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**SPRING 1994 WILDLIFE SURVEY  
NORTON AIR FORCE BASE, CALIFORNIA**

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Prepared for  
MARTIN MARIETTA ENERGY SYSTEMS, INC.  
ENVIRONMENTAL RESTORATION AND WASTE  
MANAGEMENT PROGRAM  
HAZARDOUS WASTE REMEDIAL ACTIONS PROGRAM  
OAK RIDGE, TENNESSEE 37831  
and  
UNITED STATES AIR FORCE HEADQUARTERS  
AIR FORCE BASE CONVERSION AGENCY  
NORTON OPERATING LOCATION  
SAN BERNARDINO, CALIFORNIA 92409

by the  
OAK RIDGE NATIONAL LABORATORY  
Oak Ridge, Tennessee 37831  
managed by  
MARTIN MARIETTA ENERGY SYSTEMS, INC.  
for the  
DEPARTMENT OF ENERGY  
under contract No. DE-AC05-84OR21400

MANAGED BY  
MARTIN MARIETTA ENERGY SYSTEMS, INC.  
FOR THE UNITED STATES  
DEPARTMENT OF ENERGY

**SPRING 1994 WILDLIFE SURVEY  
NORTON AIR FORCE BASE, CALIFORNIA**

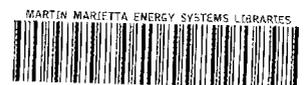
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August 17, 1994

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## CONTENTS

ACRONYMS .....	iii
1. INTRODUCTION .....	1
2. PURPOSE .....	1
3. SCOPE .....	1
4. METHODS .....	4
5. RESULTS .....	4
5.1 MAMMALS .....	4
5.2 BIRDS .....	5
5.2.1 Burrowing Owl Biology and Activity .....	5
5.2.1.1 Burrowing Owl Biology .....	8
5.2.1.2 Burrowing Owl Activity .....	8
5.3 REPTILES .....	10
6. CONCLUSIONS .....	12
7. REFERENCES .....	13
LIST OF FIGURES	
1. Regional map showing location of Norton Air Force Base .....	2
2. General map of Norton Air Force Base, California .....	3
3. Map of Burrowing Owl Survey, Norton Air Force Base, California .....	9
4. Map of Reptile Sightings, Norton Air Force Base, California .....	11
LIST OF TABLES	
1. Mammals observed at Norton Air Force Base, San Bernardino, California .....	5
2. Birds observed at Norton Air Force Base, San Bernardino, California .....	6
3. Reptiles and amphibians observed at Norton Air Force Base, San Bernardino, California .....	10
4. Potential ecological receptors at Norton Air Force Base .....	12
APPENDIX. RECONNAISSANCE BIRD SURVEY .....	A-1

## ACRONYMS

AFB	Air Force Base
EPA	Environmental Protection Agency
ERA	Ecological Risk Assessment
IRP	Installation Restoration Program
ORNL	Oak Ridge National Laboratory
SAW	Santa Ana River Wash

## 1. INTRODUCTION

The spring 1994 wildlife surveys were completed at Norton Air Force Base (AFB), California, by the U.S. Environmental Protection Agency (EPA) regional biologist and the Oak Ridge National Laboratory (ORNL) biologist. Bird and reptile surveys were conducted June 8–10, 1994, at Norton AFB (Fig. 1). Opportunistic sightings of mammals and an amphibian were also recorded. A brief reconnaissance bird survey was also completed by the ORNL biologist on April 13 and 14, 1994, and results of that survey are included in the Appendix.

The spring 1994 survey is the first of four surveys to be completed as part of the basewide Ecological Risk Assessment (ERA). Subsequent surveys in the fall and winter of 1994 and the spring of 1995 will focus on the mapping of habitats present in the areas of concern, a botanical survey, and seasonal wildlife surveys.

## 2. PURPOSE

The objective of the spring 1994 wildlife surveys was to gather data that will help in the completion of the basewide ERA. Data gathering included the identification of potential ecological receptors and the initiation of mapping habitats and understanding the ecological food chain present on or near the Installation Restoration Program (IRP) sites of concern.

## 3. SCOPE

The focus of the spring 1994 surveys for Norton AFB was in the area of Landfill 2 at the eastern end of the base and in the southern area of the base, adjacent to the Santa Ana River Wash (SAW). These areas were the focus because most endangered and threatened species habitats on the base exist there; these areas include sites 1, 2, and 5, which were identified as IRP sites with sufficient soil contamination to warrant completing an ERA (CDM 1993, CDM 1994a, and 1994b) (Fig. 2). Data was to be gathered in the following areas:

- burrowing owl distribution and use of the base;
- reptile observation on or near Landfill 2 (site 2) and in the southern area of the base, adjacent to and in the SAW (Fig. 2);

