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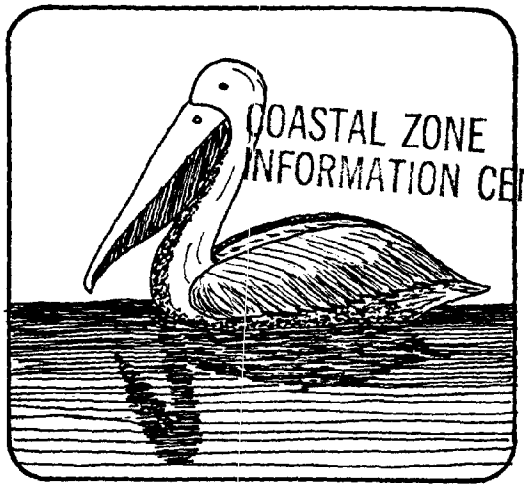

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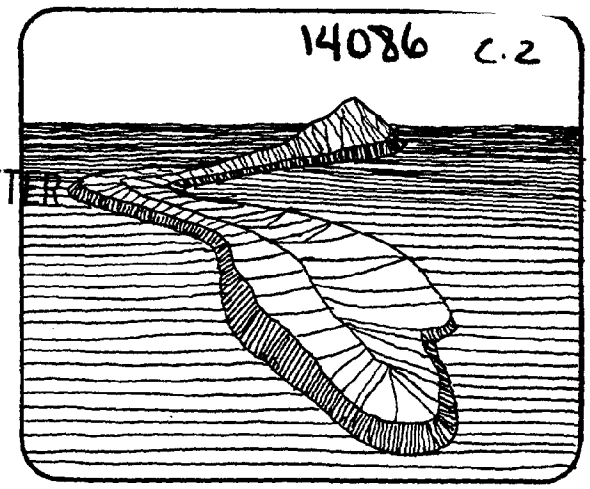

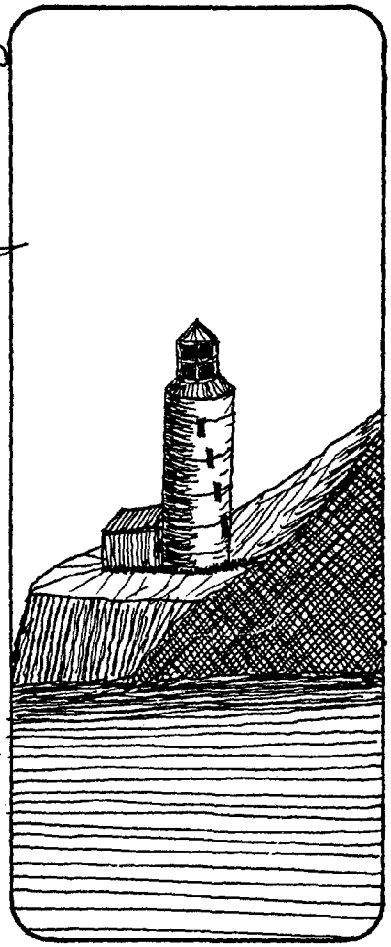

FINAL ENVIRONMENTAL IMPACT STATEMENT ON THE PROPOSED CHANNEL ISLANDS MARINE SANCTUARY

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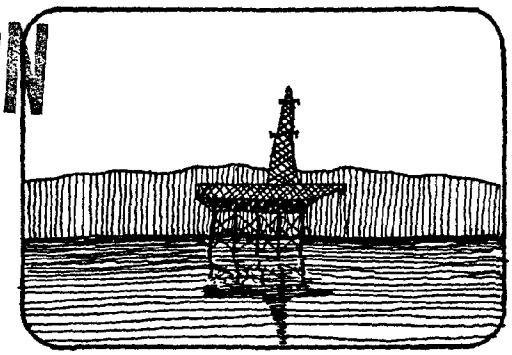

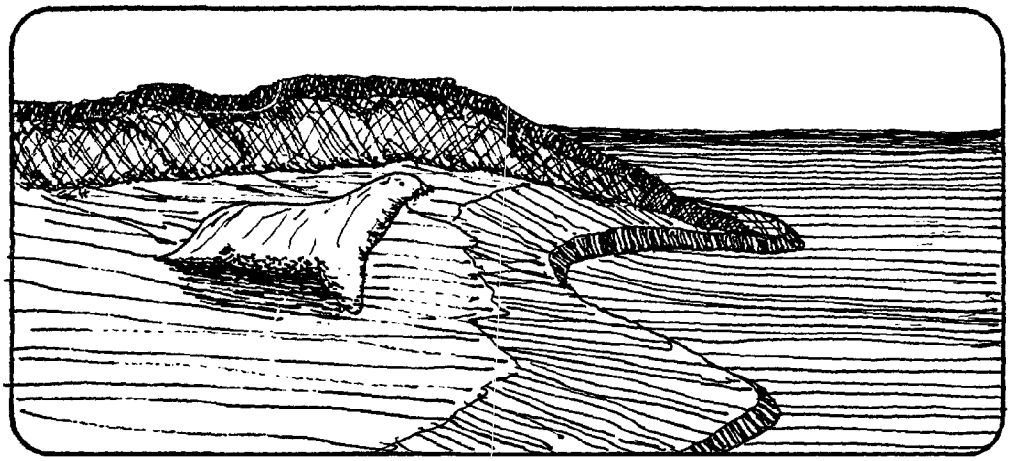

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FINAL ENVIRONMENTAL IMPACT STATEMENT

Prepared on the Proposed Channel

Islands Marine Sanctuary

May 1980

U.S. Department of Commerce
National Oceanic and Atmospheric
Administration
Office of Coastal Zone Management
3300 Whitehaven Street, NW
Washington, D.C. 20235

CZIC COLLECTION

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Office of Coastal Zone Management

QH91.75.U53 1980

DESIGNATION: FINAL ENVIRONMENTAL IMPACT STATEMENT

TITLE: Proposed Channel Islands Marine Sanctuary

ABSTRACT: The National Oceanic and Atmospheric Administration proposes the designation of the waters surrounding the four northern Channel Islands and Santa Barbara Island as a marine sanctuary. The proposed sanctuary would extend six nautical miles seaward from the mean high tide line. If these waters are designated as a marine sanctuary, the following activities would be subject to the proposed regulations described in this document: oil and gas operations, discharging or depositing any substance, alteration of or construction on the seabed, navigation and operation within one nautical mile of the Islands of vessels not engaged in fishing, kelp harvesting, research, recreation, military activities, or enforcement, aircraft overflights below 1000 feet within one nautical mile of the Islands, and removing or otherwise deliberately harming cultural resources. All regulations shall only be applied consistent with international law. Activities necessary for national defense or to respond to an emergency threatening life or property are not prohibited.

Alternatives to the proposed action include no marine sanctuary designation, modification of the sanctuary boundaries, and more stringent and less stringent regulations.

LEAD AGENCY: U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Office of Coastal Zone Management

CONTACT: JoAnn Chandler
Sanctuary Programs Office
Office of Coastal Zone Management
3300 Whitehaven Street, N.W.
Washington, D.C. 20235
202/634-4236

TABLE OF CONTENTS

		Page
A.	Cover	
B.	Note to the Reader	B-1
C.	Summary	C-1
D.	Purpose and Need for Action	D-1
E.	Description of the Affected Environment	E-1
	1. General Overview of the Nominated Area	E-1
	a. Location	E-1
	b. Environmental Setting	E-3
	2. Natural Resources of Exceptional Value	E-11
	a. Marine Mammals	E-11
	b. Marine Birds	E-29
	c. Fish and Plant Resources	E-45
	d. Intertidal Organisms	E-52
	e. Cultural and Historic Resources	E-55
	3. Human Activities	E-59
	a. Introduction	E-59
	b. Oil and Gas Activities	E-59
	c. Commercial and Recreational Fishing and Plant Harvesting	E-70
	d. Commercial Shipping	E-78
	e. Military Operations	E-87
	f. Research	E-90
	g. Recreation	E-90
F.	Alternatives	F-1
	1. Status Quo Alternative	F-1
	a. Introduction	F-1
	b. Existing Management Authorities	F-6
	c. Environmental Consequences	F-50
	2. Alternative 2--the preferred alternative	F-61
	a. Introduction	F-61
	b. Management	F-63
	c. Regulated Activities	F-70
	1. Hydrocarbon operations	F-71
	2. Discharges of polluting substances	F-116
	3. Alteration of or construction on the seabed	F-118
	4. Operation of commercial vessels	F-119
	5. Disturbing marine mammals and birds by overflights	F-124
	6. Removing or damaging historical or cultural resources	F-125
	d. Other Regulations	F-126

