowing owl, blunt-nosed leopard lizard, California horned lizard (*Phrynosoma coronatum frontale*), San Joaquin coachwhip, San Joaquin pocket mouse, short-nosed kangaroo rat (*Dipodomys nitratooides brevinasus*), San Joaquin antelope, and San Joaquin kit fox. Each of these species has been described and evaluated in the 2002 *Special-Status Species Report for the Proposed Expansion Project, Kettleman Hills Facility, Chemical Waste Management, Kings County, California* (Bumgardner Biological Consulting, 2002). Therefore, these species are not addressed further in this supplemental report.

Prairie falcon, a California species of special concern, occurs as an uncommon nesting species throughout the Sierra Nevada foothills, Coastal Ranges, Modoc Plateau and adjacent mountains, Great Basin mountains, and southern California desert and mountains. Nests are typically located in a scrape on a sheltered ledge of a cliff

overlooking a large, open area (generally supporting grassland, rangeland, savannah, or desert scrub). However, the species sometimes utilizes old nests of other cliff-nesting species (e.g., great-horned owl, common raven, golden eagle, etc.). Although southeast-facing nest sites are preferred, orientation is secondary to the nature of the ledge. Nesting occurs from mid-February through mid-September with a peak during April to early August (Zeiner et al., 1990). Home range and nest territory size varies with availability of suitable nesting habitat and adjacent foraging habitat, but may range up to as much as 10 mi² (Craighead and Craighead, 1956). An individual of this species was recorded roosting on a rock outcrop near the southeastern-most corner of the Unit B-20 study area (outside of, but immediately adjacent to the KHF). It should be noted that no suitable nest sites occur within the Unit B-20 study area. However, the species has been recorded nesting in the foothills west of the KHF (CNDDDB, 2003).

Loggerhead shrike, a federal species of concern and California species of special concern, was recorded in dense stands of *Atriplex polycarpa* within the northwestern-most portion of the Unit B-20 expansion lands and along the eastern border of the KHF (Figure 2). Given the date of the observations and behavior of the recorded individuals within the northwestern-most portion of the Unit B-20 expansion lands it is possible that the species nested on the expanded Unit B-20 study area. However, no definitive evidence of nesting was observed.

California horned lark, a California species of special concern, occurs as a nesting species in coastal California from Sonoma County south to San Diego County. It also occurs as a nesting species in the central Coast Range, San Joaquin Valley, and adjacent foothills of the Sierra Nevada. Preferred nesting habitat for the taxon is generally provided by level or rolling low, sparse grassland or open shrub vegetation types without a woody overstory. The species breeds from March through July with peak activity in May. Nest territories vary in size from 1 to 13 acres (Zeiner et al., 1990). California horned lark (i.e., the subspecies *E. a. actia*) is the only subspecies of horned lark that is expected to breed in the immediate vicinity of the project site (Grinnell and Miller, 1944). Therefore, the individuals that were heard flying over the Unit B-20 expansion lands on June 27, 2003 (within the known nesting season) have been conservatively assigned to this taxon. It should be noted that no definitive evidence of nesting was observed during the surveys.

American badger does not have a designated status, but is still included on the CDFG's special animals list (January 2003). Definitive evidence of American badger (e.g., dens and diggings) was found throughout the Unit B-20 expansion lands.

Status Changes for Species Previously Recorded in the Unit B-20 Study Area

Hoover's woolly-star was previously described as a special-status plant species that occurs within the Unit B-20 study area (BioSystems, 1991). Although it is still considered a special-status species based on its continuing designation as a List 4 species by the CNPS, the species was removed from the list of federally-threatened species on October 7, 2003 (USFWS, 2003). The removal of federal protection for the species was based on the determination that the species has a greater abundance, distribution, and

range than previously thought. In addition, it is not considered to be as vulnerable as previously identified. Consequently, Table 2 of this report reflects the changed federal status for the species:

Conclusions

The supplemental surveys and available data review conducted in 2003 for special-status species of plants that may be affected by the proposed Unit B-20 Class I landfill resulted in the assessment that two species (cottony buckwheat and gypsum-loving larkspur) have been previously recorded on the Unit B-20 expansion lands, while eight additional species as described in Bumgardner Biological Consulting (2002) have some potential to occur on these lands.

The supplemental surveys and available data review for special-status species of wildlife that may be affected by the proposed Unit B-20 Class I landfill resulted in the observation of three special-status species on or immediately adjacent to the Unit B-20 expansion lands (prairie falcon, loggerhead shrike, and California horned lark). In addition, definitive evidence of occupation was found within this portion of the Unit B-20 study area for American badger. Lastly, eight additional species as described in Bumgardner Biological Consulting (2002) are considered to have some potential to occur on these lands.

No other special-status species are expected to occur on the Unit B-20 expansion lands based on one of the following: (1) lack of suitable habitat on the site, (2) species' range is well known and does not include the project vicinity, or (3) species is only considered a special-status species during a portion of its life history that does not occur on the site (e.g., nesting period of avian species that nest elsewhere, but migrate through or winter on the project site).

Literature Cited

- BioSystems Analysis, Inc. (BioSystems). 1988. Rare Plant Survey of the Kettleman Hills Hazardous Waste Disposal Facility. Tech. Report No. 354.
- BioSystems Analysis, Inc. (BioSystems). 1991. Rare Plant Survey of the Chemical Waste Management, Inc. Kettleman Hills Facility. Tech. Report No. 596.
- Bumgardner Biological Consulting. 2002. 2002 Special-Status Species Report for the Proposed Expansion Project, Kettleman Hills Facility, Chemical Waste Management, Kings County, California
- California Department of Fish and Game (CDFG). 1990. Letter from George D. Nokes, Regional Manager (with attached *Approved Survey Methodologies for Sensitive Species*) describing recommended survey methodologies for San Joaquin kit fox, blunt-nosed leopard lizard, giant kangaroo rat, Tipton kangaroo rat, and San Joaquin antelope squirrel. Fresno, California.
- California Department of Fish and Game (CDFG). 2003. Draft Approved Survey Methodology for the Blunt-Nosed Leopard Lizard (April 2003). Fresno, California.
- Craighead, J. J. and F. C. Craighead. 1956. Hawks, Owls, and Wildlife. Stackpole Books, Harrisburg, Pennsylvania. 443 pp.
- Grinnell, J. and A. Miller. 1944. The Distribution of the Birds of California. Published by the Cooper Ornithological Society. Reprinted by Artemisia Press, April 1986. 617 pp.
- U. S. Fish and Wildlife Service (USFWS). 2003. Endangered and Threatened Wildlife and Plants; Removing *Eriastrum hooveri* (Hoover's wooly-star) from the Federal List of Threatened and Endangered Species. Federal Register 68(194):57829-57837.
- Zeiner, D. C., W. F. Laudenslayer Jr., K. E. Mayer, and M. White. 1990. California's Wildlife. Volume II Birds. California Department of Fish and Game, Sacramento, California.

<p align="center">Table 1 Results of the 2003 Blunt-nosed Leopard Lizard (BNLL) Surveys on the Unit B-20 Study Area, Kettleman Hills Facility</p>			
Date	Survey Start	Survey End	Results
	Time Air Temperature (°C) Ground Temperature (°C)	Time Air Temperature (°C) Ground Temperature (°C)	
06/24/03	10:22 am 25 °C 26 °C	1:08 pm 28 °C 40 °C	No BNLL
06/25/03	9:06 am 28 °C 26 °C	11:38 am 34 °C 37 °C	No BNLL
06/26/03	7:59 am 28 °C 30 °C	10:22 am 35 °C 39 °C	No BNLL
06/27/03	7:40 am 31 °C 30 °C	9:44 am 36 °C 41 °C	No BNLL
06/28/03	6:58 am 27 °C 25 °C	9:49 am 35 °C 40 °C	No BNLL
06/29/03	7:36 am 29 °C 30 °C	10:18 am 35 °C 38 °C	No BNLL
08/21/03	8:17 am 26 °C 26 °C	12:44 pm 31 °C 39 °C	No BNLL 75-95% overcast; brief rain; otherwise sunny
08/22/03	8:49 am 25 °C 27 °C	11:12 am 28 °C 32 °C	No BNLL
08/23/03	9:48 am 25 °C 28 °C	12:02 pm 30 °C 38 °C	No BNLL

Table 1
Results of the 2003 Blunt-nosed Leopard Lizard (BNLL) Surveys
on the Unit B-20 Study Area, Kettleman Hills Facility

Date	Survey Start	Survey End	Results
	Time Air Temperature (°C) Ground Temperature (°C)	Time Air Temperature (°C) Ground Temperature (°C)	
08/24/03	9:50 am 31 °C 34 °C	12:14 pm 35 °C 45 °C	No BNLL
08/25/03	7:44 am 28 °C 27 °C	10:25 am 34 °C 39 °C	No BNLL
09/15/03	8:54 am 28 °C 32 °C	11:40 am 34 °C 41 °C	No BNLL

TABLE 2
SPECIAL-STATUS SPECIES RECORDED OR POTENTIALLY OCCURRING
WITHIN THE VICINITY OF THE KETTLEMAN HILLS FACILITY, KINGS COUNTY ¹

Genus/Species	Common Name	Status Federal/CA/Other	Habitats and Seasonal Distribution in California	Likelihood of Occurrence on Unit B-20 Study Area
PLANTS				
<i>Delphinium gypsophilum</i> ssp. <i>gypsophilum</i>	Gypsum-loving larkspur	none/none/CNPS 4	This larkspur occurs in chenopod scrub, cismontane woodland, and valley and foothill grassland habitats. It is a perennial herb that is found in Alameda, Contra Costa, Fresno, Kings, Kern, Madera, Merced, Monterey, San Benito, San Joaquin, San Luis Obispo, Stanislaus, and Ventura counties.	Known to Occur. The taxon has been recorded during previous surveys on the KHF (BioSystems, 1991; BioSystems, 1988 as documented in TRC, 1997). These occurrences are associated with six small areas in the western-most portions of Section 3 on the KHF. Therefore, it is known to occur on the Unit B-20 study area.
<i>Eriastrum hooveri</i>	Hoover's eriastrum	none/none/CNPS 4	Hoover's eriastrum is an annual that blooms from April to August. It is found in chenopod scrub, pinyon and juniper woodlands, and valley and foothill grasslands. It is known from Kern, Fresno, Santa Barbara, Kings, San Benito, and San Luis Obispo counties. Although the majority of the known occurrences are on the San Joaquin and Cuyama valley floors, it has been found in substantial numbers at various other locations as well. The species was recently removed from federal protection under the federal Endangered Species Act.	Known to Occur. The species has been recorded during previous surveys on the KHF (BioSystems, 1991). These occurrences are associated with two small areas in the northern portion of the Unit B-20 study area. Therefore, it is known to occur on the Unit B-20 study area.

TABLE 2
SPECIAL-STATUS SPECIES RECORDED OR POTENTIALLY OCCURRING
WITHIN THE VICINITY OF THE KETTLEMAN HILLS FACILITY, KINGS COUNTY ¹

Genus/Species	Common Name	Status Federal/CA/Other	Habitats and Seasonal Distribution in California	Likelihood of Occurrence on Unit B-20 Study Area
<i>Eriogonum gossypinum</i>	Cottony buckwheat	none/none/CNPS 4	This annual occurs in chenopod scrub and valley and foothill grasslands, typically on exposed clay soils. It is known from Fresno, Kern, Kings, and San Luis Obispo counties.	Known to Occur. Three small stands of this species have been recorded on "badland" topography in the western-most portions of Section 3 on the KHF (BioSystems, 1988 and 1991). Therefore, it is known to occur on the Unit B-20 study area.
BIRDS				
<i>Falco mexicanus</i>	Prairie falcon (nesting)	none/CSC/none	Found as a breeding resident within the inner Coast Range, Sierra Nevada foothills, and desert regions of California. Species requires open terrain for hunting (e.g., oak savannah, grassland, and early successional stages of shrub and woodland habitats). Typically nests on secluded cliff, bluff, or rock outcrop (particularly with southeastern exposure).	No Potential. Although the species was recorded immediately adjacent to the KHF, no suitable nesting habitat occurs on or in the immediate vicinity of the Unit B-20 study area. Therefore, the proposed project has no potential to affect the nesting habitat of the species.
<i>Eremophila alpestris actia</i>	California horned lark (nesting)	none/CSC/none	The taxon nests in the San Joaquin Valley, adjacent Sierra Nevada foothills, and coastal California from Sonoma County south to San Diego County. Preferred nesting habitat for	Moderate Potential. Horned larks were heard flying over the southwestern-most portion of the KHF during June 2003 (during the nesting season of the species). Although there is no definitive evidence

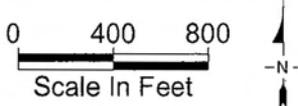
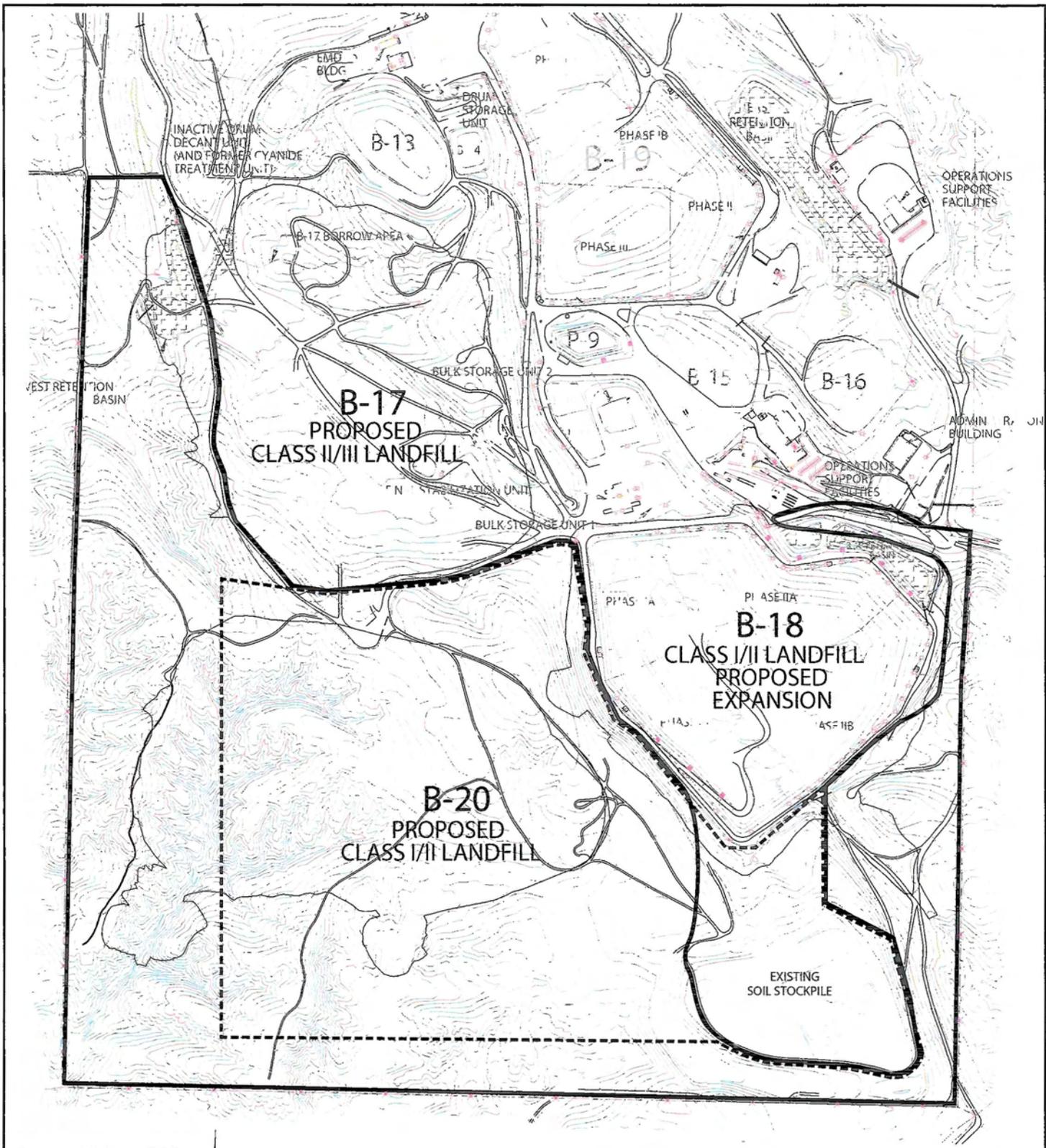
TABLE 2
SPECIAL-STATUS SPECIES RECORDED OR POTENTIALLY OCCURRING
WITHIN THE VICINITY OF THE KETTLEMAN HILLS FACILITY, KINGS COUNTY ¹

