



**Lake Mathews
Multiple Species Habitat**

**Conservation Plan and Natural Community
Conservation Plan**

**Volume 1
Conservation Plan**

July 1995

**Prepared by
The Metropolitan Water District of Southern California
and Riverside County Habitat Conservation Agency**

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Glossary

The following abbreviations, acronyms, and definitions are for terms used in Volume 1, Volume 2, and/or Volume 3 of the Lake Mathews MSHCP/NCCP.

Abbreviations

AG	agricultural lands
CDFG	California Department of Fish and Game
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CMA	Cooperative Management Agreement
DWR	(California) Department of Water Resources
ESA	Endangered Species Act (federal or state)
FESA	Federal Endangered Species Act
FWM	freshwater marsh
HCP	Habitat Conservation Plan
HQA	Habitat Quality Assessment
HVU	habitat value unit
JW	juniper woodland
MFS	mule fat scrub
MSHCP	Multiple Species Habitat Conservation Plan
NCCP	Natural Communities Conservation Planning
NEPA	National Environmental Policy Act
NNG	non-native grassland
OMSP	Ongoing Multi-species Plan
RCHCA	Riverside County Habitat Conservation Agency
RSS	Riversidian sage scrub
SKR	Stephens' kangaroo rat
SRW	sycamore riparian woodland
SWS	southern willow scrub
USFWS	U.S. Fish and Wildlife Service

Definition of Terms

1979 Agreement: The October 23, 1979, Memorandum of Agreement regarding mitigation of the State Water Project Wildlife Losses in Southern California between the State of California Department of Water Resources, the Department, and Metropolitan.

1982 Agreement: The September 14, 1982, agreement for the Establishment of an Ecological Reserve at Lake Mathews between Metropolitan and the Department.

Agreement Administrator: The person appointed by a party for purposes of making decisions on its behalf.

California Environmental Quality Act (CEQA): Sections 21000 et seq. of the California Public Resources Code.

Cooperative Management Agreement (CMA): The agreement in Volume 3 of the Lake Mathews MSHCP/NCCP that specifies roles and responsibilities for management of the Combined Reserve among the four parties (Metropolitan, USFWS, CDFG, and RCHCA).

Code: California Fish and Game Code.

Combined Reserve: A multi-jurisdictional reserve consisting of over 10,200 acres set aside and managed for various species of flora and fauna indigenous to western Riverside County. The Combined Reserve is composed of the Multiple Species Reserve and the proposed SKR Core Reserve lands outside the Plan Area.

Conservation: All methods and procedures necessary to ensure the persistence of a species, including but not limited to research; census; habitat acquisition, restoration, and maintenance; propagation; live trapping; and translocation.

Core Reserve: Term used in the Long-term SKR HCP to identify proposed areas of conserved habitat for SKR and other species. The Lake Mathews Multiple Species Reserve is part of the proposed "Lake Mathews-Estelle Mountain Core Reserve" (see below). Also cited as "proposed SKR Core Reserve."

Department: California Department of Fish and Game; also cited as "CDFG."

Enhancement: Management activities by which existing habitat values are improved or augmented for the benefit of natural communities or a specific species.

Existing Reserve: Same as "State Ecological Reserve" (see below). The area established and managed as a State Ecological Reserve pursuant to agreements between CDFG, Metropolitan, and California Department of Water Resources.

Fire Management Plan: A plan prepared by Metropolitan and California Department of Forestry to establish a process for fire management on Metropolitan's Lake Mathews properties.

Habitat: Term is used in its ecological sense, referring to communities or assemblages of plants and animals with characteristics generally recognized by the scientific community as representing a distinct type or grouping.

Habitat Quality Assessment (HQA): The habitat evaluation methodology described in Volumes 2 and 3 of the Lake Mathews MSHCP/NCCP by which Metropolitan evaluated habitat values on its properties and may assign mitigation credits to Outside Projects.

Habitat value: An objective description of the biological quality found in particular lands or water areas.

Habitat value lost because of the projects, habitat losses, and impacts of the projects: Terms are synonymous, and all are intended to equal the concepts of "effect on the environment" and "environmental impact" as they relate to the

adverse impacts of projects and activities identified in the Lake Mathews MSHCP/NCCP on plants, wildlife, and their habitat as determined by the lead agency through the environmental review process and as required by applicable resource protection laws and regulations.

Habitat value units (HVUs): Units used in HQA to measure and equate habitat values in an impact area with those of a mitigation site.

Lake Mathews-Estelle Mountain Core Reserve: One of seven proposed Core Reserves identified in the RCHCA's proposed Long-term SKR HCP that will be established and managed to preserve SKR and that form "cores" for a multiple species reserve system. Lake Mathews Multiple Species Reserve as proposed in the Lake Mathews MSHCP/NCCP is within the boundaries of the proposed Lake Mathews-Estelle Mountain Core Reserve.

Lake Mathews Mitigation Agreement: The agreement among Metropolitan, USFWS, CDFG, and RCHCA set forth in Volume 3 of the Lake Mathews MSHCP/NCCP that identifies Metropolitan's and the RCHCA's shares of the Lake Mathews Mitigation Bank and identifies how the mitigation credits may be used; also cited as "Mitigation Agreement."

Lake Mathews Multiple Species Habitat Conservation Plan and Natural Community Conservation Plan (MSHCP/NCCP): The three-volume document prepared by Metropolitan and the RCHCA for Metropolitan's Lake Mathews properties; also cited as "Lake Mathews MSHCP/NCCP" and "Lake Mathews Plan."

Lake Mathews Multiple Species Reserve: The lands (5,110.4 acres) in the Plan Area identified as the Existing Reserve and Mitigation Bank; also cited as "Multiple Species Reserve."

Long-term SKR HCP: Habitat conservation plan for the SKR prepared by the RCHCA as part of its application for a 30-year 10(a) permit from USFWS and 30-year 2081 agreement with CDFG for take of SKR.

Management: When referring to management activities within the Multiple Species or Core Reserves, means activities to conserve, protect, restore, and enhance wildlife habitat for the benefit of natural communities or a specific species.

Management Committee: The committee that will guide management of the Lake Mathews Multiple Species Reserve; comprised of representatives of the four parties (Metropolitan, CDFG, USFWS, and RCHCA).

Metropolitan: The Metropolitan Water District of Southern California.

Metropolitan's Lake Mathews properties: Used to refer to the "Plan Area." Lake Mathews itself is not a part of the Plan Area, however.

Metropolitan Mitigation Bank lands: Lands (1,275.6 acres) within the Mitigation Bank that are not occupied by SKR, with the distribution of SKR as shown on Figure 13 in the Lake Mathews MSHCP/NCCP; lands added to the Multiple Species Reserve through future acquisitions or dedications by Metropolitan also would be Metropolitan Mitigation Bank lands.

Mitigation: Measures undertaken to diminish or compensate for the negative impacts of a project or activity on the environment, including (a) avoiding the negative impact altogether by not taking a certain action or parts of an action; (b) minimizing the impacts by limiting the degree or magnitude of the action and its implementation; (c) rectifying the impact by repairing, rehabilitating, or restoring the affected environment; (d) reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; or (e) compensating for the impact by replacing or providing substitute resources or environments.

Mitigation Bank: The lands (2,544.9 acres) in the Plan Area that are being conserved under the Mitigation Banking Agreement and that will be managed together with the Existing Reserve as the Lake Mathews Multiple Species Reserve. Over time, the Mitigation Bank is expected to include other lands acquired by Metropolitan and the RCHCA and added to the Lake Mathews Multiple Species Reserve.

Multiple Species Reserve: A 5,110.4-acre reserve at Lake Mathews in western Riverside County that conserves 2,544.9 acres (Mitigation Bank) adjacent to an existing 2,565.5-acre State Ecological Reserve (Existing Reserve).

Natural Communities Conservation Planning (NCCP) Act: Sections 2800 et seq. of the California Fish and Game Code.

Operations Area: The lands (728.6 acres) in the Plan Area designated for construction, operation and maintenance activities at the Lake Mathews facility and, together with Plan Area Projects, excluded from the Lake Mathews Multiple Species Reserve.

Outside Projects: Metropolitan's projects and activities outside the Plan Area that would draw on Metropolitan's share of the Mitigation Bank.

Plan Area: The 5,993.5 acres owned by Metropolitan around but not including Lake Mathews in northwestern Riverside County; same as "Metropolitan's Lake Mathews properties" above.

Plan Area Components: Four delineated areas within the Plan Area: the Existing Reserve, Mitigation Bank, Operations Area, and Plan Area Projects.

Plan Area Projects: Lands (154.5 acres) in the Plan Area designated for water facility and related projects and, together with Operations Area, excluded from the Multiple Species Reserve.

Preservation: Term is used in its ecological sense to mean protecting a community, species, or habitat type from adverse impacts in a way that ensures the community, species, or habitat type will persist in a natural state over time.

RCHCA Core Reserve Lands: In the Lake Mathews MSHCP/NCCP, lands owned or otherwise in the control of the RCHCA in the proposed Lake Mathews-Estelle Mountain Core Reserve.

RCHCA Mitigation Bank lands: The lands (1,269.3 acres) in the Mitigation Bank that are occupied by SKR.

Reserve Manager: The entity retained with the consent of the Management Committee to provide day-to-day management of the Lake Mathews Multiple Species Reserve.

Restoration: Term is used in the ecological sense to mean active and passive management activities whereby a community, species, or habitat type is reinstated in an area where it previously occurred under natural conditions.

Service: Fish and Wildlife Service of the United States Department of the Interior; also cited as "USFWS."

Short-term SKR HCP: A habitat conservation plan implemented by the RCHCA as a condition of a federal 10(a) permit from the Service and a 2081 agreement with the Department for take of SKR, approved in 1990.

SKR Core Reserve: See "Core Reserve."

Suitable Habitat: Habitat in the Plan Area that, based on field observations and literature review, has the combination of characteristics generally associated with occupation by a species.

Target Species: Sixty-five currently listed and unlisted species identified in the Lake Mathews MSHCP/NCCP that are (a) representative of the biodiversity and sensitivity of resources in the Plan Area, (b) the focus of conservation and mitigation measures proposed in the Lake Mathews Plan, and (c) the species for which Metropolitan and the RCHCA are seeking ESA authorizations and assurances from USFWS and CDFG.

Uplands: Any lands that are not wetlands.

Usage of credits: Assignment of mitigation credits to projects and activities covered by the Lake Mathews MSHCP/NCCP pursuant to the Mitigation Agreement.

Wildlife: Includes all wild animals, birds, plants, fish, amphibians, reptiles, and related ecological communities, including the habitat upon which the wildlife depends for its continued viability.

Wintering Raptors: Raptor bird species identified in the Lake Mathews MSHCP/NCCP that use the Plan Area for foraging and roosting during winter months but are absent at other times of the year.

Summary

The Lake Mathews Multiple Species Habitat Conservation Plan and Natural Community Conservation Plan (Lake Mathews MSHCP/NCCP or Lake Mathews Plan) is a joint conservation effort initiated by The Metropolitan Water District of Southern California (Metropolitan) and the Riverside County Habitat Conservation Agency (RCHCA) in cooperation with the U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Game (CDFG).

A. Purpose

The purpose of the Lake Mathews MSHCP/NCCP is to:

1. Describe, pursuant to the federal and state Endangered Species Acts (ESAs), projects and activities that are likely to result in the take of endangered species and the measures taken to minimize and mitigate such take;
2. Provide, pursuant to the California Natural Community Conservation Planning (NCCP) Act, a comprehensive conservation and management program for multiple wildlife species, including those associated with coastal sage scrub habitat;
3. Create a mechanism to coordinate the stewardship activities of multiple public agencies with land protection or management responsibilities;
4. Serve as the basis for the issuance of an incidental take permit pursuant to the provisions of Section 10 of the federal Endangered Species Act to allow the take of currently listed species and, upon listing, those species that may be listed as threatened or endangered in the future that are covered by the Lake Mathews Plan (Target Species); and
5. Serve as the basis for a Section 2081 Memorandum of Understanding/Permit under the California Endangered Species Act and a Section 2835 Memorandum of Understanding/Permit under the NCCP Act for the Target Species.

Because the USFWS will be an active participant in the cooperative management described herein, the Lake Mathews MSHCP/NCCP will also be the basis for Section 7 consultations under the federal ESA for each of the Target Species as and when appropriate or required by law.

B. Scope

The Lake Mathews MSHCP/NCCP includes 5,993.5 acres owned by Metropolitan around but not including Lake Mathews in western Riverside County (Plan Area). Specifically, the Lake Mathews Plan:

1. Creates a 5,110.4-acre Multiple Species Reserve at Lake Mathews in western Riverside County through a mitigation banking agreement that conserves 2,544.9 acres (Mitigation Bank) adjacent to an existing 2,565.5-acre State Ecological Reserve (Existing Reserve);
2. Minimizes and mitigates the impacts of projects and activities in a way that satisfies the requirements and intent of Sections 7 and 10(a) of the federal Endangered Species Act (ESA), Section 2081 of the California ESA, and Section 2835 of the California NCCP Act;
3. Coordinates the establishment, management, and future expansion of the Multiple Species Reserve with RCHCA's proposed Lake Mathews-Estelle Mountain Core Reserve (Core Reserve or SKR Core Reserve) which it proposes to establish as part of its conservation program for the SKR and which is included in the RCHCA's Memorandum of Understanding (MOU) with USFWS, CDFG, and U.S. Bureau of Land Management (BLM) regarding multiple species habitat conservation planning; and
4. Results in a multi-jurisdictional reserve (Combined Reserve) consisting of over 12,000 acres managed for various species of flora and fauna indigenous to western Riverside County. The Combined Reserve is composed of the Multiple Species Reserve and the lands in public ownership within the RCHCA's proposed SKR Core Reserve lands outside the Plan Area.

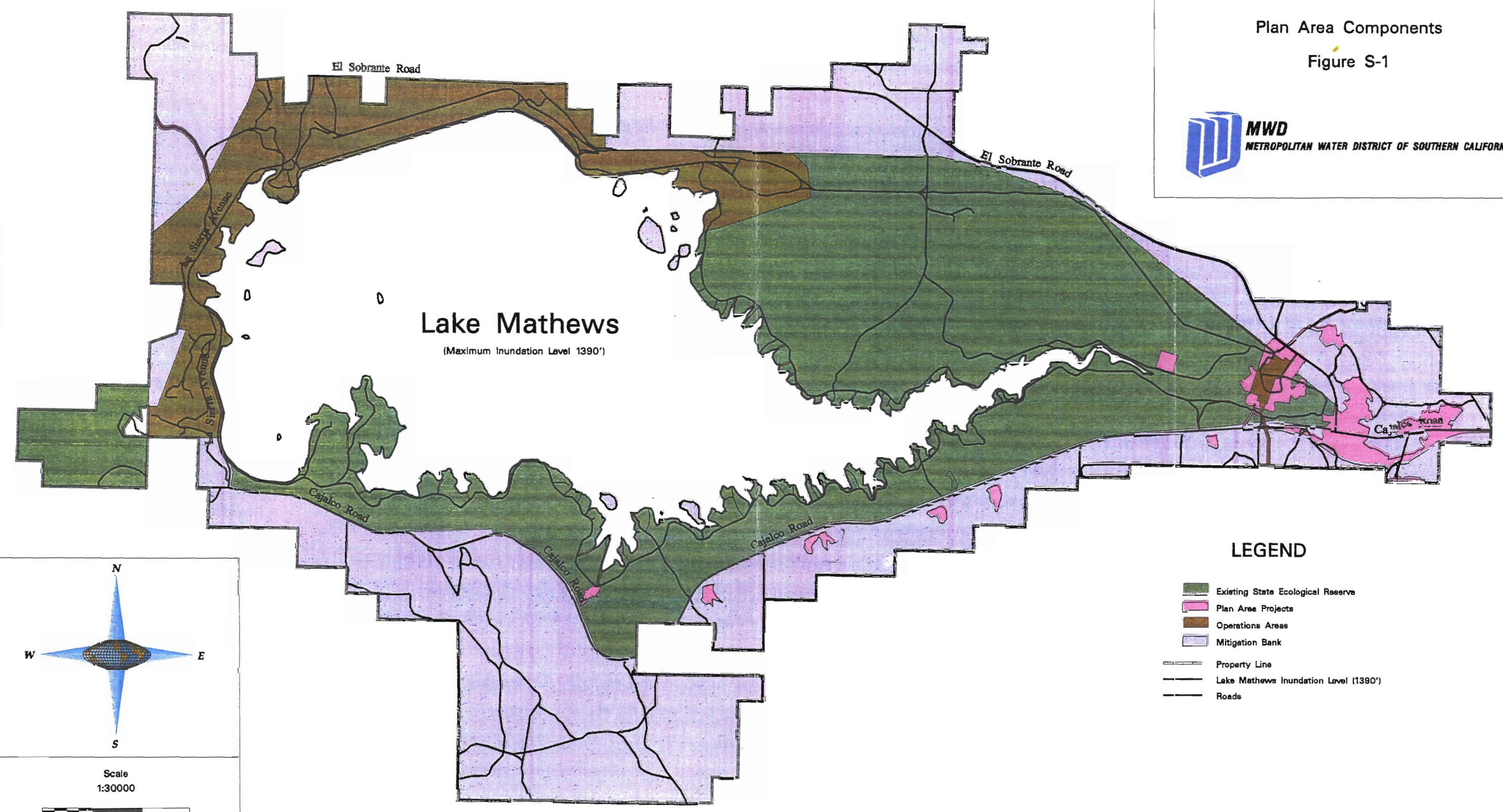
The Plan Area consists of two primary components (Figure S-1):

- The Multiple Species Reserve, which includes the Existing Reserve and Mitigation Bank and
- Areas excluded from the Multiple Species Reserve, including 728.6 acres designated for operation and maintenance activities at the Lake Mathews facility (Operations) and 154.5 acres designated for water facility improvements and related projects inside the Plan Area (Plan Area Projects).

The reservoir itself is not included in the Plan Area. Projects and activities covered by the Lake Mathews Plan include:

1. Biological management of the Combined Reserve;
2. Property management in the Plan Area, including maintenance of roads and fences and implementation of a Fire Management Plan;
3. Facility improvements and related projects in Operations and operation and maintenance activities at the Lake Mathews facility;
4. Construction, operation, and maintenance of the Plan Area Projects;
5. Metropolitan's projects and/or activities outside the Plan Area that would use the Mitigation Bank credits for impacts to habitats and/or sensitive species (Outside Projects); and
6. Construction, operation, and maintenance of additional projects within the Multiple Species Reserve.

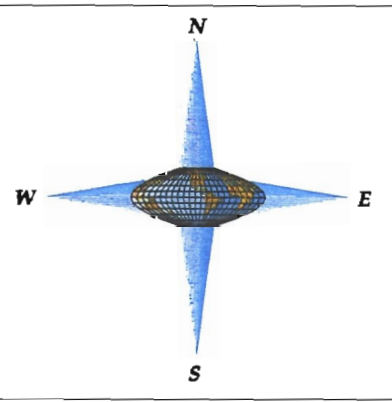
Plan Area Components
Figure S-1



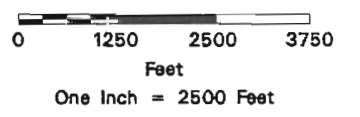
Lake Mathews
(Maximum Inundation Level 1390')

LEGEND

- Existing State Ecological Reserves
- Plan Area Projects
- Operations Areas
- Mitigation Bank
- Property Line
- Lake Mathews Inundation Level (1390')
- Roads



Scale
1:30000



December 22, 1994

The agreements in Volume 3 of the Lake Mathews Plan control in case of any conflicts with Volumes 1 and 2.

C. Resource Inventory

Detailed surveys of resources were conducted within the Plan Area. These surveys provide information on biological resources in the Plan Area including birds, mammals, reptiles and amphibians, invertebrates, and plants. The detailed surveys for multiple biological resources described in Volumes 1 and 2 of the Lake Mathews Plan were conducted only on lands owned by Metropolitan and were not conducted on the RCHCA's properties within the remainder of the Combined Reserve. Surveys conducted by the RCHCA in these areas focused on a determination of the distribution of occupied SKR habitat and are described in the RCHCA's Long-term SKR Plan (see Chapter 1 of Volume 1 for a detailed description of the Long-term and Short-term SKR Plans).

The information on which the Lake Mathews Plan is based comes from the following sources:

- Two types of biological surveys conducted in 1992 (March through July): (a) quantitative surveys for a Habitat Quality Assessment (HQA) of the Plan Area and (b) focused surveys for all biological resources in the Plan Area;
- Supplemental focused surveys for sensitive plant species conducted in 1993 and added to the database inventory for sensitive species;
- A geographic information system (GIS) database that was developed for the Lake Mathews Plan to illustrate survey results and delineate Plan Area components;
- GIS mapping of occupied SKR habitat in the Plan Area, based on studies conducted in the Plan Area between 1989 and 1992;
- Incidental sightings of wintering raptors and other sensitive species in the Plan Area outside the time frame of the 1992 surveys;
- Historic mapping and reports on habitats in the Plan Area, including maps prepared by Weislander in the 1930s and reports on the Existing Reserve prepared by CDFG in the 1970s and 1980s; and
- Scientific literature on the soils, habitats, and species in the Plan Area.

As documented in detail in Volume 2 of the Lake Mathews MSHCP/NCCP, these sources indicate that the Plan Area is part of a unique biological community comprised of 14 habitat types (Table S-1 and Figure S-2) and over 350 different species. Of the many species associated with the 14 habitats, 65 have been selected for coverage under the Lake Mathews Plan: 50 species that were observed in focused surveys or incidentally in the Plan Area (Table S-2) and 15 species that were not observed but have the potential to occur in the Plan Area based on distribution and habitat requirements for the species (Table S-3). Each of these Target Species is a "sensitive species" as defined in the Lake Mathews Plan; i.e., it is:

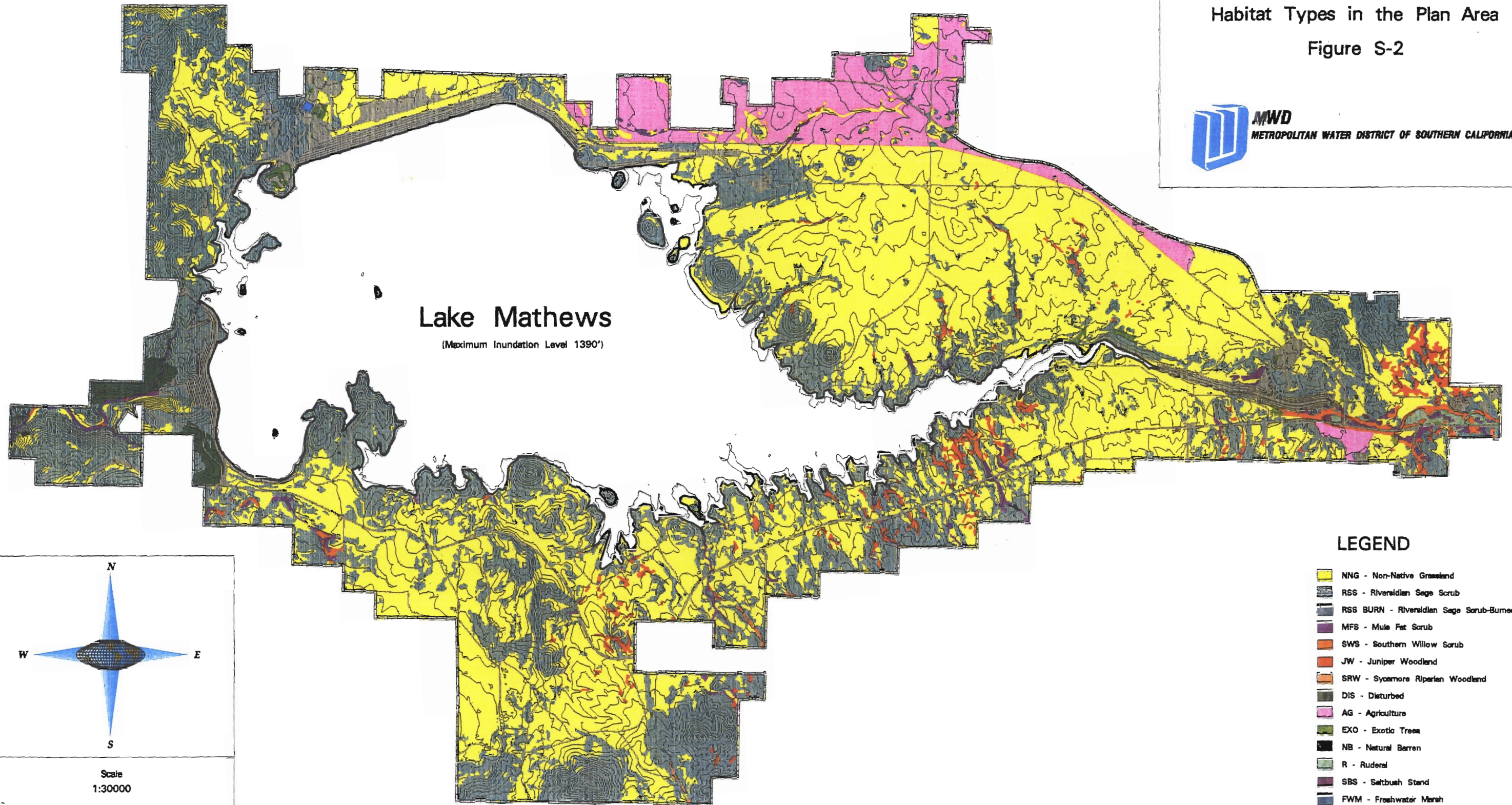
**Table S-1
Habitat Types in the Plan Area
(acres)**

Habitat Type	Multiple Species Reserve		Operations Areas	Plan Area Projects	Total Plan Area
	Existing Reserve	Mitigation Bank			
Non-native grassland	1,648.0	1,073.6	193.8	41.6	2,957.0
Riversidian sage scrub	727.7	921.5	303.2	40.9	1,993.3
Mule fat scrub	18.1	29.9	1.0	7.3	56.3
Southern willow scrub	8.1	20.5	0.5	8.9	38.0
Juniper woodland	42.5	40.0	0.0	2.4	84.9
Sycamore riparian woodland	0.0	1.9	0.0	0.2	2.1
Disturbed	108.0	126.2	213.4	30.6	478.2
Agriculture	0.0	324.4	7.0	11.5	342.9
Exotic trees	9.1	2.5	7.8	0.8	20.2
Natural barren	0.5	0.4	0.0	0.0	0.9
Ruderal	1.4	3.8	0.8	8.9	14.9
Freshwater marsh	1.0	0.0	0.0	0.2	1.2
Saltbush stand	1.1	0.2	0.0	1.2	2.5
Water (excluding lake)	0.0	0.0	1.1	0.0	1.1
TOTAL	2,565.5	2,544.9	728.6	154.5	5,993.5

- Federally or state-listed as threatened or endangered,
- A candidate for federal or state listing,
- A bird species protected by the Migratory Bird Treaty Act or Bald Eagle Protection Act,
- A species of special concern in California as identified by CDFG,
- On the California Native Plant Society (CNPS) list of sensitive plants,
- On the NCCP list of sensitive coastal sage scrub species, and/or
- Of special local concern because of its rarity or unique biological value.

The biological communities and the Target Species in the Plan Area are the focus of the conservation and mitigation measures presented in the Lake Mathews Plan. The Target Species are covered by authorizations and assurances that USFWS and CDFG are being asked to approve (see Section E, Habitat Conservation and Impact Mitigation Program).

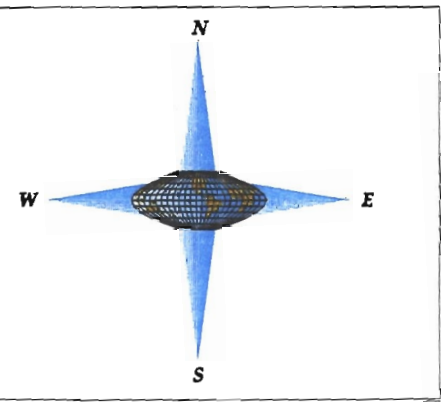
Habitat Types in the Plan Area
Figure S-2



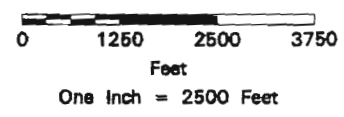
Lake Mathews
(Maximum Inundation Level 1390')

LEGEND

- NNG - Non-Native Grassland
- RSS - Riverside Sage Scrub
- RSS BURN - Riverside Sage Scrub-Burned
- MFS - Mule Fat Scrub
- SWS - Southern Willow Scrub
- JW - Juniper Woodland
- SRW - Sycamore Riparian Woodland
- DIS - Disturbed
- AG - Agriculture
- EXO - Exotic Trees
- NB - Natural Barren
- R - Ruderal
- SBS - Saltbush Stand
- FWM - Freshwater Marsh
- W - Water
- Property Boundary
- Lake Mathews Inundation Level



Scale
1:30000



October 27, 1994

**Table S-2
Target Species Observed in the Plan Area**

Species Common and Scientific Name	Sensitivity Status			Habitats in Plan Area		
	Federal	State	Other	N N G	R S S	Other
Plants (N = 7)						
Clay bindweed (small-flowered morning-glory) <i>Convolvulus simulans</i>	none	none	CNPS4	X		needs B or P clay soil
Great valley (or clay) phacelia <i>Phacelia ciliata</i>	C2	none	CNPS1B	X		needs B clay soil
Knotweed (or long-spined) spineflower <i>Chorizanthe polygonoides</i> var. <i>longispina</i>	C2	none	CNPS1B	X		needs B or P clay soil
Large-leaved filaree <i>Erodium macrophyllum</i>	none	none	LC	X		needs B clay soil
Palmer's grappling hook <i>Harpagonella palmeri</i>	C2	NCCP	CNPS2	X	X	needs P clay soil
Parry's spineflower <i>Chorizanthe parryi</i> var. <i>parryi</i>	C2	NCCP	none		X	
Small-flowered microseris <i>Microseris douglasii</i> ssp. <i>platycarpa</i>	none	none	CNPS4	X		needs P or B clay soil
Amphibians and Reptiles (N = 7)						
Coastal rosy boa <i>Lichanura trivirgata roseofusca</i>	C2	CSC NCCP	none	X	X	in rock outcrops
Coastal western whiptail <i>Cnemidophorus tigris multiscutatus</i>	C2	CSC NCCP	none	X	X	JW
Northern red diamond rattlesnake <i>Crotalus ruber ruber</i>	C2	CSC NCCP	none	X	X	
Orange-throated whiptail <i>Cnemidophorus hyperythrus beldingi</i>	C2	CSC NCCP	none	X	X	JW
San Bernardino ringneck snake ¹ <i>Diadophis punctatus modestus</i>	C2	CSC	none			MFS, SWS
San Diego horned lizard <i>Phrynosoma coronatum blainvilleii</i>	C2	CSC NCCP	none	X	X	
Western spadefoot toad ² <i>Scaphiopus hammondi</i>	C2	NCCP	none	X		FWM, rock outcrops
Birds (N = 25)						
Bald eagle ³ <i>Haliaeetus leucocephalus</i>	FE, BEPA MBTA	SE	none			Lake and other
Bank swallow ³ <i>Riparia riparia</i>	MBTA	ST	LC			Lake
Bell's sage sparrow <i>Amphispiza belli belli</i>	C2 MBTA	CSC NCCP	none		X	
Black-crowned night heron (rookery) <i>Nycticorax nycticorax</i>	MBTA	none	LC			SWS, lake
Blue grosbeak <i>Guiraca caerulea</i>	MBTA	none	LC			SWS, MFS
Burrowing owl <i>Speotyto cunicularia</i>	C2 MBTA	CSC	none	X		AG
California horned lark <i>Eremophila alpestris actia</i>	C3c MBTA	CSC NCCP	none	X		AG
Coastal California gnatcatcher <i>Poliotila californica californica</i>	FT MBTA	CSC NCCP	none		X	

Table S-2 (continued)
Target Species Observed in the Plan Area

Species Common and Scientific Name	Sensitivity Status			Habitats in Plan Area		
	Federal	State	Other	N N G	R S S	Other
Birds (continued)						
Cooper's hawk ³ <i>Accipiter cooperii</i>	MBTA	CSC	none		X	MFS, SWS, SRW
Downy woodpecker <i>Picoides pubescens</i>	MBTA	none	LC			SWS
Ferruginous hawk ³ <i>Buteo regalis</i>	C2 MBTA	CSC	none	X	X	AG
Golden eagle ³ <i>Aquila chrysaetos</i>	BEPA MBTA	CSC	none	X	X	AG
Grasshopper sparrow <i>Ammodramus savannarum perpallidus</i>	MBTA	none	LC	X		
Great blue heron (rookery) <i>Ardea herodias</i>	MBTA	none	LC			SWS, lake, exotic trees
Loggerhead shrike <i>Lanius ludovicianus</i>	MBTA	CSC NCCP	none	X	X	JW, AG
Long-eared owl ³ <i>Asio otus</i>	MBTA	none	LC			SWS
Northern harrier ³ <i>Circus cyaneus</i>	MBTA	CSC	none	X	X	AG
Red-shouldered hawk ³ <i>Buteo lineatus</i>	MBTA	none	LC			MFS, SWS, SRW
Rough-legged hawk ³ <i>Buteo lagopus</i>	MBTA	none	LC	X	X	AG
San Diego cactus wren ³ <i>Campylorhynchus brunneicapillus couesi</i>	C3b MBTA	CSC NCCP	none		X	in cactus patches
Sharp-shinned hawk ³ <i>Accipiter striatus</i>	MBTA	CSC	LC	X	X	MFS, SWS
Southern California rufous-crowned sparrow <i>Aimophila ruficeps canescens</i>	C2 MBTA	CSC NCCP	none		X	
Swainson's hawk ³ <i>Buteo swainsoni</i>	MBTA	ST	none	X	X	AG
Tricolored blackbird <i>Agelaius tricolor</i>	C2 MBTA	CSC NCCP	none	X		FWM, SWS
White-tailed kite <i>Elanus caeruleus</i>	MBTA	CFP	none	X		MFS, SWS
Mammals (N = 11)						
American badger ³ <i>Taxidea taxus</i>	none	CSC	none	X	X	JW
Big or pocketed free-tail bat ³ <i>Nyctinomops femorosaccus or macrotis</i>	none	CSC	none	X	X	MFS, SWS
Cougar ³ <i>Felis concolor</i>	none	CFP	LC	X	X	all other
Little brown bat ³ <i>Myotis spp. (probably M. yumanensis)</i>	C2	CSC	none			MFS, SWS, FWM, lake
Northwestern San Diego pocket mouse <i>Chaetodippus fallax fallax</i>	C2	CSC NCCP	none		X	

**Table S-2 (continued)
Target Species Observed in the Plan Area**

Species Common and Scientific Name	Sensitivity Status			Habitats in Plan Area		
	Federal	State	Other	N N G	R S S	Other
Mammals (continued)						
Pallid bat ³ <i>Antrozous pallidus</i>	none	CSC	none	X	X	in rock outcrops
San Diego black-tailed jackrabbit <i>Lepus californicus bennettii</i>	C2	CSC NCCP	none	X	X	SWS, JW, AG
San Diego desert woodrat <i>Neotoma lepida intermedia</i>	C2	CSC	none		X	JW
Stephens' kangaroo rat <i>Dipodomys stephensi</i>	FE	ST NCCP	none	X	X	AG, disturbed
Western mastiff bat ³ <i>Eumops perotis</i>	C2	CSC	none	X	X	in rock outcrops
Western pipistrelle ³ <i>Pipistrellus hesperus</i>	none	none	LC	X	X	in rock outcrops

Sensitivity Status Codes

- BEPA Bald Eagle Protection Act (also covers golden eagle)
- C2 Category 2 candidate for federal listing; includes taxa for which USFWS has information indicating that proposing to list as endangered or threatened is possibly appropriate but for which persuasive data on biological vulnerability and threat are not currently available to support proposed rules.
- C3b Category 3 candidate for federal listing; names that, on the basis of current taxonomic understanding, do not represent distinct species as defined in the federal ESA.
- C3c Category 3 candidate for federal listing; includes taxa that have proven to be more abundant or widespread than previously believed and/or those that are not subject to any identifiable threat.
- CNPS California Native Plant Society red list
(1B) rare or endangered in California and elsewhere
(2) rare or endangered in California and more common elsewhere
(4) plants of limited distribution
- CFP California Fully Protected (special category)
- CSC CDFG species of special concern
- FE Listed as endangered under the federal ESA
- FT Listed as threatened under the federal ESA
- LC Species of special local concern
- MBTA Protected by the Migratory Bird Treaty Act
- NCCP Sensitive species for NCCP coastal sage scrub program
- ST Listed as threatened under the California ESA

Habitat Codes

- AG Agriculture
- B Bosanko (clay soil)
- JW Juniper woodland
- MFS Mule fat scrub
- NNG Non-native grassland
- P Porterville (cobble clay soil)
- RSS Riversidian sage scrub
- SRW Sycamore riparian woodland
- SWS Southern willow scrub

Notes

- 1 Also occurs in adjacent habitat
- 2 Observed in rock outcrop areas; requires aquatic conditions for breeding; found in upland habitats in burrows during dry periods
- 3 Plan Area has foraging and/or sheltering habitat for this species but may not contain suitable breeding habitat (or primary roost sites for bats)

Table S-3
Target Species Not Observed
but Potentially Occurring in the Plan Area

Species Common and Scientific Name	Sensitivity Status			Potential Habitat in Plan Area		
	Federal	State	Other	N N G	R S S	Other
Plants (N = 8)						
Braunton's milkvetch <i>Astragalus brauntonii</i>	PFE	NCCP	CNPS1B		X	burned RSS
Coulter's matilija poppy <i>Romneya coulteri</i>	none	none	CNPS4		X	burned RSS
Little mouse tail <i>Myosurus minimus</i> var. <i>apus</i>	C2	none	CNPS3	X		alkali NNG & vernal pools
Many-stemmed dudleya <i>Dudleya multicaulis</i>	C2	NCCP	CNPS1B	X	X	in outcrops & clay soils
Munz's onion <i>Allium munzii</i>	PFE	NCCP	CNPS1B	X	X	on clay soils
Slender-horned spineflower <i>Dodecahema (= Centrostegia) leptoceras</i>	FE	SE NCCP	CNPS1B	X	X	in alluvial washes
Smooth tarplant <i>Hemizonia pungens</i> ssp. <i>laevis</i>	C2	none	CNPS1B	X		alkali areas, fallow fields
Southern tarplant <i>Hemizonia parryi</i> ssp. <i>australis</i>	C2	none	CNPS1B	X		alkali areas, fallow fields
Invertebrates (N = 2)						
Ruth's cuckoo bee <i>Holocopasites ruthae</i>	none	none	LC		X	in areas with <i>Encelia</i>
Quino checkerspot butterfly <i>Occidryas (= Euphydryas) editha quino</i>	PFE	NCCP	none	X		in <i>Plantago erecta</i> patches
Reptiles (N = 1)						
San Diego banded gecko <i>Coleonyx variegatus abbottii</i>	C2	CSC NCCP	none		X	in rocky areas
Birds (N = 4)						
Least Bell's vireo <i>Vireo bellii pusillus</i>	FE MBTA	SE	none			SWS, MFS
Southwestern willow flycatcher <i>Empidonax trailii extimus</i>	FE, FSS MBTA	SE	none			SWS, MFS
Yellow-breasted chat <i>Icteria virens</i>	MBTA	CSC	none			SWS
Yellow warbler <i>Dendroica petechia brewsteri</i>	MBTA	CSC	none			SWS

Sensitivity Status Codes

- C1 Category 1 candidate for federal listing; includes taxa for which USFWS has on file sufficient information on biological vulnerability and threat(s) to support proposals to list them as endangered or threatened. Development and publication of rules on such taxa are anticipated.
- C2 Category 2 candidate for federal listing; includes taxa for which USFWS has information indicating that proposing to list as endangered or threatened is possibly appropriate but for which persuasive data on biological vulnerability and threat are not currently available to support proposed rules.

Table S-3 (continued)
Target Species Not Observed
but Potentially Occurring in the Plan Area

Sensitivity Status Codes (continued)

CNPS	California Native Plant Society red list (1B) rare or endangered in California and elsewhere (2) rare or endangered in California, more common elsewhere (3) more information required before assignment to 1, 2, or 4 (4) plants of limited distribution.
CSC	CDFG species of special concern
PFE	Proposed for federal listing as endangered
FE	Listed as endangered under the federal ESA
FSS	Federal sensitive species
LC	Species of special local concern
MBTA	Protected by the Migratory Bird Treaty Act
NCCP	Sensitive species for NCCP coastal sage scrub program
SE	Listed as endangered under the California ESA

Habitat Codes

AG	Agriculture
MFS	Mule fat scrub
NNG	Non-native grassland
P	Porterville (cobble clay soil)
RSS	Riversidian sage scrub
SRW	Sycamore riparian woodland
SWS	Southern willow scrub

D. Habitat Evaluation

Quantitative surveys were conducted in the Plan Area to collect data for a Habitat Quality Analysis (HQA). HQA is a methodology developed by Metropolitan in consultation with USFWS and CDFG to match habitat values at impact areas and mitigation sites based on five biological variables: the presence of listed and other sensitive species, species richness, species relative density, vegetation structure, and proportion of native plant species. The HQA methodology results in an acre-for-acre mitigation-to-impact ratio when habitat quality is equivalent at both the impact and mitigation sites. This methodology is described in detail in Volume 3 of the Lake Mathews MSHCP/NCCP. It was used as part of the planning process for the Lake Mathews Plan in three ways:

1. To document the type and quality of biological resources in the Plan Area,
2. To describe the interrelation and relative values of the Plan Area resources, and
3. To establish the basis for a habitat quality index for the Mitigation Bank lands that could be used to calculate mitigation credit in the Mitigation Bank.

Detailed results of the HQA are presented in Part 1 of Volume 2, together with a comparison of the current and historic distribution of habitat in the Plan Area and a comparison of the Plan Area HQA with HQA results for other sites in southern California.

E. Habitat Conservation and Impact Mitigation Program

The habitat conservation and impact mitigation program that Metropolitan and the RCHCA propose to implement is based on what is known about resources and habitat values in the Plan Area. It has seven components:

1. Habitat conservation and management
2. Mitigation Bank terms and conditions
3. Project-level impact minimization and mitigation measures
4. ESA authorizations and assurances
5. Funding and assurances for implementation of the Lake Mathews Plan
6. Provisions for emergencies, listings, and unforeseen circumstances
7. Plan amendment process

1. Habitat Conservation and Management

Under the Lake Mathews MSHCP/NCCP, provisions are made for the establishment of the 5,110.4-acre Multiple Species Reserve and the management of the more than 12,000-acre Combined Reserve. The Cooperative Management Agreement among Metropolitan, RCHCA, USFWS, and CDFG in Volume 3 of the Lake Mathews Plan establishes the Combined Reserve. The Combined Reserve is composed of (1) the Multiple Species Reserve which consists of the Existing Reserve and the Mitigation Bank, (2) RCHCA ownership within its proposed Lake Mathews-Estelle Mountain Core Reserve, (3) the Estelle Mountain Ecological Reserve owned by CDFG, and (4) approximately 320 acres administered by the United States Bureau of Land Management located within the RCHCA's proposed Core Reserve. The Multiple Species Reserve will be managed to benefit the 65 Target Species. Biological management of RCHCA's properties within the Combined Reserve will focus on management of SKR.

a. Multiple Species Reserve

The Multiple Species Reserve includes the Mitigation Bank and Existing Reserve as shown in Figure S-1 and excludes the areas designated for Operations and Plan Area Projects. The Mitigation Bank area is further delineated into Metropolitan and RCHCA Mitigation Bank lands based on the distribution of SKR-occupied habitat.

The permanent conservation of the lands in the Mitigation Bank area doubles the amount of habitat being preserved and managed at Lake Mathews. Non-native grassland and Riversidian sage scrub are the primary habitat types in the Multiple Species Reserve, covering 4,370.8 acres (86%) of the 5,110.4 acres (Table S-4).

Conservation easements over the Mitigation Bank component of the reserve will be conveyed by Metropolitan to the RCHCA. The Existing Reserve will remain subject to the provisions of agreements that were executed in 1979 and 1982 by CDFG and Metropolitan.

**Table S-4
Habitat Types
in the Lake Mathews Multiple Species Reserve
(acres)**

Habitat Type	Mitigation Bank			Existing Reserve	Total in Multiple Species Reserve
	Metropolitan Lands	RCHCA Lands	Total		
Non-native grassland	394.3	679.3	1,073.6	1,648.0	2,721.6
Riversidian sage scrub	415.2	506.3	921.5	727.7	1,649.2
Mule fat scrub	27.1	2.8	29.9	18.1	48.0
Southern willow scrub	20.5	0.0	20.5	8.1	28.6
Juniper woodland	10.1	29.9	40.0	42.5	82.5
Sycamore riparian woodland	1.9	0.0	1.9	0.0	1.9
Agriculture	316.3	8.1	324.4	0.0	324.4
Disturbed	84.6	41.6	126.2	108.0	234.2
Exotic trees	1.9	0.6	2.5	9.1	11.6
Natural barren	0.4	0.0	0.4	0.5	0.9
Ruderal	3.1	0.7	3.8	1.4	5.2
Freshwater marsh	0.0	0.0	0.0	1.0	1.0
Saltbush stand	0.2	0.0	0.2	1.1	1.3
TOTAL	1,275.6	1,269.3	2,544.9	2,565.5	5,110.4

b. Management of the Combined Reserve

Management of the Combined Reserve will be guided by a Management Committee composed of one representative each from Metropolitan, RCHCA, CDFG, and USFWS and chaired by Metropolitan. Metropolitan will have responsibility for its properties within the Multiple Species Reserve, and RCHCA will have responsibility for the lands it owns or otherwise controls in the remainder of the proposed SKR Core Reserve. Decisions by the Management Committee will be based on consensus.

Day-to-day management will be carried out by a Reserve Manager retained under contract with Metropolitan. For purposes of the Lake Mathews Plan, the term "Reserve Manager" is meant to include the full-time and part-time staff and the consultants necessary to manage the biological resources in the reserve. It is assumed that reserve management will involve the services of a full-time Reserve Manager who resides onsite, together with one or more part-time staff and, within the constraints of available funding, biological consultants. Tasks and responsibilities will be identified in annual work plans prepared by the Reserve Manager for review and approval by the Management Committee. Funding for reserve management will be provided through an endowment established by the RCHCA and managed by Metropolitan (see Section F4, Funding and Assurances for Plan Implementation).

c. Expansion of the Multiple Species Reserve

Over time, it is anticipated that the Multiple Species Reserve will be expanded through acquisitions by Metropolitan and/or the RCHCA. It is intended that the proposed SKR Core Reserve lands shall become part of the Multiple Species Reserve and be managed for their multiple species values with the consent of the Management Committee; such additions may be proposed any time after approval of the Lake Mathews MSHCP/NCCP and are not contingent on the RCHCA's completion of a multiple species plan for the proposed Core Reserve. Expansions through acquisitions by Metropolitan and/or the RCHCA also may be proposed any time following approval of the Lake Mathews Plan and their inclusion and method of funding will be subject to approval by the Management Committee. The added lands will be managed under institutional arrangements established by the Lake Mathews MSHCP/NCCP, provided that adequate funding is or is made available.

2. Mitigation Bank Terms and Conditions

The establishment and use of the Mitigation Bank will be governed by the Mitigation Banking Agreement in Volume 3. In general, the agreement:

1. Identifies Metropolitan's and RCHCA's shares of the Mitigation Bank based on the distribution of occupied SKR habitat, with the SKR-occupied areas credited to the RCHCA and credit for the other lands retained by Metropolitan;
2. Establishes that Metropolitan will use its share of the Mitigation Bank to secure ESA authorizations and assurances and/or for California Environmental Quality Act (CEQA) mitigation needs for projects and activities in the areas designated for Operations and Plan Area Projects and for Outside Projects; and
3. Specifies that the RCHCA will acquire conservation easements over the SKR-occupied areas in the Mitigation Bank, use those lands as replacement habitat under the SKR HCPs, and be given conservation credit toward an a future multiple species plan for the other biological values of the habitat.

a. Metropolitan Mitigation Bank Lands

Metropolitan's Mitigation Bank lands include 1,275.6 acres (Table S-4). As advance mitigation for impacts to Target Species and their habitats, Metropolitan will precommit one acre of habitat in the Mitigation Bank for every one acre of such habitat in the areas designated for Operations and Plan Area Projects. Such mitigation is not provided for disturbed land and exotic trees. This advance commitment of mitigation will retire 618.3 acres of mitigation credit (505.5 acres for Operations and 112.8 acres for Plan Area Projects), leaving 657.3 acres in Metropolitan's share of the Mitigation Bank (Table S-5). These remaining credits will be available for Outside Projects and/or other projects and activities covered by the Lake Mathews Plan.

**Table S-5
Metropolitan and RCHCA Mitigation Bank Lands
(acres)**

Habitat Type ^{1, 2, 3}	Metropolitan				RCHCA
	Designated for Operations Areas	Designated for Plan Area Projects	Available for Other Projects	Total	
Non-native grassland	193.8	41.6	158.9	394.3	679.3
Riversidian sage scrub	303.2	40.9	71.1	415.2	506.3
Mule fat scrub	1.0	7.3	18.8	27.1	2.8
Southern willow scrub	0.5	8.9	11.1	20.5	0.0
Juniper woodland	0.0	2.4	7.7	10.1	29.9
Sycamore riparian woodland	0.0	0.2	1.7	1.9	0.0
Agriculture	7.0	11.5	297.8	316.3	8.1
Disturbed	0.0	0.0	84.6	84.6	41.6
Exotic trees	0.0	0.0	1.9	1.9	0.6
Natural barren	0.0	0.0	0.4	0.4	0.0
Ruderal	0.0	0.0	3.1	3.1	0.7
Saltbush stand	0.0	0.0	0.2	0.2	0.0
TOTAL	505.5	112.8	657.3	1,275.6	1,269.3

Notes

- 1 Impacts to wetland habitats for the Cajalco Creek Dam and Detention Basin Project (freshwater marsh, mule fat scrub, southern willow scrub, sycamore riparian woodland, natural barren, ruderal, and saltbush stand) are mitigated separately under a separate wetland mitigation plan.
- 2 Mitigation is not provided for disturbed lands or exotic trees.
- 3 Impacts to occupied SKR habitat for the Cajalco Creek Dam and Detention Basin Project are mitigated under a separate Section 7 biological opinion and 2081 authorization.

b. RCHCA Mitigation Bank Lands

The RCHCA's Mitigation Bank lands consist of 1,269.3 acres of SKR-occupied habitat (Table S-5). This habitat will be credited as replacement habitat under the Short-term and Long-term SKR HCP and toward the multiple species plan that the RCHCA intends to prepare. Any use by the RCHCA of the 1,269.3 acres as mitigation for impacts other than take of SKR will be contingent on USFWS and CDFG approval of a multiple species plan that encompasses the RCHCA's proposed SKR Core Reserve lands.

c. Transfer and Increase of Mitigation Credits

Metropolitan and RCHCA may transfer available mitigation credits assigned to their Mitigation Bank lands to one another or to third parties any time after approval of the Lake Mathews Plan, with written notice of the transfer provided to USFWS and CDFG. However, authorizations and assurances under the Lake

Mathews Plan are not provided to third parties. In addition, if some of the credits designated for Plan Area Projects are not needed for the proposed projects and activities in those areas, Metropolitan may use those credits for other projects and activities covered by the Lake Mathews Plan.