Page

3. Alternative 3 F-131

4. Alternative 4 F-146

5. Alternative 5 F-157

6. Alternative 6 F-160

G. Comments on the Draft Environmental Impact Statement and NOAA's Responses

H. Literature and Personal Communications Cited H-1
a. References H-1
b. Personal Communications H-12

I. List of Preparers I-1

J. Appendices J-1

Appendix 1. Proposed final designation document and proposed proposed regulations

Appendix 2. Fish and shellfish species of commercial and recreational interest in the waters around the northern Channel Islands and Santa Barbara Island

Appendix 3. Brief review of the outer continental shelf (OCS) oil and gas development process

Appendix 4. BLM special stipulations for Sale #48

Appendix 5. Summary of USGS Pacific OCS orders and notices to lessees

Appendix 6. Analysis of the economic impacts of the proposed Channel Islands sanctuary regulations

Appendix 7. Distribution list for the Channel Islands FEIS

LIST OF FIGURES

		Page
C-1	Preferred marine sanctuary	C-7
E-1	Location of Southern California Bight	E-2
E-2	Generalized water current patterns during upwellings	E-6
E-3	Generalized water current patterns for oceanic period	E-7
E-4	Generalized water current patterns for Davidson period	E-8
E-5	Santa Barbara Channel region physiographic features	E-10
E-6	Pinniped breeding and haulout areas on San Miguel Island	
	a. Callorhinus ursinus	E-14
	b. Zalophus californianus	E-15
	c. Phoca vitulina	E-16
	d. Mirounga angustirostris	E-17
E-7	Migration routes of the gray whale in the nominated area	E-28
E-8	Distribution of bird nesting colonies on San Miguel Island	E-36
E-9	Distribution of bird nesting colonies on Santa Cruz Island	E-37
E-10	Distribution of bird nesting colonies on Santa Rosa Island	E-38
E-11	Distribution of bird nesting colonies on Anacapa Island	E-39
E-12	Distribution of bird nesting colonies on Santa Barbara Island	E-40
E-13	Diversity of fish species along the Pacific coast	E-47
E-14	Distribution of kelp beds in the northern Channel Islands and Santa Barbara Island region	E-49
E-15	Underwater diagram of a kelp bed	E-50
E-16	Known marine cultural resources	E-58
E-17	Tracts withdrawn from OCS Sale #48 by the Secretary of the Interior	E-63
E-18	Existing leases and operators and tracts offered in Sale #48 in the Northern Channel Islands area	E-64
E-18a	Tracts leased in OCS Sale #48	E-65
E-19	Existing lease numbers and all tract numbers proposed for Sale #48	E-66
E-20	Mean annual fish landings (1970 to 1974) around the northern Channel Islands and Santa Barbara Island	E-71
E-21	Cumulative density of partyboat fishing landings between 1973 and 1975	E-80
E-22	Cumulative density of anglers fishing from partyboats in the southern California partyboat fleet	E-81
E-23	Vessel traffic lanes	E-83
E-24	Recreational boating concentrations and access routes around the northern Channel Islands and Santa Barbara Island	E-95
E-25	Popular skin and SCUBA diving sites	E-98
F-1	Existing federal and state management authorities as they relate to resources and activities	F-4
F-2	Ecological reserves	F-10

		Page
F-3	San Miguel Island ecological reserve	F-12
F-4	Anacapa Island ecological reserve	F-14
F-5	Santa Barbara Island ecological reserve	F-16
F-6	Boundaries for alternative 2--the preferred marine sanctuary	F-62
F-7	Existing leases and operators, and tracts offered in Sale #48, in the northern Channel Island area	F-75
F-7a	Tracts leased in OCS Sale #48	F-76
F-8	Existing leases and tracts subject to Sale #48	F-77
F-8a	Tract numbers in the immediate vicinity of the northern Channel Islands	F-78
F-9	Potential oil spill trajectories	F-93
F-10	Hypothetical spill locations from proposed Sale #48 leases	F-98
F-11	Hypothetical spill locations from existing leases	F-99
F-12	Hypothetical spill locations which correlate with tracts withdrawn from Sale #48	F-100
F-13	Locations of Clean Seas, Inc.--the oil spill cooperative for the northern Channel Islands area	F-104
F-14	Santa Barbara Channel traffic separation scheme (TSS) and the 1 nmi (1.8km) prohibition zone	F-122

LIST OF TABLES

		Page
E-1	Marine mammals of the Southern California Bight	E-12
E-2	Pinniped rookery and haulout areas	E-18
E-3	Summary of ecological information for seals, sea lions, and sea otters	E-20
E-4	Approximate times of pinniped activity in the study area	E-22
E-5	Historical species accounts and ecological information for cetaceans	E-25
E-6	Marine avifauna of the Southern California Bight	E-30
E-7	Marine birds sighted or reported near the nominated area	E-31
E-8	Known marine bird colonies in the nominated area	E-35
E-9	Numbers of seabird pairs on the California Channel Islands in 1975	E-41
E-10	Frequency of bird sightings for all species	E-44
E-11	Intertidal species of the nominated area	E-53
E-12	Shipwrecks recorded in the nominated area	E-57
E-13	Milestones in Santa Barbara Channel and the northern Channel Islands area oil and gas development	E-60
E-14	Estimated oil and gas reserves for currently leased tracts in Southern California Bight	E-62
E-15	Platforms in the Santa Barbara Channel area	E-68
E-16	Number of wells drilled on existing leases in the vicinity of the northern Channel Islands and Santa Barbara Island	E-69
E-17	Commercial fish landings for selected species caught off the northern Channel Islands and Santa Barbara Island between 1971 and 1975	E-73
E-18	1975 commercial fish landings by species around the northern Channel Islands and Santa Barbara Island	E-74
E-19	Kelp harvests off the northern Channel Islands and Santa Barbara Island between 1974 and 1978	E-79
E-20	Commercial passenger fishing vessel catch in numbers of fish for the northern Channel Islands between 1970 and 1974	E-79
E-21	Commercial passenger fishing vessel catch in numbers of fish for Santa Barbara Island between 1970 to 1974	E-79
E-22	Major research organizations which have or are likely to conduct marine related scientific investigations on the coastal ocean environment in southern California	E-91
E-23	Research funding entities with potential or demonstrated relevance to the northern Channel Islands and Santa Barbara Island waters	E-92

		Page
F-1	Summary of boundary, activity regulation, and management alternatives for a marine sanctuary designation, exclusive of the status quo alternative	F-2
F-1a	Abbreviations of authorities and agencies	F-5
F-2	Catch restrictions for species of commercial fish in the northern Channel Islands area	F-19
F-3	EPA effluent guidelines and standards for far offshore oil and gas extraction facilities	F-35
F-4	Summary of potential hazards to marine mammals, seabirds, and marine organisms resulting from offshore oil resource development and production	F-73
F-5	Potential oil and gas development impacts mitigated by NOAA's preferred marine sanctuary	F-74
F-6	Seabird species most vulnerable to impacts related to OCS oil resource exploitation	F-87
F-7	Probability of contact by one or more 1000 bbl. spills between 1979 and 2000	F-92
F-8	Probabilities (in percent) that an oil spill starting at a particular location will reach in three days: (1) major haulout and breeding areas and (2) seabird breeding areas	F-96
F-9	Oil spill recovery equipment in the vicinity of the northern Channel Islands	F-97

B. Note to the Reader

The major segments of this FEIS are Section E, the Description of the Affected Environment, which presents a review of the resources and activities in the Channel Islands area; Section F, Alternatives, which discusses the preferred alternative of designating a marine sanctuary and regulating certain activities, and five other alternatives including a status quo or no action alternative; and the summaries of comments received on the DEIS and NOAA's responses in Section G. Certain additional documentation is appended. Particular attention should be paid to the proposed Designation Document and the proposed regulations presented in Appendix 1. A compendium of the full written comments received by NOAA is included in a separate volume. This compendium is being mailed to all the commenters and Federal contacts and is available from NOAA upon request.