Genus/Species	Common Name	Status Federal/CA/Other	Habitats and Seasonal Distribution in California	Likelihood of Occurrence on Unit B-20 Study Area
			the taxon is generally provided by level or gently rolling low, sparse grassland; mountain meadows; open coastal plains; fallow grain fields, bald hills; and alkali flats.	that the species nests on the KHF, the Unit B-20 study area provides large areas of suitable nesting habitat (i.e., grassland). Therefore, it is considered to have a moderate potential to nest on the site.
<i>Lanius ludovicianus</i>	Loggerhead shrike	FSC/CSC/none	Found as resident and wintering species throughout the lower elevation portions of California in grasslands, saltbush scrub, chaparral, oak savannah, and other open woodland types (generally where there are trees with dense cover for nesting).	Known to Occur. The species was recorded on the Unit B-20 study area during the 2002 and 2003 surveys. In addition, the Unit B-20 study area provides foraging habitat (typically provided by grassland or open shrub communities) and nesting habitat for the species (in the dense <i>Atriplex</i> stands).
MAMMALS				
<i>Taxidea taxus</i>	American badger	none/SA/none	The species is found in a variety of open herbaceous and shrub vegetation types/habitats with dry, friable soils. It is widely distributed in California, with the exception of the humid coastal belt, occurring from sea-level to alpine meadows and coniferous forests.	Known to Occur. Sign of the species (e.g., dens and diggings) was recorded on the Unit B-20 study area during the 2002 and 2003 surveys. Therefore, the species is known to occur on the Unit B-20 study area.

TABLE 2
SPECIAL-STATUS SPECIES RECORDED OR POTENTIALLY OCCURRING
WITHIN THE VICINITY OF THE KETTLEMAN HILLS FACILITY, KINGS COUNTY ¹

Genus/Species	Common Name	Status Federal/CA/Other	Habitats and Seasonal Distribution in California	Likelihood of Occurrence on Unit B-20 Study Area
FEDERAL				
	FE		Federally listed as Endangered	
	FT		Federally listed as Threatened	
	FPE		Federally proposed as Endangered	
	FPT		Federally proposed as Threatened	
	FC		Federal Candidate Species (former Category 1 candidates)	
	FSC		U.S. Fish and Wildlife Service designated "Species of Concern" (former Category 2 Candidates for listing)	
	MNBMC		U.S. Fish and Wildlife Service designated "Migratory Non-game Bird of Management Concern"	
STATE				
	SE		State listed as Endangered	
	ST		State listed as Threatened	
	CFP		California Department of Fish and Game designated "Fully Protected"	
	CSC		California Department of Fish and Game designated "Species of Special Concern"	
	SA		California Department of Fish and Game designated "Special Animal"	
OTHER				
	CNPS List 1a		Plants presumed extinct in California	
	CNPS List 1b		Plants that are rare, threatened, or endangered in California and elsewhere	
	CNPS List 2		Plants that are rare, threatened, or endangered in California, but are 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	

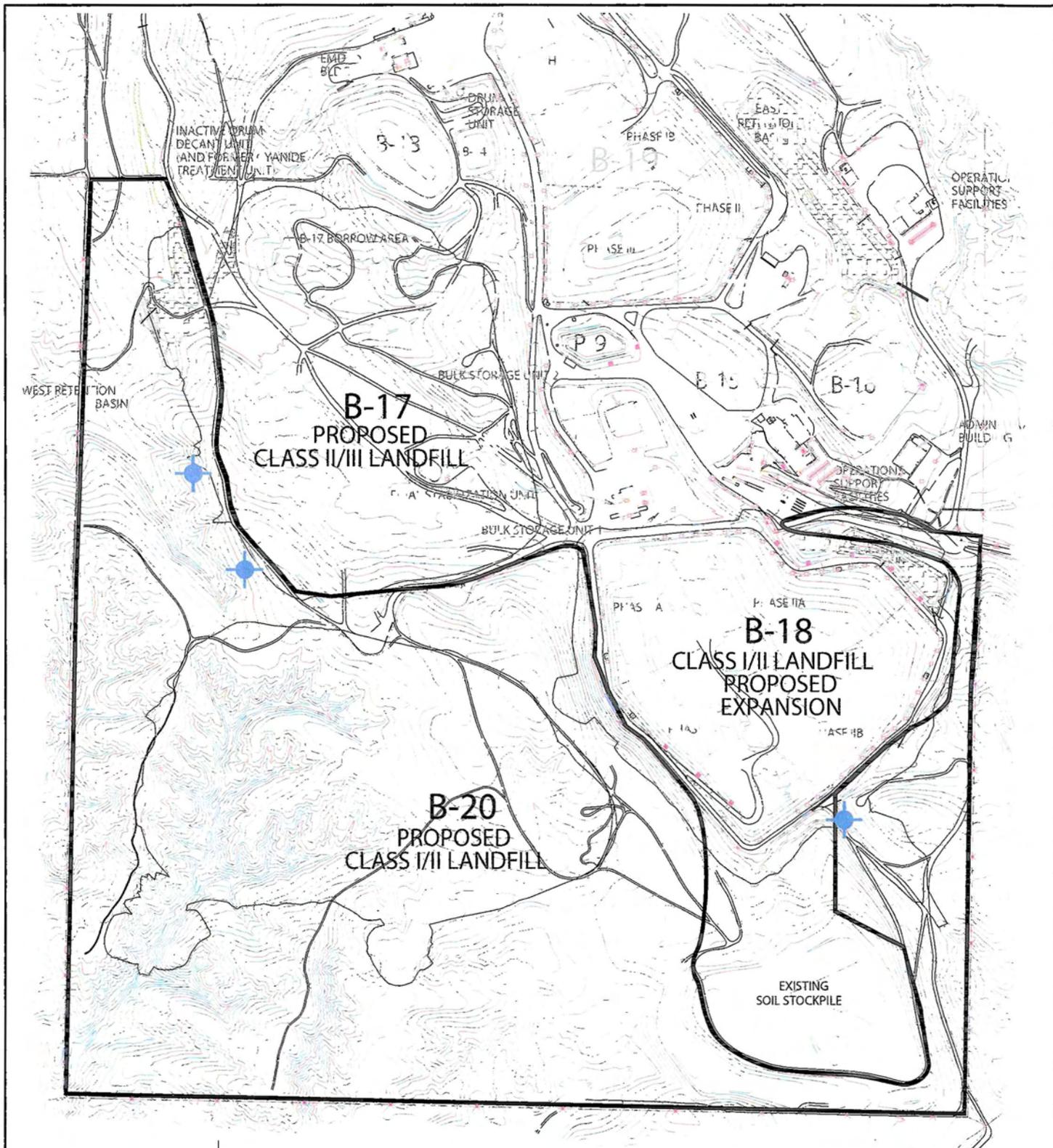
Notes: 1 – Information provided in the above table is intended to be supplementary to the information provided in Table 2 of the 2002 *Special-Status-Species Report for the Proposed Expansion Project, Kettleman Hills Facility, Chemical Waste Management, Kings County, California* (i.e., 2002 report). However, information in Table 2 of the 2002 report should be superseded by information provided in the above table for those taxa that were previously addressed in the 2002 report.



SOURCE: TRC, Bumgardner Biological Consulting, March 2004.
PHOTOGRAMMETRY BY: AERIAL PHOTOMAPPING SERVICES, DATED JUNE 3, 2002.

- Original Unit B-20 Biological Study Area Boundary
- Expanded Unit B-20 Biological Study Area Boundary

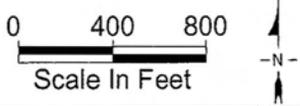
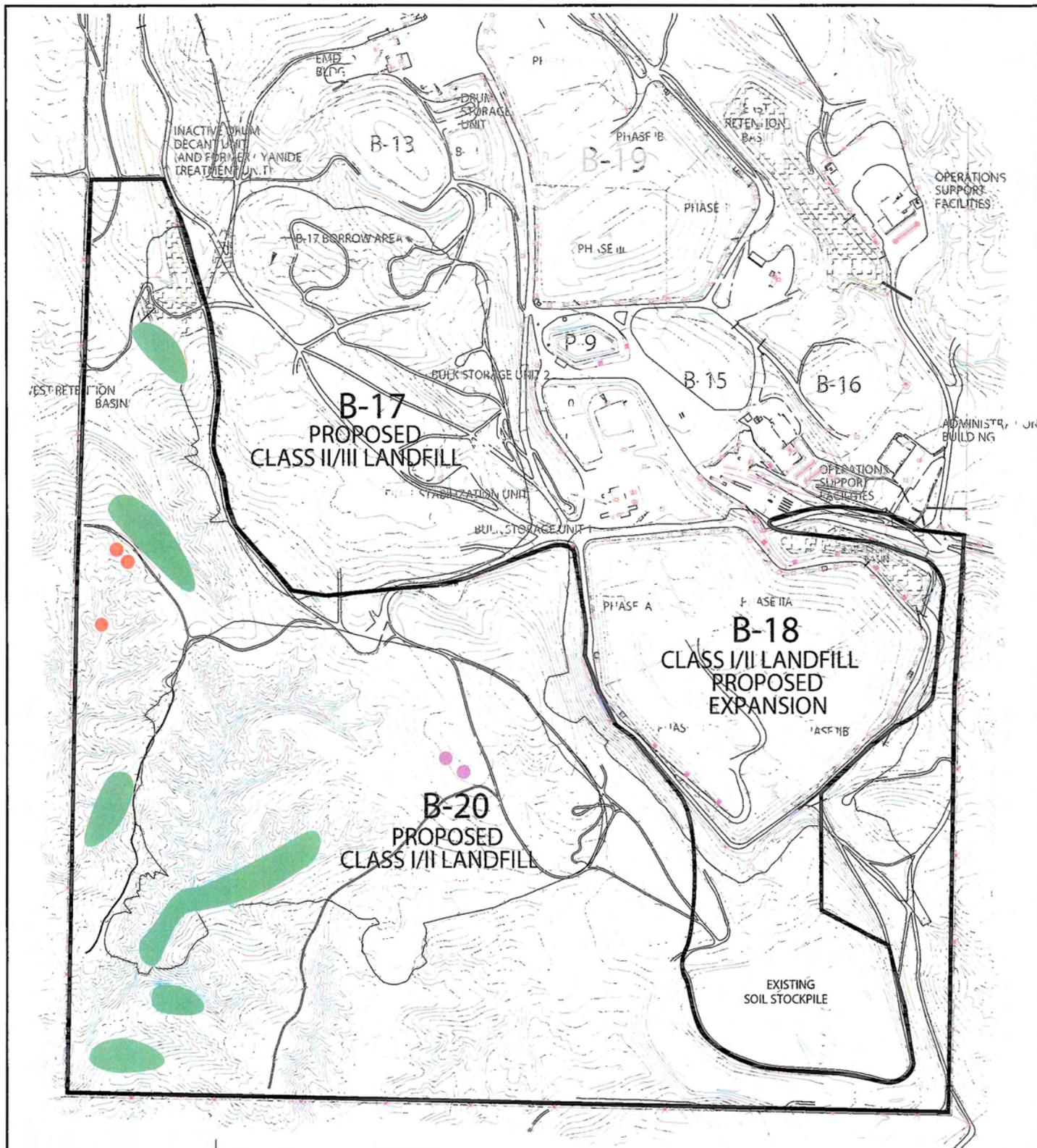
Figure 1
Expanded Unit B-20 Study Area
Kettleman Hills Facility



SOURCE: TRC, Bumgardner Biological Consulting, March 2004.
PHOTOGRAMMETRY BY: AERIAL PHOTOMAPPING SERVICES, DATED JUNE 3, 2002.

- Expanded Unit B-20 Biological Study Area Boundary
- ★ 2003 Loggerhead Shrike Occurrences

Figure 2
2003 Loggerhead Shrike Occurrences
on the Expanded Unit B-20 Study Area
Kettleman Hills Facility



SOURCE: TRC, Bumgardner Biological Consulting, March 2004
 PHOTOGRAMMETRY BY: AERIAL PHOTOMAPPING SERVICES, DATED JUNE 3, 2002.

- Expanded Unit B-20 Biological Study Area Boundary
- Cottony buckwheat (*Eriogonum gossypinum*)
- Hoover's woollystar (*Eriastrum hooveri*)
- Gypsum-loving larkspur (*Delphinium gypsophilum*)

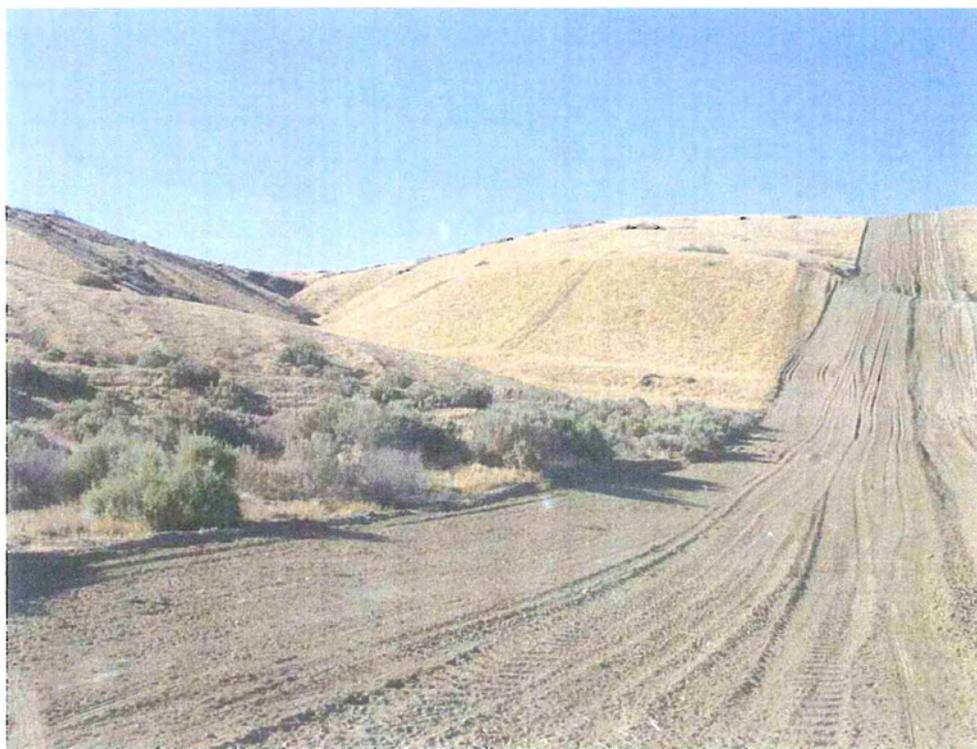
Figure 3
Special-Status Plant Species Within
the Expanded Unit B-20 Study Area
Kettleman Hills Facility

Appendix A

**Site Photographs
for
Proposed Expansion Project,
Kettleman Hills Facility,
Chemical Waste Management,
Kings County, California**



The photograph shows west-facing slopes in the northwestern-most portion of the Unit B-20 expansion lands and illustrates the moderately steep slopes that occur within portions of the study area (slopes that are typically unsuitable for blunt-nosed leopard lizard) Also, note the sparse plant cover that occurs on these slopes.