Metropolitan and the RCHCA may increase their mitigation credits by acquiring land and adding it to the Multiple Species Reserve, enhancing riparian habitat in the Multiple Species Reserve, and restoring disturbed areas in the Multiple Species Reserve to natural habitats. In addition, Metropolitan will receive mitigation credit for restoring agricultural lands in the Mitigation Bank to SKR habitat and will use those credits as mitigation for the Cajalco Creek Dam and Detention Basin Project and for Outside Projects with SKR impacts.

3. Project-level Impact Minimization and Mitigation Measures

In general, the primary mitigation provided by the Lake Mathews Plan for impacts to Target Species and their habitats is the permanent preservation of habitat in the Mitigation Bank and the management of such habitat in the Multiple Species Reserve. Individual projects and activities are covered by this mitigation, subject to the following terms and conditions regarding use of the Mitigation Bank and implementation of impact minimization measures.

a. Operations Areas and Plan Area Projects

All significant habitat impacts, including impacts to Target Species, from future projects and activities in Operations and Plan Area Projects are being mitigated in advance of their actual occurrence by the precommitment of mitigation credits for all habitat in those areas (Table S-5). This advance commitment of mitigation lands covers all projects and activities that will occur in Operations and Plan Area Projects; no additional commitment of mitigation lands or any additional mitigation will be required for any individual project or activity in these areas.

Projects and activities in Operations and Plan Area Projects will comply with the following impact minimization measures:

1. If a listed plant species (or state candidate for listing or species with a proposed federal listing rule) is present, CDFG will be notified at least 10 days prior to any impact occurring and will be given access to the site to salvage the plants and/or collect seeds.
2. To the maximum extent practicable, direct impacts to birds which are Target Species will be avoided during their breeding seasons. Any actions that directly impact breeding birds would be coordinated with the Management Committee.
3. To the maximum extent practicable and to the extent compatible with necessary maintenance of the reservoir, the reservoir's ancillary facilities, and facilities in Plan Area Projects, use of pesticides and rodenticides in a manner that would harm SKR or any other listed species will be avoided or minimized.

4. Where impacts occur immediately adjacent to the Multiple Species Reserve, boundaries between the Multiple Species Reserve and impact areas will be flagged and construction will be monitored to minimize the possibility that construction activities extend into the Multiple Species Reserve.

Additional information about species-specific considerations is provided in the individual HCPs for Target Species, which are included in Part 2 of Volume 2.

b. Outside Projects

Metropolitan Mitigation Bank lands not designated for Operations and Plan Area Projects will be available for use as mitigation for the impacts of Outside Projects to habitats and/or Target Species. The same credits may be used coterminously at Metropolitan's option to mitigate impacts to habitat under the CEQA as well as take under the state and federal ESAs.

Habitat values in impact areas will be matched to the Mitigation Bank credits using HQA or another methodology collectively acceptable to USFWS, CDFG, and Metropolitan. No further multipliers that increase the mitigation-to-impact ratio will be necessary. The required exchange is a 1:1 (acre-for-acre) mitigation-to-impact ratio expressed in the HQA formula. Other methodologies will not require greater than an acre-for-acre mitigation-to-impact ratio. Mitigation for impacts to federally listed species, however, will be determined on a case-by-case basis.

c. Projects and Activities in the Multiple Species Reserve

It is not Metropolitan's intent at this time to directly affect habitat in the Multiple Species Reserve. In the unlikely event that projects and activities other than those already existing are necessary in these areas, impact avoidance and minimization measures identified in the Lake Mathews Plan will be implemented and appropriate mitigation will be developed in coordination with the Management Committee as discussed in Chapter 3.

F. ESA Authorizations and Assurances

Implementation of the Lake Mathews MSHCP/NCCP by Metropolitan and the RCHCA is predicated on USFWS and CDFG approval of the Lake Mathews Plan as an HCP and NCCP for the Target Species. Such approval includes authorizations and assurances under the federal and state ESAs for projects and activities that Metropolitan and the RCHCA propose to undertake, including management of the Multiple Species Reserve and lands in public ownership within RCHCA's proposed SKR Core Reserve lands.

ESA authorization and assurances under the Lake Mathews Plan involve:

1. Authorization to take federally and state-listed species,
2. Authorization from CDFG to take Target Species which are not currently listed but which could become listed in the future pursuant to Section 2835 of the NCCP Act,

3. Authorization from USFWS to take Target Species which are not currently federally listed but which could become listed in the future (for each Target species that is not currently listed under the federal ESA, the Section 10(a) permit would become effective upon its listing), and
4. Confirmation by the USFWS of the "No Surprises" policy recently adopted by the Department of Interior, namely that:

"The purpose of this policy is to provide assurances to non-federal landowners participating in Endangered Species Act Habitat Conservation Planning (HCP) that no additional land restrictions or financial compensation will be required for species adequately covered by a properly functioning HCP in light of unforeseen or extraordinary circumstances."

Specific authorizations and assurances for Metropolitan projects and activities, RCHCA projects and activities, and reserve management are described below and in the agreements in Volume 3.

1. For Metropolitan Projects and Activities

Metropolitan is seeking a range of ESA authorizations and assurances that are tied to the biological value of the Mitigation Bank area and Multiple Species Reserve for observed and potentially occurring Target Species. For purposes of defining the authorizations and assurances, the species have been divided into three groups related to the type of authorization sought as discussed later in this section (Table S-6); a process for extending the authorizations and assurances to other species also has been defined.

Mitigation pursuant to these authorizations and assurances will be accomplished on a habitat basis rather than on a species-by-species basis. Habitat occupied by multiple species in the Mitigation Bank may be used to mitigate for multiple species affected by a given Metropolitan project or activity. In other words:

- if a project affects several species, which at some point during their respective life cycles occupy a single habitat type and
- if these species also occur in the Mitigation Bank,
- then mitigation for these species may be accomplished on a habitat-by-habitat basis rather than on a species-by-species basis.

a. Take of Target Species in Operations and Plan Area Projects

1) Authorizations and Assurances for Take of Species in Group 1

Metropolitan is seeking the following authorizations and assurances for take of 29 Group 1 species in Operations and Plan Area Projects, including the federally and state-listed SKR and federally listed coastal California gnatcatcher.

1. Federal and state authorization for take of SKR and federal authorization for take of coastal California gnatcatchers is given, conditioned on implementation of the impact minimization and reserve management

**Table S-6
Group 1, 2, and 3 Species**

Group 1 (N = 29)	Group 2 (N = 21)	Group 3 (N = 15)
Plants		
Clay bindweed	none	Braunton's milkvetch
Great valley phacelia		Coulter's matilija poppy
Knotweed spineflower		Little mouse tail
Large-leaved filaree		Many-stemmed dudleya
Palmer's grappling hook		Munz's onion
Parry's spineflower		Slender-horned spineflower
Small-flowered microseris		Smooth tarplant
		Southern tarplant
Invertebrates		
none	none	Cuckoo bee
		Quino checkerspot
Amphibians & Reptiles		
Coastal rosy boa	none	San Diego banded gecko
Coastal western whiptail		
Northern red diamond rattlesnake		
Orange-throated whiptail		
San Bernardino ringneck snake		
San Diego horned lizard		
Western spadefoot toad		
Birds		
Bell's sage sparrow	Bald eagle	Least Bell's vireo
Blue grosbeak	Bank swallow	Southwestern willow flycatcher
Burrowing owl	Black-crowned night heron	Yellow-breasted chat
California horned lark	Cooper's hawk	Yellow warbler
Coastal California gnatcatcher	Ferruginous hawk	
Downy woodpecker	Golden eagle	
Grasshopper sparrow	Great blue heron	
Loggerhead shrike	Long-eared owl	
So. Calif. rufous-crowned sparrow	Northern harrier	
Tricolored blackbird	Red-shouldered hawk	
White-tailed kite	Rough-legged hawk	
	San Diego cactus wren	
	Sharp-shinned hawk	
	Swainson's hawk	
Mammals		
NW San Diego pocket mouse	American badger	none
San Diego black-tailed jackrabbit	Big or pocketed free-tail bat	
San Diego desert woodrat	Cougar	
Stephens' kangaroo rat	Little brown bat	
	Pallid bat	
	Western mastiff bat	
	Western pipistrelle	

measures stated in the Lake Mathews Plan. No additional mitigation will be necessary.

2. State prelisting assurances are given pursuant to Section 2835 that, if any Group 1 species become listed, authorization for take will be given, provided that the impact minimization and reserve management measures identified in the Lake Mathews Plan are implemented. No additional mitigation will be necessary.
3. Federal prelisting assurances are given that, if other Group 1 species become listed, take is authorized, provided that the impact minimization and reserve management measures identified in the Lake Mathews Plan are implemented. Additional assurances are given that the information presented in the Lake Mathews Plan meets the standards set forth in Sections 10(a)(2)(A) and (B) and that no additional mitigation will be necessary.

2) Authorizations and Assurances for Take of Species in Group 2

Metropolitan is seeking the following authorizations and assurances for 21 Group 2 species, including the federally and state-listed bald eagle and the state-listed bank swallow and Swainson's hawk.

1. Federal and state authorization for take of the bald eagle and state authorization for take of bank swallows and Swainson's hawks is given, and no additional mitigation will be required, provided that the impact avoidance and minimization measures identified in the Lake Mathews Plan are implemented and the take does not involve the destruction or removal of an occupied nest site during the breeding season.
2. State prelisting assurances are given pursuant to Section 2835 that, if other Group 2 species become listed, authorization for take will be given, provided that the impact minimization and reserve management measures identified in the Lake Mathews Plan are implemented and the take does not involve the destruction or removal of an occupied breeding site during the breeding season.
3. Federal prelisting assurances are given that, if other Group 2 species become listed, take is authorized, provided that the impact minimization and reserve management measures identified in the Lake Mathews Plan are implemented. Additional assurances are given that the information presented in the Lake Mathews Plan meets the standards set forth in Sections 10(a)(2)(A) and (B) and that no additional mitigation will be necessary provided that the take does not involve the destruction or removal of an occupied breeding site during the breeding season.

3) Authorizations and Assurances for Potentially Occurring Target Species in Group 3

Metropolitan is seeking the following assurances regarding 15 Group 3 species.

Federal and state assurances will be provided that:

1. The mitigation, impact minimization, and reserve management provisions described in the Lake Mathews Plan are advance mitigation for impacts that

may result in Operations and Plan Area Projects if one or more of the Group 3 species occur in those areas in the future and

2. Authorization for take will be given without requiring additional mitigation if a Group 3 species that is or becomes listed is found in Operations or Plan Area Projects and the following conditions are met:
 - a. The species also occurs in the Multiple Species Reserve as confirmed by existing information or, if necessary, by a survey and
 - b. The impact minimization and reserve management measures identified in the Lake Mathews Plan will be implemented.
3. If the conditions in (2) above cannot be met, authorization for incidental take will be considered on a case-by-case basis by USFWS and CDFG as appropriate. In that consideration, any additional mitigation measures needed to ensure compliance with ESA requirements will be provided through reserve management within the constraints of the funding available at the time. Only in those cases where (1) take would result in a jeopardy opinion and (2) reserve management is shown to be ineffective would any additional mitigation be necessary. Additional measures would be determined in consultation with USFWS and/or CDFG as appropriate.

4) Authorizations and Assurances for Other Species

In addition to the above authorizations and assurances for Group 1, 2, and 3 species, Metropolitan is seeking the following assurances regarding other species that are not currently on the list of Target Species:

1. Federal and state assurances will be provided that if a proposed or listed species is found in Operations and/or Plan Area Projects but is not on the lists of Group 1, 2, and 3 species, no additional mitigation for impacts to that species and authorization for take of the species in Operations and Plan Area Projects will be given if:
 - a. the species assessment at the time shows that the Multiple Species Reserve contains habitat occupied by the species and the amount of such occupied habitat is at least equal to that actually proposed for removal or modification in Operations and/or Plan Area Projects and
 - b. the impact minimization and reserve management measures identified in the Lake Mathews Plan for Group 1, 2, and/or 3 species that occupy the same habitat and have similar needs as the species will be implemented. The determination of habitat needs will be made by the USFWS and/or CDFG as appropriate.
2. If the conditions in (1) above cannot be met, authorization for incidental take will be considered on a case-by-case basis by USFWS and CDFG as appropriate. In that consideration, any additional mitigation measures needed to ensure compliance with ESA requirements will be provided through reserve management within the constraints of the funding available at the time or from sources other than the applicant. Only in those cases where (1) take would result in significant impacts and (2) reserve management is shown to be ineffective would any additional mitigation be

necessary. Additional measures would be determined in consultation with USFWS and/or CDFG as appropriate.

b. Take of Target Species Associated With Outside Projects

Metropolitan is requesting that the authorizations and assurances for take of Target Species (if and when listed) extend to Outside Projects, pending review of Outside Project impacts by USFWS and/or CDFG as appropriate. Where such authorizations and assurances are provided, mitigation credits in the bank can be used at Metropolitan's option. Use of the Mitigation Bank established in the Lake Mathews MSHCP/NCCP is intended for Outside Project impacts to Target Species both prior to and subsequent to their listing.

For Outside Projects, habitat values for Target Species in impact areas will be matched to the Mitigation Bank credits using HQA or using another methodology collectively acceptable to USFWS, CDFG, and Metropolitan. No further multipliers that increase the mitigation-to-impact ratio will be necessary. The required exchange is a 1:1 (acre-for-acre) mitigation-to-impact ratio expressed in the HQA formula. Other methodologies will not require greater than an acre-for-acre mitigation-to-impact ratio. Mitigation for impacts to federally listed species, however, will be determined on a case-by-case basis.

Specifically, Metropolitan is seeking the following assurances related to take of Target Species associated with Outside Projects:

1. Federal and state authorization for take of SKR will be given, conditioned on restoration of occupied SKR habitat on agricultural lands in Metropolitan's share of the Mitigation Bank. These restored agricultural lands are part of the Mitigation Bank and will serve to compensate for take of SKR associated with Outside Projects.
2. Federal and state authorization for take of Target Species (both currently listed and those listed in the future) will be considered by USFWS (if and when federally listed) and CDFG (if and when state-listed) on a case-by-case basis. Federal and state assurances will be provided that absent a jeopardy opinion, take will be authorized according to the Lake Mathews Plan where available credits in the Mitigation Bank will be used pursuant to the HQA or other agreed upon methodology on a 1:1 basis. If a jeopardy opinion is issued, the federal or state agency will meet with Metropolitan to determine appropriate action to eliminate the jeopardy through reasonable and prudent alternatives.
3. The use of the Mitigation Bank for impacts to Target Species associated with Outside Projects is part of the implementation of the Lake Mathews MSHCP/NCCP. Consequently, the authorizations for take and prelisting assurances for Target Species are extended to Outside Projects without requiring a separate HCP and 10(a) permit and/or 2081/2835 management authorization for that project.

c. Take of Target Species in the Multiple Species Reserve

It is not Metropolitan's intent at this time to directly affect habitat in the Multiple Species Reserve. In the unlikely event that projects and activities other than

those already existing are necessary in the Multiple Species Reserve, federal and state authorizations and assurances for take will be provided for Target Species, conditioned on (1) implementation of the impact minimization and reserve management measures described in the Lake Mathews Plan and (2) provision of replacement habitat acceptable to the Management Committee as appropriate using a 1:1 (acre-for-acre) mitigation-to-impact ratio expressed in the HQA formula. Other methodologies would not require greater than an acre-for-acre mitigation to impact ratio. Mitigation for impacts to federally listed species, however, would be determined on a case-by-case basis.

2. For RCHCA Projects and Activities

The authorizations and assurances sought by the RCHCA are related to implementation of the SKR HCPs and preparation of a multiple species plan under the interagency MOU. Specifically, RCHCA is seeking:

1. USFWS approval and CDFG concurrence that the 1,263.9 acres of occupied SKR habitat that constitute the RCHCA's Mitigation Bank lands are acceptable as, and will be given 100% credit as, replacement habitat under the Short-term and/or Long-term SKR HCPs;
2. USFWS and CDFG assurances that the conservation value of the SKR habitat for other species will be credited toward a multiple species plan if and when adopted and approved; and
3. USFWS and CDFG concurrence that implementation of the MSHCP/NCCP is part of the establishment and management of the proposed Lake Mathews-Estelle Mountain SKR Core Reserve.

3. For Reserve Management

In addition to the above authorizations and assurances, USFWS and CDFG also are being asked to:

1. Authorize unavoidable incidental take of listed species that would result from reserve management activities and accept the benefits to the species that will accrue from reserve management as mitigation for such take and
2. Provide prelisting assurances that would allow incidental take of other unlisted species should they become listed as a result of reserve management activities and accept the benefits to those species that will accrue from reserve management as mitigation for the impacts.

These authorizations and assurances would apply to projects and activities identified in approved annual work plans for reserve management.

4. Funding and Assurances for Plan Implementation

In addition to seeking assurances from USFWS and CDFG, Metropolitan and the RCHCA are providing assurances that adequate funding is made available for

implementation of the Lake Mathews Plan and that the conservation and mitigation measures will be carried out as proposed.

a. Funding

Implementation of the Lake Mathews Plan will require adequate funding for management of the Combined Reserve. To fund such management, an endowment will be established by Metropolitan and the RCHCA as follows:

1. The RCHCA will acquire conservation easements from Metropolitan over the 1,269.3 acres of occupied SKR habitat in the Mitigation Bank area for a sum of \$5 million, paid in two installments: \$2.5 million within 60 days of approval of the Lake Mathews Plan and \$2.5 million within 5 years after the first payment.
2. Metropolitan will designate the funds received from the RCHCA for management of the Combined Reserve and deposit the funds in an income-earning account that it will administer on behalf of the Management Committee.
3. Under the terms of the 1979 agreement for the Existing Reserve, Metropolitan will seek payment of the \$500,000 assured by DWR for habitat management and, when received, deposit the funds in the reserve management account.

Metropolitan also will contribute to reserve management by identifying a location and providing two trailers for the Reserve Manager's office/residence; maintaining the fences, gates, locks, and internal access roads in the Plan Area; making its boat available to the Reserve Manager; and coordinating its security patrols with public access controls for the Multiple Species Reserve. These contributions reduce the costs of reserve management paid out of the endowment.

A preliminary cost estimate for the first 6 years of implementation of the Lake Mathews Plan indicates that approximately \$500,000 will be needed for the first year, and approximately \$125,000 per year will be required for years 2 through 6. Assuming that \$3 million will be available at the start of implementation (\$2.5 million from the RCHCA and \$500,000 from DWR), expenditures for initial costs will leave approximately \$2.5 million to generate revenue. At a 5% return, the \$2.5 million will yield approximately \$125,000 for annual operating costs. With the RCHCA's second payment of \$2.5 million, approximately \$250,000 per year will be available. In the event that RCHCA were to fail to make the second payment, funding would still be adequate, although activities outlined for years 7 and later would be significantly curtailed. Nevertheless, Metropolitan would not be required to make additional payment, and its permit and rights under the agreements in Volume 3 would remain in effect (see Volume 3 for more details regarding RCHCA's payment provisions).

b. Plan Implementation

To provide and receive assurances that the provisions of the Lake Mathews Plan will be implemented, Metropolitan and the RCHCA will enter into four agreements:

1. An Implementation Agreement with USFWS regarding implementation of the Lake Mathews Plan and the ESA authorizations and assurances,
2. A Section 2081/2835 Memorandum of Understanding/Permit with CDFG regarding approval and implementation of the Lake Mathews Plan as an NCCP and the ESA/NCCP authorizations and assurances,
3. A Cooperative Management Agreement with USFWS and CDFG regarding management of the Combined Reserve, and
4. A Mitigation Banking Agreement regarding establishment and use of the mitigation credits assigned to the Mitigation Bank lands.

In addition, Metropolitan and the RCHCA will institute a process for record keeping and monitoring. Annual reports on implementation of the Lake Mathews Plan will be prepared in conjunction with the annual work plans for reserve management. If necessary, a comprehensive review of implementation will be conducted by the Management Committee after the first 5 years of implementation and every 5 years thereafter.

5. Emergencies, Listings, and Unforeseen Circumstances

Over the course of implementation of the Lake Mathews Plan, it is anticipated that emergencies will occur, Target Species and other species will become federally or state-listed, and unforeseen circumstances might arise. Procedures have been identified to ensure quick and appropriate responses to such occurrences and are specified in the agreements in Volume 3. In general, the procedures involve coordination among the agencies on the Management Committee and, where necessary and feasible, adaptation of reserve management within the constraints of available funding to address problems and changes.

6. Plan Amendment Process

Metropolitan and the RCHCA anticipate that course corrections and other amendments to the Lake Mathews MSHCP/NCCP and accompanying agreements will be necessary over time. To facilitate such changes while maintaining the integrity of the original plan, procedures have been identified for the following four types of amendments:

- Additions to the lists of Group 1, 2, and 3 species
- Expansion of the Multiple Species Reserve
- Increases in mitigation credits
- Changes in the projects and activities covered by the Lake Mathews Plan in the Plan Area

In general, the procedures specify the information that should accompany the request for a plan amendment and indicate where approval depends on case-by-case determinations by USFWS and CDFG. Procedures will be developed for other types of amendments as necessary.

G. Assessment of Habitat Impacts, Take, and Alternatives

Consistent with ESA requirements and NCCP guidelines, potential impacts to Target Species and their habitats likely to occur under the Lake Mathews Plan have been identified and evaluated. The analysis assumes implementation of the conservation and mitigation program and poses three key questions:

- What are the sources and types of foreseeable impacts to habitats and species covered by the Lake Mathews Plan, including but not limited to projects and activities in the Plan Area?
- What level of take of listed and other Target Species will likely occur under the Lake Mathews Plan?
- Are there reasonable and prudent alternatives by which Metropolitan and RCHCA could substantially attain their stated objectives without any taking of threatened or endangered species?

1. Foreseeable Impacts

As summarized in Table S-7, six sources and types of impacts to the Target Species and their habitats have been identified:

1. Biological management of the Combined Reserve
2. Property management
3. Facility improvements and related projects in Operations and operation and maintenance activities at the Lake Mathews facility
4. Plan Area Projects
5. Outside Projects
6. Projects in the Multiple Species Reserve

No assumptions were made regarding how the multiple species credits assigned to the RCHCA's share of the Mitigation Bank would be used in the future and what the impacts of such uses would be. Instead, it was assumed that those issues will be addressed in the multiple species plan that the RCHCA proposes to prepare after the Long-term SKR HCP is approved.

2. Habitat Impacts and Take

For purposes of meeting federal ESA requirements regarding authorization for take, the effects of the foreseeable impacts on individual Target Species have been evaluated and, where possible, quantified. Impacts are expressed in terms of acres of habitat for these species. The method used for this calculation is described in Chapter 5.

**Table S-7
Foreseeable Impacts to Habitats and Species
Under the Plan**

Type of Activity	Potential Effects
Biological Management	Some forms of habitat restoration and enhancement and some research projects may entail direct impacts to habitats and take of listed species. Target Species and other species ultimately would benefit from habitat management; habitat enhancement may result in the occurrence of other sensitive species not currently in the Plan Area.
Property Management	<p>Maintenance of roads and fencing will have limited, temporary impacts on immediately adjacent vegetation, species at that location, and species that make use of roads and fencing.</p> <p>Installation of additional fencing will have a combination of temporary and permanent impacts on vegetation and species but ultimately will benefit species and habitats in the Plan Area and on RCHCA's proposed Core Reserve lands.</p> <p>Site preparation for a Reserve Manager's office and residence will require clearing and paving of a portion of the selected location and completion and maintenance of an access road; approximately 1.6 acres in the Mitigation Bank will be affected.</p> <p>Necessary fuel breaks will affect approximately 65 acres in the Plan Area as a whole. A comprehensive Fire Management Plan has been prepared for the Plan Area that takes into account the presence of sensitive species; fire management of RCHCA lands would also take into account impacts to SKR. Some fire management activities will benefit SKR and certain plants.</p>
Construction, Operation and Maintenance Activities in Operations	Construction, operation, and maintenance activities in Operations will have a combination of temporary and permanent impacts on habitats and species. For purposes of the analysis, it is assumed that all habitat in the 728.6-acre area designated for Operations will be adversely affected even though only some habitat will actually be modified over time.
Plan Area Projects	Five water-related projects are planned for the 154.5 acres designated for Plan Area Projects. Of the five, the Cajalco Creek Dam and Detention Basin Project is the farthest along in the planning and approval process. It will affect 91.5 acres, including approximately 21 acres of occupied SKR habitat. Take of SKR related to the Cajalco Creek Dam and Detention Basin Project will be authorized and mitigated pursuant to the terms of a separate Section 7 biological opinion and 2081 authorization. SKR mitigation for this project consists of use of approximately 42 acres of agricultural lands in Metropolitan's share of the Mitigation Bank which will become occupied SKR habitat following approval of the Lake Mathews Plan. Other Plan Area Projects include the Lake Mathews Sediment Basins project, a portion of the proposed CPA project, Western MWD projects on lands leased from Metropolitan (Western MWD must compensate Metropolitan in order to use mitigation credits under the Lake Mathews Plan), and a Bypass project (there is only a remote chance that this project would be constructed). Actual impacts of these other projects will be identified as the projects proceed. For purposes of this analysis, it is assumed that all habitat in areas reserved for Plan Area Projects will be affected.
Outside Projects	Outside Projects will draw on Metropolitan's Mitigation Bank credits after mitigation for Operations and Plan Area Projects is deducted. An estimated 657.3 acres of habitat will be available for this purpose at the start of implementation of the Lake Mathews Plan.
Projects in the Multiple Species Reserve	In the unlikely event that projects and activities other than those already existing are necessary in the Multiple Species Reserve, federal and state authorizations and assurances for take will be provided for Target Species, conditioned on (1) implementation of the impact minimization and reserve management measures described in Section C3(a) of this chapter and (2) provision of replacement habitat acceptable to the Management Committee as appropriate using a 1:1 (acre-for-acre) mitigation-to-impact ratio expressed in the HQA formula. Other methodologies will not require greater than an acre-for-acre mitigation-to-impact ratio. Mitigation for impacts to federally listed species, however, will be determined on a case-by-case basis.

In this analysis only Metropolitan projects and activities and only Group 1 and Group 2 species (i.e., Target Species known to occur in the Plan Area) are considered. Table S-8 indicates the estimated habitat impacts to Group 1 species in Operations Areas and Plan Area Projects, together with the amount of habitat for each Target Species that is being conserved on Metropolitan Mitigation Bank lands and in the Multiple Species Reserve as whole. Table S-9 provides the same information for Group 2 species.

3. Alternatives

Also in accordance with the federal and state ESAs and NCCP guidelines, alternatives to the taking of listed species were considered. Two alternatives other than that described in the Lake Mathews Plan and the No Action Alternative were evaluated:

1. Avoidance of Take of Currently Listed Species at Lake Mathews
2. No Outside Projects

These alternatives are described in Chapter 4 of the Lake Mathews Plan.

**Table S-8
Estimated Habitat
of Group 1 Species in the Plan Area
(acres)**

Group 1 Species	In Operations & Plan Area Projects	Total in Metropolitan Mitigation Bank Lands	Total in Multiple Species Reserve
Plants¹			
Clay bindweed (Potential Habitat) ²	0.0 (29.5)	0.5 (237.6)	0.9 (528.8)
Great valley phacelia (Potential Habitat)	0.0 (29.4)	2.5 (107.3)	5.4 (309.1)
Knotweed spineflower (Potential Habitat)	0.2 (29.5)	0.4 (237.6)	1.9 (528.8)
Large-leaved filaree (Potential Habitat)	0.0 (29.4)	0.1 (107.3)	0.2 (309.1)
Palmer's grappling hook (Potential Habitat)	0.0 (0.1)	0.3 (74.4)	0.5 (274.3)
Parry's spineflower	0.0	0.0	0.1
Small-flowered microseris (Potential Habitat)	0.0 (29.5)	29.5	32.9 (528.8)
Amphibians & Reptiles			
Coastal rosy boa ³	579.5	809.5	4,370.8
Coastal western whiptail	581.9	819.6	4,453.3
Northern red diamond rattlesnake ³	579.5	809.5	4,370.8
Orange-throated whiptail	581.9	819.6	4,453.3
San Bernardino ringneck snake ⁴	17.7	47.6	76.6
San Diego horned lizard	579.5	809.5	4,370.8
Western spadefoot toad ³	235.6	394.3	2,722.6
Birds			
Bell's sage sparrow	344.1	415.2	1,649.2
Blue grosbeak	17.7	47.6	76.6
Burrowing owl	253.9	710.3	3,046.0
California horned lark	253.9	710.3	3,046.0
Coastal California gnatcatcher (# of pairs)	344.1 (7)	415.2 (8)	1,649.2 (18)
Downy woodpecker	9.4	20.5	28.6
Grasshopper sparrow	235.4	394.3	2,712.6
Loggerhead shrike	600.4	1,135.9	4,777.7
Southern California rufous-crowned sparrow	344.1	415.2	1,649.5
Tricolored blackbird	245.0	414.8	2,751.2
White-tailed kite	253.1	441.9	2,790.2
Mammals			
Northwestern San Diego pocket mouse	344.1	415.2	1,649.2
San Diego black-tailed jackrabbit	609.8	1,156.4	4,806.3
San Diego desert woodrat	346.5	425.3	1,731.7
Stephens' kangaroo rat ⁵	289.1	see note 5	2,321.3

Notes

- 1 Except for Parry's spineflower, impacts to other plants which are Target Species are estimated in terms of potential as well as occupied habitat.
- 2 Indicates extent of clay soil grassland
- 3 Estimated acreages are overstated; species occurs in rock outcrop areas.
- 4 Estimated acreages are understated; species also occurs in adjacent habitat.
- 5 By definition, Metropolitan's Mitigation Bank lands are not occupied by SKR but, consistent with the SKR HCP, qualify as "replacement" habitat (see Chapter 4, Section B1(d), Habitat Impacts and Take). In addition, the agricultural lands that are part of Metropolitan's Mitigation Bank lands are potential SKR habitat.

Table S-9
Estimated Habitat of
Group 2 Species in the Plan Area
(acres)

Group 2 Species	In Operations & Plan Area Projects	Total in Metropolitan Mitigation Bank Lands	Total in Multiple Species Reserve
Birds			
Bald eagle ¹	see note 1		
Bank swallow ²	see note 2		
Black-crowned night heron	9.4	20.5	28.6
Cooper's hawk	362.0	464.7	1,709.7
Ferruginous hawk	598.0	1,125.8	4,695.2
Golden eagle	598.0	1,125.8	4,695.2
Great blue heron	10.2	22.4	40.2
Long-eared owl	9.4	20.5	28.6
Northern harrier	598.0	1,125.8	4,695.2
Red-shouldered hawk	17.9	49.5	78.5
Rough-legged hawk	598.0	1,125.8	4,695.2
San Diego cactus wren ³	see note 3		
Sharp-shinned hawk	597.2	857.1	4,447.4
Swainson's hawk	598.0	1,125.8	4,695.2
Mammals			
American badger	581.9	819.6	4,453.3
Big or pocketed free-tail bat	597.2	857.1	4,447.4
Cougar ⁴	see note 4		
Little brown bat	17.9	49.5	78.5
Pallid bat	579.5	809.5	4,370.5
Western mastiff bat	579.5	809.5	4,370.5
Western pipistrelle	579.5	809.5	4,370.5

Notes

- 1 The bald eagle winters in the Plan Area, foraging primarily in the lake and roosting in trees. Potential nesting habitat is available in the Multiple Species Reserve, but no nesting behavior or nests have been observed to date. Operations, Plan Area Projects, and Metropolitan's Mitigation Bank lands include areas where the bird might perch or roost and terrestrial foraging habitat.
- 2 Bank swallows have been observed foraging at the lake; no suitable breeding habitat occurs in the Plan Area.
- 3 Cactus wrens occur in cactus patches and thickets within Riversidian sage scrub habitat; no such occupied habitat currently occurs in the Plan Area.
- 4 The entire Plan Area is considered cougar habitat; no den sites are known to occur in the Plan Area.

Purpose, Scope, and Planning Context

1. Purpose, Scope, and Planning Context

The Lake Mathews Multiple Species Habitat Conservation Plan and Natural Community Conservation Plan (Lake Mathews MSHCP/NCCP or Lake Mathews Plan) is a joint conservation effort initiated by The Metropolitan Water District of Southern California (Metropolitan) and the Riverside County Habitat Conservation Agency (RCHCA) in cooperation with the U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Game (CDFG). This chapter describes the purpose and scope of the Lake Mathews Plan and the legal and public policy context for its preparation, approval, and implementation.

A. Purpose

The purpose of the Lake Mathews MSHCP/NCCP is to:

1. Describe, pursuant to the federal and state Endangered Species Acts (ESAs), projects and activities that are likely to result in the take of endangered species and the measures taken to minimize and mitigate such take;
2. Provide, pursuant to the California Natural Community Conservation Planning (NCCP) Act, a comprehensive conservation and management program for multiple wildlife species, including those associated with coastal sage scrub habitat;
3. Create a mechanism to coordinate the stewardship activities of multiple public agencies with land protection or management responsibilities;
4. Serve as the basis for the issuance of an incidental take permit pursuant to the provisions of Section 10 of the federal Endangered Species Act to allow the take of currently listed species and, upon listing, those species that may be listed as threatened or endangered in the future that are covered by the Lake Mathews Plan (Target Species); and
5. Serve as the basis for a Section 2081 Memorandum of Understanding/Permit under the California Endangered Species Act and a Section 2835 Memorandum of Understanding/Permit under the NCCP Act for the Target Species.

Because the USFWS will be an active participant in the cooperative management described herein, the Lake Mathews MSHCP/NCCP will be the basis for Section 7 consultations under the federal ESA for each of the Target Species as and when appropriate or required by law.

B. Scope

The Lake Mathews MSHCP/NCCP includes 5,993.5 acres owned by Metropolitan around Lake Mathews in western Riverside County (Plan Area). Specifically, the Lake Mathews Plan:

1. Creates a 5,110.4-acre Multiple Species Reserve at Lake Mathews in western Riverside County through a mitigation banking agreement that conserves 2,544.9 acres (Mitigation Bank) adjacent to an existing 2,565.5-acre State Ecological Reserve (Existing Reserve);
2. Minimizes and mitigates the impacts of projects and activities in a way that satisfies the requirements and intent of Sections 7 and 10(a) of the federal ESA, Section 2081 of the California ESA, and Section 2835 of the California NCCP Act;
3. Coordinates the establishment, management, and future expansion of the Multiple Species Reserve with the RCHCA's proposed Lake Mathews-Estelle Mountain Core Reserve (Core Reserve or SKR Core Reserve) which it proposes to establish as part of its conservation program for the SKR and which is included in the RCHCA's Memorandum of Understanding (MOU) with USFWS, CDFG, and U.S. Bureau of Land Management (BLM) regarding multiple species habitat conservation planning; and
4. Results in a multi-jurisdictional reserve (Combined Reserve) consisting of over 12,000 acres managed for various species of flora and fauna indigenous to western Riverside County. The Combined Reserve is composed of the Multiple Species Reserve and the lands in public ownership within the RCHCA's proposed SKR Core Reserve lands outside the Plan Area.

The agreements in Volume 3 of the Lake Mathews Plan control in case of any conflicts with Volumes 1 and 2.

1. Agency Objectives

Metropolitan. Metropolitan is a 27-member public entity that delivers water from the California and Colorado River Aqueducts to cities and communities within a 5,125-square-mile service area in southern California. Lake Mathews is a critical component of Metropolitan's system since it is the terminal reservoir of Metropolitan's Colorado River Aqueduct. The reservoir provides regulatory storage in order to most effectively and economically utilize and distribute Colorado River resources. Metropolitan's primary objectives regarding the Lake Mathews Plan are to:

1. Conduct operations and maintenance activities at the Lake Mathews facility as necessary to provide reliable deliveries to southern California;
2. Establish a conservation program, including a Mitigation Bank, to mitigate future biological impacts from operation and maintenance activities at the Lake Mathews facility, projects in the Plan Area (Plan Area Projects), and

projects outside the Plan Area within the mitigation region described in Part B of Volume 3 (Outside Projects);

3. Secure federal and state authorizations for take of already listed species in the Plan Area, together with assurances that additional conservation will not be required and authorization for take will be given if other species covered by the Lake Mathews Plan become listed in the future; and
4. Establish, in terms of the Lake Mathews Plan, Metropolitan's coordination with the RCHCA's SKR and multiple species conservation programs.

RCHCA. The RCHCA is an eight-member joint powers agency representing the county of Riverside and the cities of Corona, Hemet, Lake Elsinore, Moreno Valley, Perris, Riverside, and Temecula. It was established in April 1990 to:

. . . plan for, acquire, administer, operate, and maintain land and facilities for ecosystem conservation and habitat reserves to implement a habitat conservation plan for the Stephens' kangaroo rat and other listed or candidate threatened and endangered species (RCHCA 1994).

Its primary objectives regarding the Lake Mathews Plan are to:

1. Acquire and conserve SKR habitat in accordance with the Short-term SKR Habitat Conservation Plan (HCP) by obtaining conservation easements over 1,293.5 acres occupied by SKR in the area being conserved as a Mitigation Bank,
2. Secure federal and state assurances that the multiple species values of the SKR habitat in the Mitigation Bank will be credited towards the RCHCA's multiple species conservation program, and
3. Establish and provide for the ongoing management of the Lake Mathews Multiple Species Reserve as a major component within the Lake Mathews-Estelle Mountain Core Reserve proposed in the Long-term SKR HCP.

2. Plan Area

The Plan Area for the Lake Mathews MSHCP/NCCP consists of two primary components (Figure 1):

- The Multiple Species Reserve, which consists of 2,565.5 acres that are the Existing Reserve and 2,544.9 acres that are the Mitigation Bank and
- Areas excluded from the Multiple Species Reserve and designated for operation and maintenance activities (Operations) (728.6 acres) and Plan Area Projects (154.5 acres).

Lake Mathews itself is surrounded by the Plan Area components but is not part of the Plan Area acreage below its high water mark. At maximum inundation levels of 1,390 feet, its surface measures 2,730 acres.

The lands conserved in the Plan Area will become an increasingly important component of habitat conservation efforts in western Riverside County. Western

Riverside County is located east of the Los Angeles metropolitan area and for the past 25 years has been one of the most rapidly urbanizing areas in southern California. The county as a whole contains over 4.7 million acres (7,310 square miles), making it California's fourth largest county and roughly equal in size to the state of Connecticut. It is bordered on the north by San Bernardino County, on the east by the Arizona state line, on the south by San Diego and Imperial Counties, and on the west by Orange County (Figure 2). Western Riverside County encompasses roughly one-third of the county's total acreage and more than 75% of its population, housing, and employment. Its population currently is estimated at 1 million people and is expected to exceed 1.4 million by 2010. All of the Lake Mathews Plan Area is unincorporated land and, except for 475 acres, is part of the Lake Mathews Community Planning (LMCP) Area identified in the Riverside County General Plan. The Riverside County General Plan classifies most (3,300 acres) of the Plan Area under the special category of "public official"; the remainder is classified for rural residential uses of varying density (1,948 acres) and open space (746 acres). Lands within a 1-mile radius of the Plan Area are classified for residential and related uses (nearly 12,000 acres) and open space (approximately 3,000 acres).

Existing land uses in the Plan Area are limited to the reservoir and ancillary facilities, water-related facilities on lands leased from Metropolitan, county roadways and internal access roads, agriculture, and conservation.

3. Projects and Activities

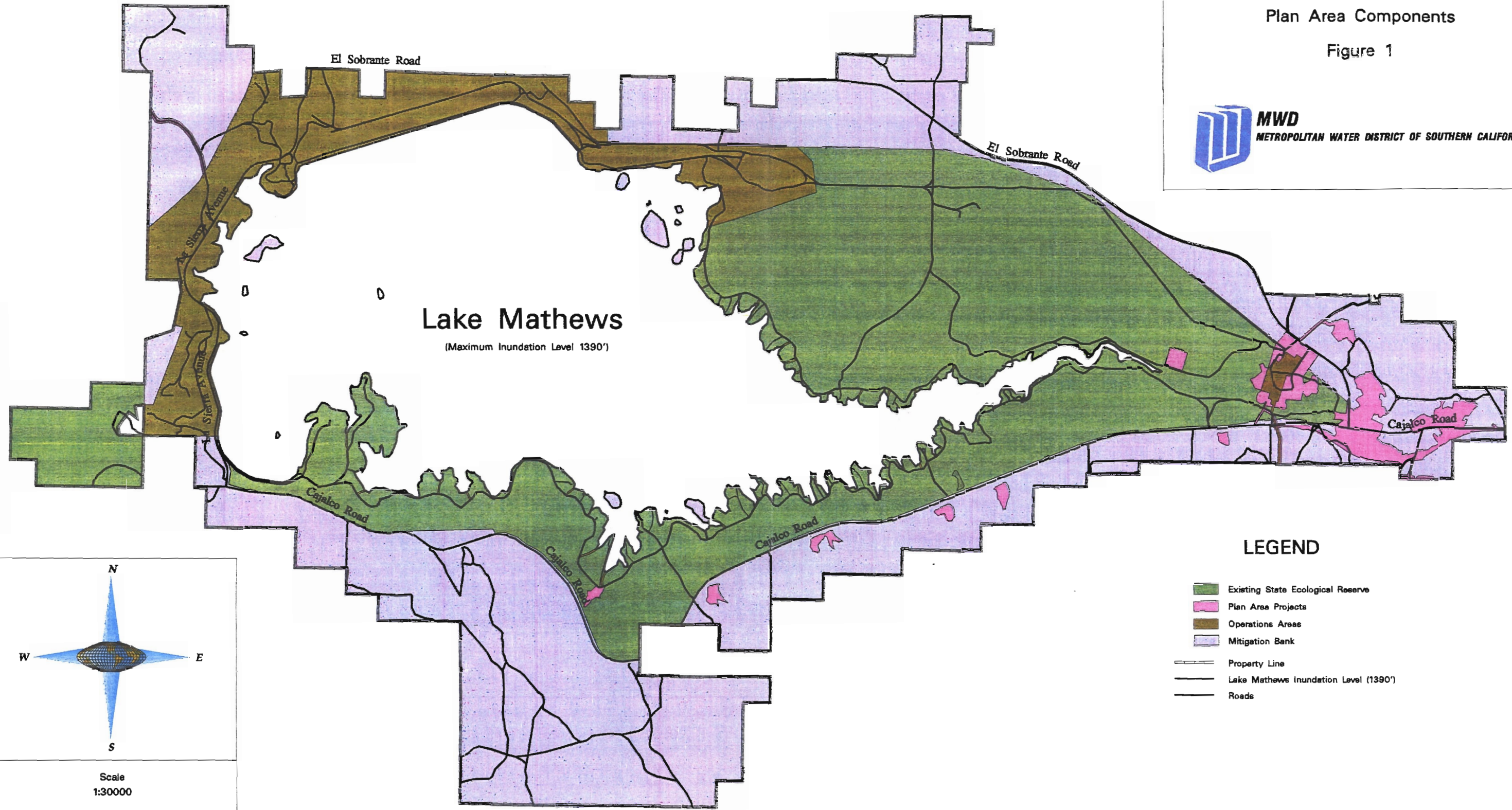
Projects and activities covered by the conservation and mitigation measures identified in the Lake Mathews Plan include:

1. Biological management of the Combined Reserve;
2. Property management in the Plan Area, including maintenance of roads and fences and implementation of the Fire Management Plan;
3. Facility improvements and related projects in Operations and operation and maintenance activities at the Lake Mathews facility;
4. Water facility improvements and related projects and operation and maintenance of facilities in the areas designated for Plan Area Projects;
5. Outside Projects that would use the Mitigation Bank but would not occur in the Plan Area; and
6. Construction, operation, and maintenance of additional projects within the Multiple Species Reserve.

The nature and foreseeable biological impacts of these projects and activities are described in detail in Chapter 4.

Plan Area Components

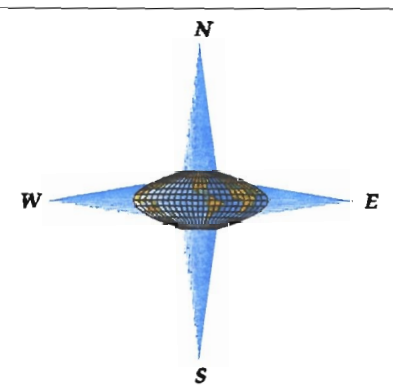
Figure 1



Lake Mathews
(Maximum Inundation Level 1390')

LEGEND

- Existing State Ecological Reserve
- Plan Area Projects
- Operations Areas
- Mitigation Bank
- Property Line
- Lake Mathews Inundation Level (1390')
- Roads



Scale
1:30000
0 1250 2500 3750
Feet
One Inch = 2500 Feet

December 22, 1994

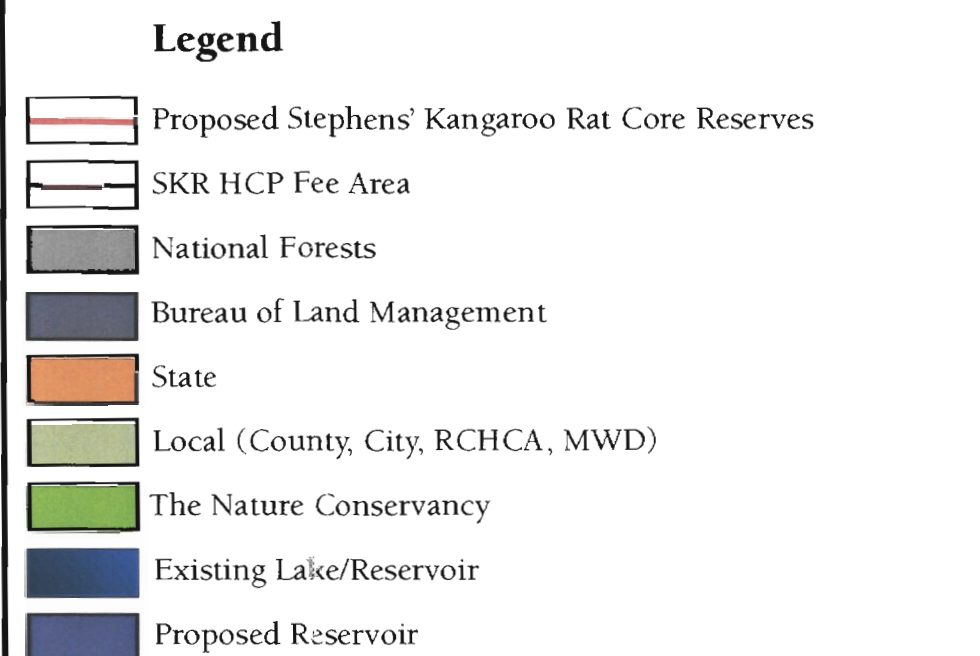
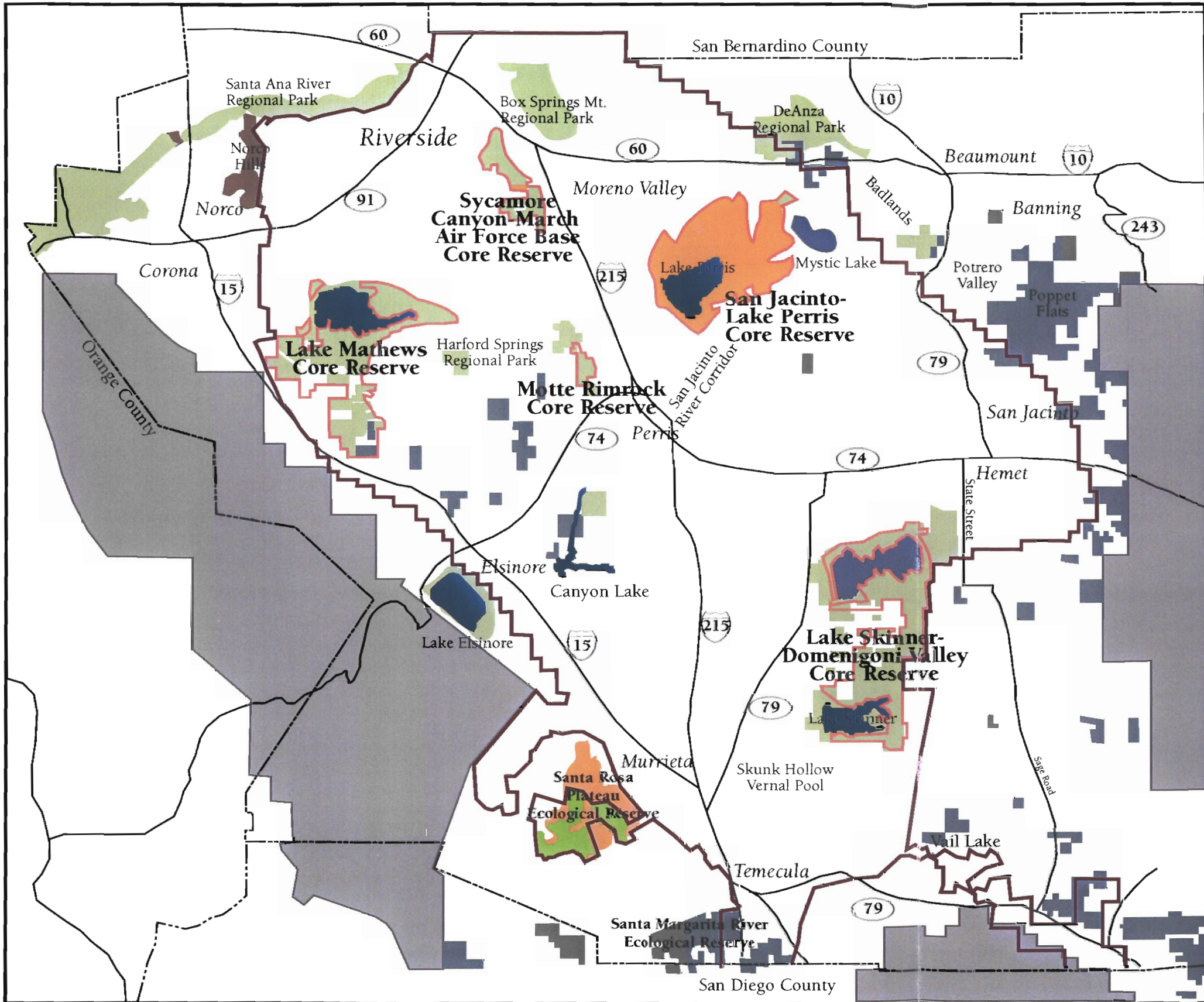
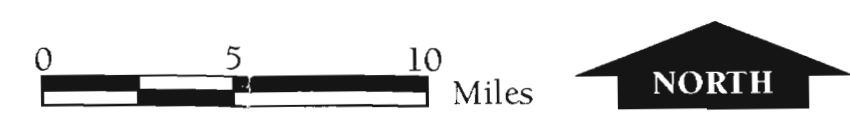


Figure 2
Regional Context of Plan Area



C. Context

The legal and public policy context of the Lake Mathews Plan includes:

1. The federal and state laws, regulations, guidelines, and policies that govern wildlife and habitat conservation;
2. Agreements signed in 1979 and 1982 regarding the Existing Reserve;
3. The RCHCA's Short- and Long-term SKR HCPs;
4. Other approved conservation plans for lands in western Riverside County; and
5. The interagency conservation planning MOU among the RCHCA, USFWS, CDFG, and BLM.