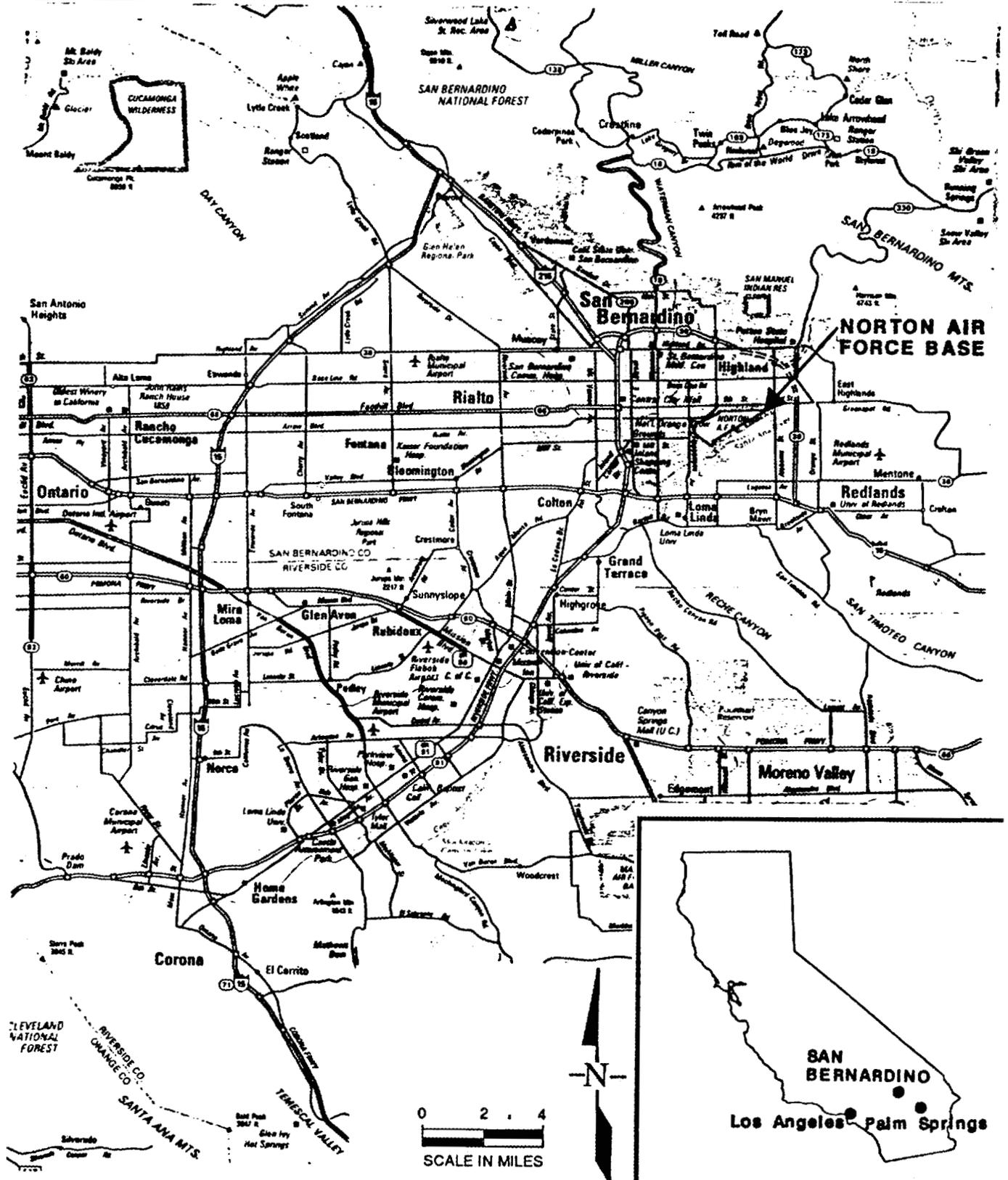


Fig. 1. Regional map showing location of Norton Air Force Base.