The photograph is representative of the moderately steep slopes that occur in much of the northwestern-most portion of the Unit B-20 expansion lands (slopes that are typically unsuitable for blunt-nosed leopard lizard). Also, note the dense grass cover that occurs on this north-facing slope.



The photograph shows the highest point in the western-most portion of the Unit B-20 expansion lands. The photo is oriented to the west and illustrates the general tendency within the site for east and north-facing slopes to support a dense cover of grass (typically unsuitable for blunt-nosed leopard lizard) whereas west and south-facing slopes support sparser plant cover (more suitable for blunt-nosed leopard lizard).



The photograph is oriented to the north and illustrates the general tendency within the site for north-facing slopes to support a dense cover of grass (typically unsuitable for blunt-nosed leopard lizard) whereas south-facing slopes support sparser plant cover

Bumgardner Biological Consulting

October 8, 2007

Carol Carollo
Chemical Waste Management, Inc.
35251 Old Skyline Road
Kettleman City, CA 93239

Dear Ms. Carollo:

This letter report provides the results of year 2007 surveys conducted for the federally and state-endangered blunt-nosed leopard lizard (*Gambelia sila*) (BNLL) in suitable habitat within the vicinity of the proposed B-18/B-20 Hazardous Waste Disposal Project (i.e., landfill project) at the Chemical Waste Management, Inc. (CWM) Kettleman Hills Facility (KHF) in Kings County, California (hereafter referenced as "study area"). The facility location and study area are depicted in Figures 1 and 2, respectively. The surveys were coordinated and conducted by Michael Bumgardner, Principal Investigator (Bumgardner Biological Consulting) with assistance from Ellen Berryman (Berryman Ecological LLC), John Howe (Howe Biological Consulting), Steve Sykes (Sykes Biological Consulting), and Paul Vanherweg, Felicia Cruz, and Karl Weiss (McCormick Biological).

The letter report provides the following:

- Description of the survey methods implemented;
- Location of the survey sites at a local and regional scale (see Figures 1 and 2);
- Summary of survey results (including dates of surveys, deviations from standard protocol, detections of BNLL [if any], and analysis of negative survey results; and
- Qualifications of each of the surveyors (Attachment A).

A reconnaissance-level assessment for BNLL habitat was conducted throughout all portions of the study area for the proposed landfill project on April 2, 2007. The reconnaissance-level assessment was conducted to determine if areas previously surveyed for BNLL continue to support suitable habitat for the species. The study area for the proposed landfill project had previously been surveyed by Bumgardner Biological Consulting in 2002 in conformance with the California Department of

*Quality Biological Services Through Technical
Proficiency and Experienced Management*

Fish and Game (DFG) May 8, 1990 *Approved Survey Methodologies for Sensitive Species* and in 2003 in conformance with a negotiated survey protocol that was a compromise between the May 8, 1990 *Approved Survey Methodologies for Sensitive Species* and April 2003 *Draft Approved Survey Methodology for the Blunt-nosed Leopard Lizard*. The negotiated survey protocol was approved by Annette Tenneboe (DFG) on May 27, 2003.

The reconnaissance-level assessment found that much of the study area for the proposed landfill project that had been characterized as suitable BNLL habitat in 2002 and 2003 no longer met the standard coverage criteria for suitable habitat (i.e., less than 50 percent cover) due to a dense cover of annual grasses (i.e., mostly in excess of 75 percent). This substantial increase in percent cover is the result of two consecutive years (i.e., 2005 and 2006) in which the winter and spring rainfall was substantially higher than the annual mean rainfall. Many areas that had previously been considered suitable for BNLL were therefore deemed unsuitable for the species in 2007. Consequently, protocol surveys were only conducted in those areas that had been surveyed in 2002 and 2003 in which the percent cover was still less than 50 percent (Table 1, Figure 2).

Surveys for BNLL within the study area for the proposed landfill project during 2007 were conducted in conformance with the DFG May 2004 *Approved Survey Methodology for the Blunt-nosed Leopard Lizard*. Specifically, the protocol-level surveys were conducted by three surveyors slowly walking parallel 30 to 50-foot wide transects within all suitable habitat (i.e., open habitats on relatively flat areas or gentle slopes) while scanning frequently with binoculars (see exception below). The surveys were conducted during 17 days that included 12 days from April 24 to June 22, 2007 (during the adult BNLL activity season). The remaining five days of surveys were conducted from August 14 to 29, 2007 (during the juvenile BNLL activity season). In accordance with the protocol, air temperatures were measured approximately 2 cm above ground with the thermometer shaded from the sun. A beginning and ending time and air temperature were recorded for each survey area (Tables 3 through 7), while spot temperature readings were taken to determine if temperatures were within the DFG's acceptable range of survey temperatures for the species.

The 2007 surveys were conducted in conformance with the May 2004 *Approved Survey Methodology for the Blunt-nosed Leopard Lizard*, but included three minor deviations. The first deviation is associated with each of the surveys within the Single Ridge and Finger Ridges Survey Areas (Figure 2). Given that the suitable habitat for BNLL within these areas only occurs on the top of narrow ridges, each survey was conducted by a single surveyor walking a transect down the ridge and second transect back up the ridge (i.e., no parallel transects by multiple surveyors). However, this deviation is not believed to have affected the results of the surveys in these areas since all suitable BNLL habitat was readily visible at all times during the transects.

The second deviation is associated with the starting and ending survey times for the April 24, 2007 survey within all survey areas. Suitable temperatures to conduct the surveys (i.e., 25 °C) did not occur until 2:17 pm. Therefore, the last survey of the day ended at 5:24 pm (well after the protocol termination time of 2:00 pm). Nonetheless, the survey team decided to conduct the surveys since substantial lizard activity was observed within the study area and air temperatures were within the protocol temperature range. Furthermore, the species numbers for the surveys conducted on this day were consistent with the species numbers on the following three survey days for each survey area. Therefore, this deviation is not believed to have affected the results of the surveys.

The third deviation is associated with starting and ending survey temperatures. A few surveys were initiated at an air temperature of 24 °C or terminated at 23 °C (Table 2). Surveys were initiated at 24 °C during April 25 and 26, 2007 due to the protocol low temperature not being reached until later in the day and the need to complete the surveys within all survey areas prior to 2:00 pm (not uncommon during early surveys in spring). Nonetheless, the survey team decided to initiate the surveys since substantial lizard activity was observed within the study area. Furthermore, the species numbers for the surveys conducted on these days were consistent with the species numbers on other survey days for the affected survey areas. Two surveys also experienced a drop in air temperature below the protocol low temperature prior to completion of the surveys (ending survey temperature of 23 °C for the Finger Ridges Survey Area on April 25, 2007 and Northern Perimeter Survey Area on April 26, 2007). Nonetheless, the species numbers for these surveys were consistent with the species numbers on other survey days for these survey areas. Furthermore, western whiptail (*Aspidoscelis tigris* [formerly *Cnemidophorus tigris*]), a species that has temperature requirements that are similar to those of BNLL, were active during the surveys. Therefore, these deviations are not believed to have affected the results of the surveys.

Surveys were also initiated at an air temperature of 24 °C within the Stockpile Survey Area during May 21, 2007 and Western Fire Break Survey Area during June 21, 2007 (Table 2). Nonetheless, the species numbers for these surveys were consistent with the species numbers on other survey days for these survey areas. Therefore, this deviation is not believed to have affected the results of the surveys.

Surveys were terminated at an air temperature of 36 °C during two surveys (Northern Perimeter Survey Area on June 18, 2007 and Stockpile Survey Area on August 27, 2007) (Table 2). Though the surveys were not terminated upon exceeding the protocol temperature window, this deviation is not believed to have affected the results of the surveys on these days since most of the survey area was surveyed within the protocol temperature window and BNLL are often active at temperatures as high as 40 °C (occasionally as high as 50 °C).

The 2007 surveys resulted in no evidence (including tail drags or scat) that BNLL occurs within the study area for the proposed landfill project (Tables 3 through 7). However, other lizard species were observed within the area. Side-blotched lizard

October 8, 2007

Page 4

(*Uta stansburiana*) was abundant throughout the study area, while western whiptail (*A. tigris*) was uncommon to common (in low numbers) during the early surveys and absent during the later surveys. The only other lizard species observed within the area were desert spiny lizard (*Sceloporus magister*) and Gilbert's skink (*Eumeces gilberti*). The former species only occurs locally within the study area in association with a large, south-facing rocky outcrop (estimated at larger than 3,000 square feet) in the Western Fire Break Survey Area. The latter species was found only during one survey within the Finger Ridges Survey Area. Gilbert's skink, which is relatively common in foothill grasslands, woodlands, and chaparral, is an unusual occurrence in saltbush scrub.

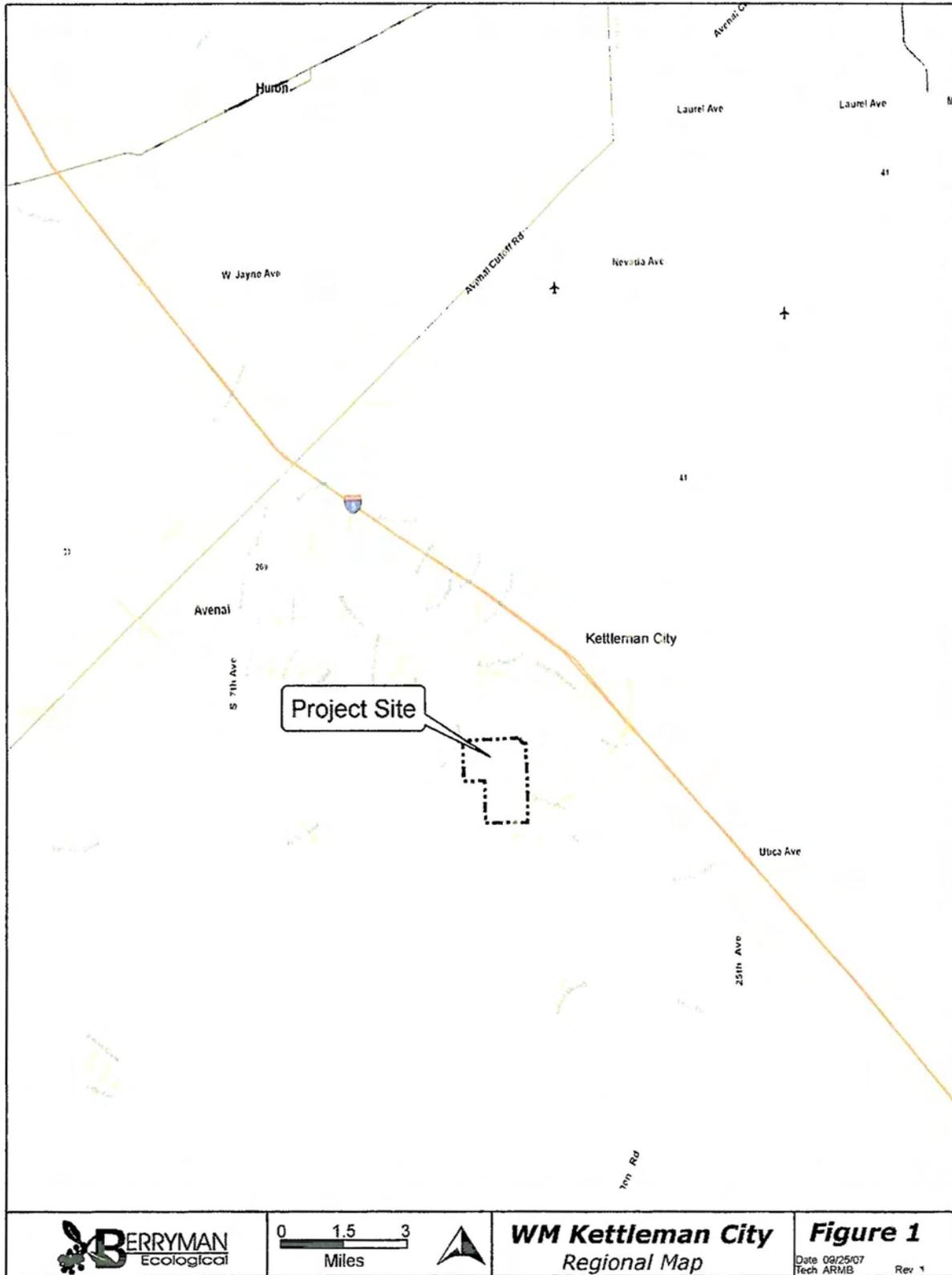
Should you have any questions or require clarification of any of the supporting information provided in conjunction with this letter report, do not hesitate to contact me (916-638-7368).

Sincerely,

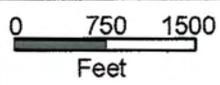
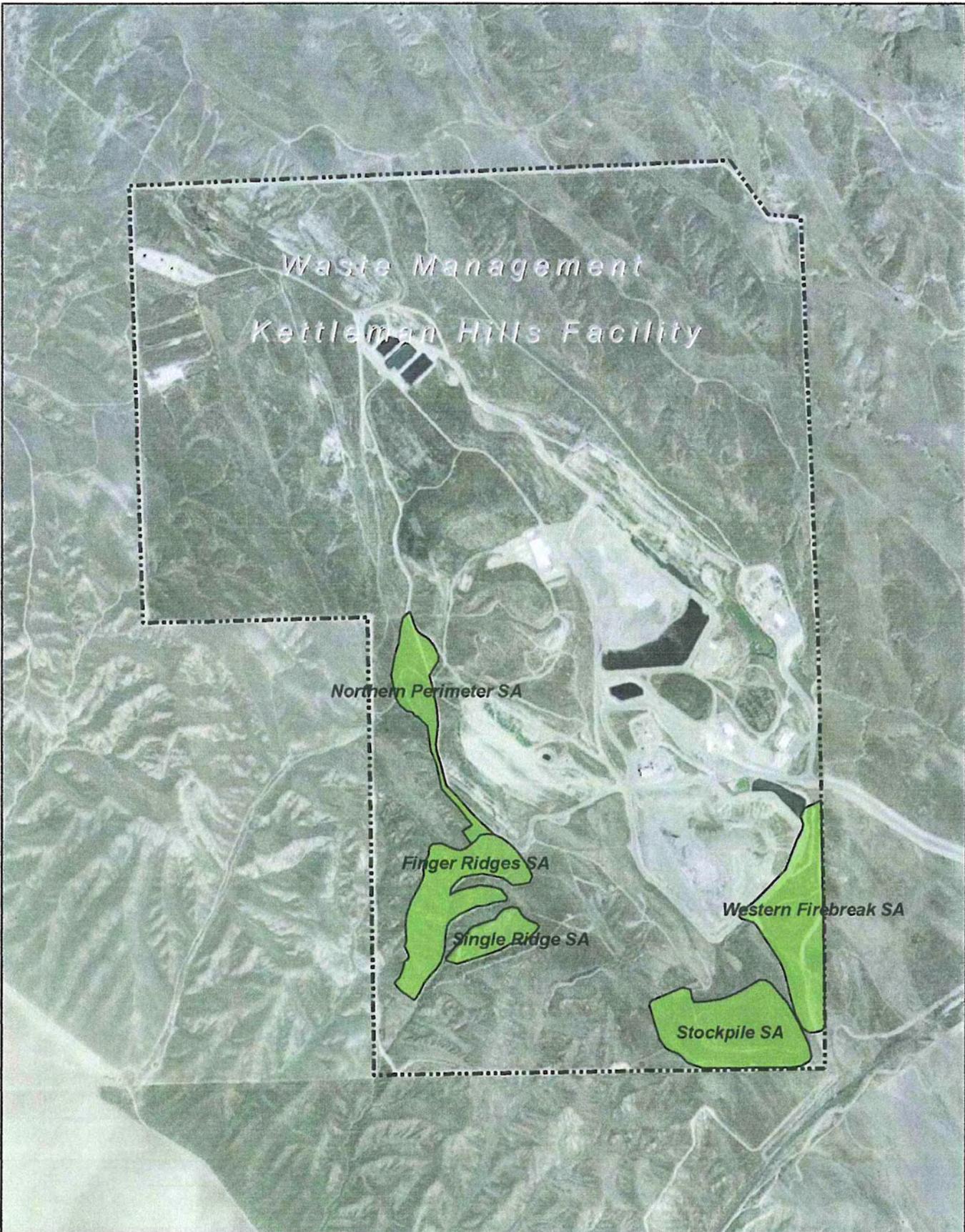
A handwritten signature in black ink that reads "Michael Bumgardner". The signature is written in a cursive style with a large initial "M".