1. Laws, Regulations, Guidelines, and Policies

The laws and regulations that most directly pertain to the Lake Mathews Plan are the federal and state ESAs and California NCCP Act, together with the relevant provisions of the federal Fish and Wildlife Coordination Act, federal Migratory Bird Treaty Act and Bald Eagle Protection Act, California Native Plant Protection Act, federal and state wetland protection laws, and federal and state environmental impact assessment laws. Table 1 summarizes the applicable provisions of these laws and their primary relevance to the Lake Mathews Plan; a more detailed discussion is provided in Appendix A.

In general, the Lake Mathews Plan is designed to provide the required information and meet the approval criteria for:

1. HCPs prepared in accordance with Section 10(a) of the federal ESA,
2. Endangered species management authorizations prepared in accordance with Section 2081 of the California ESA and Section 2835 of the NCCP Act, and
3. Ongoing multi-species plans (OMSPs) initiated prior to but consistent with adopted guidelines for the NCCP coastal sage scrub program.

Section 10(a) and Section 2081/2835 requirements (Table 2 and Appendix A) were used to guide the development of conservation and impact mitigation measures for the individual species covered by the Lake Mathews Plan, including species that currently are not listed as threatened or endangered. This approach was taken to ensure that the document provides USFWS and CDFG with the information and analysis they need to authorize incidental take of listed species. The approach is also consistent with NCCP process guidelines, which provide for the approval of an OMSP as an NCCP equivalent if, among other things, the Lake Mathews Plan meets 10(a) and 2081 standards for the species of concern (Table 2).

The Lake Mathews Plan is eligible for consideration as an NCCP equivalent because, as confirmed in August 1992 in an NCCP enrollment agreement signed

Table 1
Summary of Applicable Federal and State Laws

Federal Law	Key Provisions	Relevance to the MSHCP/NCCP
Endangered Species Act		
Section 4	Covers the federal listing process, designation of critical habitat, special rules for the protection of threatened species, and preparation of federal recovery plans.	Plan anticipates future listings, designation of critical habitat, special rules, and recovery plans for species in the Plan Area; species of concern treated as listed for planning purposes.
Section 6	Covers cooperative agreements with states for the management and conservation of listed fish, wildlife, and plants.	NCCP component and conservation measures for sensitive plants reflect existing cooperative agreements between USFWS and CDFG.
Section 7	Requires federal agencies to consult with USFWS on actions involving listed species; requires USFWS to conduct internal consultations regarding its own actions; includes provisions for conferences with USFWS on species proposed for listing and for authorization for take of listed species.	Internal consultation required for USFWS' approval of the Lake Mathews Plan and requested authorizations for take; provisions for consultations and conferences as may be appropriate or required by law.
Section 9	Prohibits the take of listed fish or wildlife species; prohibits take of listed plants in areas under federal jurisdiction, except as provided under Sections 7 and 10.	Prohibition of take currently applies to three species known to occur in Plan Area (SKR, coastal California gnatcatcher, and bald eagle); prohibition assumed to apply to other species covered by the Lake Mathews Plan.
Section 10(a)	Authorizes take of listed species for scientific purposes and in connection with otherwise lawful activities; requires preparation of an HCP for an incidental take permit and specifies approval criteria (Table 2).	Information requirements and approval criteria for HCPs applied to the Lake Mathews Plan. The Lake Mathews Plan supports issuance of a Section 10a incidental take permit for each of the Target Species.
Special 4(d) Rule for the Coastal California Gnatcatcher	Allows incidental take of coastal California gnatcatchers in areas with approved NCCPs and in areas where NCCPs are being prepared.	Information requirements and approval criteria for NCCPs applied to the Lake Mathews Plan; measures for coastal California gnatcatchers consistent with 4(d) rule.
Fish and Wildlife Coordination Act	Authorizes the Secretary of the Interior to assist and cooperate with federal, state, and public or private agencies.	Authorizes USFWS' active participation in implementation of the Lake Mathews Plan.
Section 404 of the Clean Water Act	Regulates the discharge of materials into U.S. waters; pertains to wetland habitats as well as water bodies.	Protects wetland habitats and species in the Plan Area and requires federal permit for certain impacts to wetlands.
Migratory Bird Treaty Act (MBTA) and Bald Eagle Protection Act (BEPA)	MBTA prohibits taking of certain birds or their nests and eggs during their breeding season; BEPA explicitly protects bald and golden eagles.	MBTA applies to resident and migratory bird species known to occur in Plan Area; bald eagles and golden eagles occur in Plan Area.
National Environmental Policy Act (NEPA)	Requires federal agencies to evaluate the effects of their proposed actions on the human environment.	Applies to USFWS' action on the Lake Mathews Plan as an HCP and NCCP.

**Table 1 (continued)
Summary of Applicable Federal and State Laws**

State Law	Key Provisions	Relevance to MSHCP/NCCP
Endangered Species Act		
Section 2053	Stipulates that state agencies should not approve projects that would jeopardize listed species or destroy or adversely modify their habitat; directs CDFG to help develop reasonable and prudent alternatives for such projects.	Applies to CDFG's action on a 2081 management authorization, jeopardy consultations triggered by CEQA reviews and, if listed species are involved, CDFG's action on plans prepared under the NCCP Act.
Sections 2070-2079	Covers the state listing process; calls for periodic review of species' status, habitat identified as essential to listed species, and recommendations for the recovery of listed species.	Plan anticipates future listings; species of concern treated as state-listed for planning purposes.
Section 2080	Prohibits take of state-listed species and of candidates for such listing.	Prohibition of take currently applies to four species in Plan Area; assumed to apply to other species of concern.
Sections 2081 & 2084	2081 authorizes CDFG to enter into memoranda of understanding for take of listed species; 2084 allows Fish and Game Commission to authorize take of candidate species.	Information requirements and approval criteria applied to the Lake Mathews Plan.
Sections 2090-2097	Requires state lead agencies to consult with CDFG on projects affecting state-listed species; requires CDFG to coordinate consultations with USFWS for actions involving federally listed species and, wherever possible, to adopt the federal biological opinion.	Plan assumes coordination of consultations on the species covered by the Lake Mathews Plan; in planning process, questions used by CDFG in jeopardy consultations (Table 2) were used to help evaluate potential effects on the species of concern.
NCCP Act		
Sections 2800-2840	Establishes program to conserve ecosystems on a regional scale; directs CDFG to develop guidelines for preparation and approval of such conservation plans.	Plan is intended to meet requirements of NCCP Act.
Section 2835	Allows CDFG to authorize take of species covered by plans prepared in accordance with NCCP guidelines.	Plan intended to provide basis for CDFG authorization for take of species treated as state-listed.
Native Plant Protection Act	Protects rare and endangered native plants; basis for agreement between CDFG and USFWS regarding protection of federally listed plants.	Plan conserves the plant species treated as listed in accordance with provisions of this Act.
Sections 1600-1603 of Fish and Game Code	Regulates modifications to waterways; pertains to wetland habitats as well as water bodies.	Protects wetland habitats and species in the Lake Mathews Plan and requires agreement with CDFG for certain impacts.
California Environmental Quality Act (CEQA)	Requires public lead agencies to assess the environmental effects of a proposed project before rendering a decision.	Applies to Metropolitan's and RCHCA's decisions regarding the Lake Mathews MSHCP/NCCP.

**Table 2
Information Requirements and Approval Criteria
Relevant to the Lake Mathews MSHCP/NCCP**

Information Requirements		
Federal ESA	California ESA	California NCCP Act
<p>HCP requirements, as stated in Section 10(a) and 50 CFR 13 and 17:</p> <ol style="list-style-type: none"> 1. Common and scientific name(s) of species; 2. Names of responsible parties; 3. Impacts likely to result from the taking; 4. Measures to monitor, minimize, and mitigate impacts; 5. Funding available to undertake the proposed measures; 6. Procedures to deal with unforeseen circumstances; 7. Alternatives that would not result in take and the reasons why the alternatives were not adopted; and 8. Additional measures required by USFWS (if any) as necessary or appropriate. 	<p>2081 agreement requirements, as stated in CDFG draft guidelines:</p> <ol style="list-style-type: none"> 1. Description of the affected species and their habitat(s); 2. Description of the project that will affect the listed species, including maps showing the overall project area and impact area; 3. Analysis of potential impacts, including cumulative effects on listed species in and adjacent to the project area; 4. Analysis of alternatives designed to reduce or eliminate impacts to the listed species; 5. Description of on- and offsite mitigation measures; and 6. Financial assurances regarding the implementation of mitigation measures. 	<p>NCCP conservation plan components, as stated in NCCP process guidelines:</p> <ol style="list-style-type: none"> 1. Maps and text presenting: (a) plan area boundaries; (b) the distribution of coastal sage scrub, target species populations, and sensitive species; (c) quantitative and qualitative habitat assessments; and (d) planned land uses. 2. A habitat conservation and management program that includes: (a) options that have been evaluated for their effectiveness, (b) criteria that treat target species as listed species, (c) short-term and long-term measures, (d) an evaluation of alternatives to activities that would take target species, and (e) a recommended approach. 3. An implementation program that includes: (a) a phasing program, (b) funding mechanisms, (c) mitigation and plan monitoring, and (d) procedures to address the effects of unforeseen circumstances.

**Table 2 (continued)
Information Requirements and Approval Criteria
Relevant to the Lake Mathews MSHCP/NCCP**

Approval Criteria		
Federal ESA	California ESA	California NCCP Act
<p>Approval criteria for an incidental take permit, as stated in Section 10(a)(1)(B) and 50 CFR 13 and 17:</p> <ol style="list-style-type: none"> 1. The taking will be incidental to an otherwise lawful activity; 2. The applicant will, to the maximum extent practicable, minimize and mitigate the impacts of the taking; 3. The applicant will ensure that adequate funding for the plan and procedures to deal with unforeseen circumstances will be provided; 4. The taking will not appreciably reduce the likelihood of the survival and recovery of the species in the wild; 5. The applicant will ensure that the other measures required by USFWS, if any, will be met; and 6. USFWS is assured that the conservation plan will be implemented. 	<p>No approval criteria stated in ESA; in 2090 consultations, CDFG uses the following questions to help assess impacts on listed species:</p> <ol style="list-style-type: none"> 1. Would a viable or recoverable population be eliminated or a significant proportion of a population be adversely affected? 2. Would the range of the species be significantly diminished? 3. Would the quantity or quality of the species' habitat be reduced by immediate or future effects? 4. Would the species' access to its habitat be reduced or rendered more hazardous? 5. Would current or future efforts to protect species be adversely affected? 6. Would plans for the recovery or eventual delisting of the species be adversely affected? 7. Would the project interfere with reproductive or other behavior of the species? 8. Would the project cause, or increase the risk of, the species' extinction? 	<p>No approval criteria for NCCPs stated in Act; process guidelines indicate that OMSPs must meet following criteria to qualify as an NCCP equivalent:</p> <ol style="list-style-type: none"> 1. The planning effort was funded and was underway as documented either by a memorandum of understanding, an agreement, a statutory exemption, or other formal process at the time the NCCP Act became effective (January 1, 1992); 2. The plan protects coastal sage scrub habitat and/or contains an agreement for satisfactory mitigation for any coastal sage scrub loss approved by CDFG pursuant to a prior planning effort, and the plan substantially achieves the objectives of the NCCP Act; 3. CDFG approves the plan and the plan meets state ESA Section 2081 requirements for named species of concern; and 4. USFWS approves the plan and it provides the equivalent of federal ESA Section 10(a) HCP requirements for named species of concern.

by Metropolitan and CDFG, the planning process was funded and underway prior to enactment of the NCCP program. That agreement covers two MSHCPs initiated by Metropolitan in cooperation with the RCHCA: the Southwestern Riverside County MSHCP (see 4. Other Approved Conservation Plans below) and the Lake Mathews Plan.

2. Agreements Regarding the Existing Reserve

The 2,565.5 acres that constitute the Existing Reserve around Lake Mathews are the subject of two agreements that are included in their entirety in Volume 3 of the Lake Mathews MSHCP/NCCP:

- An agreement dated October 23, 1979, between Metropolitan, CDFG, and the California Department of Water Resources (DWR) and
- An agreement dated September 14, 1982, between Metropolitan and CDFG.

a. October 1979 Agreement

The October 1979 agreement covers the dedication of lands by DWR and Metropolitan as mitigation for the impacts of the State Water Project on wildlife. Regarding Lake Mathews, the agreement reads in part as follows:

Metropolitan will dedicate at Lake Mathews for wildlife mitigation purposes approximately 2,565 acres. Uses of these lands for other purposes will not be allowed if such use impinges upon the maintenance of wildlife populations, except as needed for Metropolitan's operations. If Metropolitan requires any of these lands for its operations, Metropolitan, in cooperation with DWR, will replace such lands taken with other lands acceptable to [C]DFG.

[C]DFG will prepare a plan conceptually describing the kinds and types of habitat development it anticipates carrying out on the Lake Mathews mitigation lands. These habitat development plans, if implemented, will be financed by [C]DFG and implemented by Metropolitan. Any habitat development must be consistent with water quality standards and the operational functions of Lake Mathews as a water supply reservoir.

The 1979 agreement also states:

The maximum operations and maintenance expenditure on the lands of Lake Mathews through the term of the definitive agreements, to be reimbursed by DWR, shall not exceed \$500,000. After this amount has been expended, operations and maintenance costs will be reimbursed by [C]DFG.

The Lake Mathews Plan is consistent with and subordinate to the provisions of the 1979 agreement. With CDFG approval, the Lake Mathews MSHCP/NCCP will be the "habitat development" plan for the Existing Reserve and the \$500,000 from DWR will be sought for implementation of the Lake Mathews Plan.

b. September 1982 Agreement

The September 1982 agreement states CDFG's intention to have the mitigation lands designated as a State Ecological Reserve, acknowledges Metropolitan's ownership of and operations on the lands, and acknowledges that CDFG has statutory responsibility for management of State Ecological Reserves. Specifically, the agreement:

1. Identifies special regulations for the Lake Mathews reserve that supersede the general laws and regulations governing State Ecological Reserves, including restrictions on access, prohibition of all fishing and recreation, and authorization for Metropolitan and CDFG "to carry out management activities necessary to ensure water quality and the proper operation and maintenance of Lake Mathews as a water supply facility and natural area";
2. Stipulates that there shall be no public use of the reserve unless both Metropolitan and CDFG agree in advance that such use will not interfere with Metropolitan's water service obligations or be inconsistent with the management objectives of the reserve; and
3. States Metropolitan's responsibilities for controlling the water level in the reservoir, for controlling vegetation and rodents, for providing security measures to protect the integrity of water supplies, and for maintaining and repairing as necessary the perimeter fence around the reserve.

The 1982 agreement further states that CDFG and Metropolitan "shall put forth their best efforts in order to ensure that the operation and maintenance of Lake Mathews as a water supply facility and as a significant natural area are not impaired."

The Lake Mathews Plan is consistent with and subordinate to the provisions of the 1982 agreement.

3. RCHCA's SKR Conservation Program

The RCHCA's SKR conservation program has both short- and long-term components. The short-term component consists of an SKR HCP, 10(a) permit, and 2081 agreement that were approved by USFWS and CDFG in 1990 and allow a limited amount of SKR take within the jurisdiction of the RCHCA members. The long-term component, which the RCHCA Board of Directors has authorized staff to submit to USFWS and CDFG for approval, consists of an ongoing SKR conservation program and 30-year permit and agreement for take of SKR.

a. Short-term SKR HCP

The RCHCA's Short-term SKR HCP identifies the boundaries of the area covered by the RCHCA's existing 10(a) permit and 2081 agreement for take of SKR, the boundaries and characteristics of study areas under consideration as permanent SKR reserves, the process by which the SKR reserves will be established, the process by which the boundaries of the study areas may be modified, and limitations on how much and where incidental take of SKR may occur. The

existing permit and agreement authorize take of 4,400 acres of occupied SKR habitat provided that:

1. The take is outside of the reserve study areas, with the exception of take resulting from projects involving essential public utilities;
2. One acre of replacement habitat acceptable to USFWS and CDFG is acquired within a reserve study area for every one acre SKR habitat taken under the permit and agreement outside of study areas; and
3. The amount of replacement habitat acquired remains within 10 percent of the amount of authorized take that has occurred, as measured by cumulative totals every 6 months.

The 4,400 acres of take are allocated among the RCHCA members, and acquisition of replacement habitat is funded primarily by a \$1,950 per acre mitigation fee imposed by the RCHCA members on new development within the SKR plan area. The fees are collected by each member agency and transferred to the RCHCA, which is the entity responsible for acquisition of replacement habitat. Ten percent of all collected fees are reserved for management of the acquired lands.

Amendments approved in 1992 and 1993 further stipulate that:

1. Projects involving essential public utilities include those for "water, electricity, gas, and the like, in which no reasonable alternative location or route is available, taking into account comparable environmental consequences and costs of installation, and subject to approval of appropriate mitigation" by USFWS and CDFG are authorized within study areas;
2. Mitigation credit for the replacement habitat not occupied by SKR will be given on a case-by-case basis by USFWS with the concurrence of CDFG; and
3. Take authorized under the existing permit and agreement may occur any time within 15 years of the expiration of the permit and agreement, provided that the applicable mitigation fees have been paid, replacement habitat has been acquired, and all other terms and conditions of the permit and agreement have been met.

The term of the permit and agreement also have been extended with USFWS' and CDFG's approval.

With respect to the Lake Mathews MSHCP/NCCP, the RCHCA's short-term SKR plan, permit, and agreement pertain as follows:

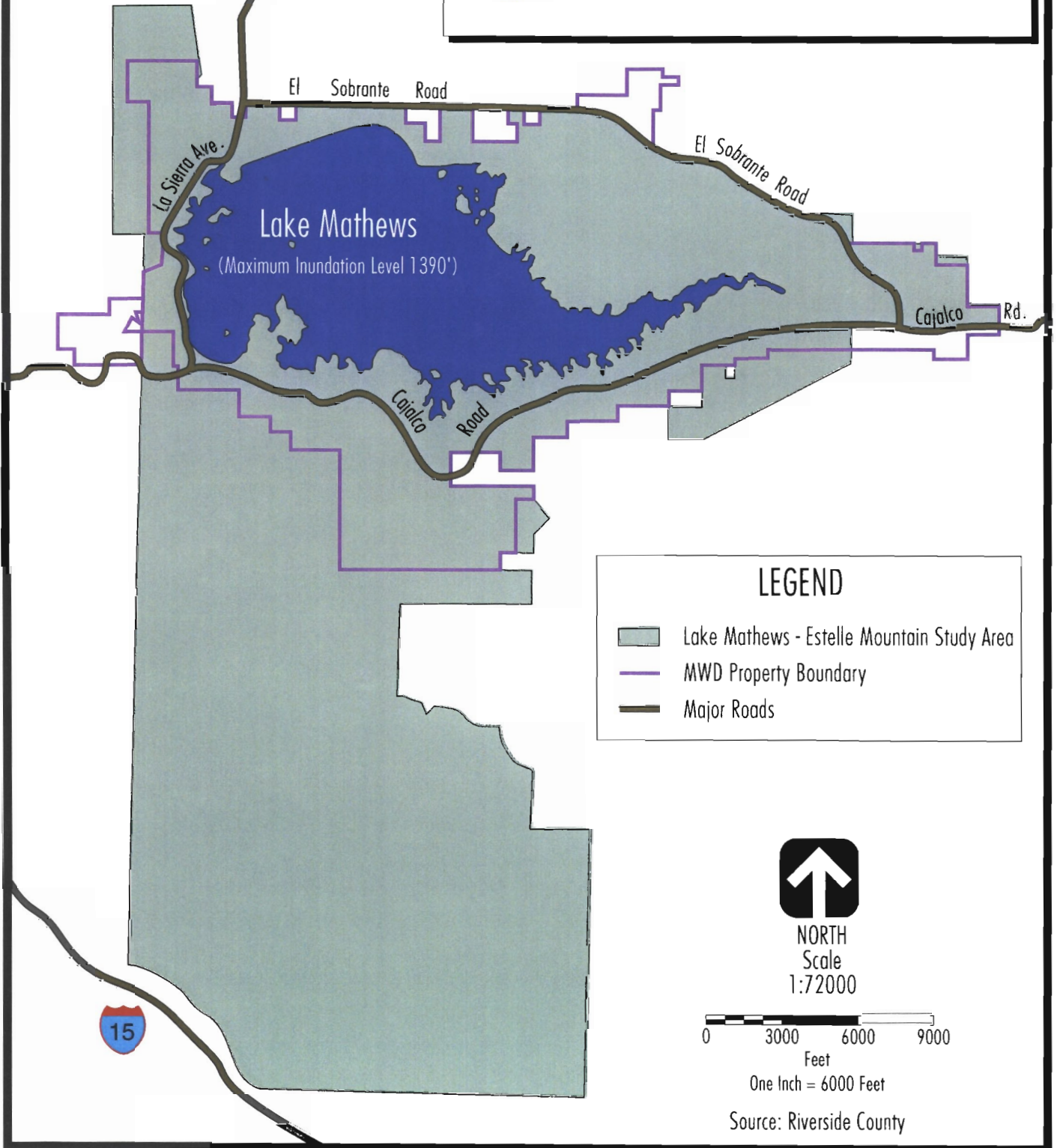
1. The lands covered by the Lake Mathews MSHCP/NCCP are within the Lake Mathews-Estelle Mountain study area identified in the Short-term SKR HCP (Figure 3);
2. The ongoing operation and maintenance activities at the Lake Mathews facility and planned water facility projects qualify as "essential public

Existing Lake Mathews - Estelle Mountain Study Area Under Short-Term SKR HCP

Figure 3



MWD
METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

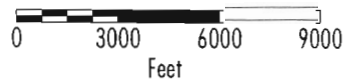


LEGEND

- Lake Mathews - Estelle Mountain Study Area
- MWD Property Boundary
- Major Roads



NORTH
Scale
1:72000



One Inch = 6000 Feet

Source: Riverside County

utilities," and the SKR measures in the Lake Mathews MSHCP/NCCP are intended to meet the requirements of the RCHCA's permit and agreement for take inside a study area;

3. The occupied SKR habitat and other lands in the proposed mitigation bank qualify as "replacement habitat" as defined in the implementing agreements for the HCP; and
4. Establishment of the Multiple Species Reserve completes the SKR reserve planning process on Metropolitan's Lake Mathews properties.

b. Long-term SKR HCP

Concurrent with the preparation of the Lake Mathews Plan, the RCHCA has been developing a Long-term SKR HCP to replace the short-term plan. In general, the long-term plan focuses on the establishment and management of seven Core Reserves that initially will conserve approximately 12,500 acres of SKR habitat and, through land exchanges and sales involving BLM, ultimately will conserve approximately 15,000 acres of SKR habitat. The proposed Core Reserves also will serve as building blocks for the RCHCA's multiple species conservation program. Incidental take of SKR would be allowed throughout the Plan Area for a 30-year period, with take inside the proposed Core Reserves subject to a 1:1 habitat replacement requirement. As in the short-term plan, special provisions are included for take of SKR resulting from essential public utilities and services. Management of each proposed Core Reserve would be planned to coordinate and supplement existing institutional arrangements.

The relationship of the Lake Mathews MSHCP/NCCP to the RCHCA's long-term SKR plan, permit, and agreement is as follows:

1. The Multiple Species Reserve is part of the proposed Lake Mathews-Estelle Mountain SKR Core Reserve and, on Metropolitan's Lake Mathews properties, the boundaries of the Multiple Species Reserve will be the boundaries of the proposed Core Reserve (Figure 4);
2. The ongoing operation and maintenance activities at the Lake Mathews facility and planned water facility projects qualify as "essential public utilities," and the SKR measures in the Lake Mathews MSHCP/NCCP are intended to meet the requirements of the RCHCA's permit and agreement for take inside the proposed Core Reserves;
3. The Lake Mathews MSHCP/NCCP provides for the establishment and management of the Multiple Species Reserve and, as specified in the Lake Mathews Plan, provides for the management of other publicly owned lands in the Combined Reserve;
4. Implementation of the Lake Mathews MSHCP/NCCP assumes, but is not contingent on, approval of a Long-term SKR HCP.

4. Other Approved Conservation Plans

In addition to the RCHCA's SKR program, three approved conservation plans for lands in western Riverside County are relevant to the Lake Mathews Plan. These plans are:

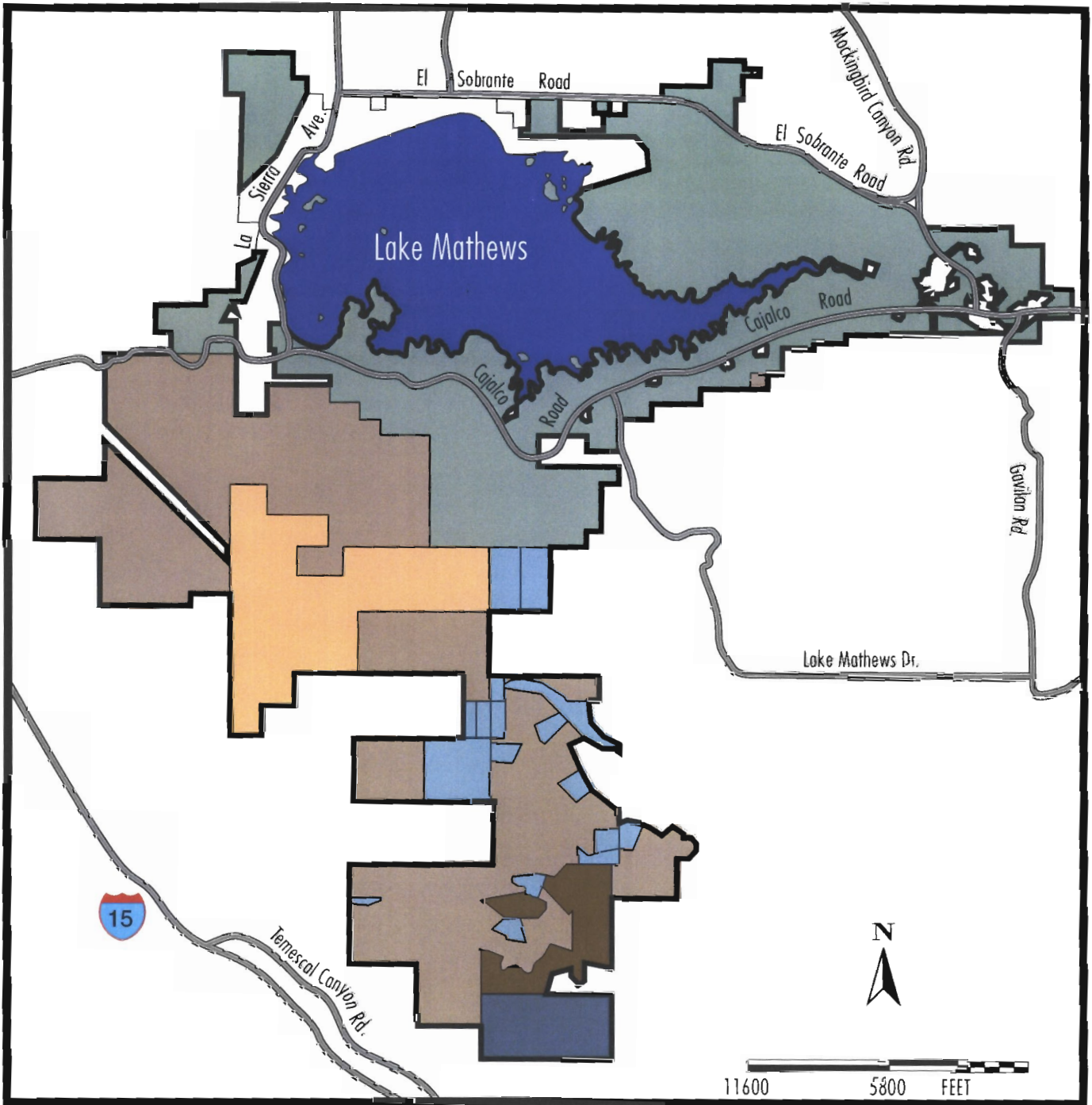
- a. The Southwestern Riverside County MSHCP,
- b. The management plan and mitigation banking agreement for the Shipley Reserve, and
- c. The management plan and mitigation banking agreement for the Santa Rosa Plateau Reserve.

The Lake Mathews MSHCP/NCCP is largely patterned on the Southwestern Riverside County MSHCP and proposes a mitigation banking and cooperative management program that is similar to that created with the Shipley Reserve. In addition, the methodology used to establish mitigation credits in the Santa Rosa Plateau mitigation bank has been used in preparing the Lake Mathews Plan.

a. Southwestern Riverside County MSHCP

The Southwestern Riverside County MSHCP was prepared cooperatively by Metropolitan and the RCHCA and approved by USFWS and CDFG in October 1992. In general, the Southwestern Riverside County MSHCP conserves more than 9,000 acres of sensitive habitats, anticipates the future listing of individual species, mitigates impacts of a specific project (a new reservoir), and provides for the ongoing management of the reserve through a cooperative agreement with USFWS and CDFG. The primary goal of the Southwestern Riverside County MSHCP is to contribute to the continued survival and recovery of sensitive species known to occur in the Southwestern Riverside County Multi-species Reserve (Multi-species Reserve), including but not limited to:

- SKR,
- Coastal California gnatcatcher,
- Seven sensitive plant species (smooth tarplant, Payson's jewelflower, Parry's spineflower, San Jacinto Valley saltbush, Munz's onion, Engelmann oak, and Palmer's grapplinghook),
- Five sensitive reptile species (orange-throated whiptail, San Diego horned lizard, northern red diamond rattlesnake, coastal western whiptail, and southwestern pond turtle),
- Eleven sensitive bird species (Bell's sage sparrow, southern California rufous-crowned sparrow, great blue heron, white-tailed kite, bald eagle, Cooper's hawk, ferruginous hawk, golden eagle, loggerhead shrike, burrowing owl, and California horned lark), and
- Six sensitive mammal species (mountain lion, American badger, Los Angeles pocket mouse, San Diego desert woodrat, San Diego black-tailed jackrabbit, and northwestern San Diego pocket mouse).



-  Land Under Negotiation for Conservation Easements
-  RCHCA
-  State Wildlife Conservation Board
-  MWD Ownership in Core Reserve
-  Private
-  BLM
-  Core Reserve Boundary
-  Roads/Highways

**Proposed Lake Mathews -
Estelle Mountain Core
Reserve
Under Long-Term SKR HCP
Figure 4**



Source: Riverside County

To this end, the Southwestern Riverside County MSHCP provides for:

- Dedication and preservation of habitat;
- Mitigation of the habitat impacts of the new reservoir;
- Cooperative management of the Multi-species Reserve by Metropolitan, the RCHCA, Riverside County Regional Park and Open-Space District, USFWS, and CDFG;
- Funding for a research program and management of the Multi-species Reserve; and
- Authorization of take, including "prelisting" assurances regarding species that currently are not but could become listed prior to completion of the new reservoir.

b. Shipley Reserve

The Shipley Reserve, which is now part of the larger multiple species reserve established by the Southwestern Riverside County MSHCP, was originally established in 1991 through a cooperative effort by Metropolitan, the RCHCA, and Riverside County Parks and Open Space District. As part of the agreements regarding the original reserve, Metropolitan "banked" mitigation credit for 933 acres of upland habitat in the reserve for later use. In addition, the RCHCA acquired a conservation easement over 582 acres of SKR habitat in the Shipley reserve and approximately 600 acres of SKR habitat on lands owned by Metropolitan and Riverside County around Lake Skinner. A \$1 million endowment fund and committee structure were established for management of the Shipley Reserve and later subsumed under the implementation program for the Southwestern Riverside County MSHCP.

c. Santa Rosa Plateau Reserve

In April 1991 Metropolitan established a 1,664-acre mitigation bank at the Santa Rosa Plateau Reserve in connection with a 3,825-acre acquisition made by Metropolitan, Riverside County, and CDFG. This acquisition more than doubled the size of an existing reserve owned and managed by The Nature Conservancy. A \$1.7 million endowment fund was established for management of the reserve, together with a committee similar to that for the Shipley Reserve.

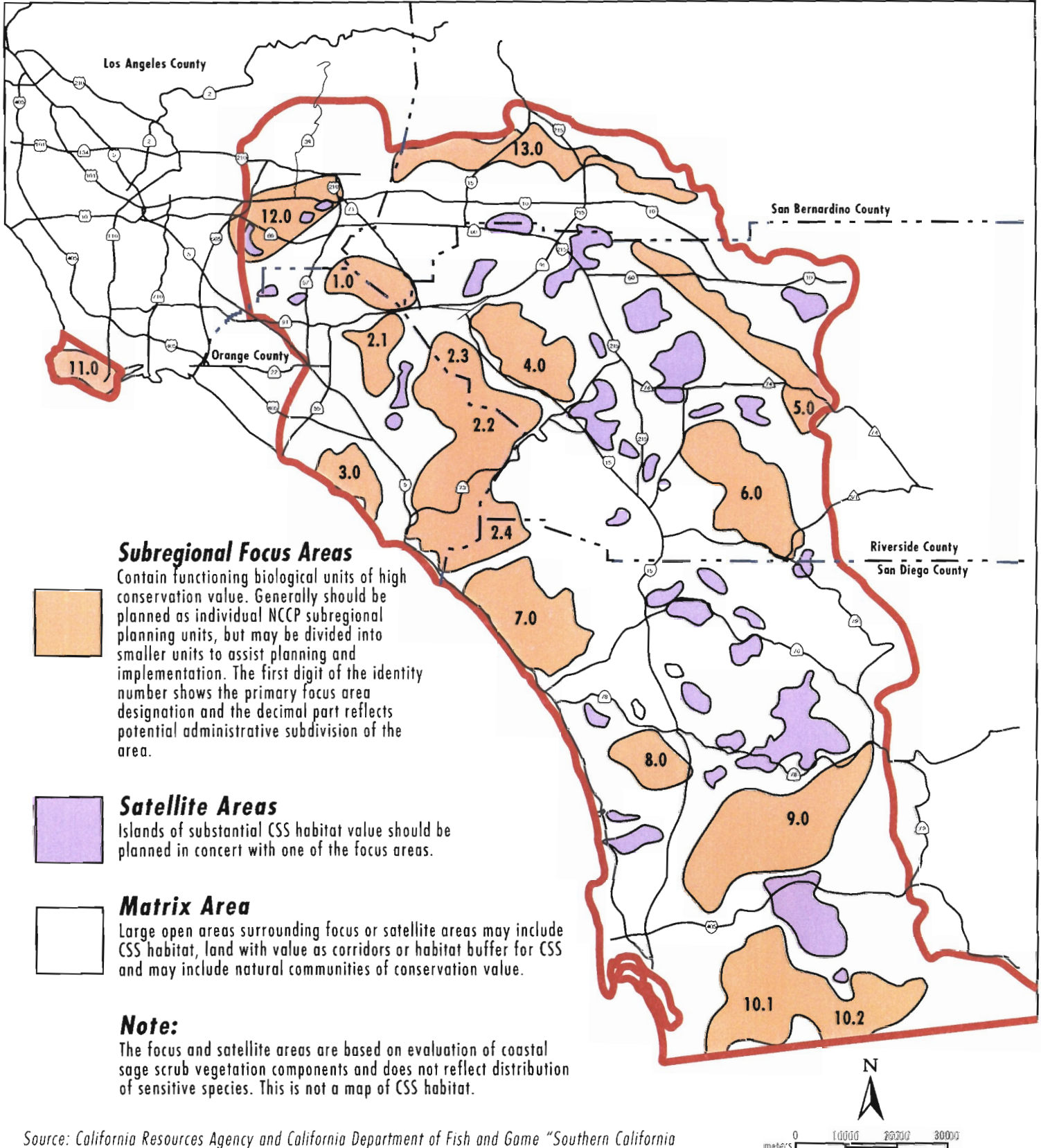
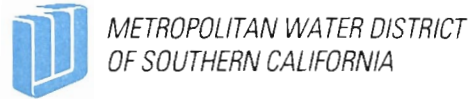
5. Interagency Conservation Planning MOU

In September 1994 the RCHCA approved an MOU with BLM, USFWS, and CDFG expressing the intent of the agencies to cooperate with one another in the preparation and implementation of a multiple species conservation program for western Riverside County. The primary relevance of the MOU to the Lake Mathews Plan is that it states the RCHCA's intent to expand its Long-term SKR HCP, without altering the provisions for SKR, into a MSHCP that is consistent with the objectives of the federal ESA, state ESA, and NCCP Act.

The Lake Mathews MSHCP/NCCP and Southwestern Riverside County MSHCP demonstrate the RCHCA's commitment to such planning. Further, in the context

of the goals of the NCCP program, the two plans provide significant levels of conservation in the two subregional focus areas identified in Riverside County. The Southwestern Riverside County MSHCP conserves 9,000 acres of sensitive habitat in Subregional Focus Area 6; the Lake Mathews Plan conserves more than 12,000 acres in Focus Area 4 (Figure 5).

**Subregional Coastal Sage Scrub Natural Community
Conservation Plan
Planning Unit Focus Area Map
Figure 5**



Subregional Focus Areas

Contain functioning biological units of high conservation value. Generally should be planned as individual NCCP subregional planning units, but may be divided into smaller units to assist planning and implementation. The first digit of the identity number shows the primary focus area designation and the decimal part reflects potential administrative subdivision of the area.



Satellite Areas

Islands of substantial CSS habitat value should be planned in concert with one of the focus areas.



Matrix Area

Large open areas surrounding focus or satellite areas may include CSS habitat, land with value as corridors or habitat buffer for CSS and may include natural communities of conservation value.



Note:

The focus and satellite areas are based on evaluation of coastal sage scrub vegetation components and does not reflect distribution of sensitive species. This is not a map of CSS habitat.



Resource Inventory and Habitat Evaluation

2. Resource Inventory and Habitat Evaluation

A. Resource Inventory

The natural community that is the focus of the Lake Mathews MSHCP/NCCP comprises primarily species associated with non-native grassland and Riversidian sage scrub habitats. This chapter summarizes what is known about the soils, habitats, and species that occur in the Plan Area, based primarily on surveys conducted in 1992 and 1993 and the best available scientific information from other sources. Additional information on the habitats and species in the Plan Area is provided in the technical report in Volume 2.

Detailed surveys of resources were accomplished within the Plan Area. These surveys provide information biological resources in the Plan Area including birds, mammals, reptiles and amphibians, invertebrates, and plants. The detailed surveys for multiple biological resources described in Volumes 1 and 2 of the Lake Mathews Plan were conducted only on lands owned by Metropolitan and were not conducted on the RCHCA's properties within the remainder of the Combined Reserve. Surveys conducted by the RCHCA in these areas focused on a determination of the distribution of occupied SKR habitat and are described in the RCHCA's Long-term SKR Plan (see Chapter 1 of Volume 1 for a detailed description of the Long-term and Short-term SKR Plans).

1. Information Sources

The biological information for the Lake Mathews Plan comes from seven sources:

1. Two types of biological surveys conducted in 1992 (March through July):
(a) quantitative surveys for a Habitat Quality Assessment (HQA) of the Plan Area and (b) focused surveys for all biological resources in the Plan Area;
2. Supplemental focused surveys for sensitive plant species conducted in 1993 and added to the database inventory for sensitive species;
3. A geographic information system (GIS) database that was developed for the Lake Mathews Plan to illustrate survey results and delineate Plan Area components;
4. GIS mapping of occupied SKR habitat in the Plan Area based on studies conducted in the Plan Area between 1989 and 1992;
5. Incidental sightings of wintering raptors and other sensitive species in the Plan Area outside the time frame of the surveys conducted for the 1992 surveys;

6. Historic mapping and reports on habitats in the Plan Area including maps prepared by Weislander in the 1930s and reports on the Existing Reserve prepared by CDFG in the 1970s and 1980s; and
7. Scientific literature on the soils, habitats, and species in the Plan Area.

2. Soils

Soils in the Plan Area are described in the U.S. Soil Service's survey for western Riverside County (Knecht 1971). Most of the area contains the Monserate-Arlington-Exeter association, which ranges from well-drained, moderately deep sandy loams to loamy soils found on old alluvial terraces and washes. These soils are shallow to deep and often have a calcareous hardpan. The eastern portion of the Plan Area contains the Cajalco-Temescal-Las Posas association, which ranges from moderately deep and shallow loam to clay loam developed on gabbro. This association also has a number of clay soils that support a variety of endemic plant life, including several sensitive species.

Nine soil series are found in the Lake Mathews area: Bosanko clay, Porterville cobbly clay, Cieneba rocky sandy loam, Gorgonio loamy sand, Handford coarse sandy loam, Las Posas stony loam, Monserate sandy loam, Temescal rocky loam, and terrace escarpments. A more detailed description of these soil series is found in Volume 2, Chapter 3.

3. Habitats

As shown in Figure 6 and Table 3, 14 habitat types occur in the Plan Area, with non-native grassland and Riversidian sage scrub together accounting for 82% of the 5,993.5 acres. Bosanko and Porterville cobbly clay which are associated with sensitive plants underlie 742.5 acres of the Plan Area, primarily the non-native grassland in the Mitigation Bank area (Table 4).

A brief description of the habitat types follows; additional information is provided in Chapter 3 (Habitat Conservation and Impact Mitigation Program) and in Part 2 of Volume 2.

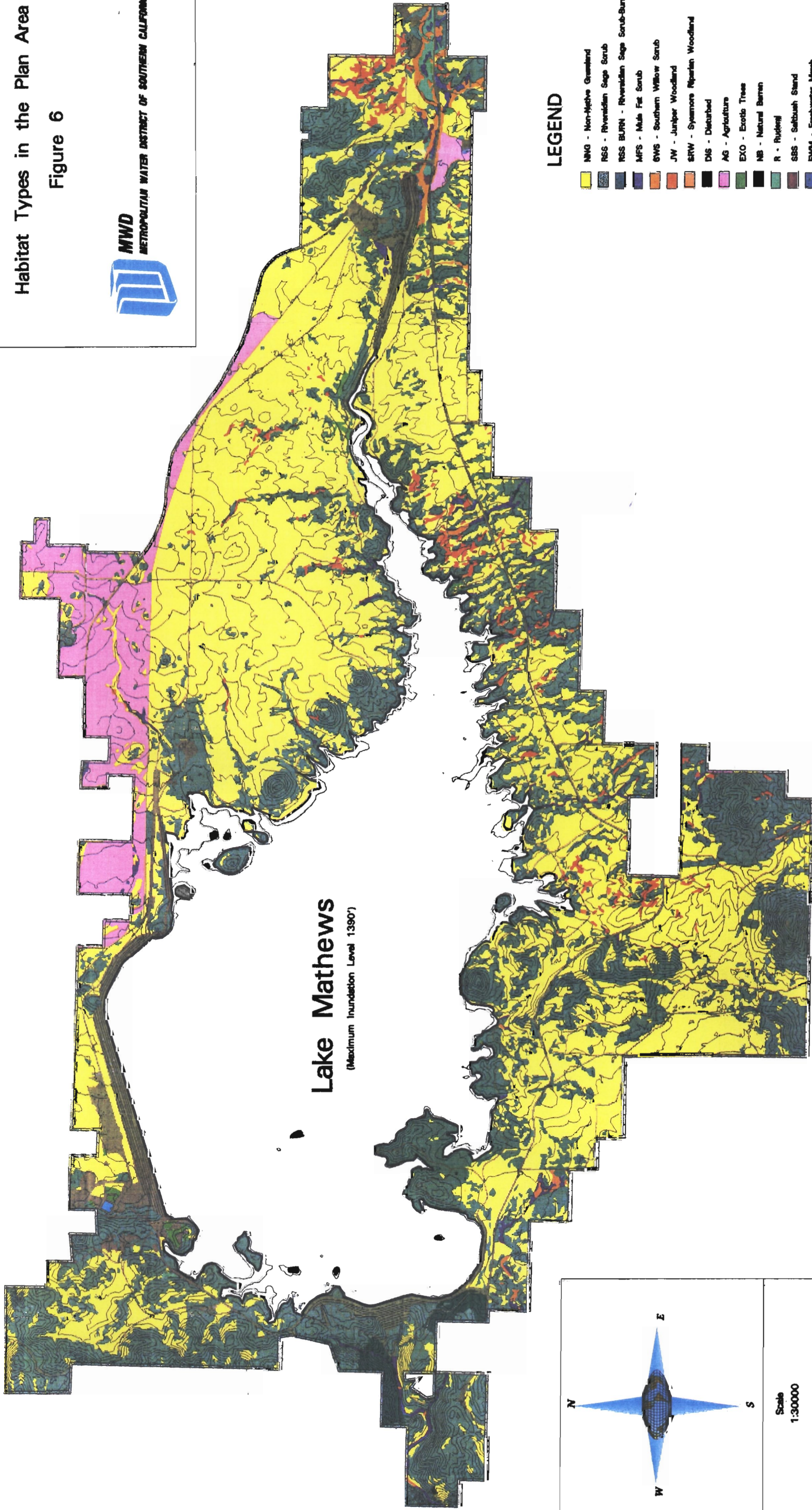
a. *Non-native Grassland*

Non-native grassland covers 2,957 acres (49%) of the Plan Area and occurs in nearly equal proportions inside and outside the Existing Reserve (Table 3). Dominant plant species are foxtail chess (*Bromus rubens*), red-stem filaree (*Erodium cicutarium*), and fescue (*Festuca myuros*). In swales north and south of the lake, low shrubs are a component of the grassland, including species such as coastal sagebrush (*Artemisia californica*) and California buckwheat (*Eriogonum fasciculatum*) that also are found in the Riversidian sage scrub. Non-native grassland inside the Existing Reserve has a denser overall cover than that in the other Plan Area components where higher levels of disturbance have occurred as a result of grazing, fires, and human access.

Clay soil grasslands, a subset of this habitat type, occur on 558.3 acres that overlay Bosanko and Porterville cobbly clay soils; most (67%) of this habitat

Habitat Types in the Plan Area

Figure 6



Lake Mathews
(Maximum Inundation Level 1390')

Scale
1:30000

0 1250 2500 3750
Feet

One Inch = 2500 Feet

October 26, 1994

LEGEND

- NMG - Non-Native Grassland
 - RSS - Riparian Sage Scrub
 - RSS BURN - Riparian Sage Scrub-Burned
 - MFS - Milk Fat Scrub
 - SMS - Southern Willow Scrub
 - JW - Juniper Woodland
 - SRW - Symmons Riparian Woodland
 - DAS - Disturbed
 - AG - Agriculture
 - EXO - Exotic Trees
 - NB - Natural Barren
 - R - Riparian
 - SBS - Saltbush Stand
 - FWM - Freshwater Marsh
 - W - Water
-
- Property Boundary
 - Lake Mathews Inundation Level

**Table 3
Habitat Types in the Plan Area
(acres)**

Habitat Type	Multiple Species Reserve		Operations Areas	Plan Area Projects	Total Plan Area
	Existing Reserve	Mitigation Bank			
Non-native grassland	1,648.0	1,073.6	193.8	41.6	2,957.0
Riversidian sage scrub	727.7	921.5	303.2	40.9	1,993.3
Mule fat scrub	18.1	29.9	1.0	7.3	56.3
Southern willow scrub	8.1	20.5	0.5	8.9	38.0
Juniper woodland	42.5	40.0	0.0	2.4	84.9
Sycamore riparian woodland	0.0	1.9	0.0	0.2	2.1
Disturbed	108.0	126.2	213.4	30.6	478.2
Agriculture	0.0	324.4	7.0	11.5	342.9
Exotic trees	9.1	2.5	7.8	0.8	20.2
Natural barren	0.5	0.4	0.0	0.0	0.9
Ruderal	1.4	3.8	0.8	8.9	14.9
Freshwater marsh	1.0	0.0	0.0	0.2	1.2
Saltbush stand	1.1	0.2	0.0	1.2	2.5
Water (excluding lake)	0.0	0.0	1.1	0.0	1.1
TOTAL	2,565.5	2,544.9	728.6	154.5	5,993.5

**Table 4
Habitat Types on Clay Soils in the Plan Area
(acres)**

Clay Soil and Habitat Type	Multiple Species Reserve		Operations Areas	Plan Area Projects	Total Plan Area
	Existing Reserve	Mitigation Bank			
Habitats on Bosanko clay soil:					
Non-native grassland	124.8	184.3	23.9	5.5	338.5
Riversidian sage scrub	9.0	43.5	4.5	1.8	58.8
Mule fat scrub	0.0	1.7	0.0	0.0	1.7
Southern willow scrub	0.0	0.2	0.0	0.0	0.2
Juniper woodland	4.2	2.8	0.0	0.7	7.7
Disturbed	3.8	12.5	7.2	0.0	23.5
Agriculture	0.0	8.6	3.0	0.0	11.6
Exotic trees	2.1	0.0	0.0	0.0	2.1
Total	143.9	253.6	38.6	8.0	444.1
Habitats on Porterville cobbly clay soil:					
Non-native grassland	29.4	190.3	0.1	0.0	219.8
Riversidian sage scrub	10.0	44.6	0.0	0.0	54.6
Mule fat scrub	0.0	5.4	0.0	0.0	5.4
Southern willow scrub	0.0	2.8	0.0	0.0	2.8
Disturbed	2.1	13.7	0.0	0.0	15.8
Total	41.5	256.8	0.1	0.0	298.4
TOTAL	185.4	510.4	38.7	8.0	742.5

occurs in the Mitigation Bank area (Table 4). In general, the clay soil grasslands contain a unique diversity of native plant species, despite the often disturbed appearance of the habitat. The habitat is dominated by a cover of wild oat (*Avena fatua*) along with other naturalized grasses and forbes.

b. Riversidian Sage Scrub

Riversidian sage scrub covers 1,993.3 acres (33%) of the Plan Area, with most (64%) of the habitat occurring outside the Existing Reserve (Table 3). Species composition of the shrub cover varies in the Plan Area, with brittlebush (*Encelia farinosa*) and California buckwheat dominant on south-facing slopes and coastal sagebrush dominant on north-facing slopes. Total shrub cover varies, ranging from 26.5% in areas of sparse Riversidian sage scrub to 55.5% in areas of robust Riversidian sage scrub; the mean of the surveyed areas is nearly 36%. Terrestrial cover is dominated by foxtail chess and red-stem filaree. As with the non-native grassland outside the Existing Reserve, some of the Riversidian sage scrub has been disturbed by fire, grazing, and illegal access.