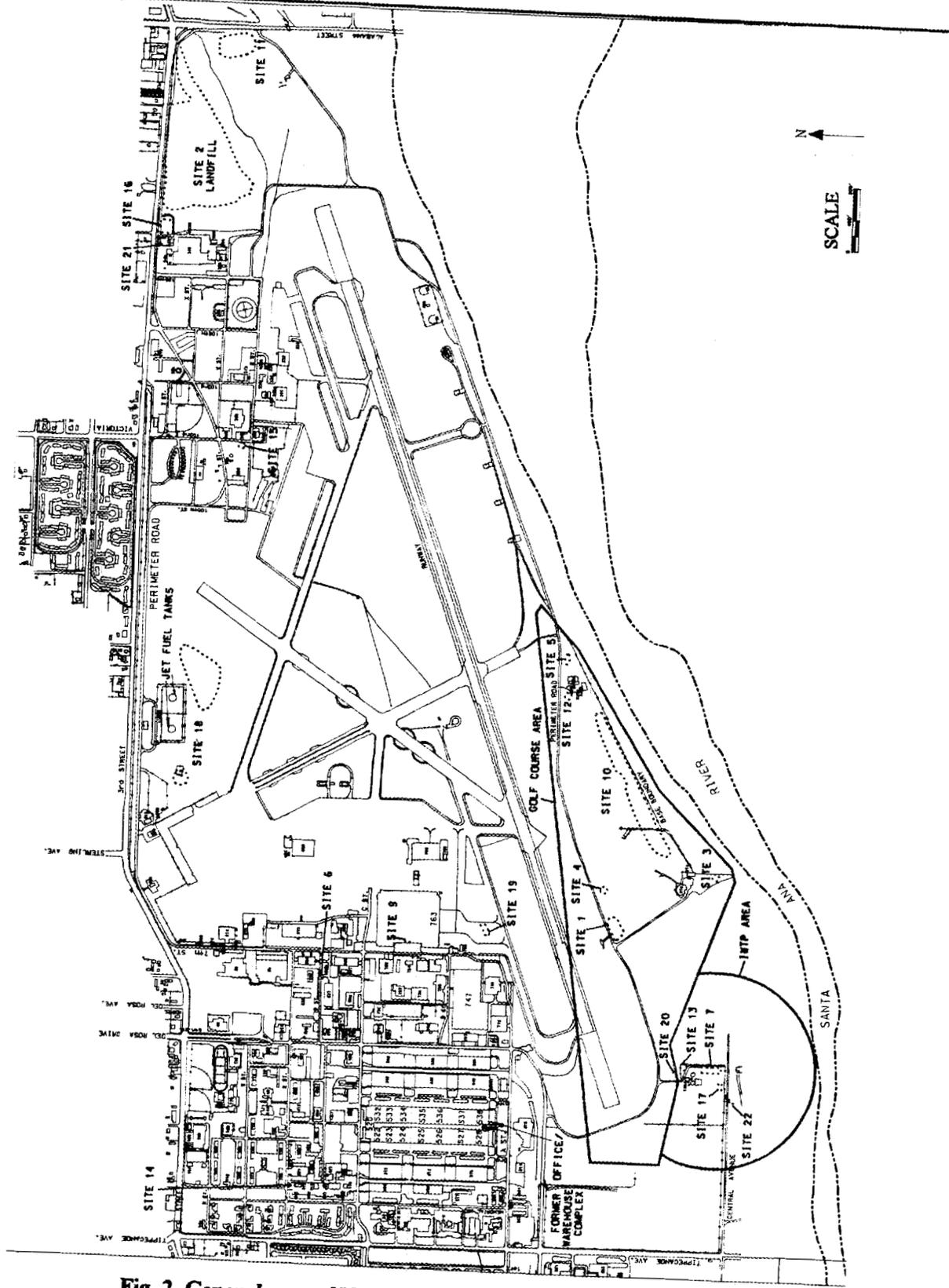


Fig. 2. General map of Norton Air Force Base, California.

- bird observation on or near Landfill 2 (site 2), in the southern area of the base, adjacent to and in the SAW, and in the golf course area (Fig. 2);
- mapping of habitats present on Landfill 2 (site 2) (Fig. 2).

Surveys were to be concentrated on birds and reptiles, since data on these species in the vicinity of the IRP sites seemed to be lacking in the previous field investigation report (Fish and Wildlife Service 1990).

#### 4. METHODS

The methods used for bird and reptile surveys included driving and walking transects of the Landfill 2 site, the base area adjacent to the SAW, the perimeter road, runway aprons, administration roads, and the golf course area. The owl and reptile survey areas were determined with a bias toward optimal burrowing owl and reptile habitat, respectively. All transects were run a minimum of three times and up to a maximum of six times. Areas of owl activity and dense reptile activity were recorded using the Global Positioning System.<sup>1</sup> The sightings were then transposed to geographical points. From this information, maps for the burrowing owl survey and reptile sightings were produced. A one-time transect was also run in the SAW adjacent the southern boundary of the base.

#### 5. RESULTS

##### 5.1 MAMMALS

Mammals observed during the June 8–10, 1994, survey period are listed in Table 1. In addition, signs of Botta's pocket gopher (*Thomomys bottae*) were seen at Landfill 2, on the golf course, and at various places throughout the base. In 1990, the Fish and Wildlife Service also documented, as a result of 100 trap nights, the presence of a number of small mammals, including Little Merriam's kangaroo rat (*Dipodomys merriami parvus*), deer mouse (*Peromyscus maniculatus*), cactus mouse (*Peromyscus eremicus*), house mouse (*Mus musculus*), and western harvest mouse (*Reithrodontomys megalotis*) in various habitats at the base.

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<sup>1</sup>The Global Positioning System (GPS) is an all-weather, space-based navigation system developed by the Department of Defense to satisfy the requirements for the military forces to accurately determine their position, velocity, and time in a common reference system, anywhere on or near the Earth on a continuous basis. Civil use of the system, since its development, include high precision surveying and mapping tasks. GPS is ideally suited for these applications because of its high accuracy and the short observation time required for a position fix.