Michael Bumgardner

Figure 1



Source: Project data provided by Waste Management. Base map provided by ESRI.



WM Kettleman City
Blunt Nosed Leopard Lizard
Survey Areas

Figure 2

Date: 11/06/07
Tech: ARMB
Rev: 1

Source: Project data provided by Waste Management. Base map provided by ESRI. Survey areas are approximate.

Table 1 Suitability Assessment for Blunt-nosed Leopard Lizard Habitat at the CWM Kettleman Hills Facility's Proposed Landfill Project Kings County, California		
Survey Area	Estimate of Average Vegetative Cover	Habitat Description
Western Fire Break	% Shrub: 0-10% % Forb: 0-10% % Grass: 25-50% % Bare: 25-50%	non-native grassland, rocky outcrop and slope, and small stand of saltbush scrub (suitable habitat is patchy)
Single Ridge	% Shrub: 0-10% % Forb: 0-10% % Grass: 25-50% % Bare: 25-50%	non-native grassland with scattered individual saltbush (habitat with suitable cover and slope is limited to the ridge top)
Finger Ridges	% Shrub: 0-10% % Forb: 0-10% % Grass: 25-50% % Bare: 50-75%	non-native grassland with scattered individual saltbush (habitat with suitable cover and slope is limited to the ridge tops)
Northern Perimeter Fence	% Shrub: 0-10% % Forb: 0-10% % Grass: 25-50% % Bare: 25-50%	non-native grassland with scattered individual saltbush; large areas of graded, bare ground; and roadways with adjacent open habitat
Stockpile	% Shrub: 0-10% % Forb: 0-10% % Grass: 25-50% % Bare: 25-50%	non-native grassland with scattered individual saltbush or small stands of saltbush scrub

Table 2
Temperature Deviations from Standard Protocol
for the 2007 Blunt-nosed Leopard Lizard Surveys
at the CWM Kettleman Hills Facility's Proposed Landfill Project,
Kings County, California

Date	Survey Area	Survey Start	Survey End
		Time Air Temperature (°C)	Time Air Temperature (°C)
04/25/07	Stockpile	9:36 am 24 °C	10:36 am 27 °C
04/26/07	Finger Ridges	11:29 am 24 °C	11:57 am 23 °C
04/26/07	Northern Perimeter Fence	10:57 am 24 °C	11:25 am 23 °C
04/26/07	Single Ridge	12:05 pm 24 °C	12:22 pm 24 °C
05/21/07	Stockpile	10:10 am 24 °C	11:24 am 27 °C
06/18/07	Northern Perimeter Fence	10:25 am 34 °C	10:51 am 36 °C
06/21/07	Western Fire Break	8:17 am 24 °C	8:50 am 25 °C
08/27/07	Stockpile	11:29 am 32 °C	12:38 pm 36 °C

Table 3
Results of the 2007 Blunt-nosed Leopard Lizard Surveys
at the CWM Kettleman Hills Facility's Proposed Landfill Project (Western Fire Break Survey Area),
Kings County, California

Date	Surveyors	Survey Start	Survey End	Results
		Time Air Temperature (°C) Ground Temperature (°C)	Time Air Temperature (°C) Ground Temperature (°C)	
04/24/07	Michael Bumgardner Ellen Berryman Steve Sykes	2:17 pm 28 °C N/A	2:58 pm 26 °C N/A	(No BNLL); 27 <i>Uta stansburiana</i>
04/25/07	Michael Bumgardner Ellen Berryman Steve Sykes	10:42 am 27 °C N/A	11:15 am 27 °C N/A	(No BNLL); 38 <i>Uta stansburiana</i> ; 1 <i>Sceloporus magister</i>
04/26/07	Michael Bumgardner Ellen Berryman Steve Sykes	1:30 pm 27 °C N/A	2:01 pm 28 °C N/A	(No BNLL); 25 <i>Uta stansburiana</i>
04/27/07	Michael Bumgardner Ellen Berryman Steve Sykes	11:45 am 29 °C N/A	12:15 pm 29 °C N/A	(No BNLL); 19 <i>Uta stansburiana</i> ; 2 <i>Aspidoscelis tigris</i>
05/21/07	Michael Bumgardner Ellen Berryman John Howe	1:11 pm 28 °C N/A	1:47 pm 31 °C N/A	(No BNLL); 2 <i>Uta stansburiana</i> ; 1 <i>Aspidoscelis tigris</i> ; gusting winds may have reduced lizard activity

Table 3
Results of the 2007 Blunt-nosed Leopard Lizard Surveys
at the CWM Kettleman Hills Facility's Proposed Landfill Project (Western Fire Break Survey Area),
Kings County, California

Date	Surveyors	Survey Start	Survey End	Results
		Time Air Temperature (°C) Ground Temperature (°C)	Time Air Temperature (°C) Ground Temperature (°C)	
05/22/07	Michael Bumgardner Ellen Berryman John Howe	9:54 am 25 °C N/A	10:45 am 27 °C N/A	(No BNLL); 14 <i>Uta stansburiana</i>
05/23/07	Michael Bumgardner Ellen Berryman John Howe	12:00 pm 31 °C N/A	12:32 pm 32 °C N/A	(No BNLL); 16 <i>Uta stansburiana</i>
05/24/07	Michael Bumgardner Ellen Berryman John Howe	8:49 am 26 °C N/A	9:30 am 27 °C N/A	(No BNLL); 25 <i>Uta stansburiana</i> ; 2 <i>Sceloporus magister</i>
06/18/07	Michael Bumgardner Ellen Berryman John Howe	7:35 am 26 °C N/A	8:14 am 28 °C N/A	(No BNLL); 9 <i>Uta stansburiana</i>
06/20/07	Ellen Berryman John Howe Paul Vanherweg	10:29 am 31 °C N/A	11:07 am 34 °C N/A	(No BNLL); 18 <i>Uta stansburiana</i> ; 1 <i>Sceloporus magister</i>

Table 3
Results of the 2007 Blunt-nosed Leopard Lizard Surveys
at the CWM Kettleman Hills Facility's Proposed Landfill Project (Western Fire Break Survey Area),
Kings County, California

Date	Surveyors	Survey Start	Survey End	Results
		Time Air Temperature (°C) Ground Temperature (°C)	Time Air Temperature (°C) Ground Temperature (°C)	
06/21/07	Ellen Berryman John Howe Felicia Cruz	8:17 am 24 °C N/A	8:50 am 25 °C N/A	(No BNLL); 16 <i>Uta stansburiana</i>
06/22/07	Eilen Berryman John Howe Karl Weiss	10:22 am 33 °C N/A	10:58 am 33 °C N/A	(No BNLL); 15 <i>Uta stansburiana</i> ; 1 <i>Sceloporus magister</i>
08/14/07	Michael Bumgardner Ellen Berryman John Howe	9:14 am 28 °C NA	9:49 am 30 °C NA	(No BNLL); 20 <i>Uta stansburiana</i> ; 1 <i>Sceloporus magister</i>
08/15/07	Michael Bumgardner Ellen Berryman John Howe	9:54 am 28 °C N/A	10:26 am 28 °C N/A	(No BNLL); 12 <i>Uta stansburiana</i>
08/27/07	Michael Bumgardner Ellen Berryman John Howe	9:30 am 28 °C N/A	10:00 am 30 °C N/A	(No BNLL); 22 <i>Uta stansburiana</i> ; 1 <i>Sceloporus magister</i>

Table 3
Results of the 2007 Blunt-nosed Leopard Lizard Surveys
at the CWM Kettleman Hills Facility's Proposed Landfill Project (Western Fire Break Survey Area),
Kings County, California

Date	Surveyors	Survey Start	Survey End	Results
		Time Air Temperature (°C) Ground Temperature (°C)	Time Air Temperature (°C) Ground Temperature (°C)	
08/28/07	Michael Bumgardner Ellen Berryman John Howe	8:25 am 28 °C N/A	8:51 am 29 °C N/A	(No BNLL); 13 <i>Uta stansburiana</i>
08/29/07	Michael Bumgardner Ellen Berryman John Howe	7:57 am 30 °C N/A	8:22 am 31 °C N/A	(No BNLL); 13 <i>Uta stansburiana</i>

Table 4
Results of the 2007 Blunt-nosed Leopard Lizard Surveys
at the CWM Kettleman Hills Facility's Proposed Landfill Project (Single Ridge Survey Area),
Kings County, California

Date	Surveyors	Survey Start	Survey End	Results
		Time Air Temperature (°C) Ground Temperature (°C)	Time Air Temperature (°C) Ground Temperature (°C)	
04/24/07	Michael Bumgardner Ellen Berryman Steve Sykes	5:09 pm 26 °C N/A	5:24 pm 27 °C N/A	(No BNLL); 5 <i>Uta stansburiana</i>
04/25/07	Michael Bumgardner Ellen Berryman Steve Sykes	11:33 am 27 °C N/A	11:50 am 27 °C N/A	(No BNLL); 9 <i>Uta stansburiana</i> , 1 <i>Aspidoscelis tigris</i>
04/26/07	Michael Bumgardner Ellen Berryman Steve Sykes	12:05 pm 24 °C N/A	12:22 pm 24 °C N/A	(No BNLL); 3 <i>Uta stansburiana</i> , 2 <i>Aspidoscelis tigris</i>
04/27/07	Michael Bumgardner Ellen Berryman Steve Sykes	10:22 am 28 °C N/A	10:40 am 29 °C N/A	(No BNLL); 3 <i>Uta stansburiana</i>
05/21/07	Michael Bumgardner Ellen Berryman John Howe	12:47 pm 28 °C N/A	1:04 pm 28 °C N/A	(No BNLL)

Table 4
Results of the 2007 Blunt-nosed Leopard Lizard Surveys
at the CWM Kettleman Hills Facility's Proposed Landfill Project (Single Ridge Survey Area),
Kings County, California

Date	Surveyors	Survey Start	Survey End	Results
		Time Air Temperature (°C) Ground Temperature (°C)	Time Air Temperature (°C) Ground Temperature (°C)	
05/22/07	Michael Bumgardner Ellen Berryman John Howe	12:14 pm 27 °C N/A	12:27 pm 27 °C N/A	(No BNLL); 1 <i>Uta stansburiana</i>
05/23/07	Michael Bumgardner Ellen Berryman John Howe	10:28 am 26 °C N/A	10:37 am 26 °C N/A	(No BNLL); 1 <i>Uta stansburiana</i>
05/24/07	Michael Bumgardner Ellen Berryman John Howe	10:41 am 31 °C N/A	10:55 am 31 °C N/A	(No BNLL); 1 <i>Uta stansburiana</i>
06/18/07	Michael Bumgardner Ellen Berryman John Howe	9:51 am 32 °C N/A	10:01 am 32 °C N/A	(No BNLL)
06/20/07	Ellen Berryman John Howe Paul Vanherweg	9:04 am 26 °C N/A	9:19 am 27 °C N/A	(No BNLL); 3 <i>Uta stansburiana</i>

Table 4
Results of the 2007 Blunt-nosed Leopard Lizard Surveys
at the CWM Kettleman Hills Facility's Proposed Landfill Project (Single Ridge Survey Area),
Kings County, California

Date	Surveyors	Survey Start	Survey End	Results
		Time Air Temperature (°C) Ground Temperature (°C)	Time Air Temperature (°C) Ground Temperature (°C)	
06/21/07	Ellen Berryman John Howe Felicia Cruz	10:10 am 27 °C N/A	10:22 am 30 °C N/A	(No BNLL); 2 <i>Uta stansburiana</i>
06/22/07	Ellen Berryman John Howe Karl Weiss	8:55 am 28 °C N/A	9:06 am 28 °C N/A	(No BNLL); 2 <i>Uta stansburiana</i>
08/14/07	Michael Bumgardner Ellen Berryman John Howe	9:58 am 29 °C NA	10:08 am 30 °C NA	(No BNLL); 4 <i>Uta stansburiana</i>
08/15/07	Michael Bumgardner Ellen Berryman John Howe	10:34 am 29 °C N/A	10:46 am 30 °C N/A	(No BNLL); 4 <i>Uta stansburiana</i>
08/27/07	Michael Bumgardner Ellen Berryman John Howe	10:10 am 29 °C N/A	10:20 am 29 °C N/A	(No BNLL); 2 <i>Uta stansburiana</i>

Table 4
Results of the 2007 Blunt-nosed Leopard Lizard Surveys
at the CWM Kettleman Hills Facility's Proposed Landfill Project (Single Ridge Survey Area),
Kings County, California

Date	Surveyors	Survey Start	Survey End	Results
		Time Air Temperature (°C) Ground Temperature (°C)	Time Air Temperature (°C) Ground Temperature (°C)	
08/28/07	Michael Bumgardner Ellen Berryman John Howe	9:00 am 30 °C N/A	9:10 am 30 °C N/A	(No BNLL); 3 <i>Uta stansburiana</i>
08/29/07	Michael Bumgardner Ellen Berryman John Howe	8:30 am 33 °C N/A	8:36 am 33 °C N/A	(No BNLL); 5 <i>Uta stansburiana</i>

Table 5
Results of the 2007 Blunt-nosed Leopard Lizard Surveys
at the CWM Kettleman Hills Facility's Proposed Landfill Project (Finger Ridges Survey Area),
Kings County, California