Citations are referenced in the text by the name of the author or source in parentheses. Section H, Literature and Personal Communications Cited, contains detailed information on both documentary references and personal communications.

C. Summary

Introduction

The Marine Protection, Research and Sanctuaries Act of 1972 (16 U.S.C. 1431-1434) authorizes the Secretary of Commerce, after consultation with appropriate Federal agencies, concurrence of the affected State, and Presidential approval, to designate ocean areas having distinctive conservation, recreational, ecological, or aesthetic values as marine sanctuaries. In 1977, the National Oceanic and Atmospheric Administration (NOAA) of the Department of Commerce sent out a nationwide letter asking for recommendations of sites appropriate for consideration as marine sanctuaries. The response included several different recommendations for the waters around the northern Channel Islands and Santa Barbara Island. The Resources Agency of the State of California recommended the waters extending 12 nmi (22km) around each of the eight Channel Islands, the National Park Service proposed the waters extending 8 nmi (14.8km) around the northern Channel Islands and Santa Barbara Island, and the County of Santa Barbara proposed the entire Santa Barbara Channel and the waters around the northern Channel Islands and over the Santa Rosa Plateau, but excluding State waters. In June 1978, the County of Santa Barbara followed up its recommendation with a formal nomination.

This Final Environmental Impact Statement (FEIS) proposes the creation of a marine sanctuary in the waters around the northern Channel Islands and Santa Barbara Island extending 6 nautical miles (nmi) (11.1 kilometers (km)) seaward from the mean high tide line. The waters immediately around the islands support an extraordinary assemblage of marine mammals, numerous seabirds including the endangered brown pelican, and important fishery

resources, including kelp and shellfish (see Section E for a discussion of the natural resources). Until recently, the waters around the islands have been left relatively untouched by human activity because of their distance from the populous mainland.

Use of the Santa Barbara Channel is increasing, however, and, based on the unique characteristics of the marine sanctuary program, designation and management of a sanctuary at this site would assist in the preservation of its distinctive ecological and recreational values. Establishment of a marine sanctuary would provide a formal institutional recognition of the national significance of the resources of this site and would focus, over the long term, on the range of actions necessary to preserve these resources. The proposed sanctuary will concentrate on the management of this marine area in a manner which will complement the management of the recently created Channel Islands National Park.

The management of the sanctuary will include research, assessment, education, coordination and regulation. A comprehensive program of this nature does not exist and will not be created in the absence of a sanctuary. Preservation of these marine resources requires an understanding of their condition, both current and evolving. A research, assessment and monitoring program is essential and would be instituted by the marine sanctuary. Funds would be available for the conduct of specific studies and for projects to coordinate and analyze existing data to assist in the decisions concerning sanctuary management. Likewise, the long term preservation of ecological, conservation, and recreational values requires public awareness of the value of the resources and of potential harm to the resources. Users of the proposed sanctuary must be informed and educated in order to reduce harm to sensitive areas. The proposed sanctuary would undertake a variety

of such educational programs. The proposed marine sanctuary would also provide a focus for the coordination of the variety of regulatory actions which state, local and federal agencies already undertake in this area. This coordination, which would occur through a sanctuary advisory committee or some other structure created by mutual agreement, would help assure that complete information concerning the cumulative impacts of activities within the proposed sanctuary is considered as each separate agency pursues its discrete mission and regulatory activities. Finally, through the promulgation of limited additional regulations, the sanctuary would control certain activities which are currently not addressed in a manner most appropriate to the preservation of the special values of this rich marine area.

To determine the desirability and feasibility of proceeding with the designation, NOAA has gathered and analyzed information and consulted with other Federal agencies; State agencies, particularly the California Coastal Commission (CCC); the Pacific Regional Fishery Management Council; and local interest groups. In April 1978, NOAA held a public workshop in Santa Barbara to discuss the sanctuary proposal. An Issue Paper on possible California marine sanctuary sites, including the Channel Islands, was circulated for review and discussion in December 1978. In February and March 1979, the California Coastal Commission (CCC) held regional and State hearings to solicit reaction to the possibility of a marine sanctuary near the Channel Islands. Based on public response and a recommendation by the CCC to develop a draft environmental impact statement (DEIS), NOAA prepared a DEIS which described the proposed action to designate the sanctuary, including draft regulations on activities and uses. NOAA distributed copies of and solicited comments on a preliminary draft of the Description of the Affected Environment (Section E.) and an outline of five designation options and the status quo option in

June, 1979. NOAA held public meetings in Santa Barbara and Ventura to discuss these documents and answer questions about the program.

In November 1979, NOAA issued proposed regulations and the DEIS for public review. NOAA held public hearings on the DEIS in Ventura and Santa Barbara on January 10 and January 11, 1980, and accepted written comments until January 23. The comment period was extended to February 4, 1980, to be consistent with the comment period on the proposed regulations and again to March 7, 1980, to assure receipt and consideration of comments from the maximum number of interested parties.

This final environmental impact statement (FEIS) summarizes and responds to all the comments received through March 7, 1980. It proposes the designation of a marine sanctuary in the waters around the northern Channel Islands and Santa Barbara Island and describes the proposed regulations in this sanctuary. The boundaries and regulations proposed for the Channel Islands Marine Sanctuary are summarized below, discussed in Section F, and set forth in Appendix 1. The changes to the proposal from the preferred alternative in the DEIS are as follows:

1) The regulation of vessel traffic within 1 nmi of the Islands has been rewritten so that it is absolutely clear that fishing, recreational and research vessels are allowed within the Islands' nearshore waters.

2) Airplane overflights for the purpose of surveying kelp beds have been exempted from the prohibition on overflights below 1000 ft. within 1 nmi of the Islands.

3) The harvest of kelp has been exempted from marine sanctuary regulation in the designation document along with fishing.

4) The navigation of vessels within vessel traffic separation schemes and port access routes designated by the Coast Guard outside the Islands' nearshore waters have been exempted from regulation by the Designation.

5) Any amendment to the regulations which significantly alters the extent to which activities are restricted will be automatically considered a direct effect on California's coastal zone for Federal consistency purposes. If California proposes to relax any requirement in State waters, NOAA will propose an amendment to conform the sanctuary regulations unless clearly inconsistent with the purposes of the sanctuary.

The proposed Designation and regulations do not represent a final decision. NOAA will receive comments on this FEIS for thirty days following publication and then consult with Federal agencies. After review and consultation, a decision will be made whether to proceed with the designation. If so, the Secretary of Commerce must obtain Presidential approval of the designation.

The final rules will be promulgated after designation. The Designation and, therefore, the regulations are not effective within State waters for a period of sixty days following publication of the Designation. During this period, if the Governor certifies that the Designation is unacceptable to the State, the sanctuary will not include State waters and the Secretary may withdraw it entirely if it no longer meets statutory and regulatory objectives.

PROPOSAL TO DESIGNATE THE CHANNEL ISLANDS MARINE SANCTUARY

The Office of Coastal Zone Management, which is reponsible for the marine sanctuary program within NOAA, proposes the designation as a marine sanctuary of the waters surrounding the northern Channel Islands and Santa Barbara Island, extending from the mean high tide water line on the four northern Channel Islands (San Miguel Island and adjacent rocks (Castle Rock and Richardson Rock), Santa Cruz Island, Santa Rosa Island, and Anacapa Island) and Santa Barbara Island seaward 6 nmi (11.1km) (see Figure C-1). The exact boundary by coordinates is presented in an appendix to the proposed regulations. The proposed sanctuary encompasses 1252.5 square nautical miles (4286.7km^2).

Designation

The Designation Document (the proposed Designation for the Channel Islands marine sanctuary is presented in Appendix 1) serves as a constitution for the sanctuary. It establishes the boundary and purposes of the sanctuary, identifies the types of activities that may be subject to regulations, specifies the extent to which other regulatory programs will continue to be effective within the sanctuary, and provides a framework for sanctuary management, including research, assessment, education, and coordination. The Designation requires the approval of the President. Its content can be altered only after repeating the entire designation process and securing Presidential approval.