**Table 1. Mammals observed at Norton Air Force Base, San Bernardino, California**

Common name (federal protected status)	Scientific name	Site <sup>a</sup>
California ground squirrel	<i>Citellus beecheyi</i>	LF, BW, GC, GCP, IWTPA, S5
Black-tailed jackrabbit	<i>Lepus californicus</i>	LF, BW, S5
Desert cottontail	<i>Sylvilagus audubonii</i>	LF, BW, S5, IWTPA, SAW
Striped skunk	<i>Mephitis mephitis</i>	LF, BW, GC
Coyote	<i>Canus latrans</i>	LF, BW, S5
Botta's pocket gopher (sign)	<i>Thomomys bottae</i>	LF, GC, BW

<sup>a</sup>BW—Basewide: occurs in various areas throughout the base  
 GCP—Golf course ponds  
 GC—Golf course area  
 IWTPA—Industrial Waste Treatment Plant area  
 LF—Landfill 2, IRP site 2  
 S5—IRP site 5 area  
 SAW—Santa Ana River Wash

## 5.2 BIRDS

A total of 48 species of birds were identified during the June 8–10 survey as well as during the April 13–14, 1994, reconnaissance and are listed in Table 2. This compares to 72 species observed by the Fish and Wildlife Service on the base and in the SAW during May and June 1990. Species observed during the 1994 surveys that were not seen in 1990 were green-backed heron (*Butorides striatus*), ring-billed gull (*Larus delawarensis*), pied-billed grebe (*Podilymbus podiceps*), lesser nighthawk (*Chordeiles acutipennis*), lark sparrow (*Chondestes grammacus*), northern cardinal (*Cardinalis cardinalis*), Gambel's quail (*Callipepla gambelli*), Cooper's hawk (*Accipiter cooperii*), vermillian flycatcher (*Pyrocephalus rubinus*), cactus wren (*Campylorhynchus brunneicapillus*), and great egret (*Casmerodius albus*). Burrowing owls (*Athene cunicularia*) were observed in various areas of the base, as described in Sect. 5.2.1.2 below, but were not observed at all during the 1990 Fish and Wildlife surveys. Three more wildlife surveys, including bird identification, will be completed in the fall and winter of 1994 and the spring of 1995.

### 5.2.1 Burrowing Owl Biology and Activity

The burrowing owl is federally listed as "sensitive" and state listed as "special concern." The sensitive category designates a species of concern for which more scientific information is needed to determine its

Table 2. Birds observed at Norton Air Force Base, San Bernardino, California

Common name (federal protected status)	Scientific name	Site <sup>a</sup>
Pied-billed grebe	<i>Podilymbus podiceps</i>	GCP
Green-backed heron	<i>Butorides striatus</i>	GCP
Great egret	<i>Casmerodius albus</i>	GCP
Mallard	<i>Anas platyrhynchos</i>	GCP
American coot	<i>Fulica americana</i>	GCP
Killdeer	<i>Charadrius vociferous</i>	BW, LF, S5, SAW
Ring-billed gull	<i>Larus delawarensis</i>	GCP
Cooper's hawk	<i>Accipiter cooperii</i>	LF
Red-tailed hawk	<i>Buteo jamaicensis</i>	LF, S5
Swainson's hawk [C (3C)] <sup>b</sup>	<i>Buteo swainsoni</i>	SAW
American kestrel	<i>Falco sparverious</i>	BW, LF, S5, GC, IWTPA
Prairie falcon (sensitive) <sup>c</sup>	<i>Falco mexicanus</i>	LF, S5
Gamble's quail	<i>Callipepla gambelli</i>	S5, SAW
Rock dove	<i>Columba livia</i>	BW, LF
Mourning dove	<i>Zenaida macroura</i>	BW, LF, S5, GC, IWTPA, SAW
Greater roadrunner	<i>Geococcyx californianus</i>	LF
Great horned owl	<i>Bubo virginianus</i>	GC, IWTPA
Burrowing owl (sensitive) <sup>c</sup>	<i>Athene cunicularia</i>	BW, LF
Common nighthawk	<i>Chordeiles minor</i>	LF
Lesser nighthawk	<i>Chordeiles acutipennis</i>	SAW
Black-chinned hummingbird	<i>Archilochus alexandri</i>	SAW
Anna's hummingbird	<i>Calypte anna</i>	BW, S5
Northern flicker	<i>Colaptes auratus</i>	LF, IWTPA
Western kingbird	<i>Tyrannus verticalis</i>	LF, GC, IWTPA
Black phoebe	<i>Sayornis nigricans</i>	LF, SAW
Vermillian flycatcher	<i>Pyrocephalus rubinus</i>	GC
Western flycatcher	<i>Epidonax difficilis</i>	GC

Table 2 (Continued)