Date	Surveyors	Survey Start	Survey End	Results
		Time Air Temperature (°C) Ground Temperature (°C)	Time Air Temperature (°C) Ground Temperature (°C)	
04/24/07	Michael Bumgardner Ellen Berryman Steve Sykes	3:15 pm 28 °C N/A	3:50 pm 28 °C N/A	(No BNLL); 4 <i>Uta stansburiana</i> ; 2 <i>Aspidoscelis tigris</i>
04/25/07	Michael Bumgardner Ellen Berryman Steve Sykes	12:07 pm 31 °C N/A	12:22 pm 29 °C N/A	(No BNLL); 8 <i>Uta stansburiana</i>
04/26/07	Michael Bumgardner Ellen Berryman Steve Sykes	11:29 am 24 °C N/A	11:57 am 23 °C N/A	(No BNLL); 8 <i>Uta stansburiana</i> ; 5 <i>Aspidoscelis tigris</i>
04/27/07	Michael Bumgardner Ellen Berryman Steve Sykes	9:42 am 25 °C N/A	10:08 am 27 °C N/A	(No BNLL); 3 <i>Uta stansburiana</i> ; 3 <i>Aspidoscelis tigris</i> ; 1 <i>Eumeces gilberti</i> (unusual in this habitat?)
05/21/07	Michael Bumgardner Ellen Berryman John Howe	11:30 am 26 °C N/A	11:53 am 27 °C N/A	(No BNLL); 2 <i>Uta stansburiana</i>

Table 5
Results of the 2007 Blunt-nosed Leopard Lizard Surveys
at the CWM Kettleman Hills Facility's Proposed Landfill Project (Finger Ridges Survey Area),
Kings County, California

Date	Surveyors	Survey Start	Survey End	Results
		Time Air Temperature (°C) Ground Temperature (°C)	Time Air Temperature (°C) Ground Temperature (°C)	
05/22/07	Michael Bumgardner Ellen Berryman John Howe	11:01 am 26 °C N/A	11:53 am 27 °C N/A	(No BNLL); 3 <i>Uta stansburiana</i>
05/23/07	Michael Bumgardner Ellen Berryman John Howe	9:57 am 26 °C N/A	10:15 am 26 °C N/A	(No BNLL); 3 <i>Uta stansburiana</i>
05/24/07	Michael Bumgardner Ellen Berryman John Howe	10:16 am 31 °C N/A	10:33 am 32 °C N/A	(No BNLL); 4 <i>Uta stansburiana</i>
06/18/07	Michael Bumgardner Ellen Berryman John Howe	10:08 am 33 °C N/A	10:21 am 34 °C N/A	(No BNLL); 1 <i>Uta stansburiana</i>
06/20/07	Ellen Berryman John Howe Paul Vanherweg	8:42 am 26 °C N/A	8:57 am 27 °C N/A	(No BNLL); 2 <i>Uta stansburiana</i>

Table 5
Results of the 2007 Blunt-nosed Leopard Lizard Surveys
at the CWM Kettleman Hills Facility's Proposed Landfill Project (Finger Ridges Survey Area),
Kings County, California

Date	Surveyors	Survey Start	Survey End	Results
		Time Air Temperature (°C) Ground Temperature (°C)	Time Air Temperature (°C) Ground Temperature (°C)	
06/21/07	Ellen Berryman John Howe Felicia Cruz	10:28 am 28 °C N/A	10:40 am 30 °C N/A	(No BNLL); 4 <i>Uta stansburiana</i>
06/22/07	Ellen Berryman John Howe Karl Weiss	8:28 am 26 °C N/A	8:48 am 28 °C N/A	(No BNLL); 2 <i>Uta stansburiana</i>
08/14/07	Michael Bumgardner Ellen Berryman John Howe	10:16 am 31 °C N/A	10:28 am 33 °C N/A	(No BNLL); 1 <i>Uta stansburiana</i>
08/15/07	Michael Bumgardner Ellen Berryman John Howe	10:51 am 30 °C N/A	11:04 am 30 °C N/A	(No BNLL); 6 <i>Uta stansburiana</i>
08/27/07	Michael Bumgardner Ellen Berryman John Howe	10:29 am 31 °C N/A	10:42 am 31 °C N/A	(No BNLL); 4 <i>Uta stansburiana</i>

Table 5
Results of the 2007 Blunt-nosed Leopard Lizard Surveys
at the CWM Kettleman Hills Facility's Proposed Landfill Project (Finger Ridges Survey Area),
Kings County, California

Date	Surveyors	Survey Start	Survey End	Results
		Time Air Temperature (°C) Ground Temperature (°C)	Time Air Temperature (°C) Ground Temperature (°C)	
08/28/07	Michael Bumgardner Ellen Berryman John Howe	9:17 am 30 °C N/A	9:29 am 30 °C N/A	(No BNLL); 1 <i>Uta stansburiana</i>
08/29/07	Michael Bumgardner Ellen Berryman John Howe	8:38 am 32 °C N/A	8:50 am 32 °C N/A	(No BNLL); 2 <i>Uta stansburiana</i>

Table 6
Results of the 2007 Blunt-nosed Leopard Lizard Surveys
at the CWM Kettleman Hills Facility's Proposed Landfill Project (Northern Perimeter Fence Survey Area),
Kings County, California

Date	Surveyors	Survey Start	Survey End	Results
		Time Air Temperature (°C) Ground Temperature (°C)	Time Air Temperature (°C) Ground Temperature (°C)	
04/24/07	Michael Bumgardner Ellen Berryman Steve Sykes	4:08 pm 29 °C N/A	4:51 pm 28 °C N/A	(No BNLL); 14 <i>Uta stansburiana</i>
04/25/07	Michael Bumgardner Ellen Berryman Steve Sykes	12:30 pm 28 °C N/A	1:05 pm 26 °C N/A	(No BNLL); 10 <i>Uta stansburiana</i>
04/26/07	Michael Bumgardner Ellen Berryman Steve Sykes	10:57 am 24 °C N/A	11:25 am 23 °C N/A	(No BNLL); 20 <i>Uta stansburiana</i> ; 2 <i>Aspidoscelis tigris</i>
04/27/07	Michael Bumgardner Ellen Berryman Steve Sykes	9:03 am 25 °C N/A	9:35 am 25 °C N/A	(No BNLL); 11 <i>Uta stansburiana</i>
05/21/07	Michael Bumgardner Ellen Berryman John Howe	12:05 pm 28 °C N/A	12:40 pm 29 °C N/A	(No BNLL); 5 <i>Uta stansburiana</i>

Table 6
Results of the 2007 Blunt-nosed Leopard Lizard Surveys
at the CWM Kettleman Hills Facility's Proposed Landfill Project (Northern Perimeter Fence Survey Area),
Kings County, California

Date	Surveyors	Survey Start	Survey End	Results
		Time Air Temperature (°C) Ground Temperature (°C)	Time Air Temperature (°C) Ground Temperature (°C)	
05/22/07	Michael Bumgardner Ellen Berryman John Howe	11:25 am 27 °C N/A	11:58 am 29 °C N/A	(No BNLL); 3 <i>Uta stansburiana</i>
05/23/07	Michael Bumgardner Ellen Berryman John Howe	9:19 am 24 °C N/A	9:52 am 25 °C N/A	(No BNLL); 13 <i>Uta stansburiana</i>
05/24/07	Michael Bumgardner Ellen Berryman John Howe	9:41 am 28 °C N/A	10:09 am 30 °C N/A	(No BNLL); 19 <i>Uta stansburiana</i>
06/18/07	Michael Bumgardner Ellen Berryman John Howe	10:25 am 34 °C N/A	10:51 am 36 °C N/A	(No BNLL); 3 <i>Uta stansburiana</i>
06/20/07	Ellen Berryman John Howe Paul Vanherweg	7:56 am 24 °C N/A	8:33 am 26 °C N/A	(No BNLL); 8 <i>Uta stansburiana</i>

Table 6
Results of the 2007 Blunt-nosed Leopard Lizard Surveys
at the CWM Kettleman Hills Facility's Proposed Landfill Project (Northern Perimeter Fence Survey Area),
Kings County, California

Date	Surveyors	Survey Start	Survey End	Results
		Time Air Temperature (°C) Ground Temperature (°C)	Time Air Temperature (°C) Ground Temperature (°C)	
06/21/07	Ellen Berryman John Howe Felicia Cruz	10:49 am 30 °C N/A	11:18 am 32 °C N/A	(No BNLL); 1 <i>Uta stansburiana</i> ; 1 <i>Aspidoscelis tigris</i>
06/22/07	Ellen Berryman John Howe Karl Weiss	7:54 am 25 °C N/A	8:22 am 26 °C N/A	(No BNLL); 7 <i>Uta stansburiana</i> ; 1 <i>Aspidoscelis tigris</i>
08/14/07	Michael Bumgardner Ellen Berryman John Howe	10:32 am 33 °C NA	10:54 am 36 °C NA	(No BNLL); 4 <i>Uta stansburiana</i>
08/15/07	Michael Bumgardner Ellen Berryman John Howe	11:11 am 30 °C N/A	11:33 am 30 °C N/A	(No BNLL); 3 <i>Uta stansburiana</i>
08/27/07	Michael Bumgardner Ellen Berryman John Howe	10:51 am 32 °C N/A	11:17 am 33 °C N/A	(No BNLL); 8 <i>Uta stansburiana</i>

Table 6
Results of the 2007 Blunt-nosed Leopard Lizard Surveys
at the CWM Kettleman Hills Facility's Proposed Landfill Project (Northern Perimeter Fence Survey Area),
Kings County, California

Date	Surveyors	Survey Start	Survey End	Results
		Time Air Temperature (°C) Ground Temperature (°C)	Time Air Temperature (°C) Ground Temperature (°C)	
08/28/07	Michael Bumgardner Ellen Berryman John Howe	9:35 am 31 °C N/A	9:57 am 33 °C N/A	(No BNLL); 11 <i>Uta stansburiana</i>
08/29/07	Michael Bumgardner Ellen Berryman John Howe	8:54 am 33 °C N/A	9:19 am 33 °C N/A	(No BNLL); 8 <i>Uta stansburiana</i>

<p align="center">Table 7 Results of the 2007 Blunt-nosed Leopard Lizard Surveys at the CWM Kettleman Hills Facility's Proposed Landfill Project (Stockpile Survey Area), Kings County, California</p>				
Date	Surveyors	Survey Start	Survey End	Results
		Time Air Temperature (°C) Ground Temperature (°C)	Time Air Temperature (°C) Ground Temperature (°C)	
04/24/07	Michael Bumgardner Ellen Berryman Steve Sykes	12:59 pm 26 °C N/A	2:09 pm 28 °C N/A	(No BNLL); 68 <i>Uta stansburiana</i>
04/25/07	Michael Bumgardner Ellen Berryman Steve Sykes	9:36 am 24 °C N/A	10:36 am 27 °C N/A	(No BNLL); 71 <i>Uta stansburiana</i> ; 1 <i>Aspidoscelis tigris</i>
04/26/07	Michael Bumgardner Ellen Berryman Steve Sykes	12:12 pm 28 °C N/A	1:28 pm 26 °C N/A	(No BNLL); 58 <i>Uta stansburiana</i> ; 1 <i>Aspidoscelis tigris</i>
04/27/07	Michael Bumgardner Ellen Berryman Steve Sykes	10:46 am 27 °C N/A	11:27 am 28 °C N/A	(No BNLL); 73 <i>Uta stansburiana</i> ; 2 <i>Aspidoscelis tigris</i>
05/21/07	Michael Bumgardner Ellen Berryman John Howe	10:10 am 24 °C N/A	11:24 am 27 °C N/A	(No BNLL); 56 <i>Uta stansburiana</i> ; 1 <i>Aspidoscelis tigris</i>

Table 7
Results of the 2007 Blunt-nosed Leopard Lizard Surveys
at the CWM Kettleman Hills Facility's Proposed Landfill Project (Stockpile Survey Area),
Kings County, California

Date	Surveyors	Survey Start	Survey End	Results
		Time Air Temperature (°C) Ground Temperature (°C)	Time Air Temperature (°C) Ground Temperature (°C)	
05/22/07	Michael Bumgardner Ellen Berryman John Howe	12:06 pm 29 °C N/A	12:56 pm 30 °C N/A	(No BNLL); 32 <i>Uta stansburiana</i>
05/23/07	Michael Bumgardner Ellen Berryman John Howe	10:47 am 28 °C N/A	11:54 am 30 °C N/A	(No BNLL); 57 <i>Uta stansburiana</i>
05/24/07	Michael Bumgardner Ellen Berryman John Howe	11:06 am 31 °C N/A	12:06 pm 35 °C N/A	(No BNLL); 51 <i>Uta stansburiana</i> ; 1 <i>Masticophis flagellum ruddocki</i> (shed skin)
06/18/07	Michael Bumgardner Ellen Berryman John Howe	8:18 am 28 °C N/A	9:41 am 32 °C N/A	(No BNLL); 57 <i>Uta stansburiana</i>
06/20/07	Ellen Berryman John Howe Paul Vanherweg	9:26 am 28 °C N/A	10:25 am 31 °C N/A	(No BNLL); 59 <i>Uta stansburiana</i>

Table 7
Results of the 2007 Blunt-nosed Leopard Lizard Surveys
at the CWM Kettleman Hills Facility's Proposed Landfill Project (Stockpile Survey Area),
Kings County, California

Date	Surveyors	Survey Start	Survey End	Results
		Time Air Temperature (°C) Ground Temperature (°C)	Time Air Temperature (°C) Ground Temperature (°C)	
06/21/07	Ellen Berryman John Howe Felicia Cruz	8:55 am 26 °C N/A	9:58 am 28 °C N/A	(No BNLL); 76 <i>Uta stansburiana</i>
06/22/07	Ellen Berryman John Howe Karl Weiss	9:13 am 28 °C N/A	10:15 am 32 °C N/A	(No BNLL); 71 <i>Uta stansburiana</i>
08/14/07	Michael Bumgardner Ellen Berryman John Howe	11:06 am 33 °C NA	11:56 am 35 °C NA	(No BNLL); 21 <i>Uta stansburiana</i>
08/15/07	Michael Bumgardner Ellen Berryman John Howe	11:43 am 31 °C N/A	12:38 pm 31 °C N/A	(No BNLL); 32 <i>Uta stansburiana</i>
08/27/07	Michael Bumgardner Ellen Berryman John Howe	11:29 am 32 °C N/A	12:38 pm 36 °C N/A	(No BNLL); 40 <i>Uta stansburiana</i>

Table 7
Results of the 2007 Blunt-nosed Leopard Lizard Surveys
at the CWM Kettleman Hills Facility's Proposed Landfill Project (Stockpile Survey Area),
Kings County, California

Date	Surveyors	Survey Start	Survey End	Results
		Time Air Temperature (°C) Ground Temperature (°C)	Time Air Temperature (°C) Ground Temperature (°C)	
08/28/07	Michael Bumgardner Ellen Berryman John Howe	10:06 am 33 °C N/A	11:01 pm 35 °C N/A	(No BNLL); 74 <i>Uta stansburiana</i>
08/29/07	Michael Bumgardner Ellen Berryman John Howe	9:28 am 33 °C N/A	10:26 am 35 °C N/A	(No BNLL); 63 <i>Uta stansburiana</i>

Attachment A

MICHAEL BUMGARDNER
Principal, Bumgardner Biological Consulting

Mr. Bumgardner has over 20 years of experience with the terrestrial vertebrates, invertebrates, and flora of North, Central, and South America; Asia; Africa; and western Europe. He also has over 17 years of experience in the management and preparation of environmental documents that comply with the National Environmental Policy Act (NEPA), California Environmental Quality Act (CEQA), Tahoe Regional Planning Agency (TRPA) Rules of Procedure, Federal Endangered Species Act (FESA), and California Endangered Species Act (CESA). He has extensive experience in the coordination and preparation of biological resource assessments, impact assessments, management plans, mitigation programs, and habitat conservation planning and permitting associated with special-status species.