Riversidian sage scrub on clay soils covers 113.4 acres, with most (78%) occurring in the Mitigation Bank (Table 4).

c. Mule Fat Scrub

Mule fat scrub covers 56.3 acres (<1%) of the Plan Area, with most (53%) of the habitat occurring in the Mitigation Bank area (Table 3). It occurs in areas where soils are saturated with moisture much of the year and in drier drainages that are wet for short periods following rain. Mule fat (*Baccharis salicifolia*) and black willow (*Salix gooddingii*) are present in both types of locations but are more abundant in drier locations. In the wetter areas, the plant species include those commonly associated with streams, and *Baccharis emoryi* is the dominant shrub. In the drier areas, the plant species are typical of the surrounding upland habitats.

d. Southern Willow Scrub

Southern willow scrub covers 38 acres (<1%) of the Plan Area, with most (53%) of the habitat occurring in the Mitigation Bank (Table 3). Similar to the mule fat scrub, southern willow scrub occurs within a range of hydrologic conditions along drainages. Two tree species are present, black willow and arroyo willow (*Salix lasiolepis*); dominant shrubs are mule fat and *Baccharis emoryi*.

e. Juniper Woodland

Junipers in the Plan Area occur as scattered individuals in non-native grassland and Riversidian sage scrub and in woodlands on north-facing slopes and low areas. The woodlands are generally located to the south and east of the lake, both inside and outside the Existing Reserve. Juniper (*Juniperus californica*) is the dominant tree and shrub. Terrestrial vegetation includes ripgut grass (*Bromus diandrus*), foxtail chess, and red-stem filaree. Shrub cover includes coastal sagebrush, valley cholla (*Opuntia parryi*), and *Baccharis emoryi*. The density of junipers in the two largest stands varies widely, at 68.3 and 186.0 trees per hectare. Heights of individual trees range from 1.5 to 5.5 meters.

Juniper woodland covers a total of 84.9 acres (1.4%) of the Plan Area, occurring in nearly equal proportions in the Existing Reserve and Mitigation Bank.

f. Sycamore Riparian Woodland

Only 2.1 acres of sycamore riparian woodland occur in the Plan Area, all outside the Existing Reserve. This habitat occurs in a narrow drainage in the southern part of the Mitigation Bank area. The drainage is narrow, only 1 meter wide at the bottom, and deeply incised, approximately 3 meters deep. Sycamore trees are relatively evenly spaced on the lower part of the banks with almost no overlap of the foliage of individual trees. Terrestrial vegetation is dominated by ripgut grass, foxtail chess, and native herbs. Shrub species include coastal sagebrush, black sage (*Salvia mellifera*), mule fat, and elderberry (*Sambucus mexicana*). Tree density is lower than in the mule fat and southern willow scrub thickets.

g. Freshwater Marsh

Approximately 1.2 acres of freshwater marsh habitat occur along Cajalco Creek west of the lake and in small, scattered pockets in other riparian areas. Cajalco Creek is narrow, less than 10 meters across, with vegetation roughly stratified according to the microtopography and water levels. At the time of the surveys, it had flowing water several inches deep. The freshwater marsh occurs in the center of the drainage, the deepest part of the channel. Mule fat and willows (*Salix* spp.) flank the marsh on the channel banks and are interspersed with marsh vegetation along the channel. The shrub layer is dominated by bulrush (*Scirpus olneyi*); the terrestrial surface layer comprises scattered individuals and clumps of yerba mansa (*Anemopsis californica*), salt marsh fleabane (*Pluchea purpurascens*), and nettle (*Urtica holosericea*).

Other freshwater marsh species distributed irregularly along Cajalco Creek include cattails (*Typha* spp.), water cress (*Rorippa nasturtium-aquaticum*), and *Scirpus acutus*.

h. Disturbed and Agriculture

Disturbed habitat and agriculture account for 821.1 acres (14%) of the Plan Area, with most (55%) of it occurring in the Mitigation Bank (Table 3).

For purposes of the Lake Mathews Plan, disturbed habitat is defined as areas that are nearly or completely denuded of vegetation due to mechanical disturbance caused by paving, grading, or other human development. Most of 478.2 acres of such land in the Plan Area consists of access roads and the hardscape of the reservoir and its ancillary facilities.

Agriculture occurs on 342.9 acres, 254 acres of which are leased to local farmers for dryland farming; almost all (95%) of these lands are in the Mitigation Bank.

i. Other Types

Other habitat types, including areas without vegetation, account for 39.6 acres (<1%) of the Plan Area. These types include:

- 20.2 acres of eucalyptus (*Eucalyptus* sp.), California pepper (*Schinus molle*), tamarisk (*Tamarix ramosissima*), and carob (*Ceratonia* sp.);
- 0.9 acre of rock outcrops that are naturally barren of plant cover;
- 14.9 acres with ruderal plant species such as mustards and sow thistles;
- 2.5 acres of saltbush stand; and
- 1.1 acre of open water (excluding the lake).

3. Species

Based on surveys and incidental sightings, over 350 different species of plants and animals are known to occur or are closely associated with the habitats in the Plan Area (see Part 2 of Volume 2). Of these species, 65 were selected as "Target Species" for ESA and NCCP planning purposes: 50 species that were observed in focused surveys or incidentally in the Plan Area (Table 5) and 15 species that were not observed but have the potential to occur in the Plan Area based on distribution and habitat requirements for the species. Each of 65 Target Species is a "sensitive species" as defined in the Lake Mathews Plan, i.e., it is:

- Federally or state-listed as threatened or endangered,
- A candidate for federal or state listing,
- A bird species protected by the MBTA or BEPA,
- A species of special concern in California as identified by CDFG,
- On the California Native Plant Society (CNPS) list of sensitive plants,
- On the NCCP list of sensitive coastal sage scrub species, and/or
- Of special local concern because of its rarity or unique biological value.

The biological communities and the Target Species in the Plan Area are the focus of the conservation and mitigation measures presented in the Lake Mathews Plan. The Target Species are covered by authorizations and assurances that USFWS and CDFG are being asked to approve (see Chapter 4). A brief description of what is known about the occurrence of Target Species and their habitat in the Plan Area follows; additional information about the Target Species is provided in Part 1 (Biological Resources Technical Report) and Part 2 (Target Species HCPs) of Volume 2.

a. Plants

Seven plant species which are Target Species were observed in the 1992 and 1993 surveys in the Plan Area. Eight additional plant species were not observed but are considered to be potentially occurring Target Species.

1) Observed Target Species

The distribution of plant species which are Target Species observed in the Plan Area is shown in Figure 7, and the estimated amount of occupied and potential habitat for each species in each Plan Area component is presented in Table 6.

Table 5
Target Species Observed in the Plan Area

Species Common and Scientific Name	Sensitivity Status			Habitats in Plan Area		
	Federal	State	Other	N N G	R S S	Other
Plants (N = 7)						
Clay bindweed (small-flowered morning-glory) <i>Convolvulus simulans</i>	none	none	CNPS4	X		needs B or P clay soil
Great valley (or clay) phacelia <i>Phacelia ciliata</i>	C2	none	CNPS1B	X		needs B clay soil
Knotweed (or long-spined) spineflower <i>Chorizanthe polygonoides</i> var. <i>longispina</i>	C2	none	CNPS1B	X		needs B or P clay soil
Large-leaved filaree <i>Erodium macrophyllum</i>	none	none	LC	X		needs B clay soil
Palmer's grappling hook <i>Harpagonella palmeri</i>	C2	NCCP	CNPS2	X	X	needs P clay soil
Parry's spineflower <i>Chorizanthe parryi</i> var. <i>parryi</i>	C2	NCCP	none		X	
Small-flowered microseris <i>Microseris douglasii</i> ssp. <i>platycarpa</i>	none	none	CNPS4	X		needs P or B clay soil
Amphibians and Reptiles (N = 7)						
Coastal rosy boa <i>Lichanura trivirgata roseofusca</i>	C2	CSC NCCP	none	X	X	in rock outcrops
Coastal western whiptail <i>Cnemidophorus tigris multiscutatus</i>	C2	CSC NCCP	none	X	X	JW
Northern red diamond rattlesnake <i>Crotalus ruber ruber</i>	C2	CSC NCCP	none	X	X	
Orange-throated whiptail <i>Cnemidophorus hyperythrus beldingi</i>	C2	CSC NCCP	none	X	X	JW
San Bernardino ringneck snake ¹ <i>Diadophis punctatus modestus</i>	C2	CSC	none			MFS, SWS
San Diego horned lizard <i>Phrynosoma coronatum blainvillii</i>	C2	CSC NCCP	none	X	X	
Western spadefoot toad ² <i>Scaphiopus hammondii</i>	C2	NCCP	none	X		FWM, rock outcrops
Birds (N = 25)						
Bald eagle ³ <i>Haliaeetus leucocephalus</i>	FE, BEPA MBTA	SE	none			Lake and other
Bank swallow ³ <i>Riparia riparia</i>	MBTA	ST	LC			Lake
Bell's sage sparrow <i>Amphispiza belli belli</i>	C2 MBTA	CSC NCCP	none		X	
Black-crowned night heron (rookery) <i>Nycticorax nycticorax</i>	MBTA	none	LC			SWS, lake
Blue grosbeak <i>Guiraca caerulea</i>	MBTA	none	LC			SWS, MFS
Burrowing owl <i>Speotyto cunicularia</i>	C2 MBTA	CSC	none	X		AG
California horned lark <i>Eremophila alpestris actia</i>	C3c MBTA	CSC NCCP	none	X		AG
Coastal California gnatcatcher <i>Poliioptila californica californica</i>	FT MBTA	CSC NCCP	none		X	

Table 5 (continued)
Target Species Observed in the Plan Area

Species Common and Scientific Name	Sensitivity Status			Habitats in Plan Area		
	Federal	State	Other	N N G	R S S	Other
Birds (continued)						
Cooper's hawk ³ <i>Accipiter cooperii</i>	MBTA	CSC	none		X	MFS, SWS, SRW
Downy woodpecker <i>Picoides pubescens</i>	MBTA	none	LC			SWS
Ferruginous hawk ³ <i>Buteo regalis</i>	C2 MBTA	CSC	none	X	X	AG
Golden eagle ³ <i>Aquila chrysaetos</i>	BEPA MBTA	CSC	none	X	X	AG
Grasshopper sparrow <i>Ammodramus savannarum perpallidus</i>	MBTA	none	LC	X		
Great blue heron (rookery) <i>Ardea herodias</i>	MBTA	none	LC			SWS, lake, exotic trees
Loggerhead shrike <i>Lanius ludovicianus</i>	MBTA	CSC NCCP	none	X	X	JW, AG
Long-eared owl ³ <i>Asio otus</i>	MBTA	none	LC			SWS
Northern harrier ³ <i>Circus cyaneus</i>	MBTA	CSC	none	X	X	AG
Red-shouldered hawk ³ <i>Buteo lineatus</i>	MBTA	none	LC			MFS, SWS, SRW
Rough-legged hawk ³ <i>Buteo lagopus</i>	MBTA	none	LC	X	X	AG
San Diego cactus wren ³ <i>Campylorhynchus brunneicapillus couesi</i>	C3b MBTA	CSC NCCP	none		X	in cactus patches
Sharp-shinned hawk ³ <i>Accipiter striatus</i>	MBTA	CSC	LC	X	X	MFS, SWS
Southern California rufous-crowned sparrow <i>Aimophila ruficeps canescens</i>	C2 MBTA	CSC NCCP	none		X	
Swainson's hawk ³ <i>Buteo swainsoni</i>	MBTA	ST	none	X	X	AG
Tricolored blackbird <i>Agelaius tricolor</i>	C2 MBTA	CSC NCCP	none	X		FWM, SWS
White-tailed kite <i>Elanus caeruleus</i>	MBTA	CFP	none	X		MFS, SWS
Mammals (N = 11)						
American badger ³ <i>Taxidea taxus</i>	none	CSC	none	X	X	JW
Big or pocketed free-tail bat ³ <i>Nyctinomops femorosaccus</i> or <i>macrotis</i>	none	CSC	none	X	X	MFS, SWS
Cougar ³ <i>Felis concolor</i>	none	CFP	LC	X	X	all other
Little brown bat ³ <i>Myotis</i> spp. (probably <i>M. yumanensis</i>)	C2	CSC	none			MFS, SWS, FWM, lake
Northwestern San Diego pocket mouse <i>Chaetodippus fallax fallax</i>	C2	CSC NCCP	none		X	

**Table 5 (continued)
Target Species Observed in the Plan Area**

Species Common and Scientific Name	Sensitivity Status			Habitats in Plan Area		
	Federal	State	Other	N N G	R S S	Other
Mammals (continued)						
Pallid bat ³ <i>Antrozous pallidus</i>	none	CSC	none	X	X	in rock outcrops
San Diego black-tailed jackrabbit <i>Lepus californicus bennettii</i>	C2	CSC NCCP	none	X	X	SWS, JW, AG
San Diego desert woodrat <i>Neotoma lepida intermedia</i>	C2	CSC	none		X	JW
Stephens' kangaroo rat <i>Dipodomys stephensi</i>	FE	ST NCCP	none	X	X	AG, disturbed
Western mastiff bat ³ <i>Eumops perotis</i>	C2	CSC	none	X	X	in rock outcrops
Western pipistrelle ³ <i>Pipistrellus hesperus</i>	none	none	LC	X	X	in rock outcrops

Sensitivity Status Codes

- BEPA Bald Eagle Protection Act (also covers golden eagle)
- C2 Category 2 candidate for federal listing; includes taxa for which USFWS has information indicating that proposing to list as endangered or threatened is possibly appropriate but for which persuasive data on biological vulnerability and threat are not currently available to support proposed rules.
- C3b Category 3 candidate for federal listing; names that, based on current taxonomic understanding, do not represent distinct species as defined in the federal ESA.
- C3c Category 3 candidate for federal listing; includes taxa that have proven to be more abundant or widespread than previously believed and/or those that are not subject to any identifiable threat.
- CNPS California Native Plant Society red list
 - (1B) rare or endangered in California and elsewhere
 - (2) rare or endangered in California and more common elsewhere
 - (4) plants of limited distribution
- CFP California Fully Protected (special category)
- CSC CDFG species of special concern
- FE Listed as endangered under the federal ESA
- FT Listed as threatened under the federal ESA
- LC Species of special local concern
- MBTA Protected by the Migratory Bird Treaty Act
- NCCP Sensitive species for NCCP coastal sage scrub program
- ST Listed as threatened under the California ESA

Habitat Codes

- AG Agriculture
- B Bosanko (clay soil)
- JW Juniper woodland
- MFS Mule fat scrub
- NNG Non-native grassland
- P Porterville (cobble clay soil)
- RSS Riversidian sage scrub
- SRW Sycamore riparian woodland
- SWS Southern willow scrub

Notes

- 1 Also occurs in adjacent habitat
- 2 Observed in rock outcrop areas; requires aquatic conditions for breeding; found in upland habitats in burrows during dry periods
- 3 Plan area has foraging and/or sheltering habitat for this species but may not contain suitable breeding habitat (or primary roost sites for bats)

Table 6
Occupied and Potential Habitat¹ for
Observed Target Plant Species in the Plan Area
(acres)

Target Plant Species	Multiple Species Reserve		Operations Areas	Plan Area Projects	Total Plan Area
	Existing Reserve	Mitigation Bank			
Clay bindweed					
Occupied Habitat	0.1	0.8	0.0	0.0	0.9
Potential Habitat	154.2	374.6	240.0	5.5	558.3
Great valley phacelia					
Occupied Habitat	1.2	4.2	0.0	0.0	5.3
Potential Habitat	124.8	184.3	23.9	5.5	338.5
Knotweed spineflower					
Occupied Habitat	0.9	1.2	0.0	0.0	2.1
Potential Habitat	154.2	374.6	24.0	5.5	558.3
Large-leaved filaree					
Occupied Habitat	0.1	0.1	0.0	0.0	0.2
Potential Habitat	124.8	184.3	23.0	5.5	338.5
Palmer's grappling hook					
Occupied Habitat	0.2	0.3	0.0	0.0	0.5
Potential Habitat	39.4	234.9	0.1	0.0	274.4
Parry's spineflower					
Occupied Habitat	0.1	0.0	0.0	0.0	0.1
Potential Habitat ²	Yes ²	Yes ²	Yes ²	Yes ²	Yes ²
Small-flowered microseris					
Occupied Habitat	0.5	32.4	0.0	0.0	32.9
Potential Habitat	154.2	374.5	24.0	5.5	558.3

Notes

- 1 Occupied habitat estimates are based on results of the 1992 and 1993 surveys; potential habitat estimates are based on GIS overlays of habitat and clay soil types.
- 2 Potential habitat for this species is assumed to occur in the Riversidian sage scrub within each Plan Area component.

With one exception, the observed plant species which are Target Species are clay soil endemics and occur both in the Existing Reserve and Mitigation Bank. The exception is Parry's spineflower (*Chorizanthe parryi* var. *parryi*), which has been observed to date only in the Existing Reserve. None of the observed Target Species is known to occur in the areas reserved for Operations or Plan Area Projects. However, the presence of suitable soils and habitat for each species indicates that the Plan Area components have the potential to support additional populations of these species.

Of seven plant species which are Target Species, small-flowered microseris (*Microseris douglasii* ssp. *platycarpha*) is the most abundant in the Plan Area,

Sensitive Plant Species

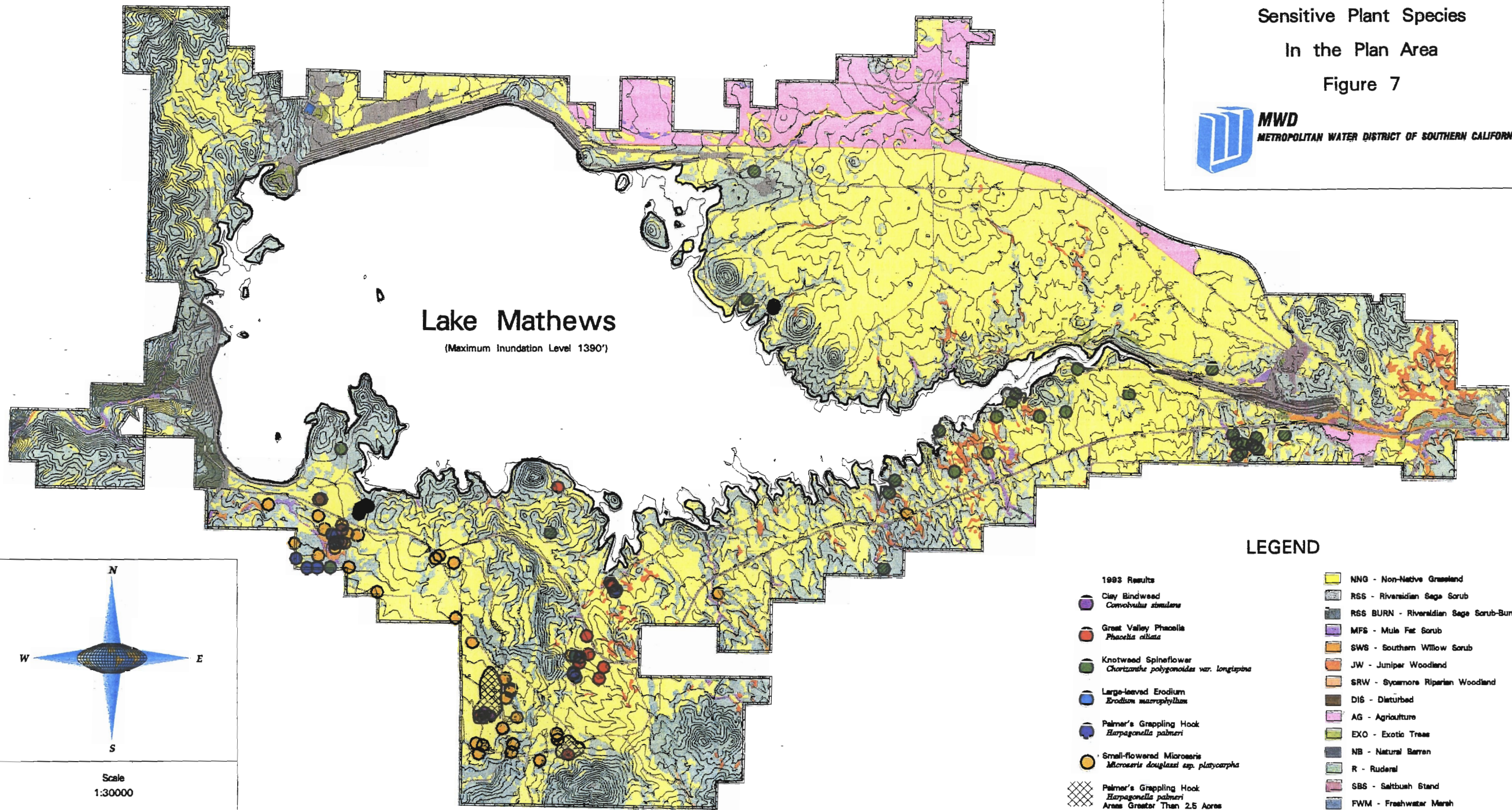
In the Plan Area

Figure 7



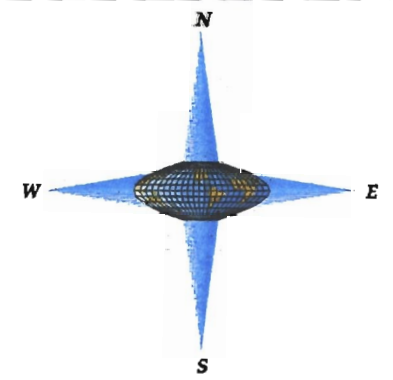
Lake Mathews

(Maximum Inundation Level 1390')



LEGEND

- | | |
|---|---|
| <p>1993 Results</p> <ul style="list-style-type: none"> Clay Bindweed
<i>Convolvulus similans</i> Great Valley Phacelia
<i>Phacelia ciliata</i> Knotweed Spineflower
<i>Chorizanthe polygonoides var. longispina</i> Large-leaved Erodium
<i>Erodium macrophyllum</i> Palmer's Grappling Hook
<i>Harpagonella palmeri</i> Small-flowered Microseris
<i>Microseris douglasi</i> sp. <i>platycarpa</i> Palmer's Grappling Hook
<i>Harpagonella palmeri</i>
Areas Greater Than 2.5 Acres <p>1992 Results</p> <ul style="list-style-type: none"> Knotweed Spineflower
<i>Chorizanthe polygonoides var. longispina</i> Parry's Spineflower
<i>Chorizanthe parryi</i> var. <i>parryi</i> | <ul style="list-style-type: none"> NNG - Non-Native Grassland RSS - Riverside Sage Scrub RSS BURN - Riverside Sage Scrub-Burned MFS - Mule Fat Scrub SWS - Southern Willow Scrub JW - Juniper Woodland SRW - Sycamore Riparian Woodland DI6 - Disturbed AG - Agriculture EXO - Exotic Trees NB - Natural Barren R - Ruderal SBS - Saltbush Stand FWM - Freshwater Marsh W - Water <p> Property Boundary</p> <p> Lake Mathews Inundation Level</p> |
|---|---|



Scale
1:30000

0 1250 2500 3750
Feet
One Inch = 2500 Feet

October 27, 1994

with nearly 114,000 specimens occurring on approximately 39 acres. Nearly 15,000 specimens of great valley phacelia (*Phacelia ciliata*) occur on approximately 5 acres, and nearly 2,200 specimens of knotweed spineflower occur on slightly more than 2 acres. Each of the other species occurs on less than 1 acre, including approximately 2,200 specimens of clay bindweed (*Convolvulus simulans*) on 0.9 acre, nearly 600 specimens of Palmer's grappling hook (*Harpagonella palmeri*) on 0.5 acre, over 100 specimens of large-leaved filaree (*Erodium macrophyllum*) on 0.2 acre, and 90 specimens of Parry's spineflower on 0.1 acre.

2) Potentially Occurring Target Species

All eight potentially occurring plant species which are Target Species are associated with the two primary habitat types in the Plan Area: non-native grassland and Riversidian sage scrub (Table 7). Two of the species are fire followers (Braunton's milkvetch [*Astragalus brauntonii*] and Coulter's matilija poppy [*Romneya coulteri*]), two are often associated with clay soils (many-stemmed dudleya [*Dudleya multicaulis*] and Munz's onion [*Allium munzii*]), and three are associated with alkali grassland (little mousetail [*Myosurus minimus* var. *apus*], smooth tarplant [*Hemizonia pungens* ssp. *laevis*], and southern tarplant and *H. parryi* ssp. *australis*).

b. Invertebrates

No sensitive invertebrate species were observed in the Plan Area surveys; however, potential habitat was identified for two species: Ruth's cuckoo bee (*Holocopasites ruthae*) and Quino checkerspot butterfly (*Occidryas* [= *Euphydryas*] *editha quino*). The cuckoo bee is a potential inhabitant of the Riversidian sage scrub in the Plan Area, especially where its primary nectar source, brittlebush, occurs. The cuckoo bee's host bee, *Calliopsis pugionis*, was observed at the east and west ends of the lake, but no *C. pugionis* nests were found. The Quino checkerspot butterfly is a potential inhabitant of the clay soil grasslands in the Plan Area that have dense patches of plantain (*Plantago erecta*), the larval host plant for the species. Historic records indicate that Quino checkerspot butterflies occurred in these areas as recently as the mid-1980s. Sheep grazing (no longer occurring in the Plan Area) and the recent drought have likely contributed to its local disappearance.

c. Amphibians and Reptiles

Seven amphibian and reptile species which are Target Species were observed in surveys in the Plan Area; one additional reptile species was not observed but is considered to be a potentially occurring Target Species.

1) Observed Target Species

The distribution of amphibian and reptile species which are Target Species observed in the Plan Area is shown in Figure 8, and the estimated amount of suitable habitat for each species in each Plan Area component is presented in Table 8. The habitat estimates are based on the occurrence of the habitats most

Table 7
Target Species Not Observed
but Potentially Occurring in the Plan Area

Species Common and Scientific Name	Sensitivity Status			Potential Habitat in Plan Area		
	Federal	State	Other	N N G	R S S	Other
Plants (N = 8)						
Braunton's milkvetch <i>Astragalus brauntonii</i>	PFE	NCCP	CNPS1B		X	burned RSS
Coulter's matilija poppy <i>Romneya coulteri</i>	none	none	CNPS4		X	burned RSS
Little mouse tail <i>Myosurus minimus var. apus</i>	C2	none	CNPS3	X		alkali NNG & vernal pools
Many-stemmed dudleya <i>Dudleya multicaulis</i>	C2	NCCP	CNPS1B	X	X	in outcrops & clay soils
Munz's onion <i>Allium munzii</i>	PFE	NCCP	CNPS1B	X	X	on clay soils
Slender-horned spineflower <i>Dodecahema (= Centrostegia) leptoceras</i>	FE	SE NCCP	CNPS1B	X	X	in alluvial washes
Smooth tarplant <i>Hemizonia pungens ssp. laevis</i>	C2	none	CNPS1B	X		alkali areas, fallow fields
Southern tarplant <i>Hemizonia parryi ssp. australis</i>	C2	none	CNPS1B	X		alkali areas, fallow fields
Invertebrates (N = 2)						
Ruth's cuckoo bee <i>Holocopasites ruthae</i>	none	none	LC		X	in areas with <i>Encelia</i>
Quino checkerspot butterfly <i>Occidryas (= Euphydryas) editha quino</i>	PFE	NCCP	none	X		in <i>Plantago erecta</i> patches
Reptiles (N = 1)						
San Diego banded gecko <i>Coleonyx variegatus abbottii</i>	C2	CSC NCCP	none		X	in rocky areas
Birds (N = 4)						
Least Bell's vireo <i>Vireo bellii pusillus</i>	FE MBTA	SE	none			SWS, MFS
Southwestern willow flycatcher <i>Empidonax trailii extimus</i>	PFE, FSS MBTA	SE	none			SWS, MFS
Yellow-breasted chat <i>Icteria virens</i>	MBTA	CSC	none			SWS
Yellow warbler <i>Dendroica petechia brewsteri</i>	MBTA	CSC	none			SWS

Sensitivity Status Codes

- C1 Category 1 candidate for federal listing; includes taxa for which USFWS has on file sufficient information on biological vulnerability and threat(s) to support proposals to list them as endangered or threatened. Development and publication of rules on such taxa are anticipated.
- C2 Category 2 candidate for federal listing; includes taxa for which USFWS has information indicating that proposing to list as endangered or threatened is possibly appropriate but for which persuasive data on biological vulnerability and threat are not currently available to support proposed rules.

Table 7 (continued)
Target Species Not Observed
but Potentially Occurring in the Plan Area

Sensitivity Status Codes (continued)

CNPS	California Native Plant Society red list (1B) rare or endangered in California and elsewhere (2) rare or endangered in California, more common elsewhere (3) more information required before assignment to 1, 2, or 4 (4) plants of limited distribution.
CSC	CDFG species of special concern
PFE	Proposed for federal listing as endangered
FE	Listed as endangered under the federal ESA
FSS	Federal sensitive species
LC	Species of special local concern
MBTA	Protected by the Migratory Bird Treaty Act
NCCP	Sensitive species for NCCP coastal sage scrub program
SE	Listed as endangered under the California ESA

Habitat Codes

AG	Agriculture
MFS	Mule fat scrub
NNG	Non-native grassland
P	Porterville (cobble clay soil)
RSS	Riversidian sage scrub
SRW	Sycamore riparian woodland
SWS	Southern willow scrub

commonly associated with the species in the Plan Area (see Table 3 for the estimated amount of each habitat type per Plan Area component and Table 5 for the habitat associations used in the calculations).

All of these Target Species were observed in both non-native grassland and Riversidian sage scrub habitat. The San Bernardino ringneck snake is associated primarily with mule fat scrub and southern willow scrub but also is known to use adjacent grassland and sage scrub. Western spadefoot toad is associated primarily with aquatic habitats and grassland, requires at least ephemeral aquatic conditions for breeding, and also occurs in other habitats in dry seasons. In the Plan Area it was observed only in two rock outcrop areas near water during the 1992 surveys and was subsequently seen more widely in non-native grasslands.

Of the eight species, coastal western whiptails (*Cnemidophorus tigris multiscutatus*) and orange-throated whiptails (*Cnemidophorus hyperythrus beldingi*) were the most frequently observed in all Plan Area components. Coastal rosy boas (*Lichanura trivirgata roseofusca*), northern red diamond rattlesnakes (*Crotalus ruber ruber*), and San Bernardino ringneck snakes were not observed frequently, but the sightings are significant in confirming the presence of these species in suitable habitat. San Diego horned lizards (*Phrynosoma*

Table 8
Occurrence of and Acres of Habitat for
Observed Target Amphibian and Reptile Species in the Plan Area¹

Target Amphibian and Reptile Species	Multiple Species Reserve		Operations Areas	Plan Area Projects	Total Plan Area
	Existing Reserve	Mitigation Bank			
Coastal rosy boa Observed onsite	No	Yes	No	No	Yes
Estimated acres of suitable habitat ²	2,375.7	1,995.1	497.0	82.5	4,950.3
Coastal western whiptail Observed onsite	Yes	Yes	Yes	Yes	Yes
Estimated acres of suitable habitat	2,418.2	2,035.1	497.0	84.9	5,025.2
Northern red diamond rattlesnake Observed onsite	Yes	Yes	Yes	Yes	Yes
Estimated acres of suitable habitat ²	2,375.7	1,995.1	497.0	82.5	4,950.3
Orange-throated whiptail Observed onsite	Yes	Yes	Yes	Yes	Yes
Estimated acres of suitable habitat	2,418.2	2,035.1	497.0	84.9	5,025.2
San Bernardino ringneck snake Observed onsite	No	Yes	No	No	Yes
Estimated acres of suitable habitat ³	26.2	50.4	1.5	16.2	94.3
San Diego horned lizard Observed onsite	Yes	Yes	Yes	No	Yes
Estimated acres of suitable habitat	2,375.7	1,185.6	497.0	82.5	4,950.3
Western spadefoot toad Observed onsite	Yes	No	Yes	No	Yes
Estimated acres of suitable habitat ⁴	1,649.0	1,073.6	193.8	41.8	2,958.2

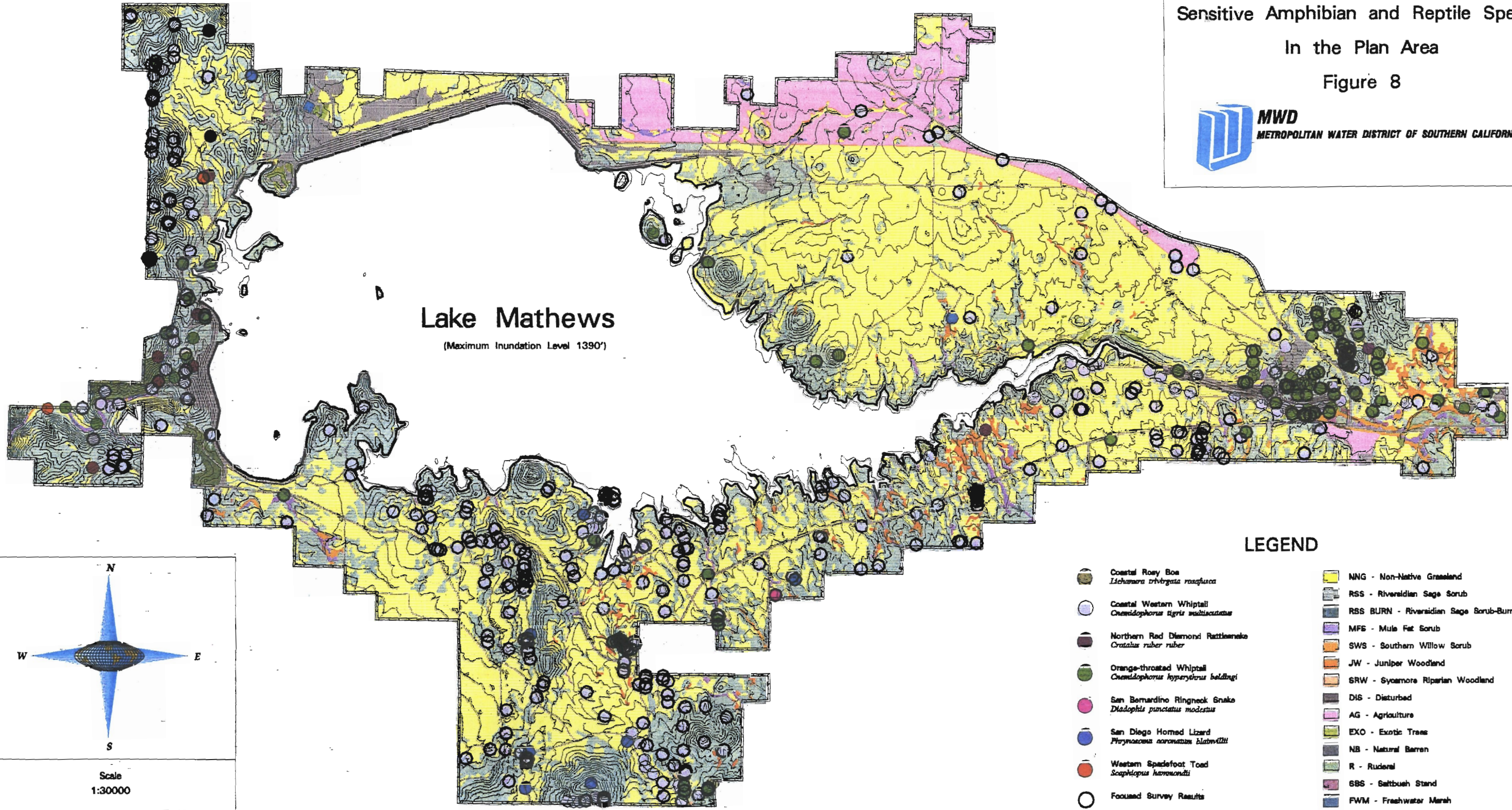
Notes

- 1 Occurrence is based on sightings of Target Species in Plan Area surveys unless otherwise noted. Estimated acres of suitable habitat are the acres of the species' habitat in each Plan Area component, based on the primary habitat association identified for each species in Table 5 and the acres of that habitat in each Plan Area component as indicated in Table 3.
- 2 Estimated acres of suitable habitat for the coastal rosy boa and northern red diamond rattlesnake are overstated; species are associated with rocky outcrops in non-native grassland and Riversidian sage scrub habitat.
- 3 Estimated acres of suitable habitat for the San Bernardino ringneck snake are understated; species also is likely to use upland habitats adjacent to mule fat scrub and southern willow scrub.
- 4 Estimated acres of suitable habitat for the western spadefoot toad are overstated; species is associated with a broad range of habitats but was found in the Plan Area in the 1992 surveys only in two rocky areas near water.

Sensitive Amphibian and Reptile Species
 In the Plan Area
 Figure 8

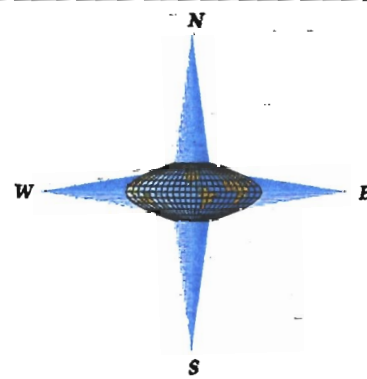


Lake Mathews
 (Maximum Inundation Level 1390')



LEGEND

- | | |
|---|--|
| Coastal Roxy Boa
<i>Lichanura trivirgata rosalia</i> | NNG - Non-Native Grassland |
| Coastal Western Whiptail
<i>Cnemidophorus tigris multicaudatus</i> | RSS - Riverside Sage Scrub |
| Northern Red Diamond Rattlesnake
<i>Crotalus ruber ruber</i> | RSS BURN - Riverside Sage Scrub-Burned |
| Orange-throated Whiptail
<i>Cnemidophorus hyperythrus beldingi</i> | MFS - Mule Fat Scrub |
| San Bernardino Ringneck Snake
<i>Diadophis punctatus modestus</i> | SWS - Southern Willow Scrub |
| San Diego Horned Lizard
<i>Phrynosoma coronatum blainvillii</i> | JW - Juniper Woodland |
| Western Spadefoot Toad
<i>Scaphiopus hammondi</i> | SRW - Sycamore Riparian Woodland |
| Focused Survey Results | DIS - Disturbed |
| Incidental Sightings | AG - Agriculture |
| | EXO - Exotic Trees |
| | NB - Natural Barren |
| | R - Ruderal |
| | SBS - Saltbush Stand |
| | FWM - Freshwater Marsh |
| | W - Water |
| | Property Boundary |
| | Lake Mathews Inundation Level |



Scale
 1:30000

 Feet
 One Inch = 2500 Feet

October 27, 1994

coronatum blainvillii) were observed less frequently than expected in areas of otherwise suitable habitat, with the relatively low occurrence levels attributable in part to the effects of poaching in the Plan Area by trespassers.

As indicated in Table 8, the Plan Area has approximately 5,000 acres of suitable habitat for the reptile species which are Target Species, except the San Bernardino ringneck snake. This estimate, however, overstates the availability of habitat for the coastal rosy boa and northern red diamond rattlesnake, which occur primarily in rock outcrops found in grassland and sage scrub. Conversely, the estimated amount of suitable habitat for the San Bernardino ringneck snake is low, since it does not include grassland and sage scrub adjacent to mule fat scrub and southern willow scrub. Based primarily on the occurrence of grasslands, the Plan Area also contains nearly 3,000 acres of habitat for western spadefoot toads. As with the estimate for the coastal rosy boa and northern red diamond rattlesnake, however, this estimate overstates the availability of habitat for the western spadefoot toad.

2) Potentially Occurring Target Species

Rock outcrops in grassland and sage scrub where other reptile species were observed also have the potential to support the San Diego banded gecko (*Coleonyx variegatus abbottii*).

d. Birds

Birds comprise the largest group of observed Target Species (25 of the 50), and their overlapping habitats encompass nearly all of the Plan Area. In addition to the 25 observed species, 4 sensitive bird species are associated with the riparian habitat in the Plan Area and are considered to be potentially occurring Target Species.

1) Observed Target Species

The 25 bird species include both resident and migratory species that were observed in focused surveys or incidentally in the Lake Mathews Plan Area. Twenty of the species were observed in the 1992 surveys; the remaining five species are wintering raptors that were not present when the 1992 surveys were conducted but were sighted during the 1992 and/or 1993 Christmas Bird Counts conducted by the Audubon Society, in the bald eagle counts conducted by CDFG, or in the course of biological monitoring activities conducted for individual projects and activities at Lake Mathews. Figure 9 shows the location of bird species detected in the 1992 surveys. Table 9 indicates the Plan Area components where the species were observed (except for five wintering raptors) and provides an estimate of the amount of suitable habitat for each species in the Plan Area.

Four of the observed bird species which are Target Species are federally and/or state-listed (Table 5). They include:

- Three migratory species (bald eagle [*Haliaeetus leucocephalus*], bank swallow [*Riparia riparia*], and Swainson's hawk [*Buteo swainsoni*]) that forage and shelter but are not known to nest in the Plan Area and

- One resident Riversidian sage scrub specialist (coastal California gnatcatcher [*Polioptila californica californica*]) that is known to nest, forage, and shelter in all Plan Area components. Coastal California gnatcatchers occur on approximately 33% of all land in the Plan Area. Figure 10 and Table 10 indicate the distribution of coastal California gnatcatchers and coastal California gnatcatcher habitat by Plan Area component.

The other observed bird species which are Target Species include:

- Predominantly grassland species such as burrowing owl (*Speotyto cunicularia*), California horned lark (*Eremophila alpestris actia*), and grasshopper sparrow (*Ammodramus savannarum perpallidus*);
- Predominantly Riversidian sage scrub species such as Bell's sage sparrow (*Amphispiza belli belli*), San Diego cactus wren (*Campylorhynchus brunneicapillus coues*), and southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*);
- Species such as ferruginous hawk (*Buteo regalis*), golden eagle (*Aquila chrysaetos*), loggerhead shrike (*Lanius ludovicianus*), and northern harrier (*Circus cyaneus*) that use a mix of non-native grassland, Riversidian sage scrub, and agricultural habitat types;
- Species such as Cooper's hawk (*Accipiter cooperii*), rough-legged hawk (*Buteo lagopus*), sharp-shinned hawk (*Accipiter striatus*), tricolored blackbird (*Agelaius tricolor*), and white-tailed kite (*Elanus caeruleus*) that use a mix of upland and riparian habitats; and
- Species such as black-crowned night heron (*Nycticorax nycticorax*), blue grosbeak (*Guiraca caerulea*), downy woodpecker (*Picoides pubescens*), great blue heron (*Ardea herodias*), long-eared owl (*Asio otus*), and red-shouldered hawk (*Buteo lineatus*) that are associated with riparian and/or aquatic habitats.

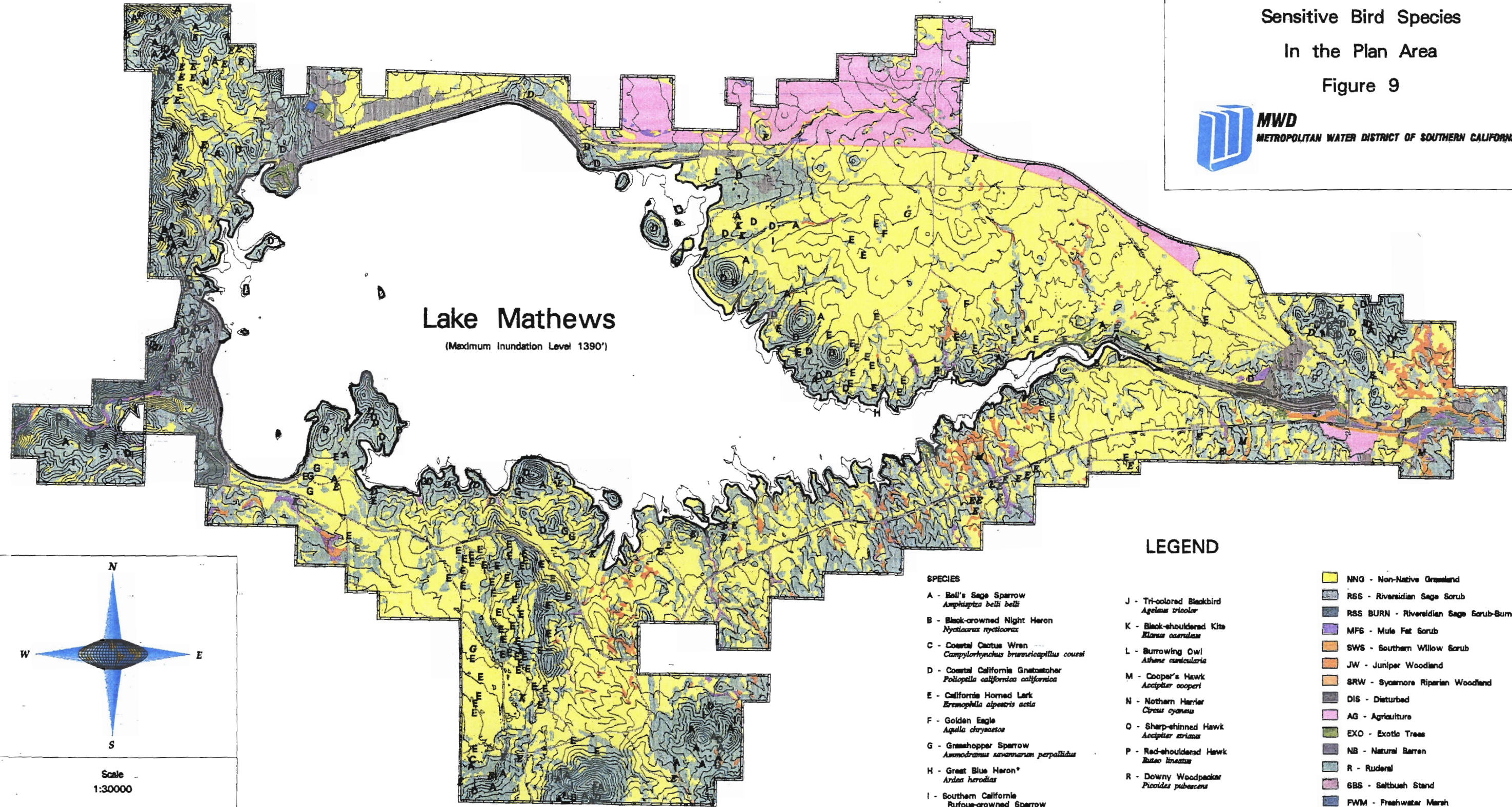
2) Potentially Occurring Target Species

In addition to the 25 observed species, 4 additional birds are considered to be potentially occurring Target Species and are associated with the riparian habitats in the Plan Area. The species are least Bell's vireo (*Vireo bellii pusillus*), southwestern willow flycatcher (*Empidonax trailii extimus*), yellow-breasted chat (*Icteria virens*), and yellow warbler (*Dendroica petechia brewsteri*).

e. Mammals

Eleven sensitive mammal species were observed in the Plan Area and designated as Target Species. Figure 11 shows the locations of the species observed during the 1992 surveys, and Table 11 indicates the occurrence of and estimated amount of suitable habitat for each species in the Plan Area. Figure 12 provides a more detailed view of the occurrence of the bat species, and Table 12 and Figure 13 indicate the distribution of SKR. No potentially occurring mammal species have been singled out at this time for inclusion on the Target Species list.