Common name (federal protected status)	Scientific name	Site <sup>a</sup>
Horned lark	<i>Eremophila alpestris</i>	BW, LF, S5
Northern rough-winged swallow	<i>Stelgidopteryx serripennis</i>	S5, SAW
Barn swallow	<i>Hirundo rustica</i>	GCP
Scrub jay	<i>Aphelocoma coerulescens</i>	BW
American crow	<i>Corvus brachyrhynchos</i>	BW, LF, GC, GCP, IWTPA
Common raven	<i>Corvus corax</i>	BW, LF, S5
Cactus wren	<i>Campylorhynchus brunneicappillus</i>	BW
American robin	<i>Turdus migratorius</i>	GC
Loggerhead shrike	<i>Lanius ludovicianus</i>	BW, LF, S5, SAW
Northern mockingbird	<i>Mimus polyglottos</i>	S5, GC, IWTPA, SAW
European starling	<i>Sturnus vulgaris</i>	BW, LF, GC, IWTPA
Northern cardinal	<i>Cardinalis cardinalis</i>	GC
Song sparrow	<i>Melospiza melodia</i>	LF
Lark sparrow	<i>Chondestes grammacus</i>	S5
Western meadowlark	<i>Sturnella neglecta</i>	BW, LF, S5, GC, IWTPA
Red-winged blackbird	<i>Agelaius phoeniceus</i>	GC
Brewer's blackbird	<i>Euphagus cyanocephalus</i>	GC, GCP, IWTPA
Brown-headed cowbird	<i>Molothrus ater</i>	GC, SAW
Western tanager	<i>Piranga ludoviciana</i>	GC, IWTPA
House sparrow	<i>Passer domesticus</i>	BW
House finch	<i>Carpodacus mexicanus</i>	BW, S5, GC, IWTPA, SAW

<sup>a</sup>BW—Basewide: occurs in various areas throughout the base

GCP—Golf course ponds

GC—Golf course area

IWTPA—Industrial Waste Treatment Plant area

LF—Landfill 2, IRP site 2

S5—IRP site 5 area

SAW—Santa Ana River Wash

<sup>b</sup>Candidate category 3C: Taxa for which the Fish and Wildlife Service has sufficient biological information to indicate that the taxa is apparently more common than previously thought, and thus is not currently under consideration for listing.

<sup>c</sup>Sensitive: Species of concern, for which more scientific information is needed to determine its biological status.

federal biological status. A state special concern species is one that has the potential to become threatened or endangered within California. Because of regulatory concern for the burrowing owl and the knowledge that the owl breeds on Norton Air Force Base, an inventory of the base was completed.