If the designation is adopted, the following activities will be subject to necessary and reasonable regulation:

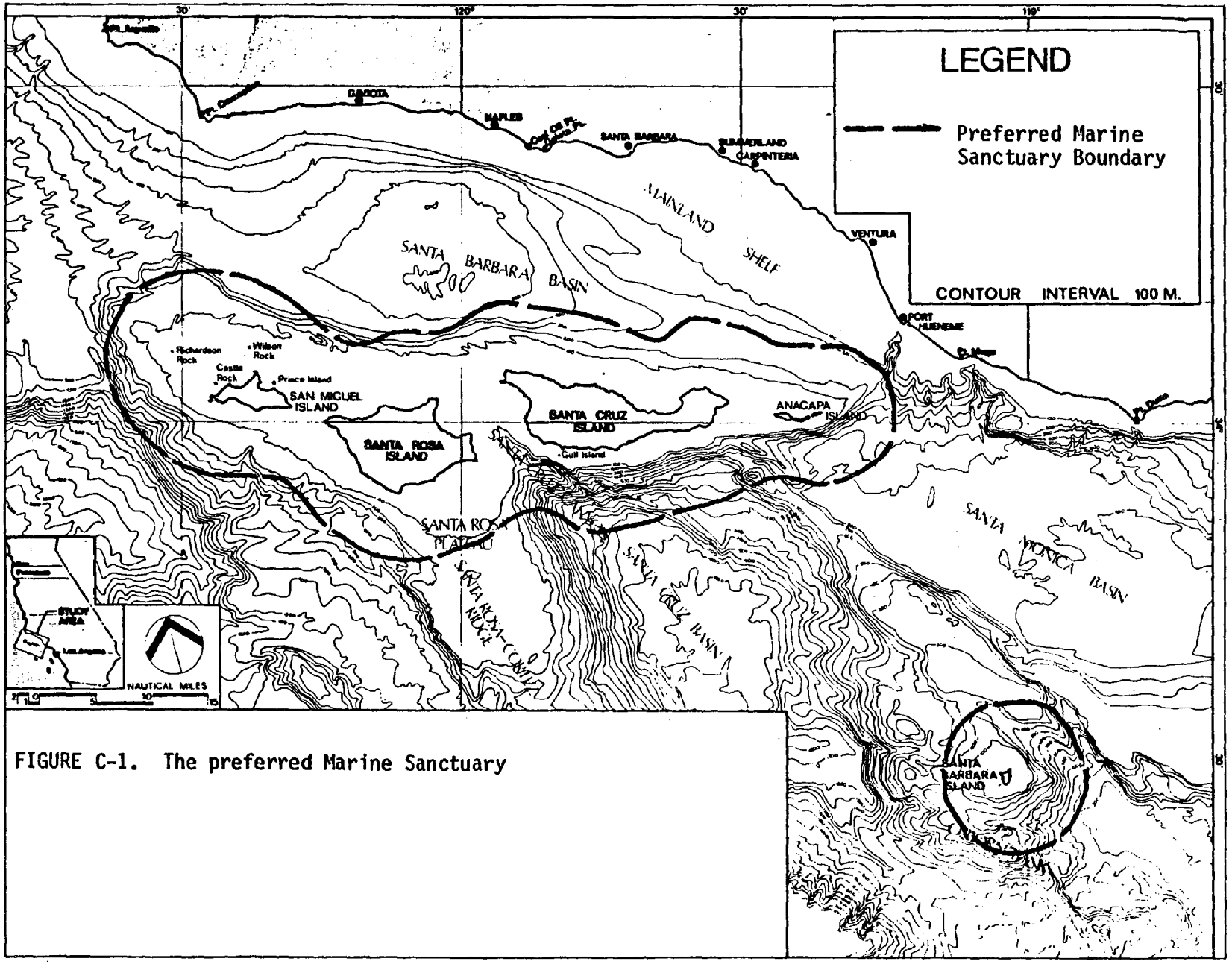

FIGURE C-1. The preferred Marine Sanctuary

-oil and gas operations
-discharging or depositing any substance
-alteration of or construction on the seabed
-navigation (except within a designated VTSS or PAR) and operation of vessels (other than fishing and kelp harvesting vessels) and aircraft over-flights below 1000 ft (305m)
-removing or otherwise deliberately harming cultural or historical artifacts

The proposed restrictions on these activities are set forth in the proposed regulations. NOAA may legally promulgate regulations only in relation to the specific activities listed in the Designation. Article 5 of the proposed Designation specifically exempts fishing and kelp harvesting activities from sanctuary regulation, except that fishing and kelp harvesting vessels may be regulated with respect to discharges.

Management

Management of the marine sanctuary will be designed to preserve the resources of the waters surrounding the northern Channel Islands and Santa Barbara Islands in their present relatively undisturbed state. By integrating education, environmental monitoring, research, and compatible use regulations into a coordinated management strategy, NOAA will insure that the public can derive maximum benefit from the marine sanctuary with a minimum of environmental damage.

If a sanctuary is established, NOAA will emphasize the national importance of the sanctuary's resources. NOAA will establish a Sanctuary Information Center and will promote the public's awareness of sanctuary resources through brochures and other techniques. NOAA will encourage and seek to coordinate research within the sanctuary. Such coordination will not only help to improve the data base on area resources and stimulate information exchange, but also should help to eliminate duplicative research and close data gaps. Sanctuary management will strive also to improve public access. Finally, both resource quality and effects of human activities in the sanctuary will be monitored. These results should aid in further upgrading the management system whenever necessary.

NOAA plans to delegate onsite sanctuary management to an existing authority with regional experience, for example, the California Department of Fish and Game (DFG). The onsite manager will coordinate with other Federal and State agencies, conduct research, monitoring, review permit applications, and make recommendations to NOAA concerning changes in regulations or overall management policies. NOAA will encourage the onsite manager to form an advisory council with representatives from Federal, State, and local agencies, user groups, and citizen associations.

Enforcement and surveillance will be an integral part of the management and protection of the Channel Islands Marine Sanctuary. NOAA is exploring various means of providing enforcement and surveillance; the National Marine Fisheries Service, the U.S. Coast Guard, the National Park Service, and DFG have experience in such operations so NOAA will further explore the possibility of cooperative management with each of these agencies. The parti-

cipation of any enforcement agent will, of course, be subject to continuing discussions and will be affected by the precise scope and content of the final regulations, as well as by other demands and priorities facing NOAA and the other agencies involved.

Under a cooperative agreement with NOAA, DFG is currently gathering information and consulting with other interested agencies to formulate more detailed suggested management programs, addressing research, education, interagency coordination, and access.

DFG will also explore enforcement issues both as they relate to the need for additional resources to enforce existing regulations and to the mechanisms and resources appropriate to enforce the proposed regulations. Some regulations are unlikely to require extensive enforcement activities, such as those relating to hydrocarbon exploration and development and dredging. Others, such as the regulation of discharges, may require surveillance of areas of the proposed sanctuary or intensive education of sanctuary users. The U.S. Coast Guard has indicated its willingness to cooperate to the limits of its normal enforcement activities. The National Park Service and DFG already have a cooperative relationship in relation to enforcement of State regulations in the very nearshore waters around the Islands which is likely to be susceptible to modification to serve the enforcement needs of the sanctuary.

The draft report by DFG should be available for final consultations with other agencies and will be made available for public comment and review when final and prior to the institution of management measures, if the sanctuary is designated.

Proposed Regulations

Specific regulations are proposed as reasonable and necessary for the protection of the natural resources. To the extent possible, the sanctuary managers will coordinate with existing authorities in both the administration and enforcement of the regulations. This coordination may be accomplished in several ways. Agencies may wish to alter their regulations in this area to conform with sanctuary regulations, or they may want to use their review and enforcement capabilities to implement NOAA provisions. Other interagency arrangements to facilitate coordination are possible. Each such step will be the subject of discussion with the individual agency concerned. If no specific arrangements are agreed upon, and more than one regulation affecting certain activities is in effect, all regulations will apply and the most stringent restrictions must be met. These regulations will apply only within the sanctuary boundaries. The full text of the proposed regulations is presented Appendix 1.