TECHNICAL CAPABILITIES

- Extensive experience with consultation and coordination with local, state, and federal regulatory agencies.
- Experienced with the statutory requirements and guidelines for federal Endangered Species Act Section 7 Consultations, Section 10(a)(1)(B) incidental take permits, Section 10(a)(1)(A) safe harbor agreements, and California Fish and Game Code Section 2081 management agreements and Section 2080.1 consistency determinations.
- Experienced in the preparation of biological assessments and conservation strategies for state and federal threatened and endangered species and other special-status species.
- Managed and conducted surveys for a wide variety of species including, but not limited to: *vernal pool crustaceans*, *valley elderberry longhorn beetle*, *California tiger salamander*, *arroyo toad*, *mountain yellow-legged frog*, *California red-legged frog*, *desert tortoise*, *western pond turtle*, *blunt-nosed leopard lizard*, *giant garter snake*, *San Joaquin kit fox*, *California clapper rail*, *spotted owl*, *northern goshawk*, *burrowing owl*, *Swinson's hawk*, *least Bell's vireo*, *southwestern willow flycatcher*, *California gnatcatcher*, and other special-status species.
- Serves on the Science Subteam of the US Fish and Wildlife Service's Recovery Team for the Santa Barbara County DPS of *California tiger salamander*.
- Experienced in the management and preparation of environmental documents that comply with CEQA, NEPA, and the TRPA Rules of Procedure.
- Particularly experienced with impact analyses involving sensitive habitats and special-status species, designing feasible mitigation measures to reduce significant impacts on biological resources, and resolving project conflicts with biological resources.

EDUCATION AND AFFILIATIONS

B.S., Zoology, June 1980, University of California at Davis, California

Registrations

Federal Scientific Take Permit No. TE-785564-6 for California Gnatcatcher (*Poliopitila californica californica*), Southwestern Willow Flycatcher (*Empidonax traillii eximius*), California Clapper Rail (*Rallus longirostris obsoletus*), and California Tiger Salamander (*Ambystoma californiense*)

State of California, Department of Fish and Game Scientific Collector's Permit #801214-01 and Letter of Authorization for Yellow-billed Cuckoo (*Coccyzus americanus*), Willow Flycatcher (*Empidonax traillii*), and California Gnatcatcher (*Poliopitila californica californica*)

PROJECT EXPERIENCE

State and Federal Endangered Species Act Compliance

California Red-legged Frog Monitoring, Salvage, and Relocation for the Marsh Creek Bridge Repairs, Sycamore Environmental Consultants and Contra Costa County Planning Department

San Joaquin Kit Fox Potential Den Surveys and Clearance for the Vernalis-Thorning 3 & 4 Aggregate Mining Sites, Teichert Aggregates

Least Bell's Vireo and *Southwestern Willow Flycatcher* Surveys within Recreation Residence Tracts of the Angeles National Forest, Angeles National Forest

San Joaquin Kit Fox Potential Den Surveys on 2,700+ Acres within The Villages at Laguna San Luis SUDP, Berryman Ecological LLC

Review of Coachella Valley Multi-Species Habitat Conservation Plan and EIR/EIS (particularly for *Peninsular Bighorn Sheep*), Pacific Municipal Consults and City of Palm Springs

Review and Comment on Proposed Critical Habitat for *Southwestern Willow Flycatcher*, Southern California Edison

Soledad Canyon Sand and Gravel Mine Expert Witness Services, Jeffer, Mangels, Butler, and Marmaro LLP

Angeles National Forest Fire and Vegetation Management Program Endangered Species Surveys and FESA Compliance, North State Resources, Inc.

Northwest Casmlia Enhanced Oil Recovery Project *California Tiger Salamander* and *California Red-legged Frog* Habitat Assessment and Endangered Species Act Compliance, Santa Maria Pacific, LLC

Kettleman Hills Waste Management Facility Class 1 Landfill Expansion *Blunt-nosed Leopard Lizard* Surveys and Endangered Species Act Compliance, TRC Solutions

Zeneca Richmond Facility Saltmarsh Remediation Project *California Clapper Rail* Focused Survey and Habitat Evaluation/Impact Assessment, LFR Levine Fricke

Los Flores Ranch Remediation Project *California Tiger Salamander* Habitat Evaluation, Impact Assessment, and Alternative Land Use Development Strategy, Chevron Environmental Management Company

White Paper on the Known Historic and Current Distribution of the *San Joaquin Kit Fox* in Eastern Merced and Stanislaus Counties and Western Madera County, Merced County

2000 Draft Yolo County Multi-Species Habitat Conservation Plan (HCP), Yolo County

UC Merced/University Community Federally Listed *Vernal Pool Crustacean*, *California Tiger Salamander*, *Special-Status Plant*, and *San Joaquin Kit Fox/Fresno Kangaroo Rat* Survey Programs and Biological Assessment, University of California and Merced County

Turk Anticline 3-D Seismic Exploration Project Endangered Species Impact Avoidance Program, Enron Oil and Gas Company

Stewart Tract Section 2081 Habitat Management Plan for *Swinson's Hawk*, Califa Development

Milpitas Recycled Water Pipeline Project Passive Relocation Program for *Burrowing Owl*, Santa Clara Valley Water District

Natural Resource Management Projects

- California Tiger Salamander* Distribution Study in Southern San Luis Obispo County, U.S. Fish and Wildlife Service
- Tulare Basin Wildlife Management Area Planning Assistance, U.S. Fish and Wildlife Service
- Hansen Creek (Nevada) Biological Monitoring Program, Getchell Gold Mine
- Lawrence Berkeley National Laboratory Biological Baseline Database, U.S. Department of Energy
- Environmental Baseline Study for a 10-year comprehensive plan that addresses 280+ petroleum-related projects in eastern Venezuela, Petroleos de Venezuela, S.A.

Utility and Infrastructure Projects

- Elk Grove Routine Stormwater Channel Maintenance Program Biological Assessment for *Giant Garter Snake* and *Valley Elderberry Longhorn Beetle*, City of Elk Grove
- Habitat Assessments for *Southwestern Willow Flycatcher* at Southern California Edison Facilities in the Santa Ana River Watershed, Southern California Edison
- Alba Phase 3 LNG Plant Preliminary Impact Analysis, Alternatives Analysis, and Environmental Impact Assessment (EIA) (Equatorial Guinea), Marathon Oil Company
- Mill Creek 2/3 Hydroelectric Project FERC Relicensing *Southwestern Willow Flycatcher* Expert Witness Services, Downy, Brand, Seymour, and Rohwer
- Level 3 Fiber Optic Cable Biological Assessments, ESA Compliance, and Permit Compliance Monitoring, Level 3 and Kiewit Environmental
- Paiute Natural Gas Pipeline Biological Evaluation, Lake Tahoe Basin Management Unit, USDA Forest Service
- Santa Rosa Subregional Long-Term Wastewater Project EIR and Biological Assessment, City of Santa Rosa
- Southern Nevada Water Authority Treatment and Transmission Facility EIS and Biological Assessment, Southern Nevada Water Authority (Nevada)
- Biological Evaluations for several wastewater infrastructure projects on National Forest lands in the Lake Tahoe Basin, South Tahoe Public Utility District
- Echo Lake Dam Stabilization Environmental Assessment, PG&E

Mining Projects

- California Red-legged Frog* Survey and Endangered Species Act Compliance Strategy for the Gardner Ranch Mining and Processing Facility, Granite Construction Company
- California Red-legged Frog* Survey for the Bee Rock Quarry and Adjacent Drainages, Granite Construction Company
- Day Creek-Inland Rock Mine Expansion *San Bernardino Kangaroo Rat* Trapping Study, West Coast Environmental & Engineering and Hanson Aggregates
- Los Alamos Sand Mine *California Tiger Salamander* and *California Red-legged Frog* Surveys, Biological Assessment, and Safe Harbor Agreement, Los Alamos Sand Company
- Williams Quarry Expansion Project Biological Resources Report, Resource Design Technology, Inc.
- Madera Ranch Quarry *California Tiger Salamander* Biological Assessment and Draft Biological Opinion, Pacific Municipal Consultants
- Ozena Valley Ranch Surface Mining Site Biological Resources Report, West Coast Environmental & Engineering
- Santa Maria River Surface Mining Site Biological Resources Report, West Coast Environmental & Engineering
- Diamond Rock Surface Mining Site Biological Resources Report and *Blunt-nosed Leopard Lizard* Impact Avoidance Program, West Coast Environmental & Engineering

Transportation Projects

- Analysis of Impacts to *Willow Flycatcher* Habitat from Emergency Washout Repairs on the Caliente Line along Meadow Valley Wash (Nevada), Union Pacific Railroad
- Analysis of Impacts to *Willow Flycatcher* Habitat from Emergency Washout Repairs on the Clifton Branch of the Lordsburg Line along the Gila River (Arizona), Union Pacific Railroad
- Biological Evaluations for 18 Union Pacific Railroad Bridge Replacement Projects in California, Olsson Consulting
- Grizzly Island Road Bridge Replacement Project *California Clapper Rail* Surveys, Sycamore Environmental Consultants
- Union Pacific Railroad Yolo Bypass North Track Project Biological Assessment, Parsons Corporation
- Kowloon-Canton Railway Corporation Lok Ma Chau Spurline (Hong Kong) Expert Witness Services, Denton Wilde Sapte (Legal Counsel, London)
- Kowloon-Canton Railway Corporation Lok Ma Chau Spurline Environmental Impact Assessment Defensibility Review and Response to Comments, California Environmental Consulting Associates
- US Highway 101 Auxiliary Lanes Project Wetlands Delineation, Natural Environment Study, and Biological Assessment, San Mateo County Department of Transportation

TRPA Projects

- Heavenly Ski Resort Master Plan EIR/EIS, Biological Resources Surveys, Biological Evaluation, and Annual Monitoring Programs, Heavenly Ski Resort and Tahoe Regional Planning Agency
- Golden Bear Park Master Plan EIR/EIS, Tahoe Regional Planning Agency and El Dorado County
- Harootyan Trust Land Transfer Biological Evaluation, Lake Tahoe Basin Management Unit, USDA Forest Service

Department of Defense Projects

- California Gnatcatcher* Surveys for the Santa Margarita River Conjunctive Use Project within MCB Camp Pendleton, Fallbrook Naval Weapons Station, and City of Fallbrook, North State Resources, Inc.
- Brooks Air Force Base (Texas) Inventory of Avian Species, U.S. Air Force Center for Environmental Excellence (AFCEE)
- Hohenfels Combat Maneuver Training Center (Germany) Integrated Natural Resources Management Plan-Fish and Wildlife and Threatened and Endangered Species Management Programs, U.S. Army Europe (USAEUR)
- Andrews Air Force Base and Davidsonville and Brandywine Communication Sites (Maryland) Biological Inventory and Integrated Natural Resources Management Plan, AFCEE
- Fort Leonard Wood (Missouri) BRAC US Army Chemical School and Military Police School Relocation Mitigation Monitoring Framework and Adaptive Management Strategy, U.S. Army
- U.S. Fish and Wildlife Service World-listed, and Portuguese Government Listed Species Surveys and Integrated Natural Resources Management Plan (Azores), AFCEE and U.S. Air Force Air Combat Command (ACC)
- Dyess Air Force Base (Texas) Threatened and Endangered Species, Fish and Wildlife, and Outdoor Recreation Component Plans of the Integrated Natural Resources Management Plan, ACC
- Vandenberg Air Force Base (California) Fiber Optic Cable Route Biological Assessment, U.S. Air Force Space Missile Command
- Camp Pendleton Relocation of Baseline Road and Case Springs Access Road Habitat Suitability and Assessment for the *Stephen's Kangaroo Rat*, *California Gnatcatcher*, and *Least Bell's Vireo*, U.S. Marine Corps

Ellen Berryman

Ellen Berryman has over twenty years of experience in environmental biology, conservation planning, and regulatory compliance. She has a well rounded background in both the public and private sector with projects involving NEPA and CEQA compliance, habitat conservation planning, impact analysis, designing mitigation strategies, and technical writing.

Education

- M.S. Biology, San Diego State University, 1993
- B.S. Zoology, UCSB, 1982

Experience

- Berryman Ecological, Principal, Meadow Vista, CA
- Foothill Associates, Regulatory Department Manager, Rocklin, CA
- EIP Associates, Senior Biologist, Sacramento, CA
- US Fish and Wildlife Service, Biologist, Sacramento, CA
- US Fish and Wildlife Service, Biologist, Carlsbad, CA
- Regional Environmental Consultants, Biologist, San Diego, CA
- California Department of Transportation, Biologist, San Diego, CA

Professional Affiliations

- Member of the Wildlife Society
- Member of the Ecological Society of America
- Member of the California Native Plant Society

Representative Experience

- **Principal, Berryman Ecological.** As the principal for Berryman Ecological, Ms. Berryman manages projects and coordinating employees and project teams to ensure projects are completed within designated timeframes, consistent with project scopes and budgets.
- **Regulatory Department Management.** Before starting her own company, Ms. Berryman was the manager of the Regulatory Department for Foothill Associates. She was responsible for managing the budget and timelines for environmental regulatory projects, managing staff workload, and reviewing products for quality control.
- **Habitat Management Plans.** Ms. Berryman has prepared habitat management plans focusing primarily on conservation needs for state and federally listed species. She prepared two

management plans for San Joaquin kit fox (approximately 1,500 acres in Merced County, and approximately 3,000 acres in San Joaquin County). She also prepared a management plan for approximately 180 acres of alkaline sink habitat supporting a state and federally listed plant species (palmate-bracted bird's beak) as well as a suite of other special status plant species, and providing foraging habitat for the state listed Swainson's hawk. Ms. Berryman has prepared management plans for Swainson's hawk habitat on agricultural land in Yolo County, and for vernal pools with federally listed plants and crustaceans in Butte and Sacramento County. She was also involved in preparation of a management plan for riparian habitat and the federally listed least Bell's vireo on the Sweetwater Reservoir in San Diego County.

- **Regional Conservation Plans.** Ms. Berryman has a strong background in regional habitat conservation planning from her experience in the HCP Division of the US Fish and Wildlife Service. She was instrumental in preparation of the Multiple Species Conservation Plan (MSCP) for south-coastal San Diego County. She was responsible for reviewing and commenting on the MSCP framework and subarea plans and Environmental Impact Report/Environmental Impact Statement, coordinating with the County and City of San Diego to revise their resource protection ordinances for implementing the MSCP, and analyzing the plan's effects on special status species. She coordinated with City and County planners on multiple specific projects within these planning areas as required for interim project coordination under the Natural Communities Conservation Planning Act (NCCP) guidelines and the California gnatcatcher 4(d) rule. She received a certificate of appreciation from Secretary of Interior Bruce Babbitt for her role in the development of the MSCP.

Ms. Berryman was also the lead US Fish and Wildlife Service biologist on other large-scale HCPs for local governments, including Yolo, Placer, and Solano Counties in northern California and the Cities of Carlsbad and Encinitas in

southern California. These regional plans were very complex and covered dozens of species over large geographic areas. Development of these plans involved coordination with county and city planners, elected officials, state and federal regulatory agencies, environmental consultants, legal counsel, and the public. Ms. Berryman also prepared the Tracy Hill Habitat Conservation Plan for an approximately 5,000-acre project in San Joaquin County. These plans included monitoring and adaptive management components.