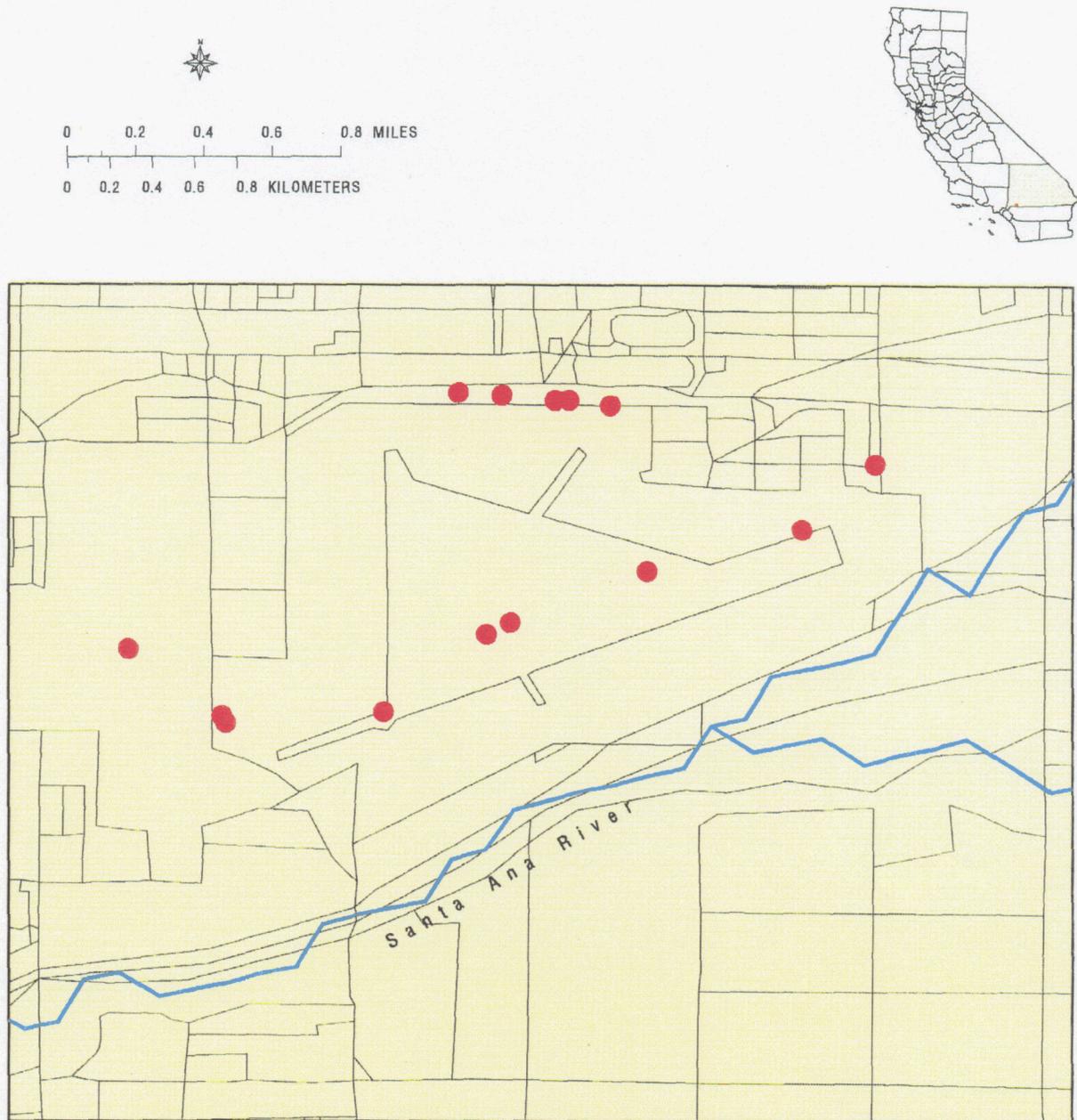
#### **5.2.1.1 Burrowing Owl Biology**

The burrowing owl (*Athene cunicularia*) is the only small owl that habitually lives on the ground in open places; it is found throughout the West, in Florida, and in dry regions of South and Central America. It may choose abandoned ground squirrel or prairie dog burrows for nesting, or infrequently it will use abandoned dens of larger mammals such as badger, woodchuck, and fox, enlarging and modifying these nest burrows by digging with its feet (Bent 1938; Terres 1991; Udvardy 1977). When not disturbed, it will use the same burrow from year to year. Its diet consists primarily of insects (grasshoppers, locusts, beetles, crickets, caterpillars, dragonflies) and secondarily of mammals (mice, rats, ground squirrels, young prairie dogs and rabbits, pocket gophers, shrews, and bats). Miscellaneous food items include lizards, snakes, frogs, toads, salamanders, fish, scorpions, centipedes, myriapods, crayfish, and small birds (Bent 1938). Normally diurnal, the male hunts both day and night during the nesting season (Udvardy 1977). Whenever food is plentiful and the ground suitable, this owl is likely to form small colonies, approximately ten pairs being found in a stretch of 2 to 3 acres (Bent 1938). Territorial size is estimated to be between 0.1 and 4.0 acres for several pairs of owls (Thomsen 1971). Predators are rattlesnakes and feral cats, which destroy eggs and young (Terres 1991). Average weight is 5.6 ounces for males and 5.3 ounces for females (Earhart and Johnson 1970).

#### **5.2.1.2 Burrowing Owl Activity**

Burrowing owl activity was documented throughout the base property. Figure 3 indicates the locations where owl activity was documented during this survey. A total of 34 individuals were observed on the base. The survey, though representative of the owl site population, is not all-inclusive and may therefore underestimate the base's actual burrowing owl population.

Within the loading dock area of the abandoned warehouse building are a total of four nests (Fig. 2). The owls use the drain pipe outlets, which empty into the alley in the middle of this building, for nest sites. A total of three adults were observed on June 8, 1994, in the area of these nests.



**Fig. 3.** Map of burrowing owl survey, Norton Air Force Base, California. The red dots represent areas where one or more burrowing owls were observed.

Other nesting groups were identified in the following places:

- in front of the Lockheed Building (west of the airfield);
- at the northern base boundary along the perimeter road, east of the jet fuel tanks (Fig. 2);
- at the northern base boundary along the perimeter road, within a storm drain near the jet fuel tanks (Fig. 2); and
- on the west end of Landfill 2 (site 2) (Fig. 2).

Each of these nesting groups included two to five young. In addition, adult owls were observed all along the perimeter road of the northern portion of the base (Fig. 3). It should be noted that no owl activity was observed on A or C Streets, as was seen in April of 1994.