The proposed regulations would impose the following controls:

--Hydrocarbon operations

The proposed regulation prohibits any activity for the exploration or exploitation of hydrocarbons (oil and gas) anywhere in the sanctuary pursuant to leases executed on or after the effective date of these regulations. Exploration, production and development pursuant to leases predating the effective date of the regulations and the construction of pipelines are allowed subject to all other proposed sanctuary regulations and all regulations

and conditions imposed by the following entities: the Department of the Interior, the U.S. Coast Guard, the Corps of Engineers, the Environmental Protection Agency, the State of California under the Federal consistency provisions of the Coastal Zone Management Act, and any other State or Federal authority. This activity is permitted subject to the further requirement that certain oil spill contingency equipment is present for such operations (see Section F.2.b.1). The regulations are designed to reduce the risk of contamination of the nearshore resources by spilled oil, and to protect the island shores from visual and acoustic disturbances.

Currently, the Bureau of Land Management and the U.S. Geological Survey regulate hydrocarbon activities on the Outer Continental Shelf (OCS), and the State Lands Commission has responsibility for oil and gas leasing in State waters. The Secretary of the Interior withdrew 24 tracts in the proposed marine sanctuary from leasing in OCS Sale #48, but, absent sanctuary regulations, tracts within the area of the proposed sanctuary may be considered for and offered in future lease sales.

--Discharges

The proposed regulation prohibits all discharges into sanctuary waters, except discharges of indigenous fish waste and chumming materials, effluents from marine sanitation devices, non-polluted cooling waters from ocean-going vessels, and effluents incidental to allowed hydrocarbon operations regulated by the standards imposed in an NPDES permit. Discharges from foreign flag vessels are also prohibited to the extent consistent with international law. The prohibition on discharges will help maintain the water quality in the sanctuary and prevent aesthetic degradation. The exemptions insure that this regulation will not prevent activities

consistent with the goals of the sanctuary.

Existing regulations control through permits some of the present sources of contamination of the ocean waters. Point source discharges are controlled by permits issued by the Environmental Protection Agency (EPA), which also has authority to regulate oil and hazardous substance discharges and ocean dumping. However, discharges may be permitted by EPA in the proposed sanctuary since no special status is permanently assigned to this site. Solid waste overboard discharges from vessels are not currently regulated. Existing regulations do not prohibit discharges from tankers and other vessels smaller than 150 gross tons, respectively, which might occur beyond the territorial zone (3 nmi (5.4km)). The limited discharge standard proposed by the sanctuary would eliminate a variety of currently allowed discharges.

--Alteration of, or construction on, the seabed

The proposed regulation prohibits dredging, drilling, constructing on, or altering the seabed within 2 nmi (3.7km) of the islands, except to construct navigation aids or lay pipelines. This prohibition offers a buffer for sensitive nearshore resources, including marine mammals, seabirds, and benthic organisms, from the visual, acoustic, and pollution/sedimentation disturbances associated with seabed alteration.

The Army Corps of Engineers and the California Coastal Commission currently have permitting authority over construction, dredging, and dredge spoil disposal. The Bureau of Land Management and State Lands Commission have authority over mining. No agency has issued particular restrictions on dredging and construction which

are intended to benefit and preserve the ecosystem of this area. Dredge spoil disposal, while subject to permit requirements, is not otherwise prohibited in the proposed sanctuary.

The laying of pipelines is exempted from this regulation because the level of disturbance and risk of oil pollution associated with barging supplies and oil and gas to and from offshore platforms is often higher than the disturbance and pollution risk associated with the laying of pipelines.

--Vessel traffic

The proposed regulation prohibits the passage of certain U.S. flag and, to the extent consistent with international law, foreign vessels within 1 nmi (1.8km) of the islands to protect sensitive nearshore resources from disturbance and possible oil spills or discharges resulting from groundings, collision, or normal operation. This restriction also serves to decrease congestion in nearshore zones. Fishing, kelp harvesting, recreational, research, military, and enforcement vessels are exempted from this prohibition.

The Coast Guard currently recommends vessel traffic lanes but does not require adherence to them. The California Department of Fish and Game restricts vessel access in parts of the ecological reserves around Anacapa and San Miguel Islands.

--Disturbing marine birds and mammals by overflights

To insure that sensitive nearshore resources, particularly marine mammals and seabirds, are fully protected, disturbance by overflights at less than 1000 ft (305m) is prohibited within 1 nmi (1.8km) of the islands. Military search and rescue, and enforcement operations, kelp harvesting surveys, and access to the islands are exempted from this regulation.

The Federal Aviation Administration (FAA), which currently regulates air traffic, will indicate some sensitive areas on charts, and will print a request from the concerned agency that pilots maintain a certain altitude in those areas. However, the FAA issues regulations for the safety of air traffic, and not to avoid potentially adverse impacts on ecosystems, species, or habitat. Accordingly, overflights of this area are not currently limited. The California Department of Fish and Game controls overflights directly over San Miguel, Anacapa, and Santa Barbara Islands.

--Historical or cultural resources

California can register sites as either "points of interest" or "landmarks." The latter would afford some protection against harmful activities, but only within State waters. Sites beyond State waters can be registered on the National Register of Historic Sites; however, registration provides protection only against Federal and not private activities. Accordingly, the proposed sanctuary regulations would prohibit removing or damaging historical or cultural resources within the sanctuary.

Environmental and Socio-Economic Consequences of the Proposed Action

The proposed action would institute an integrated management program including research, monitoring, education, long term planning, coordination and regulation that would provide increased protection for the special resources of the proposed sanctuary, particularly marine birds and mammals. The Director of the Fish and Wildlife Service has concluded, following official consultation under Section 7 of the Endangered Species Act, that the marine sanctuary will promote the conservation of the bald eagle, American peregrine falcon, and the southern sea otter and is not likely to jeopardize the continued existence of the California brown pelican (Greenwalt, 1980, personal communication).

The research, assessment and monitoring programs would increase available knowledge on the present condition of the resources and would help measure impacts of human activities. Results from these programs would be utilized not only to increase the effectiveness of sanctuary management, but to advise other agencies proposing actions. The sanctuary would establish a special institutional voice for the resources of this area.

The long term preservation of the special resources near the Islands will depend on public awareness and education. The sanctuary would promote public awareness and increase the attention of users to the issues of conservation.

The sanctuary would also address long range planning issues and other concerns which may arise in the future, which are presently not addressed by any institution. For instance, the sanctuary management plan would address matters such as the desirability of a public transportation system to all or parts of the sanctuary, and it would consider methods to increase access and enjoyment of the sanctuary by the poor, the elderly, and the handicapped.

The sanctuary managers would be concerned with the separate and cumulative impacts of all activities occurring within its boundaries, and would therefore perform a coordinating function. Coordination, even in the simple form of assuring transfer of information, will help assure full consideration is given by all agencies to the resources of the area.

Finally, through limited proposed regulations, the Sanctuary would control certain activities which require further restriction to assure preservation of the resources of the area. The regulations attempt to minimize any adverse socioeconomic consequences on affected industries, to the extent consistent with the primary mission of resource preservation. In addition, by contributing to the preservation of the natural resources of the area, the proposed action should benefit those activities such as fishing, tourism, and recreation which depend on these resources.

Because the proposed regulations have been formulated in detail and are the aspect of the sanctuary management program most likely to produce socio-economic consequences; they are discussed in some detail below.

The prohibition of petroleum operations on leases acquired on or after the effective date of the sanctuary regulations will guarantee the continued existence of an area of minimal OCS development. The Department of the Interior withdrew 24 tracts within 6 nmi of the Islands from OCS Lease Sale #48. The existence of such an area of minimal petroleum development will protect sanctuary resources that are particularly vulnerable to spilled oil and to human activity associated with normal petroleum operations and oil spill cleanup attempts from increased activity levels in the future.

The 6 nmi (11.1km) buffer provides time and distance for natural forces to weather and volatilize oil spills and other discharges before they reach nearshore communities. The buffer also increases the available response time for at-sea cleanup and oil spill containment, and if nearshore cleanup becomes necessary, allows a longer planning period; nearshore cleanup activities may otherwise be even more damaging than the oil itself. The buffer reduces the visual and acoustic disturbances of petroleum development which may affect marine mammals, seabirds, and the aesthetic qualities of the islands. Finally, the buffer will insure the continued integrity of California's oil and gas sanctuaries and prevent the potential need for a drainage sale with associated disruption and potential damage to nearshore resources.