- **Section 7 Biological Assessments.** Ms. Berryman is familiar with the formal consultation process pursuant to section 7 of the Endangered Species Act, as both a federal employee and a private consultant. As a US Fish and Wildlife Service employee, she analyzed the effects of numerous development projects and completed written assessments and Biological Opinions. Most notably, she prepared complex Biological Opinions assessing two large, multiple species Habitat Conservation Plans, for north coastal San Diego County and for San Joaquin County. As a private consultant, she coordinates clients and US Fish and Wildlife Service to identify impacts, develop conservation strategies, and resolve land use conflicts related to listed species issues. She has prepared many formal Biological Assessments to support the section 7 consultation process. Most notably, she prepared a biological assessment for the controversial University of California, Merced project. This project addressed multiple species including listed vernal pool crustaceans and plants, San Joaquin kit fox, and other special status species. Preparation of the University of California, Merced Biological Assessment involved extensive coordination between Merced County and UC Planners, their legal representatives, US Fish and Wildlife Service, CDFG, the Resources Agency, the Army Corps of Engineers, and the Environmental Protection Agency.
- **CEQA/NEPA.** Ms. Berryman assisted in preparation of Initial Studies, Mitigated Negative Declarations, and EIRs for the UC Merced Project, projects within the Sunridge Specific Plan Area in Rancho Cordova, the Sly Park Recreation Plan in El Dorado County, the Villages project in Merced County, and the Greenbriar project in Sacramento County. As a US Fish and Wildlife Service employee, Ms. Berryman reviewed and commented on numerous EIRs and EISs, and guided and assisted private consultants with the preparation of HCP EA's. As a private consultant, she prepared an EA addressing US Fish and Wildlife Service and US Army Corps of Engineers actions related to the Greenbriar development project in Sacramento County. She assisted in the preparation of the Tracy Hills HCP EA, for an

approximately 5,000-acre project in San Joaquin County.

- **Biological Field Experience.** Ms. Berryman has field experience working in a variety of California ecosystems, in desert, coastal, Central Valley, and Sierra Nevada regions. Her areas of greatest expertise are in scrub and riparian habitats. She has conducted biological resource inventory and mapping, as well as habitat assessments in both northern and southern California. She recently conducted a habitat assessment for San Joaquin kit fox, blunt-nosed leopard lizard, Fresno kangaroo rat, and palmate-bracted bird's beak on an approximately 14,000-acre property in western Madera County. She has also conducted focused surveys for special status species including California gnatcatcher, least Bell's vireo, southwestern willow flycatcher, California clapper rail, California red-legged frog, California tiger salamander, Swainson's hawk and other raptors, and a variety of listed and special status plant species. Her Master's thesis involved designing and conducting a radiotelemetry study which tracked movement patterns of the brown-headed cowbird. Ms. Berryman has over 50 hours of experience conducting California red-legged frog surveys, at least 25 hours of which were surveys in which red legged frogs were observed.

JOHN A. HOWE
18106 Maple Way
Grass Valley, California 95945
(916) 798-5923

PROFESSIONAL EXPERIENCE

Biologist

Howe Biological Consulting, Grass Valley, CA

Dates: 06/2005-Present

Experience includes working on two Land Management Plans for California Department of Fish and Game Wildlife Areas; conducting surveys for threatened and endangered species (San Joaquin kit fox (*Vulpes macrotis mutica*) and blunt-nosed leopard lizard (*Gambelia silus*)); conducting habitat assessments for rare, threatened and endangered species (giant garter snake (*Thamnophis gigas*), California red-legged frog (*Rana aurora draytonii*), and California tiger salamander (*Ambystoma californiense*)); wetland delineations; general biological resources assessments; assistance in the writing of Habitat Conservation Plans; and regulatory compliance assistance related to the Endangered Species Act and the Clean Water Act. This experience was obtained in the following California counties: Alameda, Butte, Kings, Merced, Nevada, Sacramento, San Joaquin, and Yuba, and the following Oregon counties: Douglas, Coos, and Klamath.

Biologist/Resource Specialist

Foothill Associates, Rocklin, CA

Dates: 01/2004-06/2005

Primary responsibilities involved conducting biological resource assessments, wetland delineations, and regulatory compliance and permitting in support of CEQA and NEPA documents. This included experience with Caltrans Natural Environment Studies (NES) in Sacramento and San Joaquin Counties that involved state and federally listed species, wetlands, and waters of the U.S., duties included consultation with Caltrans and County staff, conducting reconnaissance level surveys, wetland delineations, and the drafting of the NES documents; California Department of Fish Game Streambed Alteration Agreement applications for residential and commercial developments and road improvement projects; California Regional Water Quality Control Board Water Quality Certification applications, U.S. Army Corps of Engineers Clean Water Act 404 permit applications (Nationwide and Individual Permits), and Endangered Species Act consultations with the U.S. Fish and Wildlife Service. Additional duties involved conservation planning and writing of land management plans. Biological experience included surveys for listed vernal pool fairy shrimps, burrowing owls (*Athene cunicularia*), California tiger salamanders, California red-legged frog habitat assessments, Swainson's hawks (*Buteo swainsoni*), participating in benthic macroinvertebrate sampling using the California Stream Bioassessment Procedure, and participating in rare plant surveys. Wetland delineation experience involved extensive mapping of vernal pool complexes, freshwater wetlands, and waters of the U.S. Work was performed in the following California counties: Amador, Butte, Merced, Nevada, Placer, Sacramento, San Joaquin, Yolo, and Yuba.

Associate Biologist

Analytical Environmental Services, Sacramento, CA

Dates: 3/2003-01/2004

Position involved conducting biological surveys for rare, threatened, and endangered plants and animals, writing CEQA and NEPA documents, wetland mitigation planning, wetland delineations, U.S. Army Corps of Engineers Clean Water Act Section 404 permits, California Regional Water Quality Control Board Water Quality Certification applications, California Department of Fish and Game Streambed Alteration Agreement applications, and consulting with local, state, and federal agencies regarding sensitive biologic resources. Biological experience includes conducting raptor surveys and burrowing owl surveys. Additional experience included developing storm water pollution prevention plans (SWPPP). Work was performed in the following California counties: Amador, Butte, Contra Costa, El Dorado, Lake, Mendocino, Napa, Placer, Sacramento, San Bernardino, Solano, Sonoma, Tehama, and Yolo.

Monitoring and Fire Crew Intern***The Nature Conservancy, Cosumnes River Preserve, Galt, CA******Dates: 01/2003-03/2003***

This position involved collecting and reporting data as part of a long term monitoring program examining fire and grazing effects on vernal pools, grasslands, and valley oak riparian communities within the Cosumnes River Preserve. Duties involved sampling for and identifying vernal pool aquatic invertebrates. Much of this work entailed identifying endangered and threatened vernal pool invertebrate species.

Scientific Aid***CDFG, Kern National Wildlife Refuge, CA******Dates: 09/2002-01/2003***

This seasonal position involved monitoring hunter harvest of waterfowl species at the Kern National Wildlife Refuge. Additional duties included working cooperatively with the U.S. Fish and Wildlife Service to identify and enumerate terrestrial species in the sanctuary and hunt areas of the Refuge, assisting in the capture, handling, and transport of injured avian species to local wildlife rehabilitation centers, and assisting in the care and release of rehabilitated avian species at the Refuge.

Seasonal Wildlife Biologist***ECORP Consulting, Inc., Roseville, CA******Dates: 07/2002-08/2002***

This seasonal work involved conducting surveys for mountain yellow-legged frogs (*Rana muscosa*) and foothill yellow-legged frogs (*Rana boylei*), in support of a hydro-re-licensing application. This work involved conducting field surveys for frogs, as well as other amphibians and reptiles, along the South and Silver Forks of the American River, and several associated tributaries and lakes. This work entailed hiking to remote locations, navigating with topographic maps and GPS units, capturing and identifying species of frogs, and taking measurements and determining sex. Additional duties included assessing available instream and riparian habitat and stream geomorphology.

Habitat Restoration Specialist***Sapphos Environmental, Inc., Pasadena, CA******Dates: 06/2001-06/2002***

Duties involved planning and implementing habitat protection, enhancement, and restoration efforts. These duties included the selection of habitat mitigation sites, coordination with local, state, and federal agencies, restoration monitoring, and surveys for threatened and endangered species. These efforts involved the identification of native plant species, habitat mapping, restoration monitoring, and the collection of data for various physical and biological parameters. Additional experience included wetland delineations, Habitat Evaluation Procedures (HEP) for riparian habitats, assistance in developing Resource Management Programs (RMP) for the protection of sensitive habitats and threatened or endangered species. In particular, I lead a team in the development of a modified HEP for the assessment of impacts and future enhancement and restoration efforts for several stream courses and associated riparian habitat within a proposed 5,000-acre project in Ventura County. This project also involved the development of an RMP to protect natural resources, in particular the threatened California red-legged frog. Additional experience included the drafting and submission of 401 Certifications to the California Regional Water Quality Control Board, 404 Permits to the U.S. Army Corps of Engineers, and Streambed Alteration Agreements to the California Department of Fish and Game. All scientific efforts involved the writing of technical reports relative to and sections of both CEQA and NEPA documents. Work was performed in the following counties: Los Angeles, Orange, and Ventura.

Staff Research Associate***UCLA, Department of Environmental Health Sciences, Los Angeles, CA*** ***Dates: 06/2000-10/2000***

Assisted in gathering and analyzing nationwide storm water monitoring data for municipalities under the federal National Pollution Discharge Elimination System (NPDES) permit program. The goal of the project was to determine the effectiveness of the NPDES program in reducing contaminants in storm

water runoff in watersheds nation wide. This data analysis involved incorporating data into working spreadsheets, summarizing data by location and year, and conducting regression analyses. These duties involved soliciting local, state, and federal agencies for data to be used in the study.

Graduate Student Researcher

UCLA, Institute of the Environment, Los Angeles, CA

Dates: 06/2000-10/2000

Participated in the writing of a report to the U.S. Environmental Protection Agency regarding watersheds within the Los Angeles basin. This involved writing a chapter regarding the fate, transport, and ecosystem effects of anthropogenic contaminants entering Santa Monica Bay wetlands in both urban storm water and dry weather nuisance flows. My role in the writing of this chapter was to conceptualize the contaminant removal capacity of wetlands based on previous studies conducted outside of Santa Monica Bay and tie this information into research being conducted in these fields at UCLA's Institute of the Environment. The goal of this research was to aid in establishing measures to protect water quality within the watershed and the bay, including the use of restored wetlands to aid in maintaining water quality within the watershed.

Biological Science Technician

USDA Forest Service, Pacific Southwest Research Station, Fresno, CA

Dates: 06/1999-9/1999

Assisted in collecting data on California spotted owls (*Strix occidentalis occidentalis*) within the Sierra Nevada Mountains. I worked as part of a team collecting demography data on spotted owls in Sequoia and Kings Canyon National Parks. We gathered data to estimate the density, reproductive success, mortality, site fidelity, and turnover rates within territories. The methods of surveys used included point surveys, transect surveys, and road or "leap frog" surveys. Spotted owls were located during surveys by mimicking vocalizations and listening for response. I captured and banded both adult and juvenile spotted owls using mist net, noose pole, and dip net methods. Physical measurements and blood samples were taken from the juveniles to determine condition and sex. Transmitters were placed on several juveniles to determine migrational movements after fledging. I collected vegetation data at each nest site and the distribution of habitats was quantified within the study area.

Lab Technician

Kleinfelder, Fresno, CA

Dates: 08/1998-06/1999

Provided support for the engineering, geotechnical, and environmental divisions of the company. Primary duties involved lab testing of soils and materials for construction projects, including local and state roadways. Soils were typically tested for compositions of clay, silt, and sand, moisture content, compaction, and expandability. Additional duties include field sampling and measurements of on-site soil conditions and Phase I environmental site assessment assistance. Work was performed in Fresno County.

Environmental Assessor

Twining Laboratories, Fresno, CA

Dates: 11/1997-8/1998

Conducted Phase I Environmental Site Assessments for agricultural and commercial properties. Duties involved site assessments for hazardous materials, data bases queries for hazardous waste sites, review of documents containing information on hazardous waste sites, and contacting local and state agencies regarding hazardous waste sites. Work was performed in the following counties: Alameda, Fresno, Kern, Madera, Marin, Merced, Napa, Placer, San Joaquin, and Sonoma.

Field Technician

Sequoia Analytical, Redwood City, CA

Dates: 4/1996-6/1997

Conducted water and soil sampling and field data collection for hazardous materials throughout the San Francisco Bay region. Duties included interacting with both private individuals and public officials in the field while conducting sample collection. Various sampling techniques were employed to obtain uncontaminated samples to be further analyzed in the laboratory. Work was performed in the following

counties: Alameda, Contra Costa, Marin, Monterey, Napa, Santa Clara, Santa Cruz, San Francisco, San Mateo, and Sonoma.

EDUCATION

Master of Science in Environmental Biology, Department of Environmental Health Science, School of Public Health, University of California at Los Angeles, 2001

Bachelor of Science in Biology, Department of Biology, University of California at Los Angeles, 1993

Other University Coursework:

California State University Fresno, 1994, 1998-1999 – Coursework: Entomology, Aquatic Ecology, Wildlife Ecology, General Ecology, Biometry, Genetics, and Stream Restoration – 21 Units

California State University Hayward, 1997 – Environmental Assessment: NEPA/CEQA – 4 units

University of California at Davis, 2005 – Biology and Conservation of Fishes (Lecture and Lab) – 4 Units

PROFESSIONAL DEVELOPMENT

~Vernal Pool Restoration and Construction Seminar, UC Santa Barbara, Santa Barbara CA, February 2001

~Seminar on Erosion and Sediment Control, Thousand Oaks, CA, 2001

~Ecology and Management of Vernal Pool Grasslands, UC Davis Extension, Davis, CA, February 2003

~California Tiger Salamander Workshop, Laguna de Santa Rosa Foundation, Santa Rosa, CA October 2003

~Vernal Pool Invertebrate Ecology, Christopher Rodgers, Woodland, CA May 2005

~California Anostracan and Notostracan Identification Class, Mary Belk, Davis, CA September 2005

~California Tiger Salamander Larval Survey Techniques Workshop, Santa Rosa, CA April 2006

~Identifying and Appreciating the Native and Naturalized Grasses of CA, Point Reyes, CA May 2006

~Spring Run Chinook Watershed Symposium, Salmonid Restoration Federation, Chico, CA July 2006

~Salmonid Habitat Restoration, UC Davis Extension, Sacramento, CA November 2006

~Certificate in Freshwater Biomonitoring Using Benthic Macroinvertebrates, U.S. Fish and Wildlife Service, National Conservation Training Center, Shepherdstown, WV May 2007

~California Rapid Assessment Method Workshop, Society of Wetland Scientists Conference, Sacramento California, June 2007

~South Yuba River Citizens League, River Bioassessment Volunteer – assist in conducting biomonitoring using the California Stream Bioassessment Procedure for the Yuba River, Nevada City, CA

~Friends of Deer Creek, Benthic Macroinvertebrate Identification Volunteer, Nevada City, CA

RESEARCH EXPERIENCE

University of California at Los Angeles

2001

Masters Research Report

Conducted statistical analyses on previously collected data on stream benthic macroinvertebrates (BMI), water quality, and habitat parameters collected above and below wastewater treatment plant effluent in the Calleguas Creek watershed, Ventura County, CA. The goal of the research was to determine which, if any, constituents and/or habitat parameters are associated with observed BMI indices measured in surveys conducted by the California Department of Fish and Game in 1998.