### 5.3 REPTILES

The areas of greatest reptile density and diversity are shown on Fig. 4. The reptiles observed during the survey are listed in Table 3 Part A. Landfill 2 and the perimeter road were dominated by western fence

**Table 3. Reptiles and amphibians observed at Norton Air Force Base, San Bernardino, California**

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Common name (federal protected status)	Scientific name	Site <sup>a</sup>
<b>A. Reptiles</b>		
Western fence lizard	<i>Sceloporus occidentalis</i>	LF, S5, SAW
California side-blotched lizard	<i>Uta stansburiana</i>	LF, S5, SAW
Western whiptail	<i>Cnemidophorus tigris</i>	SAW
Gilbert skink	<i>Eumeces gilberti</i>	SAW
Orange-throated whiptail (possible) [C(2) <sup>b</sup> ]	<i>Cnemidophorus hyperythrus</i>	SAW
<b>B. Amphibians</b>		
Bullfrog	<i>Rana catesbeiana</i>	GCP

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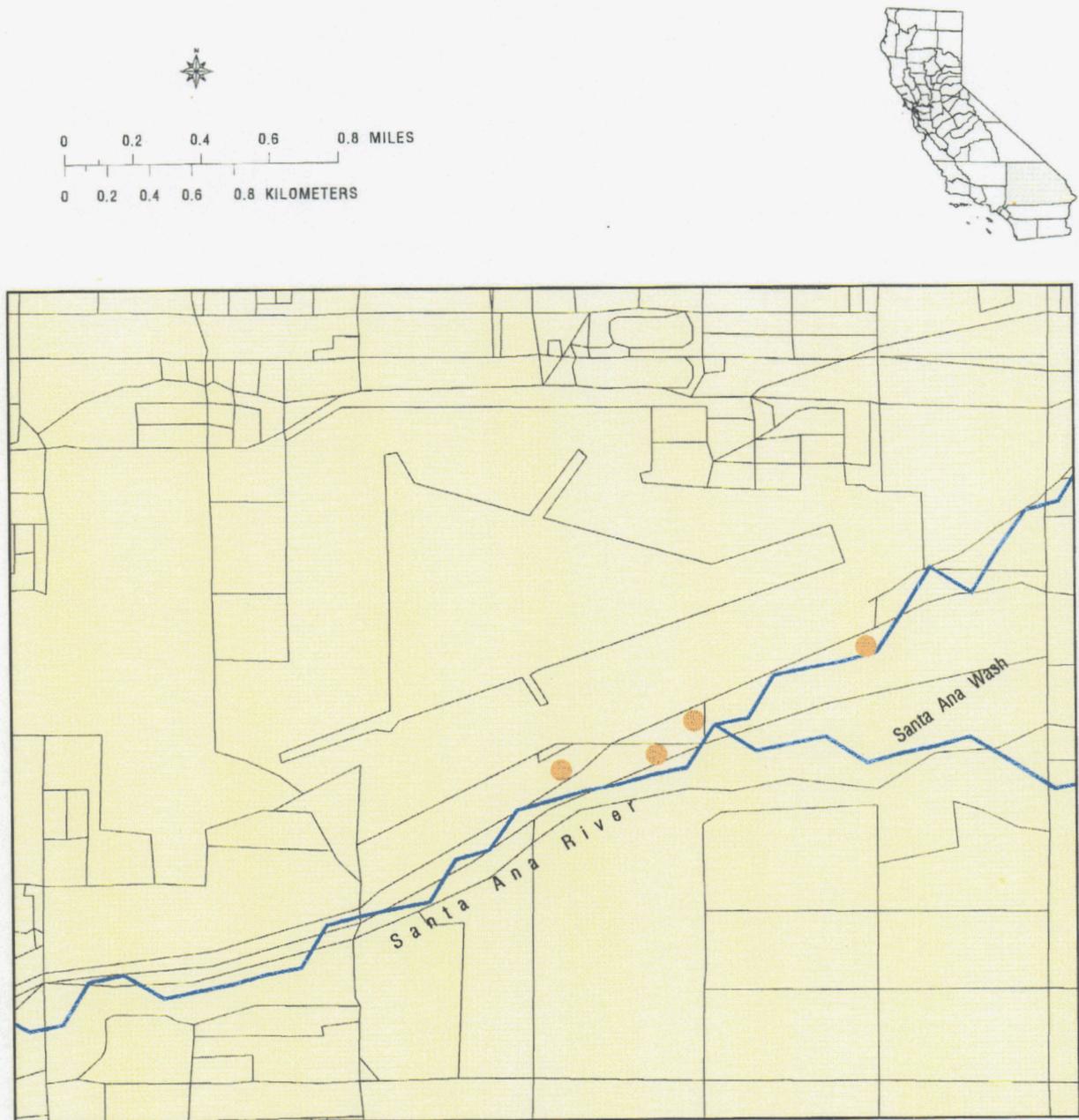
<sup>a</sup>GCP—Golf course ponds

LF—Landfill 2, IRP site 2

S5—IRP site 5 area

SAW—Santa Ana River Wash

<sup>b</sup>Candidate category 2: Taxa which existing information indicates may warrant listing, but for which substantial biological information to support a proposed rule is lacking.