Sensitive Bird Species
In the Plan Area
Figure 9



Lake Mathews
(Maximum Inundation Level 1390')

LEGEND

SPECIES

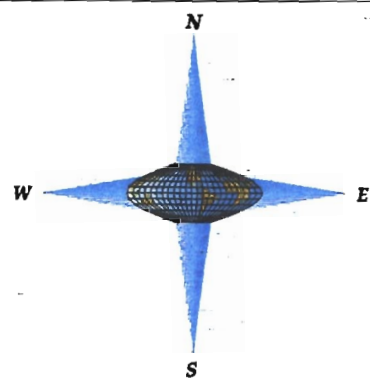
- A - Bell's Sage Sparrow
Amphispiza belli belli
- B - Black-crowned Night Heron
Nycticorax nycticorax
- C - Coastal Cactus Wren
Campylorhynchus brunneicapillus couesi
- D - Coastal California Gnatcatcher
Ptilopella californica californica
- E - California Horned Lark
Eremophila alpestris actis
- F - Golden Eagle
Aquila chrysaetos
- G - Grasshopper Sparrow
Anmodramus sarravananus perpallidus
- H - Great Blue Heron*
Ardea herodias
- I - Southern California
Purple-crowned Sparrow
Aimophila ruficeps canescens
- J - Tri-colored Blackbird
Agelaius tricolor
- K - Black-shouldered Kite
Elanus caeruleus
- L - Burrowing Owl
Athene cucularia
- M - Cooper's Hawk
Accipiter cooperi
- N - Northern Harrier
Circus cyaneus
- O - Sharp-shinned Hawk
Accipiter striatus
- P - Red-shouldered Hawk
Buteo lineatus
- R - Downy Woodpecker
Picoides pubescens

* - Rookery Site/Roost

Standard Symbols Are Focused Survey Sightings
Italic Symbols Are Incidental Sightings

Note: See Coastal California Gnatcatcher Map For Results of Focused Survey

- MNG - Non-Native Grassland
- RSS - Riverside Sage Scrub
- RSS BURN - Riverside Sage Scrub-Burned
- MFG - Mule Fat Scrub
- SWS - Southern Willow Scrub
- JW - Juniper Woodland
- SRW - Sycamore Riparian Woodland
- DIS - Disturbed
- AG - Agriculture
- EXO - Exotic Trees
- NB - Natural Barren
- R - Ruderal
- SBS - Saltbush Stand
- FWM - Freshwater Marsh
- W - Water
- Property Boundary
- Lake Mathews Inundation Level



Scale
1:30000

0 1250 2500 3750
Feet

One Inch = 2500 Feet

October 28, 1994

**Table 9
Occurrence of and Acres of Habitat for
Observed Target Bird Species in the Plan Area¹**

Target Bird Species	Multiple Species Reserve		Operations Areas	Plan Area Projects	Total Plan Area
	Existing Reserve	Mitigation Bank			
Bald eagle ^{2, 3, 4} Observed onsite Estimated acres of suitable habitat	see note 3	see note 3	see note 3	see note 3	Yes see note 4
Bank swallow ⁵ Observed onsite Estimated acres of suitable habitat	No 0	No 0	No 0	No 0	Yes see note 5
Bell's sage sparrow Observed onsite Estimated acres of suitable habitat	Yes 727.7	Yes 921.5	Yes 303.2	No 40.9	Yes 1,993.3
Black-crowned night heron (rookery) Observed onsite Estimated acres of suitable habitat	Yes 8.1	No 20.5	No 0.5	No 8.9	Yes 38.0
Blue grosbeak Observed onsite Estimated acres of suitable habitat	Yes 26.2	Yes 50.4	Yes 1.5	Yes 16.2	Yes 94.3
Burrowing owl Observed onsite Estimated acres of suitable habitat	Yes 1,648.0	No 1,398.0	Yes 200.8	No 53.1	Yes 3,290.9
California horned lark Observed onsite Estimated acres of suitable habitat	Yes 1,648.0	Yes 1,398.0	No 200.8	Yes 53.1	Yes 3,290.9
Coastal California gnatcatcher ⁶ Observed onsite Estimated acres of suitable habitat	Yes 727.7	Yes 921.5	Yes 303.2	Yes 40.9	Yes 1,993.3
Cooper's hawk ² Observed onsite Estimated acres of suitable habitat	Yes 753.9	Yes 973.8	No 304.7	Yes 57.3	Yes 2,089.7
Downy woodpecker Observed onsite Estimated acres of suitable habitat	No 8.1	Yes 20.5	No 0.5	No 8.9	Yes 38.0
Ferruginous hawk ^{2, 3} Observed onsite Estimated acres of suitable habitat	see note 3 2,375.7	see note 3 2,319.5	see note 3 504.0	see note 3 94.0	Yes 5,293.2
Golden eagle ² Observed onsite Estimated acres of suitable habitat	Yes 2,375.7	Yes 2,319.5	No 504.0	No 94.0	Yes 5,293.2
Grasshopper sparrow Observed onsite Estimated acres of suitable habitat	Yes 1,648.0	Yes 1,073.6	No 193.8	No 41.6	Yes 2,957.0
Great blue heron Observed onsite Estimated acres of suitable habitat	No 17.2	No 23.0	No 0.5	No 9.7	Yes ⁷ 58.2
Long-eared owl ^{2, 3} Observed onsite Estimated acres of suitable habitat	see note 3 8.1	see note 3 20.5	see note 3 0.5	see note 3 8.9	Yes 38.0

Table 9 (continued)
Occurrence of and Acres of Habitat for
Observed Target Bird Species in the Plan Area¹

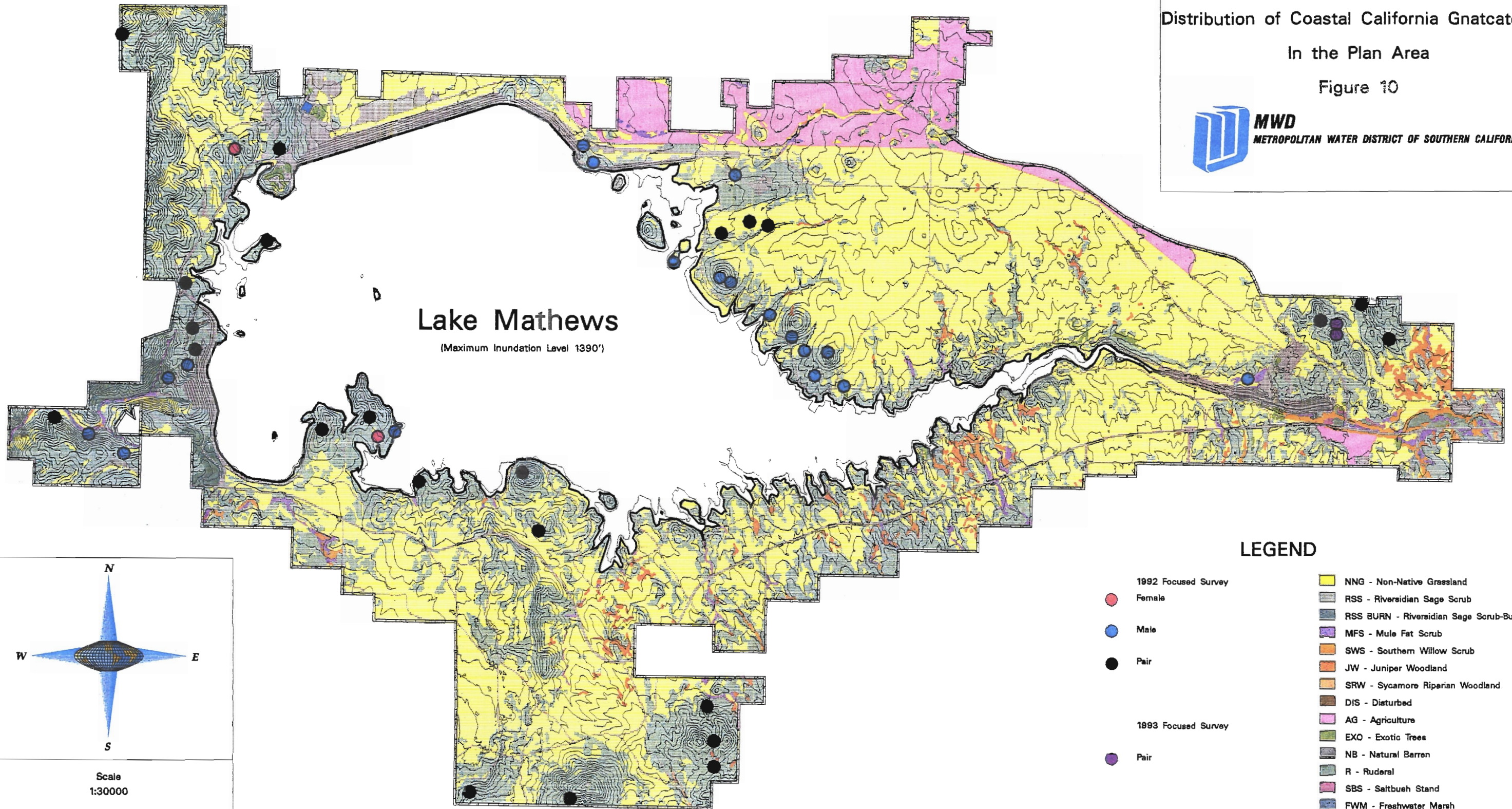
Target Bird Species	Multiple Species Reserve		Operations Areas	Plan Area Projects	Total Plan Area
	Existing Reserve	Mitigation Bank			
Loggerhead shrike	Yes	Yes	Yes	Yes	Yes
Observed onsite	2,418.2	2,359.5	504.0	96.4	5,378.1
Estimated acres of suitable habitat					
Northern harrier ²	No	Yes	No	No	Yes
Observed onsite	2,375.7	2,319.5	504.0	94.0	5,293.2
Estimated acres of suitable habitat					
Red-shouldered hawk ²	No	No	No	Yes	Yes
Observed onsite	26.2	52.3	1.5	16.4	96.4
Estimated acres of suitable habitat					
Rough-legged hawk ^{2, 3}	see note 3	see note 3	see note 3	see note 3	Yes
Observed onsite	2,375.7	2,319.5	504.0	94.0	5,293.2
Estimated acres of suitable habitat					
San Diego cactus wren ⁷	No	Yes	No	No	Yes
Observed onsite	see note 8	see note 8	see note 8	see note 8	see note 8
Estimated acres of suitable habitat					
Sharp-shinned hawk ²	Yes	No	No	No	Yes
Observed onsite	2,401.9	2,045.5	498.5	98.7	5,044.6
Estimated acres of suitable habitat					
So. California rufous-crowned sparrow	Yes	Yes	Yes	Yes	Yes
Observed onsite	727.7	921.5	303.2	40.9	1,993.3
Estimated acres of suitable habitat					
Swainson's hawk ^{2, 3}	see note 3	see note 3	see note 3	see note 3	Yes
Observed onsite	2,375.7	2,319.5	504.0	94.0	5,293.2
Estimated acres of suitable habitat					
Tricolored blackbird	Yes	Yes	Yes	No	Yes
Observed onsite	1,657.1	1,094.1	194.3	50.7	2,996.2
Estimated acres of suitable habitat					
White-tailed kite	Yes	Yes	No	No	Yes
Observed onsite	1,674.2	1,124.0	195.3	57.8	3,051.3
Estimated acres of suitable habitat					

Notes

- 1 Occurrence based on detections in 1992 surveys, unless otherwise noted. Estimated acres of suitable habitat based on the habitat associations identified for each species in Table 5 and the acres of that habitat in each Plan Area component as indicated in Table 3. Lake not included in calculations.
- 2 Wintering raptor observed in Plan Area.
- 3 Species observed outside of time frame of the 1992 surveys; sighted during Audubon Christmas Bird Counts, CDFG annual bald eagle counts, or biological monitoring activities in Plan Area; data on occurrence in Plan Area components not available in GIS database.
- 4 Bald eagles forage in the lake and, to a lesser extent, in the upland habitats in the Plan Area; potential nesting habitat occurs in the Plan Area, but breeding behavior and nest sites have not been observed to date.
- 5 Species observed foraging at the lake; no suitable breeding habitat for the species occurs in the Plan Area.
- 6 Additional information about the distribution of coastal California gnatcatchers and their habitat is provided in Table 10.
- 7 Species heard but not seen in Plan Area; Plan Area currently does not include much suitable breeding habitat for this species; Riversidian sage scrub and adjacent non-native grasslands are foraging habitat for this species.

Distribution of Coastal California Gnatcatchers
In the Plan Area

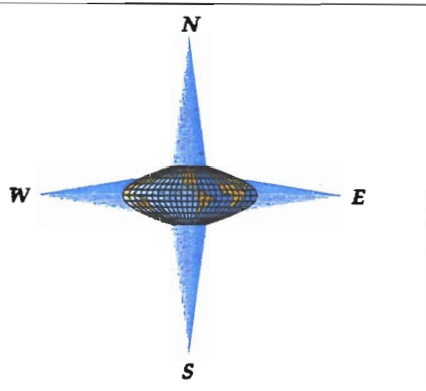
Figure 10



Lake Mathews
(Maximum Inundation Level 1390')

LEGEND

- | | |
|---|---|
| <p>1992 Focused Survey</p> <ul style="list-style-type: none"> ● Female ● Male ● Pair <p>1993 Focused Survey</p> <ul style="list-style-type: none"> ● Pair <p>Sources:</p> <p>1992 Focused Survey:
Griffith Wildlife Biology
William D. Wagner</p> <p>1993 Focused Survey:
Pacific Southwest Biological
Services, Inc.</p> | <ul style="list-style-type: none"> ■ NNG - Non-Native Grassland ■ RSS - Riverside Sage Scrub ■ RSS BURN - Riverside Sage Scrub-Burned ■ MFS - Mule Fat Scrub ■ SWS - Southern Willow Scrub ■ JW - Juniper Woodland ■ SRW - Sycamore Riparian Woodland ■ DIS - Disturbed ■ AG - Agriculture ■ EXO - Exotic Trees ■ NB - Natural Barren ■ R - Ruderal ■ SBS - Saltbush Stand ■ FWM - Freshwater Marsh ■ W - Water <ul style="list-style-type: none"> — Property Boundary — Lake Mathews Inundation Level |
|---|---|



Scale
1:30000

0 1250 2500 3750
Feet
One Inch = 2500 Feet

December 22, 1994

Table 10
Distribution of Coastal California Gnatcatchers
in the Plan Area

Coastal California Gnatcatcher Characteristics	Multiple Species Reserve		Operations Areas	Plan Area Projects	Plan Area Total
	Existing Reserve	Mitigation Bank			
Individual birds					
Females	10	9	5	3	27
Males	21	10	9	3	43
Young	2	7	0	0	9
Age/sex not noted	0	1	0	1	2
Total	33	27	14	7	81
Nests					
Nest with pair	5	1	2	1	9
Total	5	1	2	1	9
Pairs					
Male and female only	3	6	2	2	13
Male and female with nest	5	1	2	1	9
Male, female, and young	1	2	0	0	3
Total	9	9	4	3	25
Habitat					
Occupied	689.3	741.9	297.1	40.9	1,791.0
Potential	38.4	102.7	6.1	0.0	202.3
Total	727.7	921.5	303.2	40.9	1,993.3

With one exception, the observed mammal species which are Target Species are associated with grassland and sage scrub habitats in the Plan Area. The exception is the little brown bat (*Myotis* spp. [probably *M. yumanensis*]), which is primarily associated with riparian habitat and was detected foraging over the lake. Although breeding behavior was not observed during the survey period, seven of the species forage and/or shelter in the Plan Area. These species include the American badger (*Taxidea taxus*), big or pocketed free-tail bat (*Nyctinomops femorosaccus* or *macrotis*), cougar (*Felis concolor*), little brown bat, pallid bat (*Antrozous pallidus*), western mastiff bat (*Eumops perotis*), and western pipistrelle (*Pipistrellus hesperus*). The other four species are northwestern San Diego pocket mouse (*Chaetodippus fallax fallax*), San Diego black-tailed jackrabbit (*Lepus californicus bennettii*), San Diego desert woodrat (*Neotoma lepida intermedia*), and SKR.

The presence of the federally and state-listed SKR imposes ESA restrictions on a significant portion of the Plan Area. In this case, 2,610.4 acres of the 5,993.5 acres in the Plan Area (44%) are occupied by SKR, including 1,269.3 acres in

Table 11
Occurrence of and Acres of Habitat for
Observed Target Mammal Species in the Plan Area¹

Target Mammal Species	Multiple Species Reserve		Operations Areas	Plan Area Projects	Total Plan Area
	Existing Reserve	Mitigation Bank			
American badger ²					
Observed onsite	No	Yes	No	No	Yes
Estimated acres of suitable habitat	2,418.2	2,035.1	492.0	84.9	5,035.2
Big or pocketed free-tail bat ²					
Observed onsite	Yes	Yes	No	No	Yes
Estimated acres of suitable habitat	2,401.9	2,045.5	498.5	98.7	5,044.6
Cougar ^{2, 3}					
Observed onsite	see note 3	see note 3	see note 3	see note 3	Yes
Estimated acres of suitable habitat	see note 3	see note 3	see note 3	see note 3	see note 3
Little brown bat ^{2, 4}					
Observed onsite	see note 4	see note 4	see note 4	see note 4	Yes
Estimated acres of suitable habitat	27.2	50.4	1.5	16.4	95.5
Northwestern San Diego pocket mouse					
Observed onsite	Yes	Yes	No	Yes	Yes
Estimated acres of suitable habitat	727.7	921.5	303.2	40.9	1,993.3
Pallid bat ²					
Observed onsite	Yes	Yes	No	Yes	Yes
Estimated acres of suitable habitat	2,375.5	1,995.1	497.0	82.5	4,950.3
San Diego black-tailed jackrabbit					
Observed onsite	Yes	Yes	Yes	Yes	Yes
Estimated acres of suitable habitat	2,426.3	2,380.0	504.5	105.3	5,416.1
San Diego desert woodrat					
Observed onsite	No	Yes	No	No	Yes
Estimated acres of suitable habitat	770.2	961.5	303.2	43.3	2,078.2
Stephens' kangaroo rat ⁵					
Observed onsite	see note 5	see note 5	see note 5	see note 5	Yes
Estimated acres of occupied habitat	1,052.0	1,269.3	247.9	41.2	2,610.4
Western mastiff bat ²					
Observed onsite	Yes	Yes	Yes	Yes	Yes
Estimated acres of suitable habitat	2,375.7	1,995.1	497.0	82.5	4,950.3
Western pipistrelle ^{2, 4}					
Observed onsite	see note 4	Yes	see note 4	see note 4	Yes
Estimated acres of suitable habitat	2,375.7	1,995.1	497.0	82.5	4,950.3

- 1 Occurrence based on detections in 1992 surveys, unless otherwise noted. Estimated acres of suitable habitat based on the habitat associations identified for each species in Table 5 and the acres of that habitat in each Plan Area component as indicated in Table 3. Lake not included in calculations.
- 2 Foraging and sheltering is known to occur in the Plan Area; breeding activity was not observed during the 1992 surveys.
- 3 This species was observed by CDFG staff outside of the time frame for, and separate from, the surveys conducted in 1992. The entire Plan Area is considered habitat for the cougar; however, no den sites have been observed to date.
- 4 The little brown bat and western pipistrelle are indistinguishable from one another in flight and in echolocation signals; neither was captured in mist netting but, based on echolocation detections, both are assumed to forage and roost in suitable habitat in the Plan Area.
- 5 SKR were observed in special studies as well as in 1992 surveys; habitat estimates are based on GIS calculations of occupied habitat per Plan Area component (Table 12 and Figure 13).

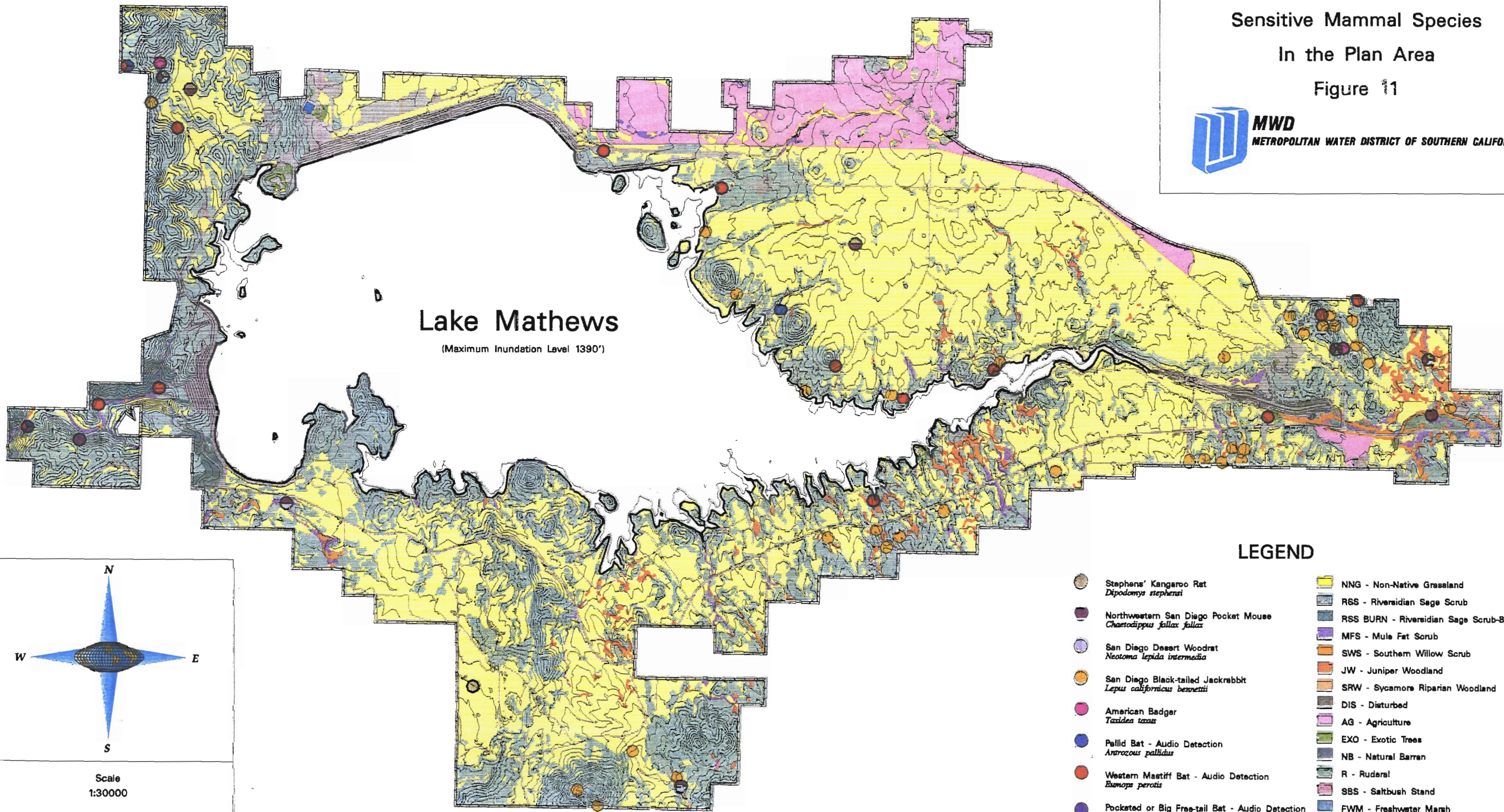
Sensitive Mammal Species

In the Plan Area

Figure 11



MWD
METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA



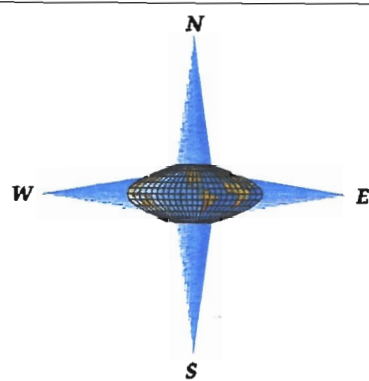
Lake Mathews

(Maximum Inundation Level 1390')

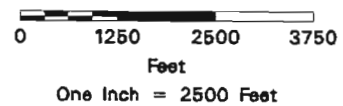
LEGEND

- | | | | |
|--|--|--|--|
| | Stephens' Kangaroo Rat
<i>Dipodomys stephensi</i> | | NNG - Non-Native Grassland |
| | Northwestern San Diego Pocket Mouse
<i>Chaetodippus fallax fallax</i> | | RSS - Riverside Sage Scrub |
| | San Diego Desert Woodrat
<i>Neotoma lepida intermedia</i> | | RSS BURN - Riverside Sage Scrub-Burned |
| | San Diego Black-tailed Jackrabbit
<i>Lepus californicus benettii</i> | | MFS - Mule Fat Scrub |
| | American Badger
<i>Taxidea taxus</i> | | SWS - Southern Willow Scrub |
| | Pallid Bat - Audio Detection
<i>Antrozous pallidus</i> | | JW - Juniper Woodland |
| | Western Mastiff Bat - Audio Detection
<i>Eumops perotis</i> | | SRW - Sycamore Riparian Woodland |
| | Pocketed or Big Free-tail Bat - Audio Detection
<i>Nyctinomops femorosaccus or macrotis</i> | | DIS - Disturbed |
| | Focused Survey Results | | AG - Agriculture |
| | Incidental Sightings | | EXO - Exotic Trees |
| | | | NB - Natural Barren |
| | | | R - Ruderal |
| | | | SBS - Saltbush Stand |
| | | | FWM - Freshwater Marsh |
| | | | W - Water |
| | | | Property Boundary |
| | | | Lake Mathews Inundation Level |

Multi-colored Symbols Have More Than One Species Sighting



Scale
1:30000

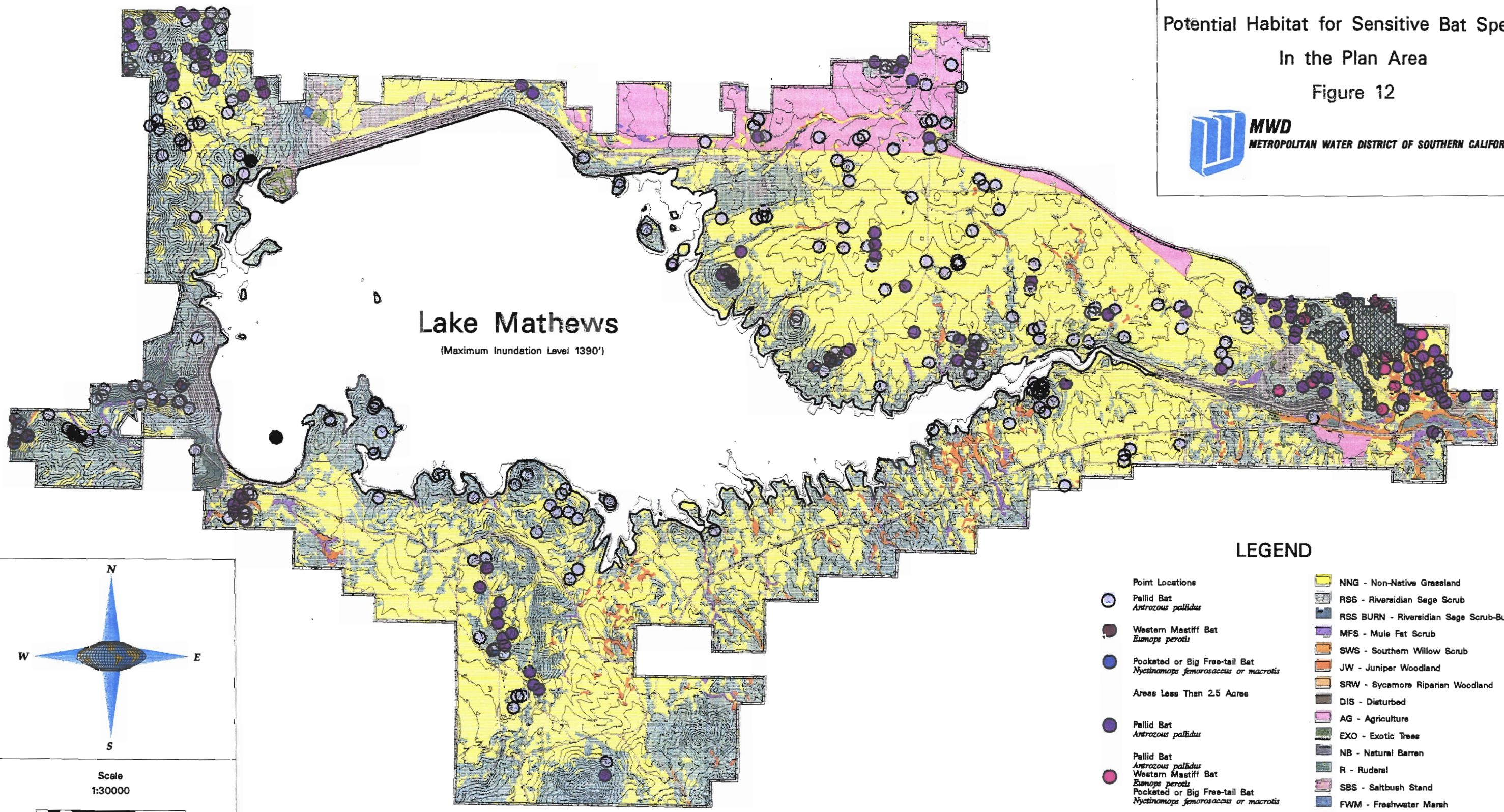


December 22, 1994

Potential Habitat for Sensitive Bat Species
In the Plan Area
Figure 12

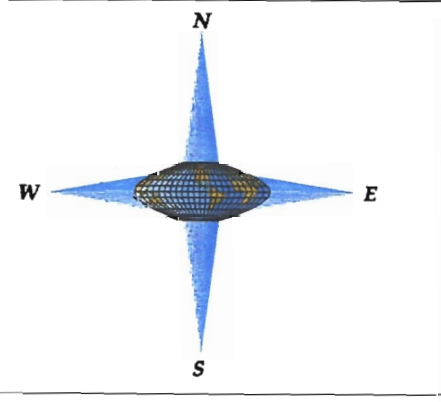


Lake Mathews
(Maximum Inundation Level 1390')



LEGEND

- | | |
|--|---|
| <ul style="list-style-type: none"> Point Locations Pallid Bat
<i>Antrozous pallidus</i> Western Mastiff Bat
<i>Eumops perotis</i> Pockated or Big Free-tail Bat
<i>Nyctinomops femorosaccus or macrotis</i> Areas Less Than 2.5 Acres Pallid Bat
<i>Antrozous pallidus</i> Pallid Bat
<i>Antrozous pallidus</i>
Western Mastiff Bat
<i>Eumops perotis</i>
Pockated or Big Free-tail Bat
<i>Nyctinomops femorosaccus or macrotis</i> Areas Greater Than 2.5 Acres Pallid Bat
<i>Antrozous pallidus</i> Pallid Bat
<i>Antrozous pallidus</i>
Western Mastiff Bat
<i>Eumops perotis</i>
Big or Pockated Free-tail Bat
<i>Nyctinomops spp.</i> | <ul style="list-style-type: none"> NNG - Non-Native Grassland RSS - Riverside Sage Scrub RSS BURN - Riverside Sage Scrub-Burned MFS - Mule Fat Scrub SWS - Southern Willow Scrub JW - Juniper Woodland SRW - Sycamore Riparian Woodland DIS - Disturbed AG - Agriculture EXO - Exotic Trees NB - Natural Barren R - Ruderal SBS - Saltbush Stand FWM - Freshwater Marsh W - Water Property Boundary Lake Mathews Inundation Level |
|--|---|



Scale
1:30000
0 1250 2500 3750
Feet
One Inch = 2500 Feet

December 22, 1994

Table 12
Occupied SKR Habitat in the Plan Area
(acres)

Habitat Type	Multiple Species Reserve		Operations Areas	Plan Area Projects	Plan Area Total
	Existing Reserve	Mitigation Bank			
Non-native grassland	796.1	679.3	104.0	18.7	1,598.1
Riversidian sage scrub	206.6	506.3	116.3	15.4	844.6
Mule fat scrub	2.6	2.8	0.0	0.2	5.6
Juniper woodland	9.2	29.9	0.0	0.9	40.0
Disturbed	36.4	41.6	26.6	5.9	110.5
Agriculture	0.0	8.1	0.4	0.0	8.5
Exotic trees	0.5	0.6	0.0	0.0	1.1
Ruderal	0.6	0.7	0.6	0.1	2.0
TOTAL	1,052.0	1,269.3	247.9	41.2	2,610.4

the Mitigation Bank area (Table 12). Most (61%) of the occupied SKR habitat is non-native grassland, 32% is Riversidian sage scrub, 4% is disturbed habitat, and the remainder (3%) is other types. Based on a GIS overlay of SKR and coastal California gnatcatcher habitat, approximately 740 acres of sage scrub in the Plan Area is occupied by both species.

In addition to its biological significance as part of the proposed Multiple Species Reserve, the occupied SKR habitat in the Mitigation Bank area also is a key factor in the implementation program for the Lake Mathews MSHCP/NCCP. It is used in mitigation banking and other implementing agreements to differentiate Metropolitan's and the RCHCA's shares of the Mitigation Bank, with the SKR-occupied areas credited to the RCHCA and the areas unoccupied by SKR credited to Metropolitan. The details of this arrangement are presented in Chapter 4 and in the agreements in Volume 3.

B. Habitat Evaluation

Three frames of reference provide a relative measure of the biological value of resources in the Plan Area: the HQA of the Plan Area based on the 1992 and 1993 survey results, a comparison of the Plan Area HQA with the HQA results for other sites, and regional vegetation mapping prepared for the RCHCA. A detailed description of the HQA is provided in Volume 2.

1. Plan Area HQA

HQA is a methodology developed by Metropolitan in consultation with USFWS and CDFG to quantify and compare the habitat values of impact areas and mitigation sites in a systematic way. It is an alternative to, but consistent with,

the "habitat evaluation procedure" (HEP) developed by the USFWS. However, HQA differs from HEP in that it measures the importance of a habitat as a community rather than in terms of the habitat's value for individual indicator species. Specifically, the approach entails:

1. Identification of important habitat types;
2. Identification of ecological concerns with respect to each habitat type;
3. Selection of measurable biological variables which are quantitative indicators of habitat value with respect to these ecological concerns:
 - a. Presence of listed and other sensitive species,
 - b. Species richness (number of different species),
 - c. Species relative density (animals per unit area),
 - d. Vegetation structure, and
 - e. Proportion of native (versus introduced) plant species; and
4. Determination of a prime example of each particular habitat that can be used as the standard against which other sites can be compared.

Metropolitan has used HQA with USFWS's and CDFG's concurrence to plan mitigation for individual projects and to establish mitigation banks. With the Lake Mathews MSHCP/NCCP, HQA also has been integrated into habitat-based conservation planning for multiple species. Specifically, HQA was used as part of the planning process for the Lake Mathews plan to:

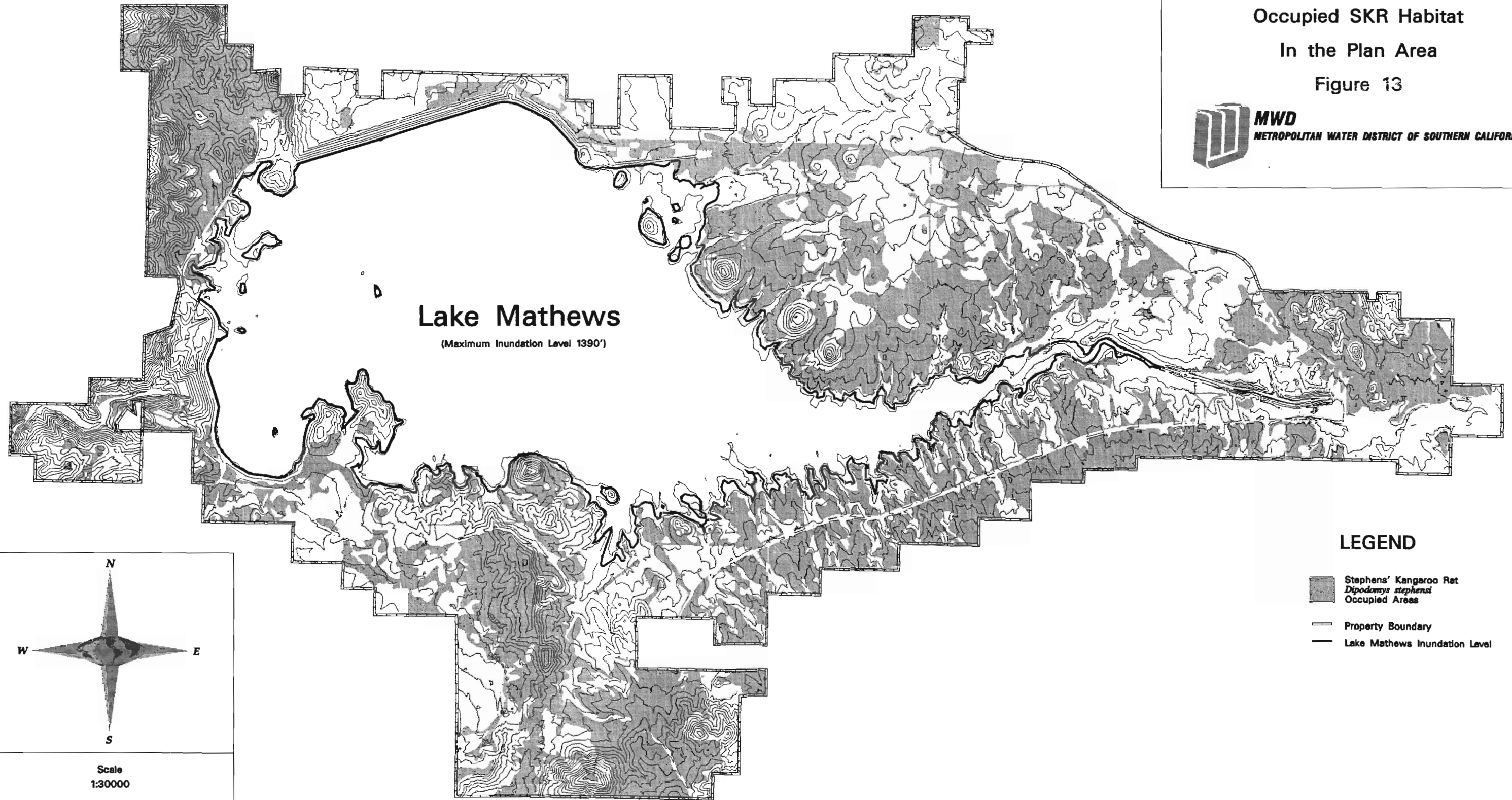
1. Document the type and quality of biological resources in the Plan Area;
2. Describe the interrelation and relative values of the Plan Area resources; and
3. Establish the basis for a habitat quality index for the Mitigation Bank lands that could be used to calculate mitigation credit in the Mitigation Bank.

HQA results for the seven primary habitat types in the Plan Area (non-native grassland, Riversidian sage scrub, juniper woodland, mule fat scrub, southern willow scrub, sycamore willow riparian, and freshwater marsh) are summarized below. Habitats are discussed in descending order of total acreage in the Plan Area, and the data used in the analysis are presented in Table 13.

a. Non-native Grassland

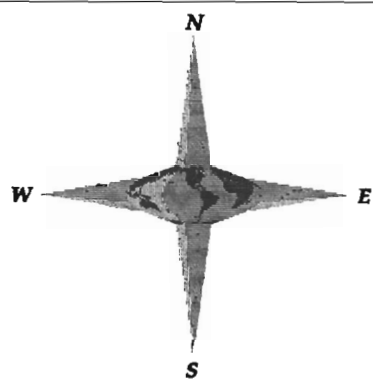
HQA criteria values for the non-native grassland are presented in Table 13. Non-native grassland was the most abundant habitat type within the Plan Area (2,957 acres). The wildlife species richness values were low, including the lowest value for small mammals on site (6). In addition to low species richness, wildlife density values were the lowest overall in the Plan Area. The lack of vegetative structure, coupled with heavy sheep grazing on some areas of the buffer lands and very dense grass cover on the ecological reserve, may contribute to the low species richness and density values. The terrestrial surface vegetation cover value was high in this habitat (123), precluding some small animal use. Scattered rock outcrops, cover openings, and clustered shrubs

Occupied SKR Habitat
In the Plan Area
Figure 13

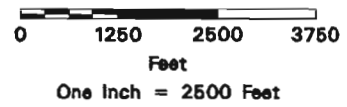


LEGEND

- Stephens' Kangaroo Rat
Dipodomys stephensi
Occupied Areas
- Property Boundary
- Lake Mathews Inundation Level



Scale
1:30000



December 22, 1994

tended to concentrate the activity of some animals, especially herpetofauna. Despite the lack of vegetation structure, the non-native grasslands had high adjusted plant species richness (5.5). This habitat also supported a large number of sensitive species, including 23 animals and 5 plants. Non-native grassland is the primary habitat for the federally endangered SKR. Other sensitive species detected include the San Diego black-tailed jackrabbit, northwestern San Diego pocket mouse, orange-throated whiptail, northern red diamond rattlesnake, and San Diego horned lizard. Aerial foraging sensitive species which utilize this habitat include, but are not limited to, the pallid bat, western mastiff bat, Cooper's hawk, golden eagle and northern harrier. The coastal California gnatcatcher was observed foraging in this habitat near the ecotone with Riversidian sage scrub. In addition, the knotweed spineflower (*Chorizanthe polygonoides longispina*) was observed in this community in small openings in the grass cover. The non-native grassland in the southern portion of the site contained potential habitat for the Quino checkerspot butterfly.

b. Riversidian Sage Scrub

HQA criteria values for this habitat are presented in Table 13. The existing ecological reserve and buffer lands contain 1,993 acres of this sensitive and regionally diminishing habitat, the second largest habitat on the site. This habitat had high overall wildlife species richness values. Bird species richness (18) and relative density (134) were high, with the latter value much higher than the non-native grassland but not as high as in the riparian habitats. This community had a high plant species richness (5.9) and overall low cover values for the vegetation layers. Many wildlife species utilize more open vegetation communities over dense vegetation with high cover values. The open areas within this shrub-dominated habitat provided excellent foraging for many small mammal and reptile species. This habitat supported the largest variety of sensitive species on the site. The SKR was present in the sparse, grassy openings between shrubs in the sparser Riversidian sage scrub. Sensitive reptiles found in this habitat included the orange-throated whiptail, northern red diamond rattlesnake, and the San Diego horned lizard. The coastal California gnatcatcher was observed nesting onsite in Riversidian sage scrub, its primary habitat. Rock outcrops suitable for bat roosts were common within the Plan Area.

c. Juniper Woodland

HQA criteria values for this habitat are presented in Table 13. The juniper woodland at Lake Mathews was similar to the non-native grassland habitat with an added structural component of the junipers (84.9 acres in the Plan Area). This community had low to moderate wildlife species richness values, which were overall slightly higher than the non-native grassland values. The wildlife species relative density values were much higher than the non-native grassland values. The terrestrial surface cover (92) was lower than in the non-native grassland habitat (123) as was overall plant species richness (4.3 compared to 5.5). Like the non-native grassland, 62% of the plants present were native. Several sensitive species occurred within this habitat, although the overall value for this criterion was low. The SKR was detected, as expected, given the suitable non-native grassland component of the habitat. Other mammal species present

Table 13
HQA Database for Habitats in the Plan Area

HQA Variable	NNG	RSS	JW	MFS	SWS	SRW	FWM
Species of Special Concern HQA ^{1, 2}	137	141	39	53	48	24	23
Species Richness							
Plants	39	41	26	30	25	25	5
Plants (Adjusted ³)	5.5	5.9	4.3	5.0	4.2	4.7	0.9
Large Mammals	6	6	6	6	5	5	ns
Small Mammals	6	7	7	8	7	10	ns
Birds	10	18	12	8	19	18	6
Amphibians & Reptiles	3	6	6	2	3	5	ns
Species Relative Density							
Large Mammals (individuals/3 hectares)	5	7	13	8	5	25	ns
Small Mammals (individuals/3 hectares)	35	82	56	112	67	193	ns
Small Mammals (individuals/100 trap nights)	26.6	62	42	70.8	51	48.5	ns
Birds (individuals/40 hectares)	60	134	330	340	980	1,400	3,360
Birds (Shannon diversity index)	na	na	na	na	2.7	2.9	1.2
Amphibians & Reptiles (individuals/9 hectares)	9	53	80	14	90	345	ns
Vegetation Structure							
Number of Layers	1	2	3	3	4	4	2
% Cover of Tree Canopy	na	na	16	7	77	49	na
% Cover of Shrub Cover	na	36	21	58	19	29	71
% Cover of Terrestrial Surface	123	82	92	56	45	107	4
Total Overlay Cover	127	118	131	122	140	185	75
Projective Cover	96	84	97	99	93	99	88
Tree Bole (boles/hectare)	na	na	na	0	208	280	na
Proportion Native Plant Species (%)	62	68	62	63	52	56	100
Total Acreage	2,957	1,993	85	56	38	2	1.2

Codes

FWM	Freshwater marsh	NNG	Non-native grassland
HQA	Habitat Quality Assessment	RSS	Riversidian sage scrub
JW	Juniper woodland	SRW	Sycamore riparian woodland
MFS	Mule fat scrub	SWS	Southern willow scrub
ns	Criterion not sampled	na	not applicable

Notes

- The species of special concern in the HQA include only those sensitive species that were observed in the surveys conducted in the Plan Area in 1992 and the supplemental focused survey for plants conducted in 1993. The species of special concern in the HQA correspond to the observed Target Species in Table 5, except that 11 species were not included in the evaluation. The excluded species include one reptile (San Bernardino ringneck snake), seven birds (bald eagle, ferruginous hawk, long-eared owl, rough-legged hawk, sharp-shinned hawk, Swainson's hawk, and tricolored blackbird) and three mammals (cougar, little brown bat, and western pipistrelle).
- The HQA totals assigned to the habitats for the presence of species of special concern is weighted according to the following point system: federal and state-listed species (10 points); species with federal proposed rules, state candidates for listing, and federal Category 1 candidates (9 points); federal sensitive species and CNPS List 1 species (6 points); federal Category 2 candidates (5 points), California fully protected, California species of special concern, and CNPS List 2 species (4 points); CNPS List 3 species (3 points), CNPS List 4, species of local concern, and NCCP coastal sage scrub sensitive species (2 points); and non-listed but highly restricted species (1 point). Calculations were based on the species' status in 1993.
- Adjusted plant species richness = plants species observed ÷ (no. of transects x 200 square meters).

included the northwestern San Diego pocket mouse, San Diego desert woodrat, and San Diego black-tailed jackrabbit. Two sensitive lizard species, the orange-throated whiptail, and coastal western whiptail, were also present. No sensitive bird species were observed in this habitat.

d. Mule Fat Scrub

HQA criteria values for this habitat are presented in Table 13. Mule fat scrub was limited to drainages within the Plan Area and totaled approximately 56 acres. This community was characterized by a very high amount of shrub cover with varying amounts of tree canopy and terrestrial surface cover. Plant species composition varied throughout the site resulting in a moderately high species richness value (5).

This community also supported a diverse wildlife population with a high large mammal species richness value (6). Wildlife species density values were fairly low with the exception of small mammals (112). Mule fat scrub is a narrow, linear habitat utilized by a variety of species but in low densities. Sensitive species present in mule fat scrub included two species of small mammal, namely the northwestern San Diego pocket mouse and the San Diego desert woodrat, and four bird species, including Bell's sage sparrow, blue grosbeak, Cooper's hawk, and the white-tailed kite. Both the orange-throated whiptail and the coastal western whiptail were also present in this habitat.

e. Southern Willow Scrub

HQA criteria values for this habitat are presented in Table 13. The southern willow scrub community is restricted to stream channels that are seasonally flooded or saturated for prolonged periods during the growing season (38 acres in the Plan Area). The vegetation structure was four-layered in mature stands, including tree boles, which were absent in less developed stands. The tree canopy (77) and terrestrial cover (45) layers were predominant, and the shrub component had a much lower cover value (19). Overall plant species richness was moderate (4.2); almost half of the species were introduced (48%). The extensive tree canopy (77) and large number of tree boles (208) provide habitat for many avian species. Both species richness (19) and the Shannon diversity index (2.7) for birds were high. The community had moderately high values for mammal species richness (5, 7) and relative density (5, 67). Herpetofauna species richness was low (3), and relative density was high (90) compared to other habitats on the site. Several sensitive wildlife species were detected in this habitat, including the downy woodpecker, blue grosbeak, coastal California gnatcatcher, and loggerhead shrike. Also present were the coastal western whiptail and orange-throated whiptail.

f. Sycamore Riparian Woodland

HQA criteria values for this habitat are presented in Table 13. This habitat was represented by 2 acres on the site and continued upstream within the drainage to the south of the site boundary. Although it was a small amount of habitat, this habitat had high values for small mammal (10) and bird species richness (18), as well as high density values for large mammals (25), small mammals (193), and herpetofauna (345) relative density. The Shannon diversity index (2.9) was high in this habitat as well. The vegetation structure of a tall, open

tree canopy (49) and diverse shrub (29) and terrestrial cover (107) layers contributed to the high wildlife values. Location and size of the habitat may also influence the high wildlife values. The narrow channel is bordered by Riversidian sage scrub and non-native grassland and was contiguous with additional sycamore riparian woodland off the Plan Area. Despite the high wildlife values, only four sensitive species were present; these included the coastal western whiptail, orange-throated whiptail, northwestern San Diego pocket mouse, and San Diego woodrat.

g. Freshwater Marsh

HQA criteria values for this habitat are presented in Table 13. The freshwater marsh habitat was the smallest natural habitat present on the Plan Area, totaling less than 2 acres. Freshwater marsh is very rare in the arid southern California region, generally occurring in small pockets within riparian areas, along agricultural ditches, and along reservoir edges. At the Lake Mathews Plan Area, marsh occurred in western Cajalco Creek. The habitat had very low values for plant species richness (0.9); however, shrub layer cover was high (71), and 100% of the species present were native. Bird species richness (6) and Shannon diversity index (1.2) were the lowest of the habitats on the site, although the largest numbers of birds occurred here. The small amount of available habitat tends to concentrate high numbers of a very few species. Two sensitive species, the tricolored blackbird and the coastal western whiptail, utilize this habitat.

2. Comparison with Other Sites

Since 1989, Metropolitan has conducted HQAs at 13 sites in southern California, including the Lake Mathews Plan Area. HQA data are available in sufficient detail to allow a comparison of 10 of the sites with the Lake Mathews Plan Area and are presented in detail in Part 2 of Volume 2. Information about four sites with at least 800 acres of grassland and/or sage scrub habitat are summarized below and compared with the HQA data for the Lake Mathews Plan Area. The four sites include:

- Lands in Crown Valley that are now part of the Shipley Reserve;
- The north hills of Domenigoni Valley that, together with the Shipley Reserve, are part of the Southwestern Riverside County Multiple Species Reserve;
- The pre-expansion configuration of the Santa Rosa Plateau Reserve; and
- Lands in the vicinity of Vail Lake.

The four sites were surveyed in connection with Metropolitan's Eastside Reservoir project, with most surveys occurring in 1990. All four sites are in western Riverside County, and three of the four are now part of permanent reserves. For purposes of this summary, only the habitat values of grassland and sage scrub habitats at the four sites are compared with those at Lake Mathews. Table 14 summarizes the HQA data for these two habitat types at the five sites.

The following caveats also should be noted regarding any conclusions based on a comparison of HQA data:

1. The surveys of the five sites were conducted in different seasons, years, and climatic conditions and
2. More surveys were conducted in the Lake Mathews Plan Area than in any of the other four sites.

a. Crown Valley (Shipley Reserve)

The Crown Valley site encompasses approximately 2,500 acres, including 439 acres of grassland and 768 acres of sage scrub. It also has a well-developed oak riparian community (67 acres), stands of coast live oak woodland (7 acres), and chaparral (232 acres).

The site is located southeast of the Lake Mathews Plan Area and can be characterized as a plateau in the mountains between Domenigoni Valley and Lake Skinner. Prior to its acquisition as a wildlife preserve, the site was an active ranch with cattle and horse grazing which greatly influenced the plant composition of the grasslands and adjacent scrub edges. However, when the site was surveyed in 1990, the habitats were in very good condition with little evidence of grazing or other degradation.

Compared with the grassland at Lake Mathews, the habitat at Crown Valley has a similar HQA score for proportion of native plant species and relative density of large mammals. However, even if differences in species lists and sampling size are taken into account, the total number of observed grassland species of concern and diversity of grassland species at Lake Mathews far exceed Crown Valley.

Compared with the sage scrub at Lake Mathews, the habitat at Crown Valley has a higher score for proportion of native plant species and plant species richness and similar rating for relative density of large mammals and birds. If differences in survey intensity are taken into account, the Crown Valley sage scrub likely has a higher overall species richness and relative density than that at Lake Mathews, reflecting the relative isolation of the area, a higher proportion of other species-rich habitats at Crown Valley and a higher proportion of areas which have been disturbed and degraded due to their accessibility at Lake Mathews.

b. Domenigoni Valley North Hills

The Domenigoni Valley North Hills site is located to the north and slightly west of the Crown Valley site. It encompasses approximately 900 acres on the north side of a small ridge in the broad, flat valley that was ultimately selected as the location for the Eastside Reservoir. At the time of the survey, the site included approximately 800 acres of sage scrub in an area completely surrounded by active agricultural uses. High wildlife use was unexpected due to the site's isolation and size. However, surveys revealed that the sage scrub contained several sensitive species, that non-native species were uncommon on the site, and that wildlife use of the area was very high.