This prohibition does not affect activities pursuant to leases within the sanctuary which predate the effective date of the regulations and are partially or wholly within the proposed sanctuary. While the majority of tracts wholly or partially inside the proposed sanctuary were withdrawn from Lease Sale #48 (which occurred June 29, 1979), the regulation is necessary to

assume the long-term protection of the area. For example, the call for nominations and comments on Lease Sale #68 included some of the waters within 6 nmi of the Islands. Although the Secretary of the Interior retains the authority to exclude these tracts from Lease Sale #68 later in the lease sale process and such a withdrawal would be consistent with the Secretary of the Interior's decision to withdraw 24 tracts from Lease Sale #48, no authority exists to withdraw permanently this area from leasing.

NOAA will seek the cooperation of the Department of the Interior to insure that the tracts affected by the prohibition are not offered for lease. If petroleum reserves exist in these areas which cannot be tapped from outside the sanctuary, these reserves will be unavailable under the proposed regulation. In February 1979 the U. S. Geological Survey (USGS) estimated that there were 5.7 million barrels of oil and 8.9 billion cubic feet of gas underlying 24 tracts in the proposed sanctuary which the Secretary of Interior withdrew from Lease Sale 48 although these resources may not all be profitable to produce. No reliable data are available on the amount of petroleum underlying the entire proposed sanctuary. Past exploration in the area has proven negative, but that does not preclude the possibility of recoverable reserves.

This area adjoins the Santa Barbara Channel, which is an area of high proven petroleum reserves. Currently, production of oil and gas is concentrated near the mainland and several leases near the northern Channel Islands were terminated because of insufficient attempts at exploration and development by the leaseholders. However, as petroleum prices rise, reserves that are not now profitable to produce may become so. If the need for oil underlying the proposed sanctuary increases and the technology becomes

environmentally safe, the regulations could be changed at a later date to allow hydrocarbon development.

The 6 nmi (11.1km) buffer created by the prohibition on oil and gas activities does not provide complete protection from the adverse effects of petroleum operations: first, in a marine environment the transport of substances from one location to another is inevitable; and secondly, operations on existing leases are allowed in the sanctuary in order to minimize the economic impact of the sanctuary and the burden on the lessees. The proposed regulations allow development of existing leases in accordance with other sanctuary regulations and all conditions imposed by existing authorities. The requirement for certain additional on-site oil spill containment equipment should not place large additional cost on the industry, particularly since similar equipment may also be required by the State of California under the consistency provisions of the Coastal Zone Management Act.

The prohibition of discharges will enhance the area's aesthetic features by lessening levels of litter thrown overboard and will reduce the threat that marine mammals and seabirds in the sanctuary will swallow or become entangled in potentially harmful trash. It will further maintain water quality by ensuring that no ocean dumping or dredge spoil disposal occurs in the sanctuary. The economic impact of this regulation on sanctuary users is minor, although they will be required to retain their trash for proper disposal on land. The regulation supplements prohibitions of discharges of oil and hazardous substances within 50 miles of the nearest land.

The impacts of prohibiting seabed alteration and construction are expected to be minor since all current dredging occurs outside the sanctuary.

The regulation prohibiting certain commercial vessels from the waters within 1 nmi (1.8km) of the islands will probably have minimal economic impacts because the affected vessels generally remain in the vessel traffic lanes and thus well away from nearshore areas. Fishing, recreational, kelp harvesting, research, military and enforcement vessels will be allowed in nearshore waters.

Since military and enforcement operations, kelp surveys, and landings on the islands are exempted from the overflight prohibition (and commercial aircraft fly much higher), the prohibition on flying below 1000 ft (305m) within 1 nmi (1.8km) of the islands will primarily affect recreationists observing area resources, especially whales.

The environmental and economic consequences of prohibiting the removal or damage of historical or cultural resources should be minimal. More precise estimates of the consequences will be possible after all identified resources are mapped.

NOAA's preferred marine sanctuary and the proposed regulations will not prohibit military operations necessary to the national defense or in a national emergency or actions necessary to respond to an emergency threatening life, property, or the environment.

Marine Sanctuary Permits

Marine sanctuary permits, issued by NOAA, will be required for any activity otherwise prohibited by the regulations and may be granted only if the activity will serve research or educational purposes. The permit procedure is specified in the regulations (Appendix 1). NOAA will coordinate its permit procedure with other authorities to the maximum extent possible.

Certification of Other Permits

The regulations propose to certify in advance any permit, license, or other authorization issued pursuant to any other authority within the sanctuary as long as the activity does not violate marine sanctuary regulations. This notice of validity avoids permit delays and costs from duplicative reviews where there is no violation.

D. Purpose and Need for Action

NOAA proposes that, as an area of exceptional value subject to mounting development and use pressures, the waters offshore of San Miguel, Santa Rosa, Santa Cruz, Anacapa, and Santa Barbara Islands deserve special recognition, protection, and management as a marine sanctuary.

Located at the confluence of two major biogeographic coastal provinces, in an area of exceptionally high biologic productivity, on a submarine ridge possessing a wide variety of open water marine habitat, the waters around the northern Channel Islands and Santa Barbara Island support a large and varied array of significant natural resources.

Among the resources found at the northern Channel Islands and Santa Barbara Island is one of the largest and most varied assemblages of pinnipeds in the world. The waters surrounding the islands serve as feeding grounds for six species of seals and sea lions including one species (the Guadalupe fur seal) which may be proposed for listing as an endangered species. In addition, numerous species of whales and dolphins migrate through the area, including several endangered species. A large number of marine birds also depend on the waters around the northern Channel Islands and Santa Barbara Island. The islands serve as rookery areas for 9 of the 12 species of nesting marine birds found in the Southern California Bight, and the surrounding waters provide an essential foraging and rafting area for resident and transient species. Marine fish, algae (particularly kelp beds), and intertidal habitats also comprise a major component of the ecosystem. Finfish, shellfish, and kelp found in the area have exceptional ecological, recreational, and commercial value.

With this concentration of highly productive, diverse, and rich living resources in a relatively small geographic area, the waters around the Channel Islands are also of high research value. Extensive studies of these marine areas have been conducted.

The recreational opportunities in the waters surrounding the northern Channel Islands and Santa Barbara Island include pleasure boating, skin diving, sportfishing, and nature studies such as bird and mammal watching.

Congress recently acknowledged the extraordinary value of this area through its creation of the Channel Islands National Park, which expanded and strengthened the Channel Islands National Monument. Park designation will provide protection and management for the special values of the Islands. However, in the debates in the House which accompanied the legislation creating the Channel Islands National Park, Congressman Sibelius voiced concern about the ability of the park to protect adequately the resources of the Islands from threats orginating in surrounding waters such as tanker traffic and oil and gas drilling (Congressional Record, May 7, 1979, H2751). The park boundary does extend 1 nmi into the water but is purely an administrative boundary and does not carry with it any authority for NPS to regulate activities in the waters. It does provide authority for NPS enforcement agents to enforce the regulations issued by other agencies that apply to the waters, such as those issued by DFG or any final regulations promulgated for the proposed marine sanctuary.

Until recently, the island waters maintained relative isolation from activities which could affect them, primarily due to their distance from the mainland. Therefore, formal recognition of the particular value of these waters to marine mammal, marine bird,

fish, kelp, and intertidal communities, and to recreational and research activities was not needed. Various agencies regulated specific uses of the waters, but the establishment of a comprehensive management system to protect these waters was not required. More recent and ever-increasing development and use, however, have made the reliance on geographic remoteness insufficient to avoid increased pressure upon and potential harm to the components of this rich ecosystem.

Although the Secretary of the Interior withdrew 24 tracts within 6 nmi (11.1km) of the islands from Lease Sale 48, pressure for expanded offshore oil and gas development in the Santa Barbara Channel and around the Channel Islands is likely to increase. Several tracts within 6 nmi (11.1km) of the islands were leased in Sale 35, and unless the area is given special status, future lease sales (Sale #68 in 1982 and Sale #73 in 1983) may include nearshore areas. New drilling and redrilling for oil and gas is being planned on several existing leases near the islands.