**Fig. 4. Map of reptile sightings, Norton Air Force Base, California. The orange dots represent areas where one or more reptiles were observed.**

(*Sceloporus occidentalis*) and California side-blotched (*Uta stansburiana*) lizards. Numerous fence lizards and side-blotched lizards were identified within the SAW area adjacent the base. Other species noted in the wash were western whiptail (*Cnemidophorus tigris*), Gilbert skink (*Eumeces gilberti*), and a possible orange-throated whiptail (*Cnemidophorus hyperythrus*).

## 6. CONCLUSIONS

As a result of the spring 1994 survey potential ecological receptors (listed below) were identified as shown in Table 4. These animals are potential ecological receptors because they are key components of the Norton Air Force Base ecological food chain, using habitats on or near IRP sites 1, 2, and 5 (sites warranting completing an ERA), and there is sufficient toxicological data available for each species or an acceptable surrogate species. The list of receptors may change after subsequent wildlife surveys (fall and winter of 1994 and spring of 1995) are completed. As a result of all of these surveys, food webs will be constructed and detailed in the ERA.

**Table 4. Potential ecological receptors at Norton  
Air Force Base**

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California ground squirrel ( <i>Citellus beecheyi</i> )
Black-tailed jackrabbit ( <i>Lepus californicus</i> )
Desert cottontail ( <i>Sylvilagus audubonii</i> )
Coyote ( <i>Canis latrans</i> )
Botta's pocket gopher ( <i>Thomomys bottal</i> )
Red-tailed hawk ( <i>Buteo jamaicensis</i> )
American kestrel ( <i>Falco sparverious</i> )
Gamble's quail ( <i>Callipepla gambelli</i> )
Mourning dove ( <i>Zenaida macroura</i> )
Burrowing owl ( <i>Athene cunicularia</i> )
Great horned owl ( <i>Bubo virginianus</i> )
Loggerhead shrike ( <i>Lanius ludovicianus</i> )
Western meadowlark ( <i>Sturnella neglecta</i> )
Western fence lizard ( <i>Sceloporus occidentalis</i> )
Bullfrog ( <i>Rana catebeiana</i> )

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APPENDIX. RECONNAISSANCE BIRD SURVEY

NORTON AIR FORCE BASE, 4/13/94, San Bernardino, California

Red-tailed hawk (*Buteo jamaicensis*)  
Swainson's hawk (*Buteo swainsoni*) [flyover]  
American crow (*Corvus brachyrhynchos*)  
Killdeer (*Charadrius vociferous*)  
Pied-billed grebe (*Podilymbus podiceps*)  
House sparrow (*Passer domesticus*)  
Mourning dove (*Zenaida macroura*)  
Rock dove (*Columba livia*)  
Western meadowlark (*Sturnella neglecta*)

NORTON AIR FORCE BASE, 4/14/94, San Bernardino, California

Killdeer (*Charadrius vociferous*)  
Burrowing owl (*Athene cunicularia*) [four in the HQ building area/one breeding pair, one on Avenue A, and one on Avenue C]  
Rock dove (*Columba livia*)  
Scrub jay (*Aphelocoma coerulescens*)  
House finch (*Carpodacus mexicanus*)  
House sparrow (*Passer domesticus*)  
European starling (*Sturnus vulgaris*)  
Greater roadrunner (*Geococcyx californianus*) [along the road east of the Golf Course Club]  
Anna's hummingbird (*Calypte anna*)  
Western flycatcher (*Epidonax difficilis*)  
Northern mockingbird (*Mimus polyglottos*)  
Mourning dove (*Zenaida macroura*)  
Red-winged blackbird (*Agelaius phoeniceus*)  
Brewer's blackbird (*Euphagus cyanocephalus*) [13 individuals]

Near site 5:

Loggerhead shrike (*Lanius ludovicianus*)  
Brewer's blackbird (*Euphagus cyanocephalus*)  
House finch (*Carpodacus mexicanus*)  
Western meadowlark (*Sturnella neglecta*)  
Mourning dove (*Zenaida macroura*)

Spring 1994 Wildlife Survey

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Red-tailed hawk (*Buteo jamaicensis*)  
Western kingbird (*Tyrannus verticalis*)  
Northern rough-winged swallow (*Stelgidopteryx serripennis*)  
Common raven (*Corvus corax*)  
Black phoebe (*Sayornis nigricans*)  
Green-backed heron (*Butorides striatus*) [flyover—six]

Golf Course area:

Mallard (*Anas platyrhynchos*) [three males]  
Great egret (*Casmerodius albus*)  
Pied-billed grebe (*Podilymbus podiceps*)  
American coot (*Fulvica americana*) [18]  
Domestic duck [three individuals]  
Domestic goose [one individual]

Near site 2:

Mourning dove (*Zenaida macroura*)  
Western meadowlark (*Sturnella neglecta*)  
Western kingbird (*Tyrannus verticalis*)  
Ant hills

**Mammals**

California ground squirrel (*Citellus beecheyi*)  
Desert cottontail (*Sylvilagus audubonii*)  
Coyote (*Canis latrans*) [one at site 2]  
Striped skunk (*Mephitis mephitis*) [near golf course]