Table 14
HQA of Grassland and Sage Scrub Habitats
in the Plan Area and at Four Other Riverside County Sites

HQA Data Categories	Lake Mathews	Crown Valley	Domenigoni Valley North Hills	Santa Rosa Plateau	Vail Lake
Year(s) Surveys Conducted	1992-93	1990	1990	1990	1989-90
Non-native and Native Grassland					
Total Acres of Habitat Type	2,957	439	np	811	274
Species of Special Concern Criteria ¹	137	28	ns	73	18
Species Richness					
Plants	39	20	ns	23	10
Plants (Adjusted ²)	5.5	3.1	ns	3.8	1.9
Large Mammals	6	2	ns	5	3
Small Mammals	6	3	ns	1	3
Birds	10	3	ns	3	1
Amphibians & Reptiles	3	1	ns	3	--
Species Relative Density					
Large Mammals (individuals/3 hectares)	5	6	ns	21	11
Small Mammals (individuals/3 hectares)	35	7	ns	11.1	16
Birds (individuals/40 hectares)	60	40	ns	60	4
Amphibians & Reptiles (individuals/9 hectares)	9	1	ns	11	--
Vegetation Structure					
% Cover of Terrestrial Surface	123	71	ns	69	44
Proportion Native Plant Species (%)	62	65	ns	52	30
Riversidian and Diegan Sage Scrub					
Total Acres of Habitat Type	1,993	768	800	223	945
Species of Special Concern Criteria ¹	141	35	38	15	50
Species Richness					
Plants	41	53	25	43	64
Plants (Adjusted ²)	5.9	7.9	4.2	7.2	8.8
Large Mammals	6	3	4	5	5
Small Mammals	7	5	5	4	5
Birds	18	10	10	10	11
Amphibians & Reptiles	6	4	2	3	2
Species Relative Density					
Large Mammals (individuals/3 hectares)	7	10	24	7	10
Small Mammals (individuals/3 hectares)	82	32	50	11	37
Birds (individuals/40 hectares)	134	100	240	400	65
Amphibians & Reptiles (individuals/9 hectares)	53	10	2	6	9
Vegetation Structure					
% Cover of Shrub Cover	36	40	79	77	53
% Cover of Terrestrial Surface	82	34	14	24	24
Proportion Native Plant Species (%)	68	81	72	81	88

Table 14 (continued)
HQA of Grassland and Sage Scrub Habitats
in the Plan Area and at Four Other Riverside County Sites

Notes

- 1 See notes 1 and 2 for Table 13. Species of Special Concern Criteria for the four comparison sites have been adjusted to reflect presence (where known) and 1993 status of species considered in Lake Mathews HQA.
 - 2 Adjusted plant species richness = plants species observed ÷ (no. of transects x 200 square meters).
- np Habitat not present/studied.
 ns Criterion not sampled/studied.

Compared with the sage scrub at Lake Mathews, the habitat on the North Hills has a similar score for proportion of native plant species and a higher score for relative density of birds. If differences in survey intensity are taken into account, overall species richness of the sage scrub on the North Hills is similar if not higher than at Lake Mathews. However, if habitat conditions are improved, the relative density of sage scrub species at Lake Mathews would likely exceed current levels in the Plan Area and at the North Hills site.

c. Santa Rosa Plateau

The Santa Rosa Plateau site encompasses approximately 3,800 acres, including 811 acres of grassland and 223 acres of sage scrub. It is the only site among the five that has native grassland and Diegan sage scrub rather than non-native grassland and Riversidian sage scrub. Other habitats at the site include 2,672 acres of chaparral, 95 acres of Engelmann oak woodland, and 2 acres of sycamore riparian woodland.

The site is located south of the Lake Mathews Plan Area in the southern Santa Ana Mountains near the city of Murrieta. At the time of the surveys, the property was an existing biological reserve surrounded by private land holdings.

Compared with the non-native grassland at Lake Mathews, the native grassland at Santa Rosa Plateau has similar scores for richness of large mammals and amphibians and reptiles and for relative density of birds and reptiles and amphibians; it has a higher score for relative density of large mammals. In addition, the total number of species of special concern is high for the plateau's grassland, reflecting the rarity of the type.

Compared with the Riversidian sage scrub at Lake Mathews, the Diegan sage scrub at the plateau has similar scores for overall species richness and relative density of large mammals and a higher score for relative density of birds. It has lower scores for relative density of small mammals, reptiles, and amphibians, reflecting differences in the level and type of trapping conducted more than actual differences in species occurrence.

d. Vail Lake

The Vail Lake site encompasses approximately 2,540 acres, including 274 acres of grassland and 945 acres of sage scrub. It also contains relatively large amounts of the riparian habitats found at Lake Mathews, including 328 acres of southern willow scrub and 66 acres of freshwater marsh. Other habitats at the Vail Lake site include 15 acres of mule fat scrub, 19 acres of cholla scrub, 102 acres of alluvial scrub, 644 acres of chaparral, 10 acres of coast live oak woodland, 76 acres of cottonwood-willow riparian forest, and 59 acres of live oak woodland.

The site is the most southern of the five areas in this comparison and is situated in a largely undeveloped mountainous area near the San Diego County border. Vail Lake, a man-made reservoir on privately owned property, previously was operated as a fishing resort but, at the time of the surveys, had been closed for several years. As with the reservoir at Lake Mathews, it increases the species richness of the area, attracting both resident and migratory species. However, the reservoir is not the only factor influencing the site's biodiversity. The area has both desert and cismontane characteristics, resulting in an assemblage of unique and highly diverse biological resources.

Compared with the grassland at Lake Mathews, the habitat at Vail Lake has a lower score for species richness, proportion of native plant species, and relative density of small mammals and birds. Compared with Lake Mathews and the other sites, the relative density of grassland bird species is especially low. The difference in scores, however, is exaggerated by differences in the intensity of surveys conducted at the sites.

Compared with the sage scrub at Lake Mathews, the habitat at Vail Lake has a high score for plant species richness and proportion of native plant species. Overall species richness at Vail and Mathews Lakes are similar but scores for relative density of small mammals, birds, amphibians, and reptiles are lower at Vail than at Mathews. These results, like those for grassland, reflect differences in survey intensity as well as differences in habitat mixes at the two sites.

3. Regional Significance

The Riversidian sage scrub and non-native grassland habitats of the Lake Mathews Reserve are important regional ecological resources. Of a total 926,910-acre area of western Riverside County studied in 1988, Minnich and Chou (1990) estimated that just over 50% had been converted from native vegetation to other use. Of the remaining 50% of land in relatively natural condition, 33% (152,660 acres) was composed of coastal sage scrub and coastal sage scrub/annual grassland mix. An additional 32,200 acres was occupied by annual grassland alone. The coastal sage scrub and grassland areas of the Lake Mathews Plan Area probably represent approximately 2% to 3% of the total remaining areas of those habitats in western Riverside County, a substantial holding for a single reserve.

Lake Mathews is part of a large, contiguous open-space area that continues south to Interstate 15. Present land use in the vicinity of the Multiple Species Reserve is rural residential, agricultural, and undeveloped open space. The

Riverside County General Plan indicates that most of the currently undeveloped lands are designated for residential and commercial development and are expected to be built out over the next few decades. Given this prospect the importance of the Multiple Species Reserve lands is evident. However, many parcels of this natural open space are owned or are planned for incorporation by various public agencies, including the Bureau of Land Management, California Wildlife Conservation Board, and the Riverside County Habitat Conservation Agency. The Lake Mathews Plan Area is well situated to function as an extensive open-space corridor.

Habitat Conservation and Impact Mitigation Measures

3. Habitat Conservation and Impact Mitigation Program

As discussed in Chapter 1, Metropolitan and the RCHCA have prepared the Lake Mathews MSHCP/NCCP to achieve multiple objectives, including but not limited to Metropolitan's need for long-term authorizations under the ESAs for future projects and activities and the RCHCA's intention of establishing a system of Core Reserves to preserve SKR and other species. This chapter describes the habitat conservation and impact mitigation program that Metropolitan and the RCHCA will implement in cooperation with USFWS and CDFG in order to achieve their common goals. The program includes seven components:

- Habitat conservation and management;
- Mitigation Bank terms and conditions;
- Project-level impact minimization and mitigation measures;
- ESA authorizations and assurances;
- Funding and assurances for implementation of the Lake Mathews Plan;
- Provisions for emergencies, listings, and unforeseen circumstances; and
- Plan amendment process.

A. Habitat Conservation and Management

Under the Lake Mathews MSHCP/NCCP, provisions are made for the establishment of the 5,110.4-acre Multiple Species Reserve and the management of the more than 12,000-acre Combined Reserve. The Cooperative Management Agreement among Metropolitan, RCHCA, USFWS, and CDFG in Volume 3 of the Lake Mathews Plan establishes the Combined Reserve. The Combined Reserve is composed of (1) the Multiple Species Reserve which consists of the Existing Reserve and the Mitigation Bank, (2) RCHCA ownership within its proposed Lake Mathews-Estelle Mountain Core Reserve, (3) the Estelle Mountain Ecological Reserve owned by CDFG, and (4) approximately 320 acres administered by the United States Bureau of Land Management located within the RCHCA's proposed Core Reserve. The Multiple Species Reserve will be managed to benefit the 65 Target Species. Biological management of RCHCA's properties within the Combined Reserve will focus on management of SKR.

1. Habitat Conservation

Habitat conservation under the Lake Mathews Plan is accomplished on Metropolitan's Lake Mathews properties through the creation of the Mitigation Bank within the Multiple Species Reserve. As shown in Figure 14, the Lake Mathews Multiple Species Reserve includes the Mitigation Bank area and Existing Reserve and excludes the areas designated for Operations and Plan Area Projects. The Mitigation Bank is further delineated into Metropolitan and RCHCA Mitigation Bank lands based on the distribution of SKR-occupied habitat (see Section B, Mitigation Bank Terms and Conditions, of this chapter).

The permanent conservation of the lands in the Mitigation Bank doubles the amount of habitat being preserved and managed at Lake Mathews. Non-native grassland and Riversidian sage scrub are the primary habitat types in the Multiple Species Reserve, covering 4,370.8 acres (86%) of the 5,110.4 acres (Table 15).

Table 15
Habitat Types
in the Lake Mathews Multiple Species Reserve
(acres)

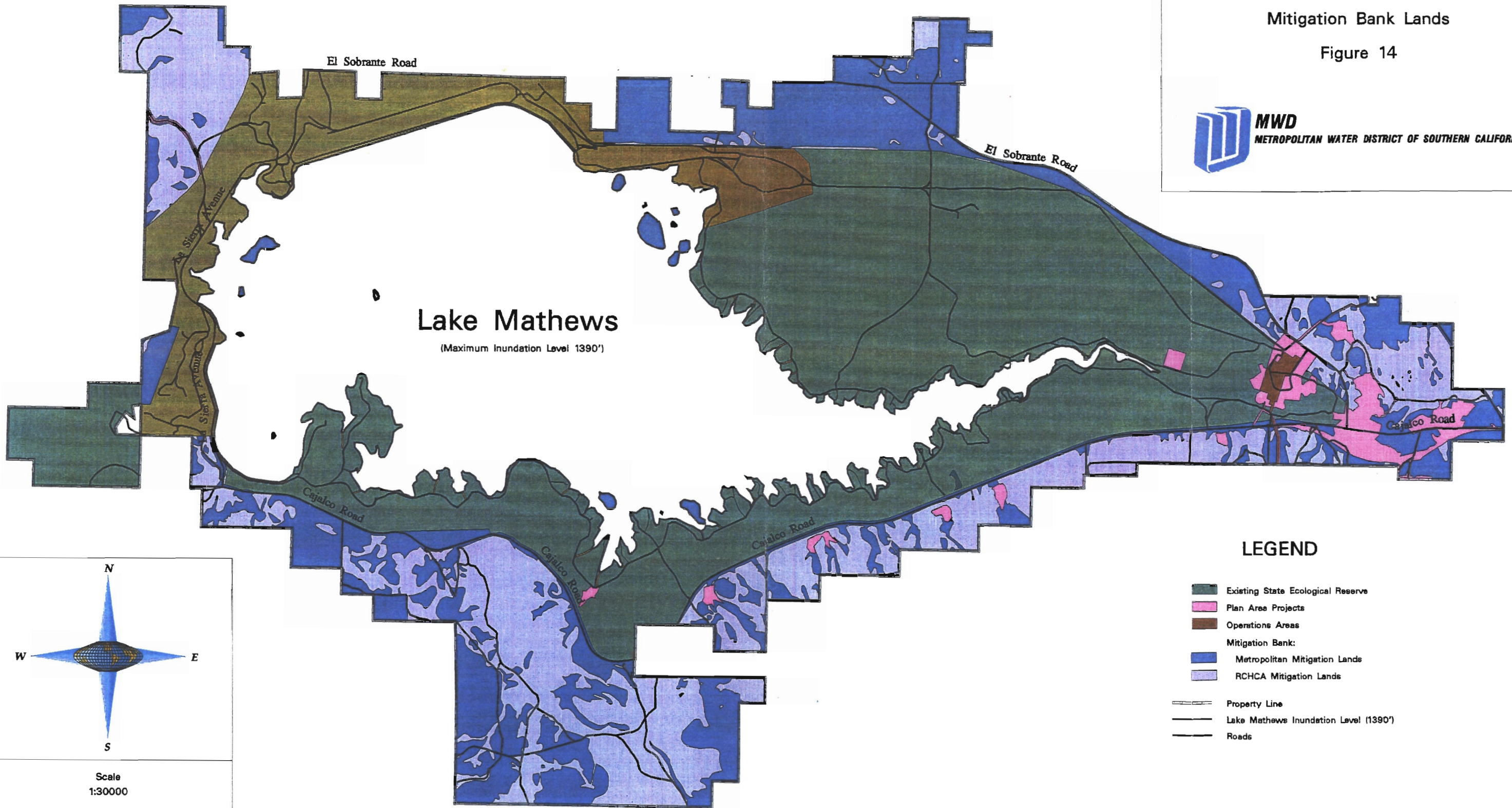
Habitat Type	Mitigation Bank			Existing Reserve	Total in Multiple Species Reserve
	Metropolitan Lands	RCHCA Lands	Total		
Non-native grassland	394.3	679.3	1,073.6	1,648.0	2,721.6
Riversidian sage scrub	415.2	506.3	921.5	727.7	1,649.2
Mule fat scrub	27.1	2.8	29.9	18.1	48.0
Southern willow scrub	20.5	0.0	20.5	8.1	28.6
Juniper woodland	10.1	29.9	40.0	42.5	82.5
Sycamore riparian woodland	1.9	0.0	1.9	0.0	1.9
Agriculture	316.3	8.1	324.4	0.0	324.4
Disturbed	84.6	41.6	126.2	108.0	234.2
Exotic trees	1.9	0.6	2.5	9.1	11.6
Natural barren	0.4	0.0	0.4	0.5	0.9
Ruderal	3.1	0.7	3.8	1.4	5.2
Freshwater marsh	0.0	0.0	0.0	1.0	1.0
Saltbush stand	0.2	0.0	0.2	1.1	1.3
TOTAL	1,275.6	1,269.3	2,544.9	2,565.5	5,110.4

Conservation easements over the Mitigation Bank lands will be conveyed by Metropolitan to the RCHCA. The Existing Reserve will remain subject to the provisions of the 1979 and 1982 agreements.

2. Reserve Management

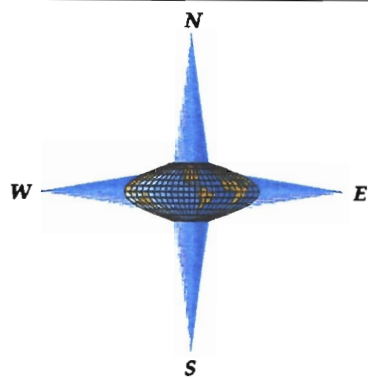
Management of the Combined Reserve will be guided by a Management Committee composed of one representative each from Metropolitan, RCHCA, CDFG, and USFWS; carried out on a day-to-day basis by a Reserve Manager; and conducted in accordance with annual work plans prepared by the Manager and approved by the Committee. Funding for reserve management will be provided through an endowment established by the RCHCA and managed by Metropolitan (see Section E, Funding and Assurances for Plan Implementation, of this chapter).

Lake Mathews
Mitigation Bank Lands
Figure 14

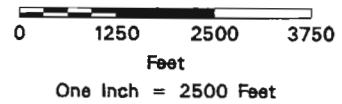


LEGEND

- Existing State Ecological Reserve
- Plan Area Projects
- Operations Areas
- Mitigation Bank:
 - Metropolitan Mitigation Lands
 - RCHCA Mitigation Lands
- Property Line
- Lake Mathews Inundation Level (1390')
- Roads



Scale
1:30000



January 11, 1995

a. Management Goals and Approaches

Reserve management will be planned and conducted over the long-term to attain three primary goals:

1. Protect existing natural habitat types on the Combined Reserve,
2. Improve degraded habitat conditions by enhancing or restoring suitable habitat for Target Species on the Multiple Species Reserve, and
3. Ensure that operation and maintenance of Lake Mathews as a water supply facility are not impaired.

It is intended that an ecosystem approach be applied to management of the Multiple Species Reserve. To this end, the entire Multiple Species Reserve will be managed as an integrated ecological unit. Similar to the adaptive management strategy adopted under the Southwestern Riverside County MSHCP, the Multiple Species Reserve will be managed for multiple species values, and this type of management is more complex than for single species. A description of the contingency planning for management of the Multiple Species Reserve is addressed in Section F, Emergencies, Listings, and Unforeseen Circumstances.

As stated in the Southwestern Riverside County Plan, the standard of mitigation effectiveness is continued viable populations, which are expected to fluctuate naturally. Factors which could influence the nature and direction of change in reserve management as a result of such fluctuations may include:

- Drought, fire, and other natural disturbances which will favor species which require open disturbed habitat;
- Control of human use and disturbance; and
- Enhancing physical resources on the Multiple Species Reserve.

Individual populations of Target Species in the Multiple Species Reserve can be expected to fluctuate naturally as they would under unmanaged natural conditions. Corrective management actions will be taken by the Management Committee only when deemed necessary. The effectiveness of mitigation will be monitored on an on-going basis and adjustments to the management approach will be made, within the limitations of the funding provided. This monitoring and management adjustment will ensure the general effectiveness of reserve management. Effectiveness will be defined in terms of overall habitat quality, not in terms of the status of any individual species.

b. Management Committee

The Management Committee will be chaired by Metropolitan and will operate based on unanimous consent of its members. The members' responsibilities are summarized below.

Metropolitan. Metropolitan will:

1. Chair, maintain records on behalf of, and provide administrative support to the committee for all committee activities regarding management of Metropolitan's properties;
2. Manage the reserve management endowment on behalf of the Management Committee;
3. Seek the \$500,000 cited in the 1979 agreement for the Existing Reserve from DWR for inclusion in the endowment;
4. Issue and administer the contract for the Reserve Manager;
5. Identify a location and provide two trailers for the Reserve Manager's office and residence;
6. Coordinate security patrols of the reservoir area with access control plans for the Multiple Species Reserve;
7. Maintain internal access roads, fencing, gates and locks, and fire breaks in the Existing Reserve and Mitigation Bank;
8. Coordinate ongoing management of its properties and facilities with reserve management; and
9. Review and approve research and study proposals in the Multiple Species Reserve.

RCHCA. The RCHCA will:

1. Coordinate implementation of the MSHCP/NCCP with the Short-term and Long-term SKR HCPs and with preparation of the MSHCP under the interagency MOU;
2. Prepare the necessary reports, maintain records, and provide administrative support for committee activities involving the proposed SKR Core Reserve lands (i.e., the lands inside the proposed Core Reserve but outside the Multiple Species Reserve);
3. Coordinate management of the proposed SKR Core Reserve lands with management of the Multiple Species Reserve;
4. Provide the endowment for reserve management (see Section E, Funding and Assurances for Plan Implementation, of this chapter); and
5. Review and approve research and study proposals that would affect SKR in the Multiple Species Reserve and in the proposed SKR Core Reserve.

CDFG. CDFG will:

1. Provide technical biological assistance in planning the management of the Multiple Species Reserve's biological resources, with a special emphasis on NCCP sensitive species;

2. Coordinate patrols by CDFG wardens with access control plans for the Multiple Species Reserve; and
3. Review and approve research and study proposals that would affect habitat or state-listed species in the Multiple Species Reserve.

USFWS. USFWS will:

1. Provide technical biological assistance in planning reserve management, with a special emphasis on federally listed species and candidates for such listing and
2. Review and approve research and study proposals that would affect habitat or federally listed species in the Multiple Species Reserve.

c. Reserve Manager

Day-to-day management of the reserve will be provided by a Reserve Manager retained under contract to Metropolitan with the approval of the Management Committee. For purposes of the Lake Mathews Plan, the term "Reserve Manager" is meant to include the full-time and part-time staff and consultants needed to manage the biological resources and property in the Multiple Species Reserve. It is assumed that reserve management will involve the services of a full-time Reserve Manager who will reside onsite, together with one or more part-time staff and, within the constraints of available funding, biological consultants. The tasks and responsibilities of the Reserve Manager, part-time staff, and consultants (if any) will be identified in annual work plans. The Reserve Manager will prepare the annual work plan for review and approval of the Management Committee, working in cooperation with Metropolitan and the RCHCA.

d. Annual Work Plans

Each year the Management Committee will adopt an annual work plan and budget that specifies the reserve management activities for the ensuing year. Within the constraints of available funding, reserve management typically could include:

1. Fencing, other barriers, and security patrols to control the access of people, vehicles, livestock (including horses), and domestic pets;
2. Monitoring of highly sensitive species, including but not limited to SKR and coastal California gnatcatchers;
3. Monitoring of species in the Multiple Species Reserve whose presence or absence provides a relative measure of the Multiple Species Reserve's biodiversity and long-term viability;
4. Cowbird trapping in the Multiple Species Reserve;
5. Predator controls in the Multiple Species Reserve;
6. Weed abatement and monitoring and removal of invasive plant species;

7. Monitoring of prescribed burns and regrowth of burned areas; and
8. Habitat restoration and enhancement in the Multiple Species Reserve.

e. Fire Management and Prescribed Burn Plans

Fire management in the Multiple Species Reserve will be conducted in accordance with the comprehensive Fire Management Plan prepared by CDF and Metropolitan. A prescribed burn plan will be developed by the Management Committee in conjunction with CDF and will be implemented in cooperation with CDF when completed.

f. Public Access

In general, public access to the Multiple Species Reserve will be restricted to the prearranged tours currently conducted on Metropolitan's properties. Other uses may be allowed, subject to three conditions:

1. CDFG must agree in advance that the uses will not interfere with its responsibilities regarding the Existing Reserve,
2. Metropolitan must agree in advance that the uses will not interfere with its water service obligations and operations and maintenance activities, and
3. The Management Committee must agree in advance that the uses are consistent with the biological management goals for the Multiple Species Reserve.

g. Management of the Combined Reserve

The Lake Mathews MSHCP/NCCP provides for both the establishment and management of the Multiple Species Reserve and, as specified in the Lake Mathews Plan, the management of the other publicly owned lands within the Combined Reserve. These other lands include 4,477 acres currently owned or otherwise controlled by the RCHCA, 320 acres of federal land administered by BLM, and 342 acres owned by CDFG. Other lands subsequently acquired by or dedicated to the RCHCA in the proposed Core Reserve also will be managed under the arrangements in the Lake Mathews Plan.

Management of the public lands outside the Plan Area will be directed by the Management Committee and carried out by the Reserve Manager and/or through cooperative agreement among the RCHCA, CDFG, and BLM. Management activities within the Combined Reserve outside the Plan Area will expand in scope and type of management activity when the RCHCA's payments into the endowment are completed (see Section E, Funding and Assurances for Plan Implementation, of this chapter). Management activities within the Combined Reserve will be phased as follows:

1. Upon approval of the Lake Mathews MSHCP/NCCP by CDFG and USFWS and with the payment of the first \$2.5 million installment, management activities on the Combined Reserve lands outside the Plan Area will, until the second payment is made, include:

- a. Periodic patrols and posting of "no trespassing" signs in appropriate locations to discourage illegal access;
 - b. Monitoring of SKR habitat to record changes in amount, distribution, and relative density of occupied habitat; and
 - c. Coordination of management activities on RCHCA lands with CDFG's and BLM's management of their lands within the Combined Reserve.
2. When the RCHCA has paid its second \$2.5 million into the endowment (see Section E, Funding and Assurances for Plan Implementation, of this chapter), the activities described in (1) above will continue. In addition, fire management activities on the Combined Reserve lands outside the Plan Area will be initiated, and access controls in the form of barriers and gates will be added to portions of the Combined Reserve as necessary.
 3. Upon approval by CDFG and USFWS of a multiple species plan prepared by the RCHCA that includes the proposed Lake Mathews-Estelle Mountain Core Reserve lands:
 - a. Management for SKR purposes will continue as noted above and
 - b. Management activities for multiple species will commence and be coordinated with those for SKR, and any additional funding required to implement such measures will be provided under the RCHCA's multiple species plan.

3. Expansion of the Multiple Species Reserve

Over time, it is anticipated that the Multiple Species Reserve will be expanded through acquisitions by Metropolitan and/or the RCHCA. It is intended that the proposed SKR Core Reserve lands outside the Plan Area shall become part of the Multiple Species Reserve and be managed for multiple species values with the consent of the Management Committee; such additions may be proposed anytime after approval of the Lake Mathews MSHCP/NCCP and are not contingent on the RCHCA's completion of a multiple species plan. Expansions of the Multiple Species Reserve through acquisitions by Metropolitan and/or the RCHCA also may be proposed anytime following approval of the Lake Mathews Plan and will be subject to approval by the Management Committee. Added lands will be managed under the arrangements established by the Lake Mathews MSHCP/NCCP with the consent of the Management Committee and provided that adequate funding is or is made available.

B. Mitigation Bank Terms and Conditions

The establishment and use of the Mitigation Bank will be governed by the Mitigation Banking Agreement in Volume 3. In general, the agreement:

1. Identifies Metropolitan's and RCHCA's shares of the Mitigation Bank based on the distribution of occupied SKR habitat, with the SKR-occupied area credited to the RCHCA and credit for the other lands retained by Metropolitan;

2. Establishes that Metropolitan will use its share of the Mitigation Bank to secure ESA authorizations and assurances and/or for CEQA mitigation needs for projects and activities in the areas designated for Operations and Plan Area Projects and for Outside Projects; and
3. Specifies that the RCHCA will acquire conservation easements over the SKR-occupied areas in the Mitigation Bank, use those lands as replacement habitat under the SKR HCPs, and be given conservation credit toward a future multiple species plan for the other biological values of the habitat.

1. Metropolitan Mitigation Bank Lands

Metropolitan's Mitigation Bank lands include 1,275.6 acres (Table 15 and Figure 14). As advance mitigation for impacts to Target Species and their habitats, Metropolitan will precommit one acre of habitat in its share of the Mitigation Bank for every one acre of such habitat in the areas designated for Operations and Plan Area Projects. Such mitigation is not provided for disturbed land and exotic trees. This advance commitment of mitigation will retire 618.3 acres of mitigation credit (505.5 acres for Operations and 112.8 acres for Plan Area Projects), leaving 657.3 acres in Metropolitan's share of the Mitigation Bank. (Table 16). The remaining credits will be available for Outside Projects and/or other Metropolitan projects and activities covered by the Lake Mathews Plan.

2. RCHCA Mitigation Bank Lands

The RCHCA's Mitigation Bank lands consist of 1,269.3 acres of SKR-occupied habitat (Table 15 and Figure 14). This SKR habitat will be credited as replacement habitat under the Short-term and Long-term SKR HCPs and toward the multiple species plan that the RCHCA intends to prepare.

Any use by the RCHCA of the 1,269.3 acres as mitigation for impacts other than take of SKR will be contingent on USFWS and CDFG approval of a multiple species plan that encompasses the RCHCA's proposed Core Reserve lands.

3. Transfer and Increase of Mitigation Credits

Metropolitan and RCHCA may transfer available mitigation credits assigned to their Mitigation Bank lands to one another or to third parties any time after plan approval, with written notice of the transfer provided to USFWS and CDFG. However, such third parties will still need to apply for any required permits. In addition, if some of the credits designated for Plan Area Projects are not needed for the proposed projects and activities in those areas (see Chapter 4), Metropolitan may use those credits for other projects and activities covered by the Lake Mathews Plan.

Metropolitan and the RCHCA may increase their mitigation credits by acquiring land and adding it to the Multiple Species Reserve, enhancing riparian habitat in the Multiple Species Reserve, and restoring disturbed areas in the Multiple Species Reserve to natural habitats. In addition, Metropolitan will receive mitigation credit for restoring agricultural lands in the Mitigation Bank to SKR

Table 16
Metropolitan and RCHCA Mitigation Bank Lands
(acres)

Habitat Type ^{1, 2, 3}	Metropolitan				RCHCA
	Designated for Operations Areas	Designated for Plan Area Projects	Available for Other Projects	Total	
Non-native grassland	193.8	41.6	158.9	394.3	679.3
Riversidian sage scrub	303.2	40.9	71.1	415.2	506.3
Mule fat scrub	1.0	7.3	18.8	27.1	2.8
Southern willow scrub	0.5	8.9	11.1	20.5	0.0
Juniper woodland	0.0	2.4	7.7	10.1	29.9
Sycamore riparian woodland	0.0	0.2	1.7	1.9	0.0
Agriculture	7.0	11.5	297.8	316.3	8.1
Disturbed	0.0	0.0	84.6	84.6	41.6
Exotic trees	0.0	0.0	1.9	1.9	0.6
Natural barren	0.0	0.0	0.4	0.4	0.0
Ruderal	0.0	0.0	3.1	3.1	0.7
Saltbush stand	0.0	0.0	0.2	0.2	0.0
TOTAL	505.5	112.8	657.3	1,275.6	1,269.3

Notes

- 1 Impacts to wetland habitats for the Cajalco Creek Dam and Detention Basin Project (freshwater marsh, mule fat scrub, southern willow scrub, sycamore riparian woodland, natural barren, ruderal, and saltbush stand) are mitigated separately under a separate wetland mitigation plan.
- 2 Mitigation is not provided for disturbed lands or exotic trees.
- 3 Impacts to occupied SKR habitat for the Cajalco Creek Dam and Detention Basin Project are mitigated under a separate Section 7 biological opinion and 2081 authorization.

habitat and will use those credits as mitigation for Outside Projects with SKR impacts and for the Cajalco Creek Dam and Detention Basin Project as mitigated under a separate Section 7 biological opinion.

C. Project-level Impact Minimization and Mitigation Measures

In general, the primary mitigation provided by the Lake Mathews Plan for impacts to Target Species and their habitats is the permanent preservation of habitat in the Mitigation Bank and the management of such habitat in the Multiple Species Reserve. Individual projects and activities are covered by this mitigation subject to the following terms and conditions regarding use of the Mitigation Bank and implementation of impact minimization measures.

1. Operations Areas and Plan Area Projects

All significant habitat impacts, including impacts to Target Species, from future projects and activities in Operations and Plan Area Projects are being mitigated in advance of their actual occurrence by the precommitment of mitigation credits for habitat in those areas (Table 16). This advance commitment of mitigation lands covers all projects and activities that will occur in Operations and Plan Area Projects (see Chapter 4); no additional commitment of mitigation lands or any other additional mitigation will be required for any individual project or activity in these areas.

Projects and activities in Operations and Plan Area Projects will comply with the following impact minimization measures:

1. If a listed plant species (or state candidate for listing or species with a proposed federal listing rule) is present, CDFG will be notified at least 10 days prior to any impact occurring and will be given access to the site to salvage the plants and/or collect seeds;
2. To the maximum extent practicable, direct impacts to birds which are Target Species will be avoided during their breeding seasons. Any actions that directly impact breeding birds would be coordinated with the Management Committee;
3. To the maximum extent practicable and to the extent compatible with necessary maintenance of the reservoir, the reservoir's ancillary facilities, and facilities in Plan Area Projects, use of pesticides and rodenticides in a manner that would harm SKR or any other listed species will be avoided or minimized; and
4. Where impacts would occur immediately adjacent to the Multiple Species Reserve, boundaries between the Multiple Species Reserve and impact areas will be flagged and construction will be monitored to minimize the possibility that construction activities extend into the Multiple Species Reserve.

Additional information about species-specific considerations is provided in the individual HCPs for Target Species, which are summarized in Appendix B and included in Part 2 of Volume 2.

2. Outside Projects

Metropolitan Mitigation Bank lands not designated for Operations and Plan Area Projects will be available for use as mitigation for the impacts of Outside Projects to habitats and/or Target Species. The same credits may be used coterminously at Metropolitan's option to mitigate impacts to habitat under CEQA as well as take under the state and federal ESAs.

Habitat values in impact areas will be matched to the Mitigation Bank credits using HQA or using another methodology collectively acceptable to USFWS, CDFG, and Metropolitan. No further multipliers that increase the mitigation to impact ratio will be necessary. The required exchange is a 1:1 (acre-for-acre) mitigation-to-impact ratio expressed in the HQA formula. Other methodologies

will not require greater than an acre-for-acre mitigation-to-impact ratio. Mitigation for impacts to federally listed species, however, will be determined on a case-by-case basis.

3. Projects and Activities in the Multiple Species Reserve

It is not Metropolitan's intent at this time to directly affect habitat in the Multiple Species Reserve. In the unlikely event that projects and activities other than those already existing are necessary in these areas, impact avoidance and minimization measures identified in the Lake Mathews Plan will be implemented. Mitigation could involve provision of replacement habitat acceptable to the Management Committee. The required exchange is a 1:1 (acre-for-acre) mitigation-to-impact ratio expressed in the HQA formula. Other methodologies will not require greater than an acre-for-acre mitigation-to-impact ratio. Mitigation for impacts to federally listed species, however, will be determined on a case-by-case basis.

a. Impact Avoidance and Minimization

Projects and activities in the Multiple Species Reserve will avoid or minimize impacts to Target Species to the maximum extent practicable:

1. Direct harm to any Target Species will be avoided to the maximum extent practicable.
2. Where feasible and if considered appropriate by the Management Committee, plants which are Target Species will be translocated to other suitable habitat in the reserve and/or seeds will be collected for later use.
3. To the maximum extent practicable, impacts to birds which are Target Species will be scheduled to avoid their breeding seasons. Any actions that directly impact breeding birds would be coordinated with the Management Committee
4. To the maximum extent practicable, use of pesticides or rodenticides that potentially would take SKR or any other listed species will be avoided or minimized.
5. Lighting at new facilities will be selectively placed, shielded, and directed away from sensitive areas in the Multiple Species Reserve.
6. Staging areas and construction sites will be kept as free as possible from trash, refuse, and other waste that might attract small scavengers that prey on Target Species.
7. Native, noninvasive plant species will be used in any newly landscaped areas.

b. Impact Mitigation

Mitigation for impacts in the Multiple Species Reserve will be as follows:

1. Temporary, reversible disturbances of habitat will be mitigated either through revegetation or by natural restoration of the site.
2. Permanent loss or modification of habitat will be mitigated through use of available Mitigation Bank credits, habitat restoration or enhancement within the Multiple Species Reserve, or acquisition of replacement habitat acceptable to the Management Committee. Sites for restoration, enhancement, or substitute acquisitions must be approved by the Management Committee. If acquisition of replacement habitat is proposed, priority will be given to locations that would expand the Multiple Species Reserve or the proposed SKR Core Reserve lands outside the Plan Area.

D. ESA Authorizations and Assurances

Implementation of the Lake Mathews MSHCP/NCCP by Metropolitan and the RCHCA is predicated on USFWS and CDFG approval of the Lake Mathews Plan as an HCP and NCCP for the Target Species. Such approval includes authorizations and assurances under the federal and state ESAs for projects and activities that Metropolitan and the RCHCA propose to undertake, including management of the Multiple Species Reserve and lands in public ownership within RCHCA's proposed SKR Core Reserve lands.

ESA authorization and assurances under the Lake Mathews Plan involve:

1. Authorization to take federally and state-listed species,
2. Authorization from CDFG to take Target Species which are not currently listed but which could become listed in the future pursuant to Section 2835 of the NCCP Act,
3. Authorization from USFWS to take Target Species which are not currently federally listed but which could become listed in the future (for each Target Species that is not currently listed under the federal ESA, the Section 10(a) permit would become effective upon its listing), and
4. Confirmation by the USFWS of the "No Surprises" policy recently adopted by the Department of Interior, namely that:

"The purpose of this policy is to provide assurances to non-federal landowners participating in Endangered Species Act Habitat Conservation Planning (HCP) that no additional land restrictions or financial compensation will be required for species adequately covered by a properly functioning HCP in light of unforeseen or extraordinary circumstances."

Specific authorizations and assurances for Metropolitan projects and activities, RCHCA projects and activities, and reserve management are described below and in the agreements in Volume 3.

1. For Metropolitan Projects and Activities

Metropolitan is seeking a range of ESA authorizations and assurances that are tied to the biological value of the Mitigation Bank area and Multiple Species

Reserve for observed and potentially occurring Target Species. For purposes of defining the authorizations and assurances, the species have been divided into three groups related to the type of authorization sought as discussed later in this section (Table 17); a process for extending the authorizations and assurances to other species also has been defined.

Mitigation pursuant to these authorizations and assurances will be accomplished on a habitat basis rather than on a species-by-species basis. Habitat occupied by multiple species in the Mitigation Bank may be used to mitigate for multiple species affected by a given Metropolitan project or activity. In other words:

- if a project affects several species, which at some point during their respective life cycles occupy a single habitat type and
- if these species also occur in the Mitigation Bank,
- then mitigation for these species may be accomplished on a habitat-by-habitat basis rather than on a species-by-species basis.

a. *Take of Target Species in Operations and Plan Area Projects*

1) Authorizations and Assurances for Take of Species in Group 1

Metropolitan is seeking the following authorizations and assurances for take of 29 Group 1 species in Operations and Plan Area Projects, including the federally and state-listed SKR and federally listed coastal California gnatcatcher.

1. Federal and state authorization for take of SKR and federal authorization for take of coastal California gnatcatchers is given, conditioned on implementation of the impact minimization and reserve management measures stated in the Lake Mathews Plan. No additional mitigation will be necessary.
2. State prelisting assurances are given pursuant to Section 2835 that, if other Group 1 species become listed, authorization for take will be given, provided that the impact minimization and reserve management measures identified in the Lake Mathews Plan are implemented. No additional mitigation will be necessary.
3. Federal prelisting assurances are given that, if other Group 1 species become listed, take is authorized, provided that the impact minimization and reserve management measures identified in the Lake Mathews Plan are implemented. Additional assurances are given that the information presented in the Lake Mathews Plan meets the standards set forth in Sections 10(a)(2)(A) and (B) and that no additional mitigation will be necessary.

2) Authorizations and Assurances for Take of Species in Group 2

Metropolitan is seeking the following authorizations and assurances for 21 Group 2 species, including the federally and state-listed bald eagle and the state-listed bank swallow and Swainson's hawk.

Table 17
Group 1, 2, and 3 Species

Group 1 (N = 29)	Group 2 (N = 21)	Group 3 (N = 15)
Plants		
Clay bindweed	none	Braunton's milkvetch
Great valley phacelia		Coulter's matilija poppy
Knotweed spineflower		Little mousetail
Large-leaved filaree		Many-stemmed dudleya
Palmer's grappling hook		Munz's onion
Parry's spineflower		Slender-horned spineflower
Small-flowered microseris		Smooth tarplant
		Southern tarplant
Invertebrates		
none	none	Cuckoo bee
		Quino checkerspot
Amphibians & Reptiles		
Coastal rosy boa	none	San Diego banded gecko
Coastal western whiptail		
Northern red diamond rattlesnake		
Orange-throated whiptail		
San Bernardino ringneck snake		
San Diego horned lizard		
Western spadefoot toad		
Birds		
Bell's sage sparrow	Bald eagle	Least Bell's vireo
Blue grosbeak	Bank swallow	Southwestern willow flycatcher
Burrowing owl	Black-crowned night heron	Yellow-breasted chat
California horned lark	Cooper's hawk	Yellow warbler
Coastal California gnatcatcher	Ferruginous hawk	
Downy woodpecker	Golden eagle	
Grasshopper sparrow	Great blue heron	
Loggerhead shrike	Long-eared owl	
So. Calif. rufous-crowned sparrow	Northern harrier	
Tricolored blackbird	Red-shouldered hawk	
White-tailed kite	Rough-legged hawk	
	San Diego cactus wren	
	Sharp-shinned hawk	
	Swainson's hawk	
Mammals		
NW San Diego pocket mouse	American badger	none
San Diego black-tailed jackrabbit	Big or pocketed free-tail bat	
San Diego desert woodrat	Cougar	
Stephens' kangaroo rat	Little brown bat	
	Pallid bat	
	Western mastiff bat	
	Western pipistrelle	

1. Federal and state authorization for take of the bald eagle and state authorization for take of bank swallows and Swainson's hawks is given, and no additional mitigation will be required, provided that the impact avoidance and minimization measures identified in the Lake Mathews Plan are implemented and the take does not involve the destruction or removal of an occupied nest site during the breeding season.
2. State prelisting assurances are given pursuant to Section 2835 that, if other Group 2 species become listed, authorization for take will be given, provided that the impact minimization and reserve management measures identified in the Lake Mathews Plan are implemented and the take does not involve the destruction or removal of an occupied breeding site during the breeding season.
3. Federal prelisting assurances are given that, if other Group 2 species become listed, take is authorized, provided that the impact minimization and reserve management measures identified in the Lake Mathews Plan are implemented. Additional assurances are given that the information presented in the Lake Mathews Plan meets the standards set forth in Sections 10(a)(2)(A) and (B) and that no additional mitigation will be necessary provided that the take does not involve the destruction or removal of an occupied breeding site during the breeding season.

3) Authorizations and Assurances for Potentially Occurring Target Species in Group 3

Metropolitan is seeking the following assurances regarding 15 Group 3 species.

Federal and state assurances will be provided that:

1. The mitigation, impact minimization, and reserve management provisions described in the Lake Mathews Plan are advance mitigation for impacts that may result in Operations and Plan Area Projects if one or more of the Group 3 species occur in those areas in the future and
2. Authorization for take will be given without requiring additional mitigation if a Group 3 species that is or becomes listed is found in Operations or Plan Area Projects and the following conditions are met:
 - a. The species also occurs in the Multiple Species Reserve as confirmed by existing information or, if necessary, by a survey and
 - b. The impact minimization and reserve management measures identified in the Lake Mathews Plan will be implemented.
3. If the conditions in (2) above cannot be met, authorization for incidental take will be considered on a case-by-case basis by USFWS and CDFG as appropriate. In that consideration, any additional mitigation measures needed to ensure compliance with ESA requirements will be provided through reserve management within the constraints of the funding available at the time. Only in those cases where (1) take would result in a jeopardy opinion and (2) reserve management is shown to be ineffective would any additional mitigation be necessary. Additional measures would be determined in consultation with USFWS and/or CDFG as appropriate.

4) Authorizations and Assurances for Other Species

In addition to the above authorizations and assurances for Group 1, 2, and 3 species, Metropolitan is seeking the following assurances regarding other species that are not currently on the list of Target Species:

1. Federal and state assurances will be provided that if a proposed or listed species is found in Operations and/or Plan Area Projects but is not on the lists of Group 1, 2, and 3 species, no additional mitigation for impacts to that species and authorization for take of the species in Operations and Plan Area Projects will be given if:
 - a. the species assessment at the time shows that the Multiple Species Reserve contains habitat occupied by the species and the amount of such occupied habitat is at least equal to that actually proposed for removal or modification in Operations and/or Plan Area Projects and
 - b. the impact minimization and reserve management measures identified in the Lake Mathews Plan for Group 1, 2, and/or 3 species that occupy the same habitat and have similar needs as the species will be implemented. The determination of habitat needs will be made by the USFWS and/or CDFG as appropriate.
2. If the conditions in (1) above cannot be met, authorization for incidental take will be considered on a case-by-case basis by USFWS and CDFG as appropriate. In that consideration, any additional mitigation measures needed to ensure compliance with ESA requirements will be provided through reserve management within the constraints of the funding available at the time or from sources other than the applicant. Only in those cases where (1) take would result in significant impacts and (2) reserve management is shown to be ineffective would any additional mitigation be necessary. Additional measures would be determined in consultation with USFWS and/or CDFG as appropriate.

b. Take of Target Species Associated With Outside Projects

Metropolitan is requesting that the authorizations and assurances for take of Target Species extend to Outside Projects, pending review of Outside Project impacts (with the exception of impacts to SKR) by USFWS and/or CDFG as appropriate. Where such authorizations and assurances are provided, mitigation credits in the bank can be used at Metropolitan's option. Use of the Mitigation Bank established in the Lake Mathews MSHCP/NCCP is intended for Outside Project impacts to Target Species both prior to and subsequent to their listing.

For Outside Projects, habitat values for Target Species in impact areas will be matched to the Mitigation Bank credits using HQA or using another methodology collectively acceptable to USFWS, CDFG, and Metropolitan. No further multipliers that increase the mitigation to impact ratio will be necessary. The required exchange is a 1:1 (acre-for-acre) mitigation-to-impact ratio expressed in the HQA formula. Other methodologies will not require greater than an acre-for-acre mitigation-to-impact ratio. Mitigation for impacts to federally listed species, however, will be determined on a case-by-case basis.

Specifically, Metropolitan is seeking the following assurances related to take of Target Species associated with Outside Projects:

1. Federal and state authorization for take of SKR will be given, conditioned on restoration of occupied SKR habitat on agricultural lands in Metropolitan's share of the Mitigation Bank. These restored agricultural lands are part of the Mitigation Bank and will serve to compensate for take of SKR associated with Outside Projects.
2. Federal and state authorization for take of other Target Species (both currently listed and those listed in the future) will be considered by USFWS (if and when federally listed) and CDFG (if and when state-listed) on a case-by-case basis. Federal and state assurances will be provided that absent a jeopardy opinion, take will be authorized according to the Lake Mathews Plan where available credits in the Mitigation Bank will be used pursuant to the HQA or other agreed upon methodology on a 1:1 basis. If a jeopardy opinion is issued, the federal or state agency will meet with Metropolitan to determine appropriate action to eliminate the jeopardy through reasonable and prudent alternatives.
3. The use of the Mitigation Bank for impacts to Target Species associated with Outside Projects is part of the implementation of the MSHCP/NCCP. Consequently, the authorizations for take and prelisting assurances for Target Species are extended to Outside Projects without requiring a separate HCP and 10(a) permit and/or 2081/2835 management authorization for that project.

c. Take of Target Species in the Multiple Species Reserve

It is not Metropolitan's intent at this time to directly affect habitat in the Multiple Species Reserve. In the unlikely event that projects and activities other than those already existing are necessary in the Multiple Species Reserve, federal and state authorizations and assurances for take will be provided for Target Species, conditioned on (1) implementation of the impact minimization and reserve management measures described in Section C3(a) of this chapter and (2) provision of replacement habitat acceptable to the Management Committee as appropriate using a 1:1 (acre-for-acre) mitigation-to-impact ratio expressed in the HQA formula. Other methodologies will not require greater than an acre-for-acre mitigation-to-impact ratio. Mitigation for impacts to federally listed species, however, will be determined on a case-by-case basis.

2. For RCHCA Projects and Activities

The authorizations and assurances sought by the RCHCA are related to implementation of the SKR HCPs and preparation of a multiple species plan under the interagency MOU. Specifically, RCHCA is seeking:

1. USFWS approval and CDFG concurrence that the 1,263.9 acres of occupied SKR habitat that constitute the RCHCA's Mitigation Bank lands are acceptable as, and will be given 100% credit as, replacement habitat under the Short-term and/or Long-term SKR HCPs;

2. USFWS and CDFG assurances that the conservation value of the SKR habitat for other species will be credited toward the RCHCA's multiple species plan; and
3. USFWS and CDFG concurrence that implementation of the MSHCP/NCCP is part of the establishment and management of the proposed Lake Mathews-Estelle Mountain SKR Core Reserve.

3. For Reserve Management

In addition to the above authorizations and assurances, USFWS and CDFG also are being asked to:

1. Authorize unavoidable incidental take of listed species that would result from reserve management activities and accept the benefits to the species that will accrue from reserve management as mitigation for such take and
2. Provide prelisting assurances that would allow incidental take of other unlisted species as a result of reserve management activities and accept the benefits to those species that will accrue from reserve management as mitigation for the impacts.

These authorizations and assurances would apply to projects and activities identified in approved annual work plans for reserve management. Take in connection with independent research or studies allowed in the Multiple Species Reserve would require separate permits.

E. Funding and Assurances for Plan Implementation

In addition to seeking assurances from USFWS and CDFG, Metropolitan and the RCHCA are providing assurances that adequate funding is made available for implementation of the Lake Mathews Plan and that the conservation and mitigation measures will be carried out as proposed.

1. Funding

Implementation of the Lake Mathews Plan will require adequate funding for management of the Combined Reserve. To fund such management, an endowment will be established by Metropolitan and the RCHCA as follows:

1. The RCHCA will acquire conservation easements from Metropolitan over the 1,269.3 acres of occupied SKR habitat in the Mitigation Bank area for a sum of \$5 million, paid in two installments: \$2.5 million within 60 days of plan approval and \$2.5 million within 5 years after the first payment.
2. Metropolitan will designate the funds received from the RCHCA for management of the Combined Reserve and deposit the funds in an income-earning account that it will administer on behalf of the Management Committee.

3. Under the terms of the 1979 agreement for the Existing Reserve, Metropolitan will seek payment of the \$500,000 assured by DWR for habitat management and, when received, deposit the funds in the reserve management account.

Metropolitan also will contribute to reserve management by identifying a location and providing two trailers for the Reserve Manager's office/residence; maintaining the fences, gates, locks, and internal access roads in the Plan Area; making its boat available to the Reserve Manager; and coordinating its security patrols with public access controls for the reserve. These contributions reduce the costs of reserve management paid out of the endowment.

A preliminary cost estimate for the first 6 years of implementation of the Lake Mathews Plan indicates that approximately \$500,000 will be needed for the first year, and approximately \$125,000 per year will be required for years 2 through 6 (Table 18). Assuming that \$3 million will be available at the start of implementation of the Lake Mathews Plan (\$2.5 million from the RCHCA and \$500,000 from DWR), expenditures for initial costs will leave approximately \$2.5 million to generate revenue. At a 5% return, the \$2.5 million will yield approximately \$125,000 for annual operating costs. With the RCHCA's second payment of \$2.5 million, approximately \$250,000 per year will be available (Table 18). In the event that RCHCA were to fail to make the second payment, funding would still be adequate, although activities outlined for years 7 and later would be significantly curtailed. Nevertheless, Metropolitan would not be required to make additional payment, and its permit and rights under the agreements in Volume 3 would remain in effect (see Volume 3 for more details regarding RCHCA's payment provisions).