The Santa Barbara Channel also has become an important commercial shipping area with use levels expected to increase as additional tankers bring oil and liquid natural gas (LNG) into southern California ports. Specifically, the movement of oil from the Elk Hills Petroleum Reserve and from drilling platforms in the Channel, as well as the projected development of an LNG terminal in the Channel region, may significantly increase tanker transport of oil and hazardous substances through the Santa Barbara Channel. The shipment of rocket boosters and external tanks to Vandenberg Air Force Base for the Space Shuttle Vehicle System will increase the number of barges transitting the Channel. The construction of a Northern Tier pipeline and of platform to shore pipelines in the Channel may, however, cut down on some of the tanker and barge

traffic in the Channel.

Commercial fishing activity, already firmly established around the northern Channel Islands, will continue and possibly increase in intensity as market demands for fish expand. With a growing southern California population, the area has also become more frequently sought out as a recreational resource. Because of the area's varied recreational potential and the paucity of undisturbed natural marine settings elsewhere in the region, the demand for recreational opportunities will grow. Finally, the Department of Defense, particularly the U.S. Navy, uses much of the Channel and Channel Islands area for various training and testing activities.

In summary, increasing development within the Channel and in the waters surrounding the northern Channel Islands is gradually eroding the buffer of isolation that previously protected the area's outstanding natural resources, and pressures are likely to continue growing in the future. Therefore, some form of special protection is desireable in order to ensure that the extraordinary wealth of natural resources in the area is not jeopardized, and a focussed management program dealing with research, assessment, education, coordination, long-term planning, and regulation is required.

Although many agencies currently regulate or have authority over specific activities and particular natural resources of the island waters, no single authority has responsibility for monitoring the entire system and acting to protect that system. Consequently, the impacts of each activity which might affect the resources are evaluated separately, and cumulative impacts may be overlooked.

Currently, there is no provision for comprehensively monitoring the effects of human activities in the area. Without some provision for study and monitoring, it is impossible to act in a manner insuring the long-term protection and preservation of the marine resources of the waters near the islands. The absence of a program of public education reduces public awareness of the value and sensitivity of the area's natural resources.

Furthermore, the waters around the islands have no formal recognition of their special environmental value. In some cases, it may be in the general public's interest to allow activities which may pose threats to the environment, such as the siting of an LNG terminal. Such decisions, however, must be balanced against the region's important resources. In the absence of formal recognition of the importance of the waters around the Channel Islands, there is no assurance that the existing authorities will adequately consider the particular value and vulnerability of this vital habitat.

The designation of a marine sanctuary in these waters would create a system responsible for assessing the overall impacts of activities in the area. More formal acknowledgement of the special value of the area would insure that it is given special protection and consideration in an overall planning sense, and would encourage particularly careful review of any proposals for future siting of potentially harmful activities nearby. Finally, monitoring and study of the sanctuary would provide the basis for a greater understanding of the area's needs and ecological balance and would provide the foundation for better management.

In light of the identified needs, the proposed sanctuary would have the following objectives:

1. To preserve a unique and strategically located part of the California outer continental shelf where marine life, geological formations, and ocean currents combine to form an outstanding marine ecosystem by ensuring that human uses and activities within the proposed sanctuary boundaries do not: (a) degrade intertidal and subtidal habitats and their associated communities or foraging, resting, migratory, or other open water habitat areas of value to marine birds and mammals; or (b) otherwise threaten the continued health, stability, diversity or numbers of seabird or marine mammal populations using sanctuary waters.
2. To encourage scientific research consistent with objective 1 on the significant resources of the area which will contribute to the understanding of ecologic relationships and to the resolution of management and regulatory issues.
3. To enhance public awareness of sanctuary resources by ensuring adequate interpretive and educational services.

E. DESCRIPTION OF THE AFFECTED ENVIRONMENT

E.1. General Overview of the Nominated Area

E.1.a. Location

The ocean area currently under investigation lies within the northern portion of a regional coastal ocean area commonly referred to as the Southern California Bight (see Figure E-1). This area (also referred to below as the study area) includes the Santa Barbara Channel and the waters surrounding the four northern Channel Islands of San Miguel, Santa Rosa, Santa Cruz, and Anacapa as well as Santa Barbara Island. The shoreward boundary of the area under consideration extends to the upper limit of high tide. A set seaward boundary was not established for purposes of assessing environmental resources, but specific boundary alternatives are developed in Section F based upon this assessment of the affected environment.

This area was selected in large part because of the extraordinary concentration of the following resources: 1) marine mammals; 2) seabirds; 3) fish, shellfish, and kelp resources; 4) intertidal organisms; and, to a lesser extent, 5) archaeologic/historic resources. Accordingly, each of these resource categories is addressed separately in Section E.2. Human activities in areas near these resources are discussed in Section E.3.

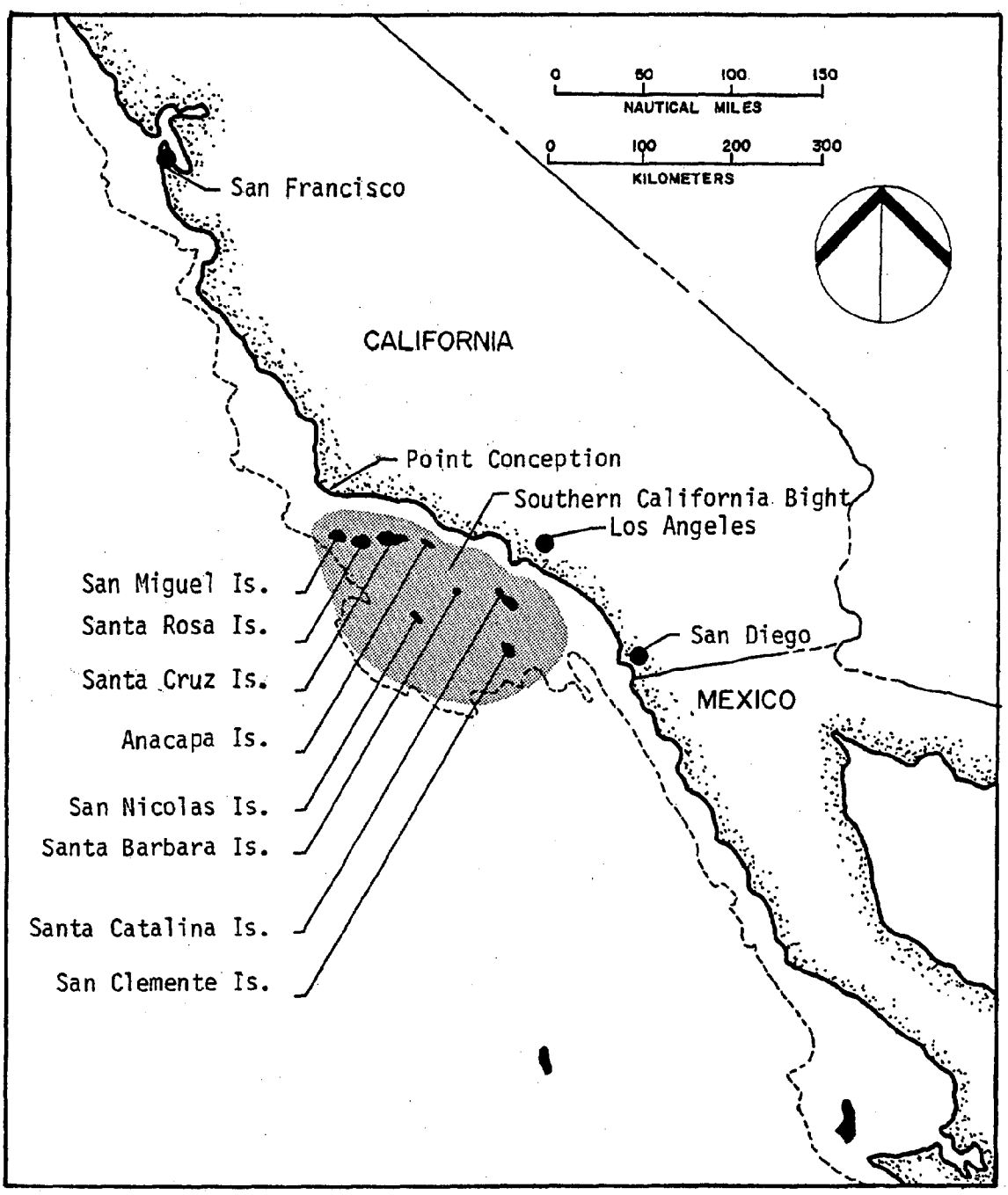

FIGURE E-1. Location of the Southern California Bight

E.1.b. Environmental Setting

Prior to reviewing each of the above-listed resource categories, it is necessary to recognize the significance of the broader ecologic system which supports and influences the localized resource assemblage. This requires some understanding of the role and importance of intricate physical and biological processes which link resources to the regional environment.