California State University at Fresno

Hensley Lake

1994

Madera County, CA

Wildlife Management - As a part of this course I participated in a group research project, in conjunction with U.S. Army Corps of Engineers, involving wood duck (*Aix sponsa*) nesting success in artificial nest boxes. The study entailed repairing existing nest boxes, determining usage and hatching success, and determining the degree of intraspecific nest parasitism.

University of California at Los Angeles, Field Biology Quarter

1992

Granite Mountains Reserve

Mojave Desert, CA

Physiological Ecology of Desert Organisms - As part of this course I conducted a dietary study on cactus mice (*Peromyscus eremicus*) to determine what physiological or behavioral traits they had adapted for survival in the desert environment.

Sequoia National Park, CA

Plant Adaptations - As part of this course I conducted a study on white fir trees (*Abies concolor*) to determine if leaf orientation produced differences in water stress within branches of the same tree.

PERMITS

California Department of Fish and Game Scientific Collecting Permit (#SC-006822)

-Permitted for Capture and Release of invertebrates, amphibians, reptiles, fish, and mammals for identification purposes.

USFWS Recovery Permit for Vernal Pool Branchiopods (# TE114928-0)

PROFESSIONAL AFFILIATIONS

Member of the Wildlife Society

Member of the Ecological Society of America

Member of the California Native Grassland Association

Member of the Society of Wetland Scientists

AWARDS

~September 1999, *Certificate of Merit*, for superior performance on the spotted owl demographic study during the 1999 field season. United States Department of Agriculture, Forest Service PSW, Forestry Science Laboratory.

~March 2000, *Department Fellowship*, Department of Environmental Health Science, School of Public Health, UCLA

~May 2000, *Department Fellowship*, Department of Environmental Health Science, School of Public Health, UCLA.

~June 2001, *Delta Omega*, Nominated and elected by the Department of Environmental Health Science in the UCLA School of Public Health for membership in this honorary national public health society.

Stephen A. Sykes

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ssykes@sykesbio.com

Stephen Sykes is the sole proprietor of Sykes Biological Consulting, specializing in California reptiles and amphibians. Mr. Sykes has been an avid herpetologist all his life, and has been closely studying California's herps for over 7 years. As a graduate student at the University of California in Santa Barbara, Mr. Sykes conducted a 3 year drift fence project studying the movements of California tiger salamanders. Since then, Mr. Sykes has overseen and coordinated over nine drift fence projects along California's central coast and in the Central Valley. In addition, he has also conducted numerous habitat assessments for California tiger salamanders and other special-status reptiles and amphibians.

EDUCATION

University of California, Santa Barbara. Department of Ecology, Evolution, and Marine Biology
Advisor: Dr. Samuel Sweet. 2000-2005. M.A. in prep.

Rutgers University, Cook College, New Brunswick, New Jersey
Bachelor of Science, May 1998
Major: Natural Resource Management, Emphasis in Conservation and Applied Ecology
Minor: Environmental and Business Economics

ADDITIONAL QUALIFICATIONS

10(a)(1)(a) Recovery Permit

- Hold Federal Fish and Wildlife Permit (TE-104080-0) to capture, handle, and release adult, juvenile, and larval California tiger salamanders (*Ambystoma californiense*), and conduct aquatic and drift fence surveys for this species.

Attended California Red-legged Frog Workshop, May 9-10, 2007

"Biology and Management of the California Red-legged Frog", Los Vaqueros Watershed

- Workshop discussed identification, life history, habitat requirements, and management of California Red-legged Frogs
- Handled 26 individual California Red-legged Frogs

EXPERIENCE

ECORP Consulting, Inc. Rocklin, California

January–May 2007 (Subcontract Work)

- Designed and conducted California tiger salamander presence/absence drift fence study at a site in Wallace, Calaveras County, California.

Althouse and Meade, Inc., Paso Robles, California

November–December 2006 (Subcontract Work)

- Conducted habitat assessment for a Union Pacific bridge site in Tulare County, California.
- Monitored activities of a construction crew at a Union Pacific bridge site in Tulare County, California.

Ecological Outreach Services, Grass Valley, California

June 2006 (Subcontract Work)

- Conducted habitat evaluation for special status reptile and amphibian species at a site in Nevada County, California.

Storrer Environmental Services., Santa Barbara, California

Periodic work from June 2001-July 2006 (Subcontract Work)

- Monitored activities of a construction crew during construction of a fiber-optic line along Highway 101.
- Monitored construction activities for desiltation of Orcutt Creek in Santa Barbara County.
- Monitored construction activities for wetland creation at Laguna Sanitation District in SB County.
- Authorized to handle California red-legged frogs as part of the Biological Opinion for these projects.

Bumgardner Biological Consulting, Gold River, California

November 2004 to May 2006 (Subcontract Work)

- Conducted aquatic sampling for California tiger salamander larvae in San Luis Obispo County under contract from the Ventura Fish and Wildlife Office.
- Conducted surveys for San Joaquin kit fox dens at a project site in Merced County, California.

University of California, Santa Barbara

Graduate Student, September 2000 to December 2004

- Conducted research project examining the terrestrial and reproductive ecology of California tiger salamanders (*Ambystoma californiense*) at the Santa Maria Airport under the direction of Dr. Samuel Sweet.
- Captured, handled, and released adult, juvenile, and larval California tiger salamanders in Santa Barbara County, attached radio-transmitters and thread-trailers, examined burrows with a fiber-optic scope, and conducted drift fence studies.
- Captured nearly 200 adult and juvenile salamanders through research activities conducted at the Santa Maria Airport between January 1, 2002 and May 4, 2004.
- Conducted aquatic sampling for tiger salamander larvae on 20 occasions at various locations in Santa Barbara County, and handled hundreds of tiger salamander larvae during the course of these surveys.

VJS Biological Consulting, Inc., Santa Barbara, California

CTS Biologist, November 2004 to January 2005 (Subcontract Work)

- Assisted with installation, monitoring and maintenance of drift fence projects at the Rancho Maria Golf Course near Santa Maria, and Los Alamos Ranch

Lawrence Hunt Biological Consulting, Inc., Santa Barbara, California

January 2004 to April 2005 (Subcontract Work)

- Supervised installation, monitoring, and maintenance of drift fence projects at Mahoney Ranch and Patterson Ranch near Santa Maria, California

July 2001 to January 2002 (Subcontract Work)

- Monitored activities of a construction crew through installation of a fiber-optic line at Vandenberg AFB.
- Monitored construction area for protected species, including silvery legless lizard (*Anniella pulchra pulchra*), coast horned lizard (*Phrynosoma coronatum*), La Purisima manzanita, and shagbark manzanita.

Sandpiper Development Company, Newport, California

February 2003 (Subcontract Work)

- Conducted biological assessment of impacts for a proposed development at site in Orcutt, California with special emphasis on California tiger salamanders.

Bradley Land Company, Santa Maria, California

December 2002-March 2003 (Subcontract Work)

- Designed and conducted California tiger salamander presence/absence drift fence study for a proposed development project.

Herpetological Associates, Inc., Plant and Wildlife Consultants, Jackson, New Jersey
Staff Herpetologist, May 1998 to August 2000

- Assisted with the study of endangered plants and wildlife, specializing in reptiles and amphibians, under the direction of Robert T. Zappalorti.
- Assisted with presence/absence studies, radio-tracking, mark-and-recapture, and habitat utilization studies for developers and nonprofit organizations, in New Jersey, Pennsylvania, and New York (including The Nature Conservancy, Natural Lands Trust, New Jersey DEP Division of Fish, Game, and Wildlife, and Wildlands Conservancy).
- Wrote proposals, presentations, and scientific reports for clients.

Cook College, Rutgers University, New Brunswick, New Jersey
George H. Cook Honors Research Program, May 1997 to May 1998

- Planned, implemented, and conducted research project dealing with frugivory preferences of the eastern box turtle.

PRESENTATIONS

Sykes, Stephen A. "The California Tiger Salamander in Santa Barbara County" Presentation for The Wildlife Society's Workshop: *California Tiger Salamander: Ecology and Survey Techniques*. October 4, 2003.

Sykes, Stephen A. "California Tiger Salamander" Presentation for The Wildlife Society's Workshop: *Identification and Ecology of Sensitive Amphibians and Reptiles of Southern California*. May 9, 2003.

Sykes, Stephen A. "California Tiger Salamander Drift Fence Studies at Three Ponds in Santa Maria" Presentation for the California Tiger Salamander Recovery Team. January 22, 2003.

SELECTED AUTHORED AND COAUTHORED DOCUMENTS

Sykes, Stephen A. 2006. Habitat assessment for special-status species at the Marino Property, Smartville, Nevada County, California. Unpublished report submitted to Ecological Outreach Services. 5 pp.

Sykes, Stephen A. 2006. Habitat assessment for California tiger salamanders (*Ambystoma californiense*) at the Union Pacific Bridge Repair Site, Mile Post 235.01, Fresno Subdivision, Tulare County, California. Unpublished report submitted to Althouse and Meade, Inc. 12 pp.

Sykes, Stephen A. 2006. Results of California Tiger Salamander Research conducted from 2001-2004 at Two Ponds at the Santa Maria Airport, Santa Maria California. Unpublished report submitted to U.S. Fish and Wildlife Service. 33 pp.

Sykes, Stephen A. 2003. Biological Assessment of Impacts for Proposed Construction Project on SDC-CT, LLC Property in Orcutt, California. Unpublished report submitted to Sandpiper Development Company. 16 pp.

Sykes, Stephen A. 2003. Results of Drift Fence Study Conducted December 2002 - March 2003 on Bradley Land Company Property, Santa Barbara County, California. Unpublished report submitted to Bradley Land Company. 29 pp.

Sykes, Stephen A. 1998. Frugivory preferences of the eastern box turtle (*Terrapene carolina carolina*) in New Jersey. George H. Cook Honors Program. Cook College, Rutgers University, New Brunswick, N. J. 116 pp.

Zappalorti, R. T., P. J. Drake, S. A. Sykes, and A. Pasquini. 1998. The ecology and nesting behavior of the bog turtle (*Clemmys muhlenbergii*) at two sites in Chester County, Pennsylvania. Unpublished report submitted to The Nature Conservancy.

Zappalorti, R. T., J. O'Herron, S. A. Sykes. 1998. Habitat evaluations and endangered frog surveys along the proposed I-276 and I-95 interchange project study corridor, in Bucks County, Pennsylvania. Unpublished report submitted to the Pennsylvania Fish and Boat Commission.

Zappalorti, R. T. and S. A. Sykes. 1999. An evaluation of the Sahara Sand Mining Property known as Block 7001, Lots 5 and 7, Block 7101, Lot 3, as habitat for endangered raptors and snakes in Monroe Township, Gloucester County, New Jersey. Unpublished report submitted to The Pinelands Preservation Alliance, Pemberton, New Jersey.

Zappalorti, R. T. and S. A. Sykes. 1999. A habitat evaluation and endangered and threatened wildlife species survey of five wetlands proposed to be filled for the expansion of the G.R.O.W.S. Landfill Project, Falls Township, Bucks County, Pennsylvania. Unpublished Report submitted to Waste Management, Morrisville, Pennsylvania.

Zappalorti, R. T. and S. A. Sykes. 1998. A habitat evaluation and intensive survey for the wood turtle (*Clemmys insculpta*) in wetlands associated with a new parking area at the Land of Make Believe, in Hope Township, Warren County, New Jersey. Unpublished report submitted to the NJDEP, Trenton, New Jersey.

Zappalorti, R. T. and S. A. Sykes. 1998. An evaluation of the Wishnick Property known as Block 75.01, Lots 46.02, 47, 48, 49 and 54, as habitat for pine snakes and corn snakes in Manchester Township, Ocean County, New Jersey. Unpublished report submitted to the Pinelands Preservation Alliance.

McCormick Biological, Inc.

❖Biological Sciences - Inventory, Permitting, and Planning

Felicia Cruz

Biologist

EXPERIENCE

4/06-Present

McCormick Biological, Inc. (Bakersfield, California)

Provide biological consulting services to a variety of clients including general biological resource field surveys, biological resource assessment, document preparation, and monitoring; specializing in rare, threatened, and endangered species of central California; familiar with FESA, CESA, maintain contact with clients, sub-consultants, and other professional biologists.

EDUCATION/CONTINUING EDUCATION

- California State University, Bakersfield
Bachelor of Science - Biology (2007)
- Blunt-nosed Leopard Lizard Workshop, Sponsored by The Wildlife Society, San Joaquin Valley Chapter (May 17-18, 2007)

RELEVANT PROJECT EXPERIENCE

Blunt-nosed Leopard Lizard (*Gambelia sila*) Species-specific Survey Experience (April 2006 - Present)

Ms. Cruz has completed over 150 survey-days evaluating project sites for blunt-nosed leopard lizard while following the applicable CDFG survey methodology for the species. She has demonstrated the ability to distinguish between all lizard species that may be encountered during these surveys. Her experience qualifies her as a "Level II" researcher as per the CDFG May 2004 Draft Approved Survey Methodology for the Blunt-nosed Leopard Lizard.

McCormick Biological, Inc.

❖Biological Sciences - Inventory, Permitting, and Planning

Paul Vanherweg

Biological Technician

EXPERIENCE

5/07-9/07

McCormick Biological, Inc. (Bakersfield, California)

Provided biological consulting support for McCormick Biological, Inc. projects under the supervision of staff. Survey responsibilities included general biological resource inventory, San Joaquin kit fox den monitoring, and blunt-nosed leopard lizard surveys.

1999-2005

William Vanherweg, Consulting Biologist (Bakersfield, California)

As a biological technician, Mr. Vanherweg assisted with general biological surveys, small mammal trapping, blunt-nosed leopard lizard surveys, San Joaquin kit fox surveying (including spotlighting), and den monitoring on a part-time seasonal basis.

EDUCATION

- California State University, Fresno
Bachelor of Science - Agricultural Business (2006)

RELEVANT PROJECT EXPERIENCE

**Blunt-nosed Leopard Lizard (*Gambelia sila*) Species-specific Survey Experience
(April 1999 - September 2007)**

Mr. Vanherweg has completed over 100 survey-days conducting blunt-nosed leopard lizard surveys following the applicable CDFG survey methodology for the species. He has demonstrated the ability to identify all lizard species that may be encountered during these surveys. As of September 2007, he is classified as a "Level II" researcher based on the CDFG May 2004 Draft Approved Survey Methodology for the Blunt-nosed Leopard Lizard.

McCormick Biological, Inc.

❖ Biological Sciences – Inventory, Permitting, and Planning

Karl A. Weiss

Biological Technician

EXPERIENCE

5/07-Present

McCormick Biological, Inc. (Bakersfield, California)

Provide biological consulting support for McCormick Biological, Inc. projects under the supervision of staff. Survey responsibilities include general biological resource inventory and blunt-nosed leopard lizard surveys.

EDUCATION

- California State University, Bakersfield
Bachelor of Science – Biology (expected January 2008)

RELEVANT PROJECT EXPERIENCE

**Blunt-nosed Leopard Lizard (*Gambelia sila*) Species-specific Survey Experience
(May 2007 – September 2007)**

Mr. Weiss has completed over 50 survey-days conducting blunt-nosed leopard lizard surveys following the applicable CDFG survey methodology for the species. He has demonstrated the ability to identify all lizard species that may be encountered during these surveys. As of September 2007, he is classified as a “Level II” researcher based on the CDFG May 2004 Draft Approved Survey Methodology for the Blunt-nosed Leopard Lizard.