2. Plan Implementation

To provide and receive assurances that the provisions of the Lake Mathews Plan will be implemented, Metropolitan and the RCHCA will enter into four agreements:

1. An Implementation Agreement with USFWS regarding implementation of the Lake Mathews Plan and the ESA authorizations and assurances;
2. A Section 2081/2835 Memorandum of Understanding/Permit with CDFG regarding approval and implementation of the Lake Mathews Plan as an NCCP and the ESA/NCCP authorizations and assurances;
3. A Cooperative Management Agreement with USFWS and CDFG regarding management of the Multiple Species Reserve and the other lands in public ownership within the Combined Reserve; and
4. A Mitigation Banking Agreement regarding establishment and use of the mitigation credits assigned to the Mitigation Bank lands.

In addition, Metropolitan and the RCHCA will institute the following record keeping and monitoring, annual report, and program review process.

Table 18
Preliminary Cost Estimate of Reserve Management

Type of Expenditure	Initial Costs Year 1	Annual Costs Years 2-6	Annual Costs Years 7 +
Project Administration	\$ 3,500	\$ 700	\$ 940
Emergency Fund Contingency (10%) ¹	32,086	9,091	17,063
Personnel			
Reserve Manager (full time)	34,000	34,000	37,000
Asst. Reserve Manager (1/2 time)	15,500	15,500	26,250
Project Manager (1/4 time)	9,000	9,000	10,000
Scientific Aides (2, 1/2 time each)	0	0	25,000
Taxes & Benefits (20%)	11,700	11,700	19,650
Workers' Compensation (6%)	3,510	3,510	5,895
Training	500	65	1,500
Capital/Maintenance Costs			
Fencing Portions of Reserve	100,000	0	0
Establishment of Manager's Residence/Office	58,000	0	0
Construction (fences, gates, locks, road repair)	33,824	273	3,612
Specialist Surveys	11,600	0	520
Permits	720	0	0
Reporting	550	150	550
Signs, Patrolling, Interpretive Materials	3,500	30	1,381
Biological/Chemical Invasive Control (RCHCA lands)	4,960	0	1,047
Habitat Enhancement	0	33	1,469
Erosion Control	765	765	2,295
Fire Management (prescriptive burns and response)	0	0	2,000
Waste Management	900	0	1,560
Residence/Office Maintenance (utilities, phone, etc.)	5,670	4,670	6,270
Equipment (vehicles, phones, computer, fax, etc.)	80,260	9,910	22,500
Office Supplies (including maintenance contracts)	900	800	1,100
General Overhead (20%)	88,236	24,999	46,921
TOTAL COSTS	\$499,681	\$125,196	\$234,523

Notes

- 1 Contingency funds set aside for unanticipated or emergency repairs or activities.
- 2 Specialist surveys will emphasize monitoring of SKR. In the first year, these surveys will be done under contract. Surveys in future years are anticipated to be completed by permitted employees.

a. Record Keeping and Monitoring

Metropolitan and the RCHCA each will maintain written records of their use of Mitigation Bank credits. In addition, for projects and activities in the areas designated for Operations and Plan Area Projects and for Outside Projects that draw on the Mitigation Bank, Metropolitan will:

1. Maintain files of surveys conducted in connection with planning the project or activity,

2. Report to USFWS and CDFG as appropriate any incidental take of listed species that occurs as a result of the project or activity,
3. Provide written notice to USFWS and CDFG before the precommitted mitigation credits are being used for projects and activities in Operations and Plan Area Projects or for Outside Projects, and
4. Provide USFWS and CDFG with information regarding Outside Projects requesting use of the Mitigation Bank for impacts to listed Group 1 or Group 2 species, projects and activities with impacts in the Multiple Species Reserve, the extension of authorizations and assurances to Group 3 species, and the addition of other species to the lists of Group 1,2, and 3 species.

b. Annual Reports

Twelve months following approval of the Lake Mathews Plan and every twelve months thereafter or as specified by the Management Committee, Metropolitan, the RCHCA, and the Reserve Manager will cooperatively prepare a report on implementation of the MSHCP/NCCP for review by the Management Committee. The report will be prepared in the same time frame as the work plan for reserve management in the upcoming year and may include:

1. A summary of projects and activities covered by the Lake Mathews Plan that were initiated, continued, or completed in the year past;
2. A list of projects and activities covered by the Lake Mathews Plan that are expected to begin, continue, or conclude in the upcoming year;
3. Take of any listed species that occurred the previous 12 months in connection with projects and activities covered by the Lake Mathews Plan;
4. An accounting of expended and available mitigation credits;
5. A report of changes in the federal or state listing status of Group 1, 2, and 3 species; and
6. A report of any significant changes (compared with the previous year) in the conditions in the Mitigation Bank area and Existing Reserve.

c. Periodic Comprehensive Reviews

If necessary, at the end of the fifth year of implementation of the Lake Mathews Plan and every 5 years thereafter, a comprehensive review will be undertaken by the Management Committee. The scope of the review will be determined by the Management Committee as part of the annual work program.

F. Emergencies, Listings, and Unforeseen Circumstances

Over the course of implementation of the Lake Mathews Plan, it is anticipated that emergencies will occur, Target Species and other species will become

federally or state-listed, and unforeseen circumstances might arise. The following procedures will be followed to ensure appropriate responses to such occurrences.

1. Emergencies

In the event of natural disasters in the Multiple Species Reserve or within the Combined Reserve, impacts to habitats and Target Species will be addressed in accordance with the emergency response and fire management plans for the properties. In such an event, CDFG and USFWS will be notified immediately. Measures to monitor or restore habitat values will be planned by the Management Committee.

2. Listing of Target and Other Species

Changes in the listing status of species on lands in the Multiple Species Reserve will be addressed in the annual work plans for reserve management and, if necessary, amendments to the Lake Mathews Plan. If a Target Species that currently is not listed is proposed for federal or state listing, that species' habitat requirements may be addressed in the annual work plan for the upcoming year. If a species other than a Target Species occurs in the Multiple Species Reserve and is proposed for federal or state listing, an amendment to the Lake Mathews Plan may be developed by Metropolitan and RCHCA for Management Committee review and approval (see below). In addition, in accordance with the provisions of the Lake Mathews Plan, Metropolitan and the RCHCA will seek formal authorization for incidental take from USFWS when a Target Species becomes federally listed, following the procedures identified in the Implementation Agreement with USFWS in Volume 3.

3. Unforeseen Circumstances

For purposes of the Lake Mathews Plan, the term "unforeseen circumstances" is meant to include:

1. Significant adverse changes in the habitat values in the Multiple Species Reserve,
2. Significant changes in the anticipated impacts of development covered by the Lake Mathews Plan, and
3. Significant new information relevant to the MSHCP/NCCP that was unforeseen at the time the Lake Mathews Plan was approved.

Unforeseen circumstances will not include:

- Changes in regional population, distribution, and life history data for the Target Species which may increase their importance on the Multiple Species Reserve (such as regional declines of Target Species populations outside of the Multiple Species Reserve);
- Continued development in the vicinity of the Combined Reserve resulting in isolation of the Multiple Species Reserve;

- Temporary habitat loss and alteration on the Multiple Species Reserve outside the control of the Management Committee;
- Fluctuation in populations of Target Species on the Multiple Species Reserve; and,
- Additional sensitive species which may occur in the Multiple Species Reserve.

It is anticipated that the management funding provided under the Lake Mathews Plan will be adequate to address concerns raised by the above issues. In the event that unforeseen circumstances have occurred, however, corrective measures will be developed according to the provisions in the Implementation Agreement in Volume 3.

G. Plan Amendment Process

Metropolitan and the RCHCA anticipate that course corrections and other amendments to the Lake Mathews MSHCP/NCCP and accompanying agreements will be necessary over time. To facilitate such changes while maintaining the integrity of the original plan, the following procedures would apply to four types of amendments:

- Additions to the lists of Group 1, 2, and 3 species;
- Expansion of the Multiple Species Reserve;
- Increases in mitigation credits; and
- Changes in the projects and activities covered by the Lake Mathews Plan in the Plan Area.

1. Additions and Other Changes to the Lists of Group 1, 2, and 3 Species

As discussed under Section 3D, ESA Authorizations and Assurances, it is anticipated that the lists of Group 1, 2, and 3 species will change over time to include additional species. Plan amendments will include the following information: the species' common and scientific name, current sensitivity status, habitat associations, known occurrence in the Multiple Species Reserve (based on existing information) and, if the species would be added to Group 1 or 2, the estimated level of take and/or habitat impacts that would occur under the Lake Mathews Plan. For other species, an individual HCP will not be required if the species' needs are encompassed by one or more species already on the Group 1 or 2 lists. This type of amendment may require additional survey work as determined by the Management Committee within the constraints of available funding.

2. Expansion of the Multiple Species Reserve

As discussed under Section 3A, Habitat Conservation and Management, it is anticipated that the Multiple Species Reserve will be expanded over time to include the proposed SKR Core Reserve lands outside of the Plan Area and lands acquired by Metropolitan or the RCHCA. Lands added to the Multiple Species

Reserve will be managed under the institutional arrangements established under the Lake Mathews Plan, and their inclusion and method of funding will be subject to review and approval by the Management Committee.

To facilitate the committee's action, the following information will be submitted with the request: total acres and number of parcels of the proposed addition, a map of the property indicating its location in relationship to the Multiple Species Reserve, and a description of the habitat types and conditions on the property and, if possible, a list of Target Species known to occur onsite.

3. Increases in Mitigation Credits

As discussed under Section 3B, Mitigation Bank Terms and Conditions, Metropolitan and the RCHCA may increase their mitigation credits under the Lake Mathews Plan by acquiring land, enhancing riparian habitat, and restoring disturbed areas to natural habitats. In addition, Metropolitan will receive mitigation credit for future Outside Projects for restoring agricultural lands in the Mitigation Bank to occupied SKR habitat.

Every acre (or portion of an acre) of habitat on the acquired, enhanced, and restored lands will be counted as Mitigation Bank lands and may be used for Metropolitan and/or RCHCA projects and activities as appropriate, subject to the applicable provisions of the Lake Mathews Plan. The additional mitigation credits would become available as follows:

1. For acquired lands, the description of habitat types submitted to the Management Committee will be the documentation of habitat on the property. USFWS and CDFG participation in the Management Committee review of the proposed addition to the Multiple Species Reserve will constitute their review and approval of the increased mitigation credits. No additional review by USFWS and CDFG would be required to approve the change.
2. For habitats restored in disturbed areas, criteria for determining successful restoration will be established when the restoration activity is approved by the Management Committee; the restored habitat will be counted as mitigation lands, mitigation credits will become available when the criteria have been adequately met, and the progress of the restoration will be documented in a report to the Management Committee.
3. For enhanced or restored riparian habitat, criteria for determining successful enhancement or restoration will be established in coordination with USFWS and CDFG when the activity is proposed; mitigation credits on the enhanced or restored riparian habitat will become available when the criteria have been adequately met, and the progress of the restoration will be documented in a report to the Management Committee.

4. Changes in Projects and Activities in the Plan Area

The fourth type of expected amendment concerns changes to type or location of projects and activities in the Plan Area covered by the authorizations and

assurances provided under the Lake Mathews Plan. Such changes would include (but are not limited to) additional projects and activities in the reserve, shifts in the location or configuration of Plan Area Projects, and expansions of the Plan Area (i.e., expansions of the area covered by the authorizations and assurances). Such changes will comply with the impact minimization measures specified in the Lake Mathews Plan and will be accomplished in coordination with the Management Committee. Mitigation will be required as discussed in the Lake Mathews Plan for these changes.

Assessment of Habitat Impacts, Take, and Alternatives

4. Assessment of Habitat Impacts, Take, and Alternatives

Consistent with ESA requirements and NCCP guidelines, this chapter identifies and evaluates potential impacts to Target Species and the habitats in the Plan Area that are likely to occur under the Lake Mathews Plan in the foreseeable future. The analysis assumes implementation of the conservation and mitigation measures described in Chapter 3 and focuses on three issues:

- What are the sources and types of foreseeable impacts to habitats and species covered by the Lake Mathews Plan, including but not limited to projects and activities in the Plan Area?
- What level of take of listed and other Target Species will likely occur under the Lake Mathews Plan?
- Are there reasonable and prudent alternatives by which Metropolitan and RCHCA could substantially attain their stated objectives without any taking of threatened or endangered species?

A. Foreseeable Impacts

As summarized in Table 19 and discussed below, six sources and types of impacts to the Target Species and the habitats in the Plan Area are considered in this analysis:

1. Biological management of the Combined Reserve
2. Property management
3. Facility improvements and related projects in Operations and operation and management activities at the Lake Mathews facility
4. Plan Area Projects
5. Outside Projects
6. Projects in the Multiple Species Reserve

In addition, the indirect affects associated with projects and activities in the Plan Area are also discussed.

No assumptions were made regarding how the multiple species credits assigned to the RCHCA's share of the Mitigation Bank would be used in the future and what the impacts of such uses would be. Instead, it was assumed that those issues will be addressed in the multiple species plan that the RCHCA proposes to prepare in cooperation with USFWS, CDFG, and BLM.

Table 19
Foreseeable Impacts to Habitats and Species
Under the Plan

Type of Activity	Potential Effects
Biological Management	Some forms of habitat restoration and enhancement and some research projects may entail direct impacts to habitats and take of listed species. Target Species and other species ultimately would benefit from habitat management; habitat enhancement may result in the occurrence of other sensitive species not currently in the Plan Area.
Property Management	<p>Maintenance of roads and fencing will have limited, temporary impacts on immediately adjacent vegetation, species at that location, and species that make use of roads and fencing. Installation of additional fencing will have a combination of temporary and permanent impacts on vegetation and species but ultimately will benefit species and habitats in the Plan Area and on RCHCA Core Reserve lands.</p> <p>Site preparation for a Reserve Manager's office and residence will require clearing and paving of a portion of the selected location and completion and maintenance of an access road; approximately 1.6 acres in the Mitigation Bank will be affected.</p> <p>Necessary fuel breaks will affect approximately 65 acres in the Plan Area as a whole. A comprehensive Fire Management Plan has been prepared for the Plan Area that takes into account the presence of sensitive species; fire management of RCHCA lands would occur in accordance with an agreement that addresses impacts to SKR. Some fire management activities will benefit SKR and certain plants.</p>
Construction, Operation and Maintenance Activities in Operations	Construction, operation, and maintenance activities in Operations will have a combination of temporary and permanent impacts on habitats and species. For purposes of the analysis, it is assumed that all habitat in the 728.6-acre area designated for Operations will be affected even though only some habitat will actually be modified over time.
Plan Area Projects	Five water-related projects are planned for the 154.5 acres designated for Plan Area Projects. Of the five, the Cajalco Creek Dam and Detention Basin Project is the farthest along in the planning and approval process. It will affect 91.5 acres, including approximately 21 acres of occupied SKR habitat. Take of SKR related to the Cajalco Creek Dam and Detention Basin Project will be authorized and mitigated pursuant to the terms of a separate Section 7 biological opinion and 2081 authorization. SKR mitigation for this project consists of use of approximately 42 acres of agricultural lands in Metropolitan's share of the Mitigation Bank which will become occupied SKR habitat following approval of the Lake Mathews Plan. Other Plan Area Projects include the Lake Mathews Sediment Basins project, a portion of the proposed CPA project, Western MWD projects on lands leased from Metropolitan (Western MWD must compensate Metropolitan in order to use mitigation credits under the Lake Mathews Plan), and a Bypass project (there is only a remote chance that this project would be constructed). Actual impacts of these other projects will be identified as the projects proceed. For purposes of this analysis, it is assumed that all habitat in areas reserved for Plan Area Projects will be affected.
Outside Projects	Outside Projects will draw on Metropolitan's Mitigation Bank credits after mitigation for Operations and Plan Area Projects is deducted. An estimated 657.3 acres of habitat will be available for this purpose at the start of implementation of the Lake Mathews Plan.
Projects in the Multiple Species Reserve	In the unlikely event that projects and activities other than those already existing are necessary in the Multiple Species Reserve, federal and state authorizations and assurances for take will be provided for Target Species on a habitat basis, conditioned on (1) implementation of the impact minimization and reserve management measures described in Section C3(a) of this chapter and (2) provision of replacement habitat acceptable to the Management Committee as appropriate using a 1:1 (acre-for-acre) mitigation-to-impact ratio expressed in the HQA formula. Other methodologies will not require greater than an acre-for-acre mitigation-to-impact ratio. Mitigation for impacts to federally listed species, however, will be determined on a case-by-case basis.

1. Biological Management

For purposes of this analysis, "biological management" means projects and activities undertaken for the purpose of monitoring, studying, maintaining, restoring, or enhancing the biological values of the Multiple Species Reserve. Such projects and activities are subject to approval by the Management Committee and typically would be implemented by the Reserve Manager and biologists authorized to conduct research or projects in the Plan Area.

In general, biological management is expected to be largely non-intrusive and beneficial for Target Species and other species in the Plan Area. Habitat management, restoration, and enhancement also may lead to the occurrence of sensitive species not currently present in the Plan Area, including but not limited to those identified in Chapter 3 as Group 3 species. Some active manipulation of habitat will likely occur as part of reserve management, and some take of listed species potentially might result from such habitat manipulation. Some studies and research projects also will likely entail habitat modification, collection of sensitive species, and potentially take of listed species. In addition, the restoration or enhancement of habitat used by one set of Target Species may result in the reduction or modification of habitat used by other Target Species.

Although some adverse effects to individual Target Species and the habitats in the Multiple Species Reserve will likely result from biological management, three factors limit the possible magnitude of such effects:

1. The persons conducting activities that involve listed species must be permitted under federal and state laws as persons authorized to survey for and/or handle listed species,
2. Take in connection with studies or research performed by parties other than Metropolitan or RCHCA in the Multiple Species Reserve would be subject to advance approval by the Management Committee, and
3. The reserve management process established under the Lake Mathews MSHCP/NCCP provides for the review and coordination of all activities in the Multiple Species Reserve.

The net effect on listed and other Target Species is expected to be beneficial. Mitigation for adverse impacts is provided by the monitoring measures that are part of the reserve management process.

2. Property Management

Property management includes the following types of activities in the Plan Area:

- Maintenance of existing roads and fences,
- Installation of additional fencing,
- Site preparation for a Reserve Manager's office and residence,
- Implementation of the Fire Management Plan and a prescribed burn plan, and
- Control of public access to and uses of the property.

a. Maintenance of Roads and Fences

Existing roads and fences currently comprise approximately 265 acres of Metropolitan's Lake Mathews properties. This acreage is primarily disturbed land but also includes approximately 80 acres of vegetation within 20 feet of the roads and fences. The extent of existing roads and fences has not been quantified for the proposed SKR Core Reserve lands outside the Plan Area, which consist of several different parcels (Figure 4, Chapter 2).

Maintenance of existing roads and fences will likely have limited and, in most cases, temporary impacts on adjacent vegetation, Target Species in that vegetation, and Target Species that use roads and fences (e.g., reptiles that use fences as basking sites and SKR that use dirt roads to disperse to other areas). Where maintenance requires weed abatement or brush clearing for fire management purposes, it is possible that some Target Species might be affected. However, the potential magnitude of such effects is limited by two factors:

1. The impacts will be spread out over time and will occur only in locations where maintenance is needed and
2. The conservation and mitigation program includes measures to avoid, minimize, and mitigate effects on the Multiple Species Reserve.

No significant adverse impacts to the Target Species or habitat in the Multiple Species Reserve are expected to result from maintenance of existing roads and fencing. Further, to the degree that fencing prevents illegal access and roads provide appropriate access to the property (e.g., access for fire management purposes), maintenance of existing fencing and roads contributes to the conservation of the Target Species and the habitats in the Multiple Species Reserve.

b. Installation of Additional Fencing

Under the Lake Mathews MSHCP/NCCP, additional fencing will be added to portions of the Multiple Species Reserve to limit access and protect sensitive resources. The specific locations of the new fencing will be determined by the Management Committee in the context of their review and approval of annual work plans for reserve management. Fencing also will likely be added by the Reserve Manager on the proposed SKR Core Reserve lands outside the Plan Area; however, the installation of such fencing will not occur until after the RCHCA has completed its payments to Metropolitan.

The potential adverse impacts of fence installation will be similar to those from fence maintenance, except that some permanent habitat modifications will also result. Likewise, the potential magnitude of the impacts is limited by the same factors that apply to fence maintenance. Overall, Target Species and the habitats in the Multiple Species Reserve are expected to benefit from the increased control of access provided by the additional fencing.

c. Reserve Manager's Office/Residence

As part of the management of the Multiple Species Reserve, a Reserve Manager's office and residence will be sited on Metropolitan's properties. The office and residence will consist of two trailers provided by Metropolitan, plus parking and storage areas. There are two alternative proposed sites for the residence/office. Alternative A is located south of Cajalco Road in the Mitigation Bank area (Figure 15). Alternative B is located west of Lake Mathews Drive in the Mitigation Bank area (Figure 16). In both alternatives site preparation will require clearing the area for the trailers, establishing an access road, providing water and utility connections, and providing parking space for four vehicles. Approximately 1.6 acres will be affected. Impacts of Alternative A involve 1.2 acres of non-native grassland and 0.4 acre of disturbed habitat. Impacts of Alternative B involve 1.6 acres of occupied SKR habitat, which consists of 1.3 acres of Riversidian sage scrub, and 0.3 acre of disturbed habitat.

Adverse impacts to Target Species and the habitats in the Multiple Species Reserve from site preparation, use, and maintenance will be minimal. In addition, the presence of an onsite Reserve Manager will be beneficial in that it will help deter illegal access and poaching. Once the alternative site has been chosen, adverse impacts associated with that alternative will be mitigated by (1) subtracting the acreage impacted from the Mitigation Bank and (2) mitigating occupied SKR habitat through Metropolitan's SKR Mitigation Bank on an acre-for-acre basis.

d. Fire Management

Within the Plan Area, fire management will be conducted according to a comprehensive fire management program developed by the California Department of Forestry and Fire Prevention (CDF) and Metropolitan. A Fire Management Plan was prepared in 1994. The Fire Management Plan describes:

- 1) presuppression measures which include controlling fire hazards, improving habitat conditions, mitigating negative impacts to the atmosphere, and increasing water yield and quality;
- 2) suppression prescriptions which include controlling and extinguishing fires and controlling erosion and sedimentation; and
- 3) postsuppression measures to be implemented after fires have occurred and which include conducting and formulating plans for emergency watershed protection measures while minimizing impacts to biological and water resources.

Presuppression measures include but are not limited to clearing and maintenance of fire breaks, prescribed burns, and other forms of fuel management. Suppression measures include but are not limited to air drops of water and/or chemicals, use of heavy equipment as mobile pumping stations and to construct control lines, and use of back fires. Postfire activities include but are not limited to reshaping of areas modified by control lines, construction of water bars where needed and monitoring of affected resources.

Based on the fuel break strategy in the Fire Management Plan, an estimated 65 acres in the Plan Area, including about 27 acres of non-native grassland, will need to be cleared on a regular basis to protect both the resources in the Multiple Species Reserve and adjacent residences. Manual and mechanical brush clearing will occur together with prescribed burns. A prescribed burn plan will be developed by the Management Committee and CDF to guide implementation and monitoring of prescribed burns. Fire management will occur on the publicly owned lands within the Combined Reserve outside the Plan Area occur as required under state and local regulations.

The net effect of fire management for many of these Target Species and their habitats will be beneficial.

e. Public Access and Uses

Public access and uses fall into two distinct categories: authorized access to the property for educational or recreational purposes and illegal access and uses by trespassers and poachers.

Currently, authorized access to Metropolitan's property is limited to tours of the Existing Reserve under the supervision of CDFG or Metropolitan. Under the Lake Mathews MSHCP/NCCP, guided tours will be continued. No additional recreation is planned for the Multiple Species Reserve.

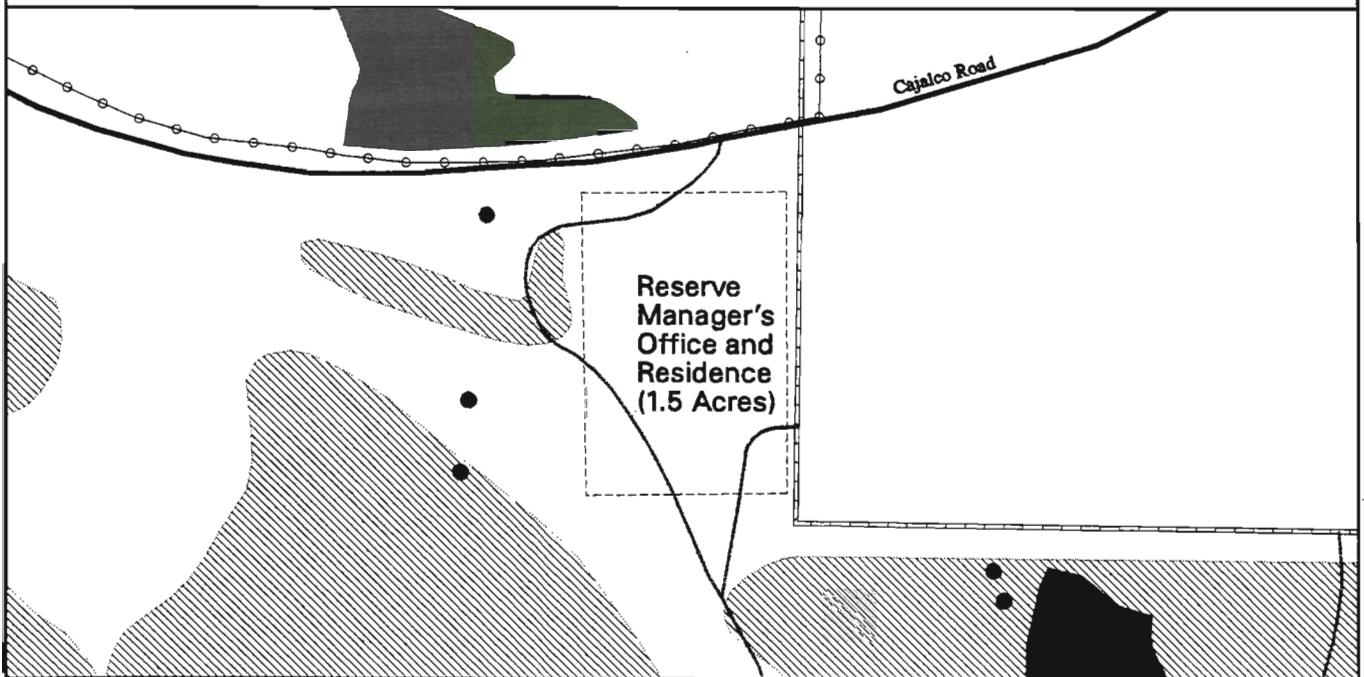
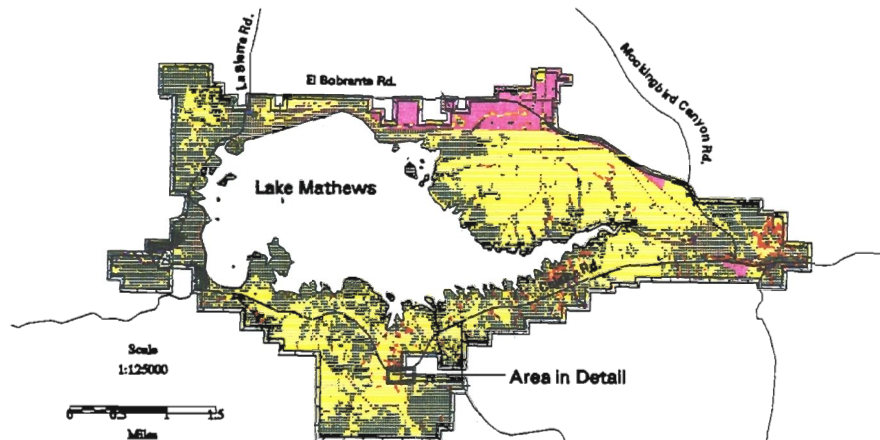
Illegal access and uses have been an ongoing threat to habitat values and individual species in parts of the Plan Area. Trespassers have degraded habitat in some portions of the Mitigation Bank area through illegal dumping, biking, and target shooting. Poaching also is known to occur. The potential for such impacts will be reduced through the installation of additional fencing and by coordinating and increasing patrols of the area.

Public access to the proposed SKR Core Reserve lands outside the Plan Area is generally limited by the topography of the area. The Long-term SKR HCP does not propose or preclude public uses. Decisions regarding access and uses will be made by the Management Committee after the Core Reserve has been established.

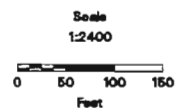
3. Facility Improvements in Operations and Operation and Maintenance Activities at the Lake Mathews Facility

Ongoing operation and maintenance activities at the Lake Mathews facility are covered by the 1982 agreement with CDFG, which authorizes "activities necessary to ensure water quality and the proper operation and maintenance of Lake Mathews as a water supply facility and natural area." The existing reservoir facilities include the Lake Mathews dam, two dikes, a 176-foot outlet tower with approach and outlet tunnels leading to a distribution headworks structure, a 200-foot-long channel spillway on the dam, a diversion tunnel under the north abutment of the dam, a power plant, and several support buildings. Two main distribution pipelines originate at the forebay of the power plant: the 45.7-mile Lower Feeder and 60-mile Upper Feeder. Ongoing operation of these facilities includes:

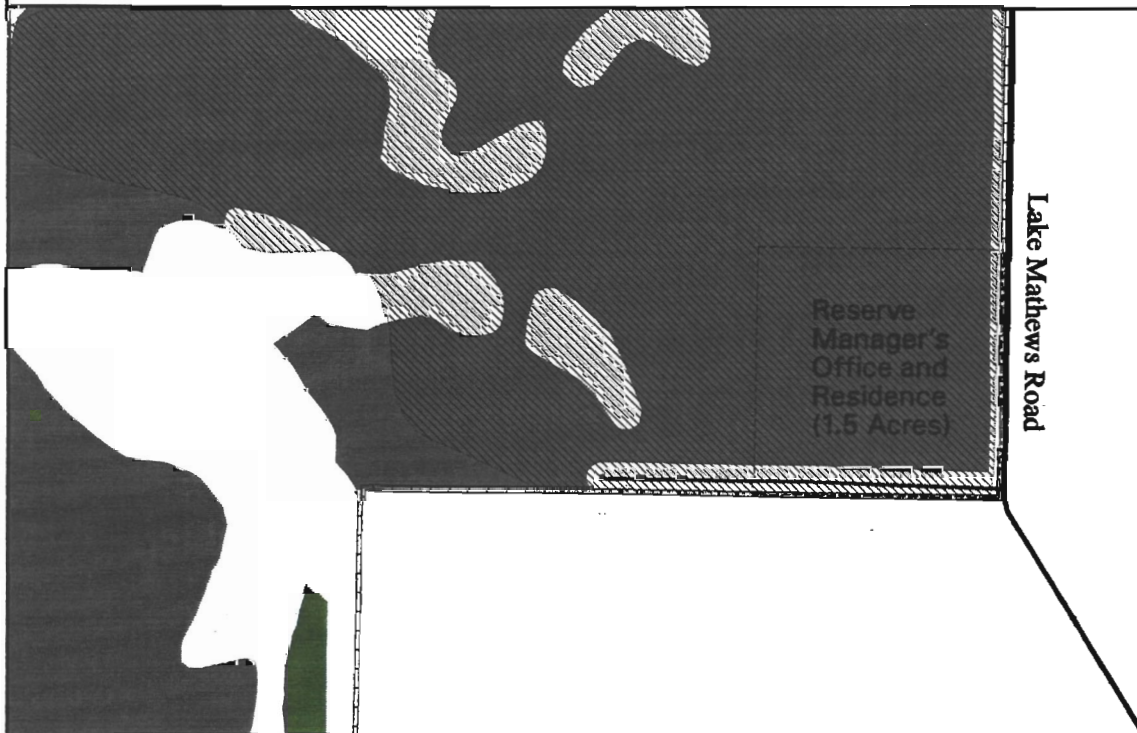
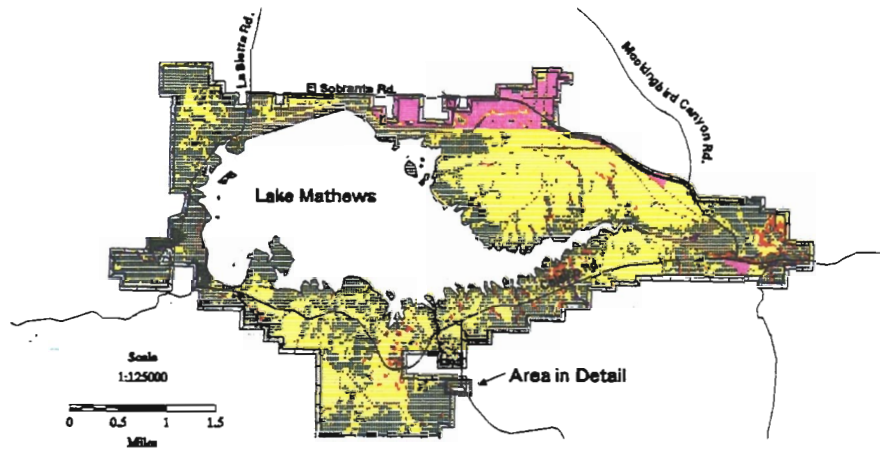
Proposed Location for
Reserve Manager's Office/Residence
Alternative A
Figure 15



- Sensitive Areas**
- SKR Occupied Habitat
 - Riversidian Sage Scrub
 - Sensitive Species Sitings
 - Coastal Western Whiptail
 - Ecological Reserve Fence
 - Property Line
 - Paved Roads
 - Dirt Roads

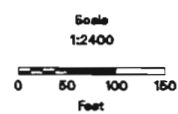


Proposed Location for
Reserve Manager's Office/Residence
Alternative B
Figure 16



- Sensitive Areas**
- SKR Occupied Habitat
 - Riverside Sage Scrub

- Property Line
- Paved Roads
- Dirt Roads



- Control of water storage volumes (affecting water levels),
- Control of vegetation and rodents,
- Control of taste- and odor-producing algae,
- Maintenance of the physical structures associated with the reservoir and distribution system,
- Water quality monitoring,
- Day-to-day operation of the water storage and conveyance system,
- Maintenance of emergency access to the reservoir and ancillary facilities,
- Periodic excavation for repairs or aboveground relocation of equipment,
- Grading of patrol roads, and
- Brushing around aboveground facilities and along access and patrol roads.

Emergency repair work also may require access to portions of Metropolitan's properties that are not easily reached. In such cases, new temporary access roads may need to be constructed and work areas cleared for crews and equipment.

In addition, Metropolitan operates regional construction services from its Lake Mathews properties, providing services such as:

- Maintenance and repair of construction equipment and vehicles,
- Storage of construction materials,
- Repair, painting, and storage of distribution system piping and appurtenances, and
- Mining and processing of aggregate and road base materials.

New facilities and facility improvements within Operations may be proposed in the future. Such projects will involve construction of new structures or improvements to existing facilities.

The complete extent of the temporary and permanent impacts from all sources cannot be quantified with certainty at this time. Because the impacts from any and all sources are to be mitigated under the Lake Mathews Plan, however, it is assumed that all habitat in the area designated for Operations will be adversely affected even though only some will be actually modified or removed. Further, it is assumed that all SKR and coastal California gnatcatchers in Operations will be taken even though only a small proportion of the populations of these two species in Operations will be directly affected at any one time or cumulatively over time. Similarly, it is assumed that all the other Target Species occurring in Operations and Plan Area Projects will be taken under the Lake Mathews Plan.

Mitigation for the assumed and actual impacts in Operations is being provided by:

- The advance commitment of Metropolitan Mitigation Bank lands on a one-for-one (acre-for-acre) basis for every acre of habitat in Operations,
- Implementation of the impact minimization and avoidance measures discussed in the Lake Mathews Plan for individual projects, and
- Management of the Multiple Species Reserve to the benefit of Target Species.

4. Plan Area Projects

As noted in Chapter 1, 154.5 acres in the Plan Area are designated for future water facility improvements, which are collectively referred to in the Lake Mathews Plan as Plan Area Projects. Four projects are anticipated in the designated areas, and there is a very remote chance that a fifth would be constructed. The five projects are:

1. Construction, operation, and maintenance by Metropolitan of a detention dam and basin and saddle dam in Cajalco Creek (Cajalco Creek Dam and Detention Basin Project) to capture, detain, and control storm flows as part of a water quality management plan for the Lake Mathews watershed;
2. Construction, operation, and maintenance by Metropolitan at a future date of six sediment basins (Lake Mathews Sediment Basins project) to be located on the major drainage courses tributary to the south side of the lake as part of a water quality management plan for the Lake Mathews watershed;
3. Construction, operation, and maintenance by Metropolitan of a water outlet structure, short tunnel, and access road as part of the Central Pool Augmentation (CPA) project, which is designed to meet new drinking water quality standards and to improve water deliveries to Metropolitan's members in Orange and Los Angeles Counties;
4. Construction, operation, and maintenance by Western Municipal Water District (Western MWD) of two aboveground water storage tanks and a pipeline extension, together with improvements to an existing administrative office (Western MWD must compensate Metropolitan in order to use mitigation credits under the Lake Mathews Plan);
5. Subject to further decision, construction of a tunnel, pipeline, and portals for an underground bypass system ("Bypass project") that would convey water from the Colorado River Aqueduct to Metropolitan's distribution facilities without using Lake Mathews as a terminal storage point.

Of these five, the Cajalco Creek Dam and Detention Basin Project is the farthest along in the planning process. Based on the certified environmental impact report (EIR) for the project, it will affect 91.5 acres, including 62.7 acres of Target Species habitat and 20.2 acres of occupied SKR habitat (Table 20). The EIR includes mitigation for impacts to sensitive species. Take of SKR related to

Table 20
Habitat Types Affected by the Cajalco Creek Dam and
Detention Basin Project
(acres)

Habitat Type	Total Impact Area	SKR ³ Occupied
Non-native grassland	16.3	6.9
Riversidian sage scrub	21.3	8.6
Mule fat scrub ¹	3.4	0.0
Southern willow scrub ¹	9.0	0.1
Juniper woodland	1.0	0.4
Sycamore riparian woodland ¹	0.2	0.0
Agriculture	11.5	0.0
Disturbed ²	18.0	4.2
Exotic trees ²	0.6	0.0
Natural barren ¹	0.0	0.0
Ruderal ¹	8.9	0.0
Freshwater marsh ¹	0.1	0.0
Saltbush stand ¹	1.2	0.0
Water	0.0	0.0
TOTAL	91.5	20.2

Notes

- 1 Impacts to wetland habitats for the Cajalco Creek Dam and Detention Basin Project (freshwater marsh, mule fat scrub, southern willow scrub, sycamore riparian woodland, natural barren, ruderal, and saltbush stand) are mitigated separately under a separate wetland mitigation plan.
- 2 Mitigation is not provided for disturbed lands or exotic trees.
- 3 Impacts to occupied SKR habitat for the Cajalco Creek Dam and Detention Basin Project are mitigated under a separate Section 7 biological opinion and 2081 authorization.

the Cajalco Creek Dam and Detention Basin Project will be authorized and mitigated pursuant to the terms of a separate Section 7 biological opinion and 2081 authorization. SKR mitigation for this project consists of use of approximately 42 acres of agricultural lands in Metropolitan's share of the Mitigation Bank which will become occupied SKR habitat following approval of the Lake Mathews Plan.

The impacts of the other Plan Area Projects cannot be quantified with certainty at this time. Based on planning done in connection with the Cajalco Creek Dam and Detention Basin Project, the Lake Mathews Sediment Basins project will likely affect 17.9 acres. The CPA project will likely entail impacts both in areas for Operations and for Plan Area Projects; actual impacts will depend on the configuration of the project that is finally approved. Western MWD's proposed

improvements are in various stages of planning. The Bypass project is extremely unlikely to occur in the foreseeable future.

For purposes of this analysis, it is assumed that all habitat in the areas designated for Plan Area Projects will be adversely affected or removed and that all SKR and coastal California gnatcatchers in the areas will be taken. Mitigation credits are being reserved for the projects on a one-for-one basis for every acre of habitat in the designated areas. Per the provisions of the conservation program, actual impacts will be identified in the environmental documentation for projects in the designated areas, and Metropolitan will provide USFWS and CDFG with advance written notice when a project is drawing on the reserved credits. If the reserved credits are not needed for Plan Area Projects, Metropolitan will use them instead for other projects and activities covered by the Lake Mathews Plan. Plan Area Projects also will be required to implement the applicable impact minimization and avoidance measures as a condition of using the reserved credits.

5. Outside Projects

As described in more detail under Section B1 of Chapter 3, it is estimated that 657.3 acres of mitigation credit for habitat will be available for Outside Projects. Agricultural lands in the Mitigation Bank are available for conversion to SKR habitat as mitigation for take by Outside Projects; approximately 250 acres (the area covered by the Bruno lease) are available for such restoration.

For purposes of this analysis, it is assumed that the 657.3 acres of mitigation credit available for Outside Projects represent the foreseeable extent of impacts under the Lake Mathews Plan to habitat outside the Plan Area. However, additional mitigation credits will be available for Outside Projects if Metropolitan adds lands to the Mitigation Bank or if the credits reserved for Plan Area Projects are not needed for that purpose.

For Outside Projects, habitat values for Target Species in impact areas will be matched to the Mitigation Bank credits using HQA or using another methodology collectively acceptable to USFWS, CDFG, and Metropolitan. No further multipliers that increase the mitigation to impact ratio will be necessary. The required exchange is a 1:1 (acre-for-acre) mitigation-to-impact ratio unless expressed otherwise in the HQA formula. Other methodologies will not require greater than an acre-for-acre mitigation-to-impact ratio. Mitigation for impacts to federally listed species, however, will be determined on a case-by-case basis.

6. Projects and Activities on the Multiple Species Reserve

Metropolitan will endeavor to minimize impacts to resources on the Multiple Species Reserve in all of its operations in and adjacent to the Multiple Species Reserve; nevertheless the parties to the Lake Mathews Plan and to the Cooperative Management Agreement recognize Metropolitan's rights to utilize the Multiple Species Reserve and adjacent lands to meet its water service obligations or water service operations responsibilities, to perform rescue operations, and similar activities. In this regard, and for all purposes of the Lake Mathews Plan, without limitation on rights as reserved under the conservation

easements conveyed as part of the Lake Mathews Plan, the parties acknowledge and accept that Metropolitan has the right to:

- Take such actions on the Multiple Species Reserve as Metropolitan shall deem necessary in the interests of its water service obligation or operations (including, but not limited to, metering of natural water inflow into the reservoirs and activities to maintain water quality in the reservoirs), public safety, or national security. These actions will be coordinated with the Management Committee.
- Maintain, repair, replace, and use existing roads, water facilities, and ancillary improvements; and, subject to the prior written approval of CDFG and USFWS, which approval shall not be unreasonably withheld, to designate, construct, and use or authorize rights of way for roads, trails, irrigation works, flood control structures and channels, utility corridors, sewers, water facilities, and ancillary improvements, telephone and above and below-ground power lines, across the Multiple Species Reserve for operational and water supply purposes as described in the Lake Mathews Plan.
- Authorize its directors, officers, employees, licensees, agents, and contractors to enter on, pass over, and egress from the Multiple Species Reserve as necessary to protect any right or carry out Metropolitan's water service obligations or operations, including, but not limited to, the protection of water quality.
- Remove or demolish any unauthorized structure or other improvement located on the Multiple Species Reserve that may conflict with Metropolitan's water service obligations and operations in coordination with the Management Committee.

7. Indirect Impacts

Indirect impacts to Target Species and habitat on the Multiple Species Reserve may occur as a result of facility improvements and operations within Operations, and construction and operation of the Plan Area Projects or projects in the Multiple Species Reserve. Such impacts will include but not be limited to dust, noise, and lighting:

- Where necessary, dust be minimized by watering or as otherwise necessary in accordance with South Coast Air Quality Management District dust control regulations.
- Lighting of construction areas will be directed away from the Multiple Species Reserve to minimize indirect impacts to the greatest extent possible.
- Noise will occur as a result of construction and operation activities and will carry across the reservoir to the Multiple Species Reserve. As necessary, noise will be minimized to the extent practicable for projects and activities in Operations, Plan Area Projects, and on the Multiple Species Reserve.

B. Habitat Impacts and Take

For purposes of meeting federal ESA requirements regarding authorization for take, the effects of the foreseeable impacts on individual Target Species have been evaluated and, where possible, quantified. Impacts are expressed in terms of acres of habitat for these species. In this analysis, only Metropolitan projects and activities and only Group 1 and Group 2 species (e.g., Target Species known to occur in the Plan Area) are considered. RCHCA projects and activities were not included in the analysis because:

1. The RCHCA's use of its Mitigation Bank lands as replacement SKR habitat under the Short-term SKR HCP is covered by the certified environmental documentation for the RCHCA's existing 10(a) permit and 2081 agreement and
2. The RCHCA's use of the multiple species credits assigned to its Mitigation Bank lands, including any take authorized based on those credits, will be addressed in the multiple species plan that the RCHCA intends to prepare for its proposed Core Reserve lands.

Group 3 species were not included because assumptions regarding their future occurrence would be too speculative to provide a reasonable basis for assessing likely impacts.

Table 21 indicates the estimated habitat impacts to Group 1 species in Operations Areas and Plan Area Projects and from Outside Projects, together with the amount of habitat for each Target Species that is being conserved on Metropolitan Mitigation Bank lands and in the Multiple Species Reserve as a whole. Table 22 provides the same information for Group 2 species.

In both Table 21 and Table 22, the estimates were calculated as follows:

1. The estimated habitat impacts in Operations and Plan Area Projects are the sum of the acres that match the habitat types associated with each species in those areas (Tables 5, 7, 8, 9, and 11, Chapter 2);
2. The estimates of habitat for Target Species in Metropolitan Mitigation Bank lands are the sum of the acres that match the habitat types associated with the Target Species in that area (Table 5, Chapter 2; Table 16, Chapter 3); and
3. The estimates of habitat for Target Species in the Multiple Species Reserve are the sum of the acres in both the Mitigation Bank and Existing Reserve that match the habitat types of the Target Species (Tables 7, 8, 9, and 11, Chapter 2).

A brief discussion of the habitat impacts and estimated levels of take of Group 1 and Group 2 species is provided below; additional analysis is provided in Part 2 of Volume 2, which contains the individual HCPs for Target Species.

Table 21
Estimated Habitat
of Group 1 Species in the Plan Area
(acres)

Group 1 Species	In Operations & Plan Area Projects	Metropolitan Mitigation Bank Lands	Total in Multiple Species Reserve
Plants¹			
Clay bindweed (Potential Habitat) ²	0.0 (29.5)	0.5 (237.6)	0.9 (528.8)
Great valley phacelia (Potential Habitat)	0.0 (29.4)	2.5 (107.3)	5.4 (309.1)
Knotweed spineflower (Potential Habitat)	0.2 (29.5)	0.4 (237.6)	1.9 (528.8)
Large-leaved filaree (Potential Habitat)	0.0 (29.4)	0.1 (107.3)	0.2 (309.1)
Palmer's grappling hook (Potential Habitat)	0.0 (0.1)	0.3 (74.4)	0.5 (274.3)
Parry's spineflower	0.0	0.0	0.1
Small-flowered microseris (Potential Habitat)	0.0 (29.5)	29.5 (237.6)	32.9 (528.8)
Amphibians & Reptiles			
Coastal rosy boa ³	579.5	809.5	4,370.8
Coastal western whiptail	581.9	819.6	4,453.3
Northern red diamond rattlesnake ³	579.5	809.5	4,370.8
Orange-throated whiptail	581.9	819.6	4,453.3
San Bernardino ringneck snake ⁴	17.7	47.6	76.6
San Diego horned lizard	579.5	809.5	4,370.8
Western spadefoot toad ³	235.6	394.3	2,722.6
Birds			
Bell's sage sparrow	344.1	415.2	1,649.2
Blue grosbeak	17.7	47.6	76.6
Burrowing owl	253.9	710.3	3,046.0
California horned lark	253.9	710.3	3,046.0
Coastal California gnatcatcher (number of pairs)	344.1 (7)	415.2 (8)	1,649.2 (18)
Downy woodpecker	9.4	20.5	28.6
Grasshopper sparrow	235.4	394.3	2,712.6
Loggerhead shrike	600.4	1,135.9	4,777.7
Southern California rufous-crowned sparrow	344.1	415.2	1,649.5
Tricolored blackbird	245.0	414.8	2,751.2
White-tailed kite	253.1	441.9	2,790.2
Mammals			
Northwestern San Diego pocket mouse	344.1	415.2	1,649.2
San Diego black-tailed jackrabbit	609.8	1,156.4	4,806.3
San Diego desert woodrat	346.5	425.3	1,731.7
Stephens' kangaroo rat ⁵	289.1	see note 5	2,321.3

Notes

- 1 Except for Parry's spineflower, impacts to other plants which are Target Species are estimated in terms of potential as well as occupied habitat.
- 2 Indicates extent of clay soil grassland.
- 3 Estimated acreages are overstated; species occurs in rock outcrop areas in each habitat type.
- 4 Estimated acreages are understated; species also occurs in edges of adjacent habitat.
- 5 By definition, Metropolitan's Mitigation Bank lands are not occupied by SKR but, consistent with the SKR HCP, qualify as "replacement" habitat (see Section B1(d), Habitat Impacts and Take). In addition, the agricultural lands that are part of Metropolitan's Mitigation Bank lands are potential SKR habitat.

Table 22
Estimated Habitat of
Group 2 Species in the Plan Area
(acres)

Group 2 Species	In Operations & Plan Area Projects	Metropolitan Mitigation Bank Lands	Total in Multiple Species Reserve
Birds			
Bald eagle ¹	see note 1		
Bank swallow ²	see note 2		
Black-crowned night heron	9.4	20.5	28.6
Cooper's hawk	362.0	464.7	1,709.7
Ferruginous hawk	598.0	1,125.8	4,695.2
Golden eagle	598.0	1,125.8	4,695.2
Great blue heron	10.2	22.4	40.2
Long-eared owl	9.4	20.5	28.6
Northern harrier	598.0	1,125.8	4,695.2
Red-shouldered hawk	17.9	49.5	78.5
Rough-legged hawk	598.0	1,125.8	4,695.2
San Diego cactus wren ³	see note 3		
Sharp-shinned hawk	597.2	857.1	4,447.4
Swainson's hawk	598.0	1,125.8	4,695.2
Mammals			
American badger	581.9	819.6	4,453.3
Big or pocketed free-tail bat	597.2	857.1	4,447.4
Cougar ⁴	see note 4		
Little brown bat	17.9	49.5	78.5
Pallid bat	579.5	809.5	4,370.5
Western mastiff bat	579.5	809.5	4,370.5
Western pipistrelle	579.5	809.5	4,370.5

Notes

- 1 The bald eagle winters in the Plan Area, foraging primarily in the lake and roosting in trees. Potential nesting habitat is available in the Multiple Species Reserve, but no nesting behavior or nests have been observed to date. Operations, Plan Area Projects, and Metropolitan's Mitigation Bank lands include areas where the bird might perch or roost and terrestrial foraging habitat.
- 2 Bank swallows have been observed foraging at the lake; no suitable breeding habitat occurs in the Plan Area.
- 3 Cactus wrens occur in cactus patches and thickets within Riversidian sage scrub habitat; little occupied habitat currently occurs in the Plan Area.
- 4 The entire Plan Area is considered cougar habitat; no den sites are known to occur in the Plan Area.

1. Group 1 Species

As discussed earlier in this chapter, the Lake Mathews MSHCP/NCCP assumes that all habitat in Operations and Plan Area Projects will be adversely affected by the identified projects and activities even though only some habitat will actually

be modified or removed. Consistent with this assumption, it also is assumed that the projects and activities will result in the take of all 29 Group 1 species even though only 16 of 29 were actually observed in these areas.

a. Plants

None of the seven Group 1 plants were observed in Operations and Plan Area Projects, but potential habitat for each species occurs in the areas. Estimated impacts to potential habitat range from the assumed loss of 0.1 acre of Palmer's grappling hook to the assumed loss of nearly 30 acres for the other five clay soil species. The potential for the occurrence of Parry's spineflower in Operations and Plan Area Projects is low, and no actual impacts to or take of this species is expected. Metropolitan's Mitigation Bank lands include a considerable amount of clay soil grassland, and consequently it is likely that mitigation credits in excess of the existing occupied habitat for Group 1 plants could be available for Outside Projects.

Except for Parry's spineflower, all of the other plant Target Species are known to occur on Metropolitan's Mitigation Bank lands. For all seven species, the total amount of occupied habitat conserved in both the Mitigation Bank lands and Multiple Species Reserve exceeds that assumed taken (Table 21).

b. Amphibians and Reptiles

Based on the presence of habitat, it is assumed that take of all seven amphibian and reptile species which are Target Species will occur in Operations and Plan Area Projects. However, coastal rosy boas and San Bernardino ringneck snakes were not actually observed in Operations, and coastal rosy boas, San Bernardino ringneck snakes, western spadefoot toads, and San Diego horned lizards were not seen in Plan Area Projects.

All of the Group 1 amphibians and reptiles are known to occur in the Multiple Species Reserve and were seen on Metropolitan's Mitigation Bank lands. As discussed in Chapter 2, San Diego horned lizards were observed less frequently in several areas of otherwise suitable habitat in the Mitigation Bank and are expected to recur in greater numbers when access controls and deterrents to poaching are implemented as part of reserve management. As also discussed in Chapter 2, the western spadefoot toad was observed in only two locations in the Plan Area during the 1992 surveys but has been subsequently seen in Metropolitan's Mitigation Bank lands. Habitat for the western spadefoot toad occurs on Metropolitan Mitigation Bank lands, including grasslands typically used by the western spadefoot toads during wet seasons.

All the amphibian and reptile species in Group 1 are known to occur on Metropolitan's Mitigation Bank lands. For all seven species, the total amount of occupied habitat conserved in the both the Mitigation Bank lands and Multiple Species Reserve exceeds that assumed taken (Table 21)

c. Birds

All 11 Group 1 bird species are assumed taken in Operations and Plan Area Projects, even though 5 were not observed in Operations (blue grosbeak, California horned lark, downy woodpecker, grasshopper sparrow, and white-

tailed kite) and only 4 were observed in Plan Area Projects (California horned lark, coastal California gnatcatcher, loggerhead shrike, and southern California rufous-crowned sparrow). Assumed levels of take range from under 10 acres of habitat for the downy woodpecker to 600 acres for the loggerhead shrike. The assumed impacts to Riversidian sage scrub species are estimated at 344.1 acres, including habitat occupied by seven coastal California gnatcatcher pairs. The assumed impacts to primarily non-native grassland species range from approximately 235 to 250 acres, depending on the other habitat types also used by the species.

All of the Group 1 birds are known to occur in the Multiple Species Reserve, and all but two (blue grosbeak and burrowing owl) were observed on Metropolitan's Mitigation Bank land. For both the blue grosbeak and the burrowing owl, the amount of suitable habitat on Metropolitan Mitigation Bank lands is more than twice the amount assumed taken in Operations and Plan Area Projects. The amount of habitat conserved for the coastal California gnatcatcher includes 415.2 acres occupied by 8 pairs on Metropolitan Mitigation Bank lands and a total of 1649.2 acres occupied by 18 pairs in the reserve as a whole.

d. Mammals

All four Group 1 mammals are known to occur and are assumed taken in Operations and Plan Area Projects, including the federally and state-listed SKR. Assumed habitat impacts include approximately 345 acres of habitat for the northwestern San Diego pocket mouse and San Diego desert woodrat, approximately 600 acres of habitat for the San Diego black-tailed jackrabbit, and 289 acres of occupied SKR habitat. SKR habitat in the Operations area is 250 acres and 39.1 acres in Plan Area Projects.

As stated previously, most of the habitat in the Operations area will not be impacted at all or will only be temporarily impacted. Most of these impacts will occur in areas which are currently disturbed and do not contain SKR habitat or are directly adjacent to existing facilities. Further, much of the occupied SKR habitat in Plan Area Projects is being mitigated separately. The Cajalco Creek Dam and Detention Basin Project contains 20.2 acres of occupied SKR habitat (of the 39.1 acres for Plan Area Projects total), and impacts to this habitat will be mitigated through a separate Section 7 biological opinion and 2081 authorization. Additional impacts related to Western MWD facility improvements are also being mitigated separately in coordination with USFWS and CDFG. Less than 18 acres that may be permanently affected by Plan Area Projects would be mitigated through the habitat precommitted for Operations and Plan Area Projects under the Lake Mathews Plan.

All of the Group 1 mammals are known to occur in the reserve and, except for SKR, on Metropolitan Mitigation Bank lands. Except for SKR, for the other three species, the total amount of occupied habitat conserved in the both the Mitigation Bank lands and Multiple Species Reserve exceeds that assumed taken (Table 21). As discussed in Chapter 3, Metropolitan's share of the Mitigation Bank is by definition not occupied by SKR. However, the lands also fit the definition of replacement habitat under the RCHCA's SKR HCP. As defined in the implementing agreements for the HCP, replacement habitat includes:

. . . lands which are occupied by SKR, as well as lands that are not occupied by SKR but would benefit SKR if included in a reserve operated and maintained to preserve SKR and its habitat, including but not limited to potential SKR habitat, wildlife corridors, areas connecting patches of occupied SKR habitat, and areas buffering SKR-occupied habitat from adjacent uses.

Viewed in this context, all of Metropolitan's Mitigation Bank lands (1,275.6 acres) could meet the definition of replacement habitat. The distribution of SKR is known to change readily within the Plan Area, and SKR use adjacent areas to move among occupied patches.

In addition, it is expected that the management of the Mitigation Bank lands will enhance the abundance and distribution of SKR in the future. Metropolitan has developed a Fire Management Plan and the Management Committee will prepare a prescribed burn plan associated with the Fire Management Plan in conjunction with CDF. Previous research funded by Metropolitan at Lake Mathews demonstrates that SKR abundance is increased through prescribed burns. Implementation of the prescribed burn plan should result in overall increased abundance of SKR in the Mitigation Bank lands.

2. Group 2 Species

Similar to the assumptions regarding Group 1 species, the Lake Mathews MSHCP/NCCP assumes that Metropolitan's projects and activities will adversely affect habitat used by Group 2 species in Operations and Plan Area Projects. Some take of Group 2 species is assumed to result, but the conservation and mitigation program for these species includes measures to avoid and minimize the potential for direct harm to the maximum extent practicable. Several of the Group 2 species were observed incidentally in the Plan Area outside the time frame and scope of the 1992 surveys, and consequently their occurrence within Plan Area components is not documented with the same level of detail as Group 1 species. As in the analysis for Group 1 species, it is assumed that all Group 2 species are present in the habitat types primarily associated with the species (Table 5, Chapter 2).

a. Birds

Habitat impacts to Group 2 birds in Operations and Plan Area Projects have been estimated for 11 of the 14 species and range from an assumed loss of approximately 10 acres of habitat for black-crowned night herons, great blue herons, and long-eared owls to approximately 600 acres of habitat for the ferruginous hawk, golden eagle, northern harrier, sharp-shinned hawk, and Swainson's hawk (Table 22). The three species for which habitat impacts have been assumed but not quantified include the bald eagle, bank swallow, and San Diego cactus wren (Table 22).

The Multiple Species Reserve and Metropolitan Mitigation Bank lands are known to include foraging or sheltering habitat for all Group 2 birds. The amount of habitat on Metropolitan Mitigation Bank lands ranges from approximately 20 acres for the riparian species to 1,125 acres for the raptors that use multiple habitats. In all cases, the total amount of occupied habitat conserved in Metropolitan's Mitigation Bank lands exceeds that assumed taken. The reserve

as a whole includes approximately 40 acres of habitat for the riparian species and nearly 4,700 acres for the raptors that use multiple habitats.

b. Mammals

Habitat impacts to Group 2 mammals in Operations and Plan Area Projects have been estimated for six of the seven species and range from the assumed loss of approximately 18 acres of foraging habitat for little brown bats to nearly 600 acres of habitat for the American badger and four bat species (Table 22). The habitat of cougars also is assumed to be affected in the areas.

The amount of habitat for Group 2 species on Metropolitan Mitigation Bank lands ranges from approximately 50 acres for little brown bats to over 800 acres for the other species. In all cases, the total amount of occupied habitat conserved in Metropolitan's Mitigation Bank lands exceeds that assumed taken. The Multiple Species Reserve as a whole contains nearly 80 acres for the little brown bat and approximately 4,400 acres for the other species.

C. Alternatives

Also in accordance with the federal and state ESAs and NCCP guidelines, alternatives to the taking of species have been considered. Two alternatives other than that described in the Lake Mathews Plan and the No Action Alternative were evaluated:

1. Avoidance of Take of Currently Listed Species at Lake Mathews
2. No Outside Projects

Based on the evaluation, these options were eliminated from further consideration, and the conservation program and mitigation measures described in the Lake Mathews MSHCP/NCCP were proposed. Each alternative is briefly described below, together with the reasons why it was eliminated from further consideration.

1. Avoidance of Take of Currently Listed Species at Lake Mathews

Under this alternative, no Section 10(a) permit would be necessary for projects and activities in the Plan Area. Effects on nonlisted Target Species would be allowed and take of currently listed species would be prohibited on Metropolitan's Lake Mathews properties. Direct harm to currently listed species would need to be avoided and, in the process, habitat for most of the other Target Species would also not be affected. Metropolitan would attempt to design projects and activities in the Plan Area to avoid take of all currently listed species. However, many projects and activities within the Plan Area would be precluded because it would not be possible to completely (1) avoid take of SKR and coastal California gnatcatchers and (2) ensure that effects on habitat for bald eagles, bank swallows, and Swainson's hawks would not constitute take under the state or federal ESA as appropriate. In addition, maintenance of existing facilities would be curtailed or become impossible. Maintenance of the

dam and dikes is critical to preserve their integrity and consequently to protect public health and safety.

The RCHCA could still purchase conservation easements over SKR-occupied habitat from Metropolitan as necessary under the Short-term and Long-term SKR HCPs, however, Metropolitan would not need to establish a comprehensive management program for multiple species as described in the Proposed Project.

This alternative was eliminated from further consideration because it could lead to inordinate delays in necessary operation and maintenance activities at Lake Mathews. These delays would result from the need to apply for any necessary individual Section 10(a) permits under the federal ESA. Such a piecemeal approach could result in a lack of comprehensive and coordinated environmental planning. This alternative does not meet Metropolitan's objectives to provide reliable water deliveries from Lake Mathews and could reduce Metropolitan's ability to respond in a timely way to operation and maintenance needs at the Lake Mathews facility as necessary to protect public health and safety.

2. No Outside Projects

Under this alternative, the Mitigation Bank credits and the authorizations and assurances provided under the Lake Mathews Plan would apply only to projects and activities on Metropolitan's Lake Mathews properties; no Outside Projects would be covered. Outside Projects would require additional individual incidental take permits for federally or state-listed species as necessary.

This approach would reduce the total take anticipated under the Lake Mathews Plan by eliminating the category of Outside Projects; however, it would not change the estimated levels of take on Metropolitan's properties. Mitigation for projects that otherwise might have drawn on the Lake Mathews Mitigation Bank would have to be provided elsewhere; however, assuming that appropriate mitigation is provided, the effects of the projects would still occur. Such mitigation planning for Outside Projects would increase total mitigation costs for Metropolitan. In addition, areas to be restored to endangered species habitat under the Proposed Project would not occur, and land in the Mitigation Bank not used for mitigation of projects and activities in the Plan Area and not occupied by listed species could be leased for activities (e.g., agriculture) that are consistent with maintaining water quality in the reservoir. As a result, the size of the managed multiple species reserve under this alternative would be substantially smaller than under the Proposed Project.

The RCHCA could still purchase conservation easements over SKR-occupied habitat from Metropolitan as necessary under the Short-term and Long-term SKR HCPs. The smaller size of the multiple species reserve would reduce the cost of management, however, and the endowment for management of the reserve would be smaller than under the Proposed Project.

This alternative was eliminated from further consideration because precluding the opportunity to mitigate for Outside Projects through the Lake Mathews Plan would result in increased mitigation cost for Metropolitan and a smaller reserve conserved and managed for Target Species. In addition, individual permitting for Outside Projects would be more inefficient than the approach described in the Proposed Project, because it would require additional paperwork and delays

related to the separate permit applications for each Outside Project. The alternative does not meet Metropolitan's objectives to establish a conservation program, including a mitigation bank, to mitigate future biological effects of Outside Projects.

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Regulatory Framework of the Lake Mathews MSHCP/NCCP

Appendix A

Regulatory Framework of the Lake Mathews MSHCP/NCCP

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Appendix A

Regulatory Framework of the Lake Mathews MSHCP/NCCP

This appendix describes the federal and state laws and regulations that pertain to the Lake Mathews MSHCP/NCCP. The information supplements the summary provided in Chapter 1.

A. Federal Wildlife and Habitat Conservation Laws

The federal wildlife and habitat conservation laws that pertain to the Lake Mathews MSHCP/NCCP include the federal Endangered Species Act (ESA), Migratory Bird Treaty Act (MBTA), Bald Eagle Protection Act (BEPA), Fish and Wildlife Coordination Act, and Section 404 of the Clean Water Act.

1. Federal Endangered Species Act

Five sections of the federal ESA are relevant to the preparation, approval, and implementation of the Lake Mathews MSHCP/NCCP.

- Section 4 covers the listing process, designation of critical habitat, issuance of special rules for the protection of threatened species, and preparation of recovery plans;
- Section 9 prohibits the import, export, take, possession, transport, receipt, or sale of listed species;
- Section 10(a) authorizes the U.S. Fish and Wildlife Service (USFWS) to issue permits for incidental take of listed species and to approve HCPs for listed and/or unlisted species;
- Section 7 includes provisions for the authorization of incidental take resulting from federal actions; and
- Section 6 authorizes cooperative agreements between USFWS and states and includes provisions for the conservation of federally listed plants.

a. Section 4

Section 4 of the federal ESA stipulates that a species may be determined to be endangered or threatened based on any one of five factors:

1. Present or threatened destruction, modification, or curtailment of its habitat or range;

2. Overutilization for commercial, recreational, scientific, or educational purposes;
3. Disease or predation;
4. The inadequacy of existing regulatory mechanisms; and
5. Other natural or man-made factors affecting its continued existence.

Section 4 further stipulates the steps by which species may be proposed for listing and the time frame in which decisions must be made. It also requires that critical habitat for the species be designated concurrently with the decision to list the species and that a plan for the conservation and survival of the species (recovery plan) be prepared and implemented. Section 4 also provides for the issuance of special regulations for the protection of federally listed threatened species in any state that has entered into a cooperative agreement with USFWS pursuant to Section 6 of the ESA.

The Lake Mathews MSHCP/NCCP anticipates the future federal listing of species known or expected to occur in the Plan Area.

b. Section 9

Section 9 of the federal ESA prohibits the taking of species listed by USFWS as threatened or endangered. As defined in the ESA, "taking" means "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or to attempt to engage in such conduct." "Harass" and "harm" are further defined in federal regulations and case law as follows:

"Harass" means an intentional or negligent act or omission which creates the likelihood of injuring wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering" (50 CFR 17.3).

"Harm" means an act which actually kills or injures wildlife. Such acts may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering" (50 CFR 17.3).

With respect to endangered plants, the ESA makes it unlawful to:

1. Remove and reduce to possession any such species from areas under federal jurisdiction;
2. Maliciously damage or destroy any such species on such areas; or
3. Remove, cut, dig up, or damage or destroy any such species on any other area in knowing violation of any law or regulation in any state or in the course of any violation of a state criminal trespass law.

ESA protection for threatened plants is substantially the same as that given to endangered plants, except that the seeds of threatened plants may be cultivated.

Within the Plan Area for the Lake Mathews MSHCP/NCCP, Section 9 prohibitions on take currently apply to three wildlife species: SKR, bald eagle, and coastal California gnatcatcher; no federally listed plants have been observed.

c. Section 10(a)

In recognition that take cannot always be avoided, Section 10(a) of the ESA includes provisions for takings that are incidental to, but not the purpose of, otherwise lawful activities. Similar provisions also are found in Section 7 for actions by federal agencies.

Under Section 10(a)(1)(B), USFWS (via powers delegated by the Secretary of the Interior) is authorized to approve "incidental take" permits provided that the applicant has met certain conditions. As described in the Code of Federal Regulations (CFR) and draft conservation planning guidelines prepared by USFWS, the application for such permits must be submitted on a specific form and must be accompanied by an HCP that contains the following information:

1. The impact that will likely result from the proposed taking of the species;
2. Steps the applicant will take to monitor, minimize, and mitigate such impacts;
3. The level and source of funding available to implement such steps;
4. Procedures that will be used to deal with unforeseen circumstances;
5. The names of the responsible party or parties;
6. Alternatives to the taking and the reasons why they were not pursued; and
7. Other measures that may be required by USFWS as necessary or appropriate.

The application is submitted to the regional director of USFWS who, after a public comment period, must issue the permit if it is found that:

1. The taking will be incidental to an otherwise lawful activity;
2. The applicant will, to the maximum extent practicable, minimize and mitigate the impacts of the taking;
3. The applicant will ensure that adequate funding for the conservation plan and procedures to deal with unforeseen circumstances will be provided;
4. The taking will not appreciably reduce the likelihood of the survival and recovery of the species in the wild;
5. The applicant will ensure that other measures (if any) that USFWS may require as being necessary or appropriate will be met; and
6. USFWS is assured that the conservation plan will be implemented (USFWS's practice has been to require an "implementing agreement" signed by the

permittee and USFWS in which the actions identified in the HCP are presented in the form of a legal contract).

Prior to making the decision, USFWS must conduct an internal consultation in accordance with Section 7 of the ESA. USFWS also must comply with the environmental review requirements of the National Environmental Policy Act (NEPA), which requires that the potential effects of a major action be analyzed in a written statement.

Although phrased in terms of criteria for issuance of incidental take permits, Section 10(a)(1)(B) also was intended by Congress to authorize USFWS's approval of HCPs for unlisted as well as listed species. Moreover, if the HCP treats unlisted species as if it were already listed, additional mitigation would not be required within the area covered by the HCP upon the listing of that species. As stated by the House Conference Committee when Section 10(a)(1)(B) was added to the ESA in 1982:

The committee intends that the Secretary [of the Interior] may utilize this provision to approve conservation plans which provide long-term commitments regarding the conservation of listed as well as unlisted species and long-term assurances to the proponent of the conservation plan that the terms of the plan will be adhered to and that further mitigation requirements will only be imposed in accordance with the terms of the plan. In the event that an unlisted species addressed in an approved conservation plan is subsequently listed pursuant to the Act, no further mitigation requirements should be imposed if the conservation plan addressed the conservation of the species and its habitat as if the species were listed pursuant to the Act (House of Representatives Conference Report No. 97-835, 97th Congress, 2d Session, p. 30).

Consistent with Congress's intent, the Lake Mathews MSHCP/NCCP addresses the needs of listed and currently unlisted species of concern in the Lake Mathews Plan. It also presents the type of information and analysis required for USFWS to consider authorization for take. The action to be taken by USFWS is issuance of Section 10(a) permits for the Target Species.

d. Section 7

Section 7 of the ESA requires all federal agencies to consult with USFWS on actions involving listed species and requires USFWS to conduct internal consultations regarding the effects of its own actions on such species. It also requires USFWS to use its program to further the objectives of the ESA. A Section 7 consultation begins with a biological assessment that examines the potential effects of the action on the species in question and concludes with a written statement by USFWS stating whether the action would jeopardize a listed or proposed species or adversely affect critical habitat. If USFWS finds that the species would not be jeopardized, the written statement includes authorization for incidental take.

With respect to the Lake Mathews MSHCP/NCCP, the actions to be taken by USFWS include approval of three agreements: an Implementation Agreement, a Mitigation Banking Agreement, and a Cooperative Management Agreement. Prior to acting on the agreements, USFWS must conduct an internal consultation

regarding potential effects of the Lake Mathews MSHCP/NCCP on the federally listed species.

e. Section 6

Section 6 of the ESA authorizes USFWS to enter into cooperative agreement with states, and Section 6(c)(2) deals explicitly with conservation programs for listed plants. As stated in the ESA:

In order for a State program to be deemed an adequate and active program . . . the Secretary must find, and annually thereafter reconfirm such finding, that under the State program ---

- (A) Authority resides in the State agency to conserve resident species of plants determined by the State agency or the Secretary to be endangered or threatened;
- (B) the State agency has established acceptable conservation programs, consistent with the purposes and policies of this [ESA], for all resident species of plants in the State which are deemed by the Secretary to be endangered or threatened, and has furnished a copy of such plan and program, together with all pertinent details, information, and data requested to the Secretary;
- (C) the State agency is authorized to conduct investigations to determine the status and requirements for survival of resident species of plants; and
- (D) provision is made for public participation in designating resident species of plants as endangered or threatened . . .

Such a program has been authorized in California based on the state ESA, the Native Plant Protection Act, and California Native Desert Plants Act.

The plant conservation program proposed in the Lake Mathews MSHCP/NCCP is based on the assumption that the authorized state program in California provides mechanisms for approving take of federally as well as state-listed plants.

f. Special 4(d) Rule for the Coastal California Gnatcatcher

The final 4(d) rule for the coastal California gnatcatcher was published in the *Federal Register* on December 10, 1993, and reads as follows:

- (1) Except as noted in paragraphs (b)(2) and (3) of this section, all prohibitions of §17.31(a) and (b) shall apply to the coastal California gnatcatcher.
- (2) Incidental take of the coastal California gnatcatcher will not be considered a violation of section 9 of the Endangered Species Act of 1973, as amended (Act), if it results from activities conducted pursuant to the State of California's Natural Community Conservation Planning Act of 1991 (NCCP), and in accordance with a NCCP plan for the protection of coastal sage scrub habitat, prepared consistent with the State's NCCP Process Guidelines, *provided that*:

- (i) The NCCP plan has been prepared, approved, and implemented pursuant to California Fish and Game Code sections 2800-2840; and
 - (ii) The Fish and Wildlife Service (Service) has issued written concurrence that the Natural Community Conservation Plan meets the standards set forth in 50 CFR 17.32(b)(2). The Service shall issue its concurrence pursuant to the provisions of the Memorandum of Understanding (MOU) dated December 4, 1991, between the California Department of Fish and Game and the Service regarding coastal sage scrub natural community conservation planning in southern California The Service shall monitor the implementation of the NCCP plan and may revoke its concurrence under this paragraph (b)(2)(ii) if the NCCP plan, as implemented, fails to adhere to the standards set forth in 50 CFR 17.32(b)(2).
- (3) During the period that a NCCP plan referred to in paragraph (b)(2) of this section is being prepared, incidental take of the coastal California gnatcatcher will not be a violation of section 9 of the Act if such take occurs within an area under the jurisdiction of a local government agency that is enrolled and actively engaged in the preparation of such a plan and such results from activities conducted in accordance with the NCCP Conservation Guidelines and Process Guidelines.
- (4) The Service will monitor the implementation of the NCCP Conservation and Process Guidelines as a whole, and will conduct a review every 6 months to determine whether the guidelines, as implemented, are effective in progressing toward or meeting regional and subregional conservation goals during the interim planning period. If the Service determines that the guidelines are not effecting adequate progress toward or meeting regional and subregional conservation objectives, the Service will consult with the California Department of Fish and Game pursuant to the MOU to seek appropriate modification of the guidelines or their application as guidelines as defined herein. If appropriate modification of the guidelines or their application as defined therein does not occur, the Service shall revoke the interim take provisions of this special rule on a subregional or subarea basis. The Service will publish findings for revocation in the *Federal Register* and provide for a 30-day public comment period prior to the effective date for revoking the provisions of the special rule in a particular area. Revocation would result in the reinstatement of the take prohibitions set forth under 50 CFR 17.31(a) and (b) in the affected NCCP area.

The provisions for the coastal California gnatcatcher in the Lake Mathews MSHCP/NCCP are intended to be consistent with the special rule.

2. Migratory Bird Treaty Act

The MBTA makes it unlawful to pursue, hunt, capture, kill, or possess or attempt to do the same to any migratory bird or part, nest, or egg of such bird listed in wildlife protection treaties between the United States and Great Britain, United Mexican States, Japan, and the Union of Soviet States. As with the

federal ESA, the act also authorizes the Secretary of the Interior to issue permits for take. The procedures for securing such permits are found in Title 50 of the CFR, together with a list of the migratory birds covered by the act.

The Lake Mathews MSHCP/NCCP conserves and provides for the management of habitat used by several sensitive bird species protected by the MBTA; it also includes impact avoidance measures for MBTA species.

3. Bald Eagle Protection Act

BEPA explicitly protects the bald eagle and golden eagle and imposes its own prohibition on any taking of the species. Similar to the ESA, the BEPA defines "take" as meaning to pursue, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb. Take for scientific, exhibition, and religious purposes is allowed provided that the Secretary of the Interior makes a determination that it is compatible with the preservation of species and issues a permit for the take.

Both the bald eagle and golden eagle winter in the Plan Area; no take of either species is currently contemplated under the Lake Mathews Plan.

4. Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act authorizes the Secretary of the Interior to:

1. Provide assistance to and cooperate with federal, state, and public or private agencies and organizations:
 - (a) in the development, protection, rearing, and stocking of all species of wildlife, resources thereof, and their habitat;
 - (b) in controlling losses of the same from disease or other causes;
 - (c) in minimizing damages from overabundant species;
 - (d) in providing public shooting and fishing areas, including easements across public lands for access thereto; and
 - (e) in carrying out other measures necessary to effectuate the purposes of said sections;
2. Make surveys and investigations of the wildlife of the public domain, including lands and waters or interests therein acquired or controlled by any agency of the United States; and
3. Accept donations of land and contributions of funds in furtherance of the purposes of said sections.

The act's stated purpose is to:

1. Recognize the contribution of the wildlife resources to the nation, the increasing public interest and significance thereof due to the expansion of the national economy and other factors and

2. Provide that wildlife conservation receives equal consideration and be coordinated with other features of water resource development programs.

Specifically, the act requires that all federal agencies must consult with USFWS and the head of the state wildlife agency with jurisdiction over the project area with a view to preventing loss of and damage to and providing for the development and improvement of wildlife resources. The reports and recommendations from such consultations must be included in any documents prepared as part of the approval process for the project and must be considered prior to approval being given.

The Lake Mathews MSHCP/NCCP assumes that the Fish and Wildlife Coordination Act authorizes USFWS's active participation in its implementation.

5. Section 404 of the Clean Water Act

Section 404 of the Clean Water Act, which is administered by the U.S. Army Corps of Engineers (COE), regulates the discharge of dredged and/or fill material into the waters of the United States. The term "waters of the United States" generally defines COE's jurisdiction and is defined at 33 CFR Part 328 as:

1. All navigable waters (including waters subject to the ebb and flow of the tide);
2. All interstate waters and wetlands;
3. All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce;
4. All impoundments of waters mentioned above;
5. All tributaries to waters mentioned above;
6. The territorial seas; and
7. All wetlands adjacent to waters mentioned above.

Wetlands are further defined at 33 CFR 328.3(b) as:

. . . those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support . . . a prevalence of vegetation typically adapted for life in saturated soil conditions.

The vegetation, soils, and hydrology of a wetland is further characterized in the manual used by COE as normally meeting the following three criteria:

- More than 50% of the dominant plant species at the site must be typical of wetlands (i.e., rated as facultative or wetter in the *National List of Plant Species that Occur in Wetlands*),

- Soils must exhibit physical and/or chemical characteristics indicative of permanent or periodic saturation (e.g., a gleyed color or mottled with a matrix of low chroma indicating a relatively consistent fluctuation between aerobic and anaerobic conditions), and
- Hydrologic characteristics must indicate that the ground is saturated to within 12 inches of the surface for at least 5% of the growing season during a normal rainfall year.

Certain activities in wetlands or waters of the United States are automatically authorized by COE or granted a nationwide permit, provided they meet specific conditions. All impacts of 10 acres or more and aggregate wetland impacts greater than 1 acre require an individual permit. The permitting process entails consultation with federal agencies, public notice, and preparation of a project alternatives analysis in accordance with guidelines issued by the U.S. Environmental Protection Agency (EPA). EPA's guidelines are used as the primary environmental criteria for evaluating the necessity of the proposed activity and for determining the least damaging feasible alternative appropriate mitigation for unavoidable impacts. In accordance with the provisions of Section 404, Fish and Wildlife Coordination Act, and, if federally listed species are present, Section 7 of the ESA, COE also is required to consult with USFWS prior to acting on a permit.

The Lake Mathews MSHCP/NCCP assumes that projects that would remove or modify regulated wetlands would be subject to case-by-case review and approval under the provisions of the Clean Water Act. The Lake Mathews Plan also provides a framework for coordinating authorized wetland enhancement in the Multiple Species Reserve.

B. California Wildlife and Habitat Conservation Laws

State conservation laws that most directly pertain to the Lake Mathews MSHCP/NCCP include the California ESA, Native Plant Protection Act, NCCP Act, and streambed alteration laws.

1. California Endangered Species Act

The California ESA is part of the California Fish and Game Code. Key sections that pertain to the Lake Mathews MSHCP/NCCP include:

- Sections 2070-2079, which cover the state listing process;
- Section 2080, which prohibits the taking, importation, or sale of state-listed species;
- Sections 2081 and 2053, which authorize California Department of Fish and Game (CDFG) to allow take that is for scientific, educational, or management purposes through MOUs and specify state policy regarding projects with impacts to listed species; and

- Sections 2090-2097, which cover the state consultation process.

a. Sections 2070-2079

Sections 2070-2079 of the California ESA specify the process by which species are proposed for listing as threatened or endangered or as candidates for such listing. Unlike the federal law, however, the state law does not specify factors that could trigger a listing. Instead, state law requires the CDFG to recommend and the Fish and Game Commission to adopt criteria for determining a species' status.

The Lake Mathews MSHCP/NCCP anticipates the future state listing of species known or expected to occur in the Plan Area and encompasses habitat occupied by two state-listed species (SKR and Swainson's hawk). It also should be noted that the Lake Mathews Plan is intended to help achieve the goal of the NCCP program, which is to preserve natural communities in a way that will preclude the need to list certain species as threatened or endangered.

b. Section 2080

Similar to Section 9 of the federal ESA, Section 2080 of the state law prohibits the import, export, take, possession, purchase, or sale of listed species unless explicitly authorized by other provisions of the law. However, the state restrictions on take differ from those under federal law in two key ways:

1. Take is defined simply as "to hunt, pursue, capture, or kill or attempt the same" and the terms "harm" or "harass" are not used and
2. Take of species designated as candidates for state listing is prohibited for the 1-year period during which the final listing decision is made (federal law does not prohibit the taking of species proposed for federal listing).

In the Lake Mathews MSHCP/NCCP, where state and federal definitions of take differ, the more restrictive of the two has been applied.

c. Sections 2081 and 2053

Section 2081 authorizes CDFG to enter into MOUs with "individuals, public agencies, universities, zoological gardens, and scientific or educational institutions to import, export, take, or possess species for scientific, educational, or management purposes." In general, a 2081 MOU is similar to an implementing agreement for a 10(a) permit in that it is a legal contract with CDFG regarding implementation of conservation and mitigation measures.

The state ESA, however, does not specify the contents of or approval criteria for such MOUs other than the requirement that they can be approved only if they comply with Section 2053. Section 2053 stipulates that:

. . . it is the policy of the state that state agencies should not approve projects as proposed which would jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat essential to the continued existence of those

species, if there are reasonable and prudent alternatives available consistent with conserving the species or its habitats which would prevent jeopardy.

Furthermore, it is the policy of the state and the intent of the Legislature that reasonable and prudent alternatives shall be developed by the department, together with the project proponent, and the state lead agency, consistent with conserving the species, while at the same time maintaining the project purpose to the greatest extent possible.

If the species also is federally listed, CDFG's practice has been to accept an HCP prepared for a federal 10(a) permit as the basis for the MOU if it contains information that is sufficient for purposes of Section 2081 and 2053. Following review by both CDFG and the State Legal Advisors Office, the MOU is signed by the director of CDFG.

The Lake Mathews MSHCP/NCCP is designed to demonstrate consistency with the terms and conditions of an existing 2081 MOU between CDFG and the RCHCA for take of SKR. Authorization for take of state-listed species for future projects and in event of future listings is being sought pursuant to Section 2835 of the NCCP Act.

d. Sections 2090-2097

Sections 2090-2097 of the state ESA require state lead agencies to consult with CDFG on projects with potential impacts to state-listed species and incorporate by reference Section 21104.2 of California Environmental Quality Act (CEQA). (CEQA requires state lead agencies to consult with and obtain written findings from CDFG when preparing an environmental impact report [EIR] for a project that affects a state-listed species.) These sections also require CDFG to coordinate consultations with USFWS for actions involving federally as well as state-listed species and, whenever possible, to adopt the federal biological opinion as its findings in such consultations.

To make its written findings on projects involving listed species, CDFG requires that the following information be presented:

1. A full description of the project area and project impact area, including maps
2. Known and potential distribution of endangered and threatened species in the project area and project impact area, based on recent field surveys conducted in compliance with Fish and Game guidelines
3. Additional information on the species' distribution and habitat, based upon literature, scientific data review, and discussions with experts
4. Analysis of possible effects of the proposed project on listed species, including cumulative effects
5. Analysis of alternatives designed to reduce or eliminate impacts to endangered and threatened species

A specific format for the data is not stipulated, but the information must be presented clearly. CDFG then applies the following questions to the project:

1. Would a viable or recoverable population be eliminated, or would a significant proportion of a population be adversely affected by the project or the project's effects?
2. Would the range of the species be significantly diminished by the project?
3. Would habitat used by the species be reduced in quantity or quality by either the immediate or future effects of the project?
4. Would a species' access to its habitat be reduced or rendered more hazardous as a result of the project?
5. Would the project adversely affect current or future efforts at providing protection for the species?
6. Would plans for recovery or eventual delisting of the threatened or endangered species be adversely affected by the project?
7. Would the project interfere with reproductive or other behavior of the endangered or threatened species?
8. Would the project cause extinction of the species?

To support a no jeopardy finding, the answers to all of the questions must be no. A yes answer to any of the questions is considered the basis for an initial assumption that a threatened or endangered species would be jeopardized. Final determination of whether or not jeopardy would occur is based on the degree to which the project would increase the risk of extinction, limit options for immediate protection, or decrease the likelihood of future recovery.

For planning purposes, the questions posed in the 2090 consultation have been used to scope potential impacts of the projects covered by the Lake Mathews MSHCP/NCCP. Further, the Lake Mathews MSHCP/NCCP contains the information and analysis needed for CDFG to make written findings regarding the effects on the Target Species.

2. Native Plant Protection Act

The Native Plant Protection Act includes measures to preserve, protect, and enhance rare and endangered native plants. The definitions of "rare" and "endangered" in the Native Plant Protection Act differ from those in the state ESA, but the list of protected native plants encompasses ESA candidate, threatened, and endangered species. The Native Plant Protection Act also includes its own restrictions on take, stating that "[n]o person shall import into this state, or take, possess, or sell within this state" any rare or endangered native plant, except as provided in the act. The exception is where a land owner has been notified of the presence of a protected plant by CDFG and is required to notify CDFG at least 10 days in advance of changing land uses to allow CDFG an opportunity to salvage the plants. Salvaging typically is planned and authorized in connection with consultations triggered by Sections 2090-2097 of the state ESA and Section 21104.2 of CEQA.

In the Lake Mathews MSHCP/NCCP, the Native Plant Protection Act has been assumed to apply to all state-listed and federally listed plants and all candidates for such listing in areas encompassed by the Lake Mathews Plan.

3. Natural Community Conservation Planning Act

The NCCP Act was approved in 1991 and added to the Fish and Game Code as Sections 2800-2840. In general, the act authorizes the preparation and approval of conservation plans for communities of plants and wildlife, with Section 2835 explicitly providing for the authorization of take of listed species covered by such plans. Currently, the NCCP program is focused on the coastal sage scrub community in southern California, which includes a broad range of sensitive plant and wildlife species.

a. Purpose and Focus

The primary purpose of NCCP program is to preserve local and regional biological diversity, reconcile urban development and wildlife needs, and meet the objectives of the state and federal ESAs by conserving habitat before species are on the brink of extinction. As stated in the planning and conservation guidelines prepared by CDFG and the Scientific Review Panel (SRP) appointed as technical advisors, the NCCP process is designed to:

- Promote coordination and cooperation among public agencies, landowners, and other private interests;
- Provide a mechanism whereby landowners and development proponents can effectively participate in the resource conservation process;
- Provide a regional planning focus which can effectively address cumulative impact concerns, minimize habitat fragmentation, and promote multiple species management and conservation;
- Provide an option for identifying and ensuring appropriate mitigation for impacts on fish and wildlife;
- Promote the conservation of broad-based natural communities and species diversity; and
- Provide for efficient use and protection of natural and economic resources while promoting greater public awareness of important elements of the state's critical resources.

As also stated in the guidelines, the NCCPs are intended to:

1. Protect sufficient coastal sage scrub habitat to ensure the long-term survival of designated "target" species associated with the habitat;
2. Be based on biological data on the distribution, abundance, and habitat requirements of the designated target species;
3. Include habitat enhancement and protection measures for small as well as large parcels of lands; and

4. Satisfy the requirements of the federal and state ESAs for any listed species.

The "target" species recommended by the SRP include, but are not limited to, the coastal California gnatcatcher, the cactus wren, and the orange-throated whiptail. The SRP also has identified other sensitive species associated with coastal sage scrub habitat and has prepared biological field survey guidelines for use in the planning process.

The Lake Mathews MSHCP/NCCP is designed to fulfill the objectives of the NCCP program on Metropolitan's Lake Mathews properties, which were enrolled in the NCCP program as part of an Ongoing Multi-species Plan (see below).

b. Subregional NCCPs and Ongoing Multi-species Plans

CDFG guidelines recommend that conservation planning for coastal sage scrub communities be conducted in a series of 10 to 20 subregions through a process that:

- Encourages maximum cooperation between landowners, local governments, and conservation interests and
- Allows local governments to adapt the NCCP process to their existing administrative processes relating to plan preparation, public participation, public hearing, and environmental review.

In general, the planning process entails six steps:

1. Enrollment of local governments and landowners in the NCCP program;
2. Designation of NCCP subregional boundaries by local governments and landowners who have enrolled in the NCCP program, with each subregion of sufficient size and diversity to meet the guidelines set by the SRP and CDFG;
3. Establishment of a coordinated process for the preparation, review, and approval of each subregional NCCP, with the process specified in a planning agreement signed by the participating local agencies, landowners, CDFG, and USFWS;
4. Formulation of the conservation plan through a public planning process, with opportunities for public participation that equal or exceed those provided by existing ordinances, public notice and hearing requirements, and related laws;
5. Preparation and approval of an implementing agreement that specifies all terms and conditions of activities under the NCCP plan; and
6. Preparation of appropriate CEQA and NEPA documentation for the actions to be taken on the plan, with the lead agency responsibilities and type of documentation identified in the planning agreement.

The guidelines do not specify a format for individual plans but require that the following components be included:

1. Maps and text that clearly present (a) the boundaries and extent of the area included in the subregional NCCP, (b) existing coastal sage scrub habitat within the subregion, (c) the distribution of target species populations within the subregion and the presence of other sensitive species, (d) quantitative and qualitative assessments of the coastal sage scrub habitat required by the designated target species, and (e) proposed land uses or other activities that would affect coastal sage scrub habitat.
2. A habitat conservation and management component that includes (a) a range of habitat protection and management options that have been evaluated for their effectiveness; (b) criteria for habitat conservation and mitigation that treat all of the target species as listed species; (c) policies for habitat protection and management, including short-term and long-term actions to mitigate identified impacts; (d) evaluations of potential alternatives to planned development or other activities that would result in incidental take of target species; and (e) a recommended habitat conservation plan.
3. An implementation component that includes (a) a phasing program designed to assure the long-term protection of habitat and open space corridors over time, (b) funding measures, (c) a mitigation monitoring program that satisfies CEQA requirements and is adequate to measure the effectiveness of plan implementation, and (d) procedures to address the effects of unforeseen circumstances.

The guidelines also recognize pre-existing conservation planning efforts as NCCP equivalents, provided that the following four conditions are met:

1. The planning effort was funded and underway at the time that the NCCP Act became effective (January 1, 1992) as documented by a memorandum of understanding, an agreement, a statutory exemption, or other formal process.
2. The plan protects coastal sage scrub habitat and/or contains an mitigation agreement approved by CDFG pursuant to a prior planning effort, and the plan substantially achieves the objectives of the NCCP Act, meaning that the plan provides assurance that coastal sage scrub habitat and named species will be protected to a degree substantially equivalent to an NCCP prepared under the guidelines.
3. CDFG approves the plan, and the plan meets Section 2081 requirements for named species of concern.
4. USFWS approves the plan, and it provides the equivalent of Section 10(a) HCP requirements for the named species of concern.

Such efforts are termed "ongoing multi-species plans" (OSMPs) and may differ from subregional NCCPs in one or more of the following ways:

1. The plan covers species and habitats in addition to those in the coastal sage scrub community,

2. The boundaries of the planning area are different from those for NCCP subregions (but have been previously approved by CDFG and do not significantly impair long-term opportunities for conserving coastal sage scrub regionwide),
3. Survey methodologies differ from NCCP guidelines but have been approved by CDFG, and
4. Timing requirements differ from the target NCCP milestones.

The Lake Mathews MSHCP/NCCP qualifies as an OMSP because it meets the timing and other provisions stated in the guidelines. Specifically, the Lake Mathews Plan qualifies because:

1. Agreements between Metropolitan and CDFG dated October 23, 1979, and September 14, 1982, provide for cooperative planning and implementation of a habitat management program on Metropolitan's Lake Mathews properties;
2. The lands proposed for conservation is part of a reserve study area established under a 2081 agreement with CDFG and an HCP approved by USFWS in 1990;
3. Metropolitan has enrolled its Lake Mathews properties in the NCCP program (see enrollment letter in Volume III);
4. The Lake Mathews Plan provides for the conservation of coastal sage scrub habitat and interrelated grassland and other habitats within a subregional focus area identified for the NCCP program;
5. The Lake Mathews Plan is designed to meet Section 2081 and Section 10(a) requirements for target species;
6. The survey methodologies and habitat evaluation process used in plan preparation were reviewed by USFWS and CDFG and have been used in plans previously approved by both agencies; and
7. Both USFWS and CDFG have participated in plan preparation.

c. CSS Conservation Strategy

Following publication of a draft 4(d) rule regarding the coastal California gnatcatcher, CDFG issued draft recommendations for an interim coastal sage scrub (CSS) conservation strategy. The strategy subsequently has been modified and adopted as part of the NCCP process guidelines.

In general, the strategy is to minimize short-term loss of coastal sage scrub habitat until a long-term enhancement and conservation program is formulated. Under this strategy, interim loss would be limited to 5% of the coastal sage scrub habitat in any subregion. Implementation of the strategy would occur in the following sequence:

1. In each subregion where an NCCP would be prepared, a planning body would be established according to the approved NCCP process guidelines.
2. Working in consultation with USFWS and CDFG, the subregional planning body would define the boundaries of the area to be included in the subregional NCCP.
3. An inventory of coastal sage scrub habitat and species would be completed for the subregion.
4. All natural lands within the subregion would be evaluated for their long-term conservation based on the method described below.
5. The amount of coastal sage scrub within the subregion would be calculated, verified by USFWS and CDFG, and used to compute the allowable 5% interim loss.
6. A central clearinghouse for data on habitat loss would be established within the subregion, and that entity would advise the local land use jurisdictions, USFWS, and CDFG regarding actual and anticipated impacts to coastal sage scrub within the subregion.
7. Interim mitigation requirements would be established for all development of coastal sage scrub habitat, either through a subregional NCCP planning agreement or other written document requiring the concurrence of USFWS and CDFG.
8. The subregional planning body would work to identify and fill data needs for long-term planning using SRP conservation guidelines in the process.
9. The subregional NCCPs would then be completed according to the approved process guidelines.

The Lake Mathews MSHCP/NCCP provides for the permanent conservation and management of the habitats in the Multiple Species Reserve. In this regard, it is a long-term, ongoing conservation strategy, not an interim approach. However, nothing in the Lake Mathews Plan would preclude development and implementation of an interim strategy for other lands in western Riverside County, including habitats adjoining the Plan Area.

d. NCCP Habitat Evaluation Process

NCCP guidelines for the evaluation of the long-term conservation value of CSS recommend that all lands with natural habitats be included in the analysis, including forestlands, brushlands, native and non-native grasslands, non-irrigated grazed land, and vacant or disturbed natural land. Lands subject to intensive agricultural and urban uses would be excluded. Coastal sage scrub would be identified based on the presence of primary or secondary cover characteristics as defined in planning guidelines. The effective size of coastal sage scrub patches would then be determined by assays of relatively continuous natural habitat and relatively dense clusters of coastal sage scrub within a 1- or 2-mile-diameter circle. Proximity to other habitat patches would be measured as a direct, straight-line distance, with the appropriate scale determined for each subregion.

Landscape linkages also would be determined by drawing geometric corridors that connect each higher value area to the closest two or three other higher value areas. The presence of species also would be taken into account, with higher value assigned to areas that support significant populations of target species, highly endemic species, or rare subhabitat types.

In this way, areas within an NCCP subregion would be determined to have higher, intermediate, or lower potential value for long-term conservation. Development would be constrained on the higher value area until the NCCP is completed; development in intermediate areas would be evaluated on a case-by-case basis; and development on lower potential areas would be allowed with appropriate mitigation.

The habitat evaluation resulting from the "habitat quality assessment" methodology used in the Lake Mathews MSHCP/NCCP achieves the same purposes of the NCCP approach.

4. Streambed Alteration Laws

Sections 1600-1603 of the California Fish and Game Code regulate all diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake in California that supports fish or wildlife. "Stream" is defined in CDFG regulations as:

. . . a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life. This includes watercourses having surface or subsurface flow that supports or has supported riparian vegetation.

CDFG jurisdiction within altered or artificial waterways is based on the value of those waterways to fish and wildlife and generally mirrors that of COE under Section 404 of the federal Clean Water Act.

Under state law, CDFG must be contacted for a streambed alteration agreement for any project that may impact a streambed or wetland. CDFG has maintained a "no net loss" policy regarding potential impact and has required recreation of wetlands on at least an acre-for-acre basis. Replacement ratios typically are higher than one-for-one in order to offset the immediate loss, replacement time, and inherent failures in mitigation attempts. Public agency projects are addressed under Section 1601 of the code; private sector projects are addressed under Section 1603.

The Lake Mathews MSHCP/NCCP assumes that projects that would remove or modify regulated wetlands would be subject to case-by-case review and approval under the provisions of Section 1603. The Lake Mathews Plan also provides a framework for coordinating authorized wetland enhancement in the Multiple Species Reserve.

C. Federal and State Environmental Documentation Requirements

Both federal and state laws regarding the documentation and analysis of environmental impacts pertain to the Lake Mathews Plan.

1. National Environmental Policy Act

The National Environmental Policy Act (NEPA) requires federal agencies to evaluate the effects of their proposed actions on the human environment in a written statement that addresses:

1. The environmental impact(s) of the proposed action,
2. Any adverse environmental effects that cannot be avoided should the proposed action be implemented,
3. Alternatives to the proposed action,
4. The relationship between short-term uses of the human environment versus the maintenance and enhancement of long-term productivity, and
5. Any irreversible and irretrievable commitments of resources that would be involved if the proposed action is implemented.

Compliance with NEPA generally begins with an internal "scoping" process. If a preliminary review indicates that the proposed action has no or minimal environmental impacts, then a "categorical exclusion" may be determined and no further environmental documentation is required. If the review indicates that the proposed action may have significant effects, then an environmental assessment (EA) or an environmental impact statement (EIS) must be prepared. An EA is prepared when the preliminary review indicates that the proposed action is not likely to have significant impacts; an EIS is prepared when the expected impacts are significant.

Appropriate NEPA documentation for USFWS's action on the Lake Mathews MSHCP/NCCP will be prepared jointly with that required under state law for local and state agency actions on the Lake Mathews Plan.

2. California Environmental Quality Act

Similar to NEPA, CEQA requires state agencies empowered to make discretionary decisions to evaluate the environmental effects of a proposed project before rendering a decision. The evaluation begins with an initial study that includes:

1. A description of the project, including the location of the project;
2. An identification of the environmental setting;

3. An identification of environmental effects by use of a checklist, matrix, or other method;
4. A discussion of ways to mitigate the significant effects identified, if any;
5. An examination of whether the project would be consistent with existing zoning, plans, and other applicable land use controls; and
6. The name of the person or persons who prepared or participated in the Initial Study.

If one or more significant impacts are identified, a detailed EIR must be prepared. If no significant impacts are determined or if all of the significant impacts can be mitigated, a negative declaration is prepared. CEQA also requires that a negative declaration or draft EIR be prepared if a project has statewide, regional, or areawide significance and defines projects that would substantially affect sensitive habitats as projects of areawide significance.

CEQA documentation for Metropolitan's and the RCHCA's actions on the Lake Mathews MSHCP/NCCP will be prepared jointly with the NEPA documentation for USFWS's actions. The joint CEQA/NEPA document also will be considered by CDFG in its actions.