A marine sanctuary cannot be a self-contained environmental unit whose living natural resources are independent of broader environmental conditions. The sanctuary can, however, describe an area whose natural conditions, as influenced by surrounding environmental processes, permit the site to serve as a focal point for biologic activity or resources of special significance. The following discussion briefly highlights some of the most important region-wide processes, conditions, and pathways which serve to influence the significant resources concentrating within the Channel Island shelf marine environment.

Perhaps the most significant aspect of the northern Channel Islands is their location at the transition point between two biogeographic coastal provinces. Stretching along the coast to the north from Point Conception to Alaska is a biologically rich cold-temperate province referred to by Hedgpeth (1975) as the boreal-antiboreal littoral province. To the south from Point Conception to the lower third of Baja California in Mexico is a warm-temperate area referred to by Briggs (1974) as the San Diego biogeographic province. The biota of this transition zone includes cold temperate species from the north and tropical species from the south, as well as a large number of endemic (or regionally limited) species.

The importance of Point Conception as a major marine biogeographic boundary is well documented. Briggs (1974) cites several investigators who note that this California point lies at a significant biogeographic boundary for many species of fish, and invertebrates such as bryozoans* and mollusks. In addition, the point is also a significant boundary area for several species of marine mammals and seabirds. The area marks a northern breeding limit for some warm-temperate species and a southern breeding limit for certain northern cold-temperate organisms. Located directly in this transition area, the northern Channel Islands area possesses a unique and extraordinarily rich species assemblage.

Two of the major factors contributing to the creation of this biologic transition area are the area's geomorphology and current patterns (see Figure E-3). At Point Conception the coastline turns sharply to the east while the edge of the outer continental slope offshore continues in a generally south-southeasterly direction. The California Current, which carries cold water down from the north, sweeps along the shoreline in a meandering southeasterly direction. When the current reaches the Point Conception promontory, this direction of flow carries the current away from the shoreline and thus induces a large eddy (gyre) effect in the Southern California Bight area. The return flow, carrying waters through the Channel Islands toward the shore in a southeast to northwesterly direction, is called the Southern California Countercurrent. Both the California Current and the Countercurrent are surface currents extending about 328 ft (100m) deep. The current gyres in the Southern California Bight circulate both nutrients and pollutants throughout the areas and thus provide a major force tying the conditions in the northern Channel Island

*Bryozoans include many of the small marine organisms commonly seen encrusting submerged rocks, pilings and other solid substrates.

area to those of the broader region.

During the course of a year, surface currents in the Southern California Bight undergo three distinct phases: the oceanic period from July to November; the Davidson Current period from November to mid-February*; and an upwelling period from mid-February through August during which nutrient rich deep waters are drawn to the surface. The current patterns characterizing these periods have been reviewed by the U.S. Bureau of Land Management (1979) and are graphically presented in Figures E-2, E-3, and E-4.

During the spring, when day length and light intensity are increasing, the high nutrient levels in surface waters foster exceptionally high primary production (phytoplankton and other plant growth). High primary production increases the food supply for other marine animals and thereby supports greater numbers of fish, shellfish, and other marine life than would otherwise be possible. Patches of upwelling occur in a sporadic fashion during this late winter-early summer period; the waters off Point Conception are particularly prominent as an upwelling center (U.S. Bureau of Land Management, 1979). Water current gyres throughout the Southern California Bight as well as species movement serve to distribute the high productivity benefits of this phenomenon beyond the localized upwelling patches and throughout the southern California coastal area.

*The Davidson Current is a northwesterly flowing mid-water current which rises to the surface along the southern California coast during this time of the year.

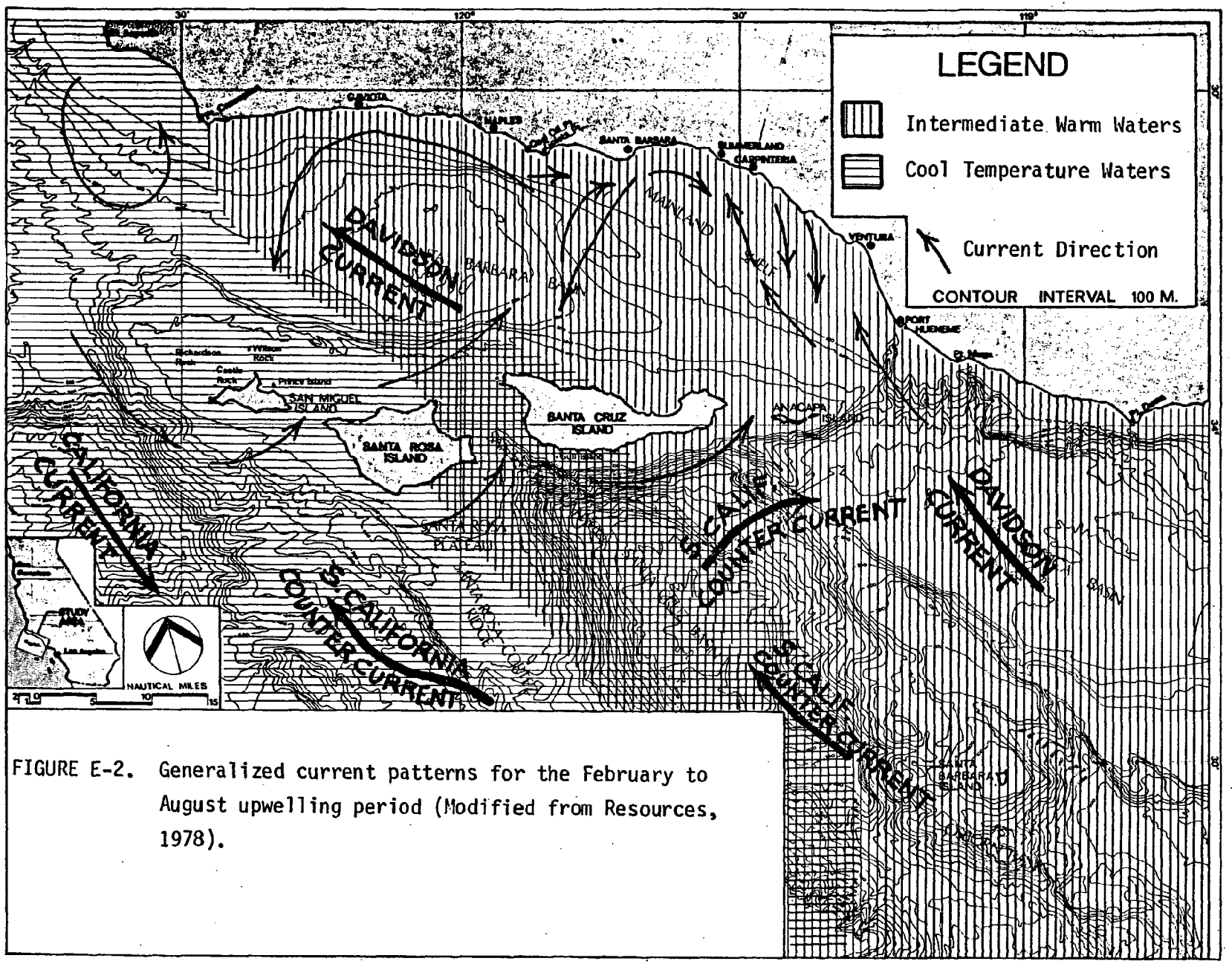

FIGURE E-2. Generalized current patterns for the February to August upwelling period (Modified from Resources, 1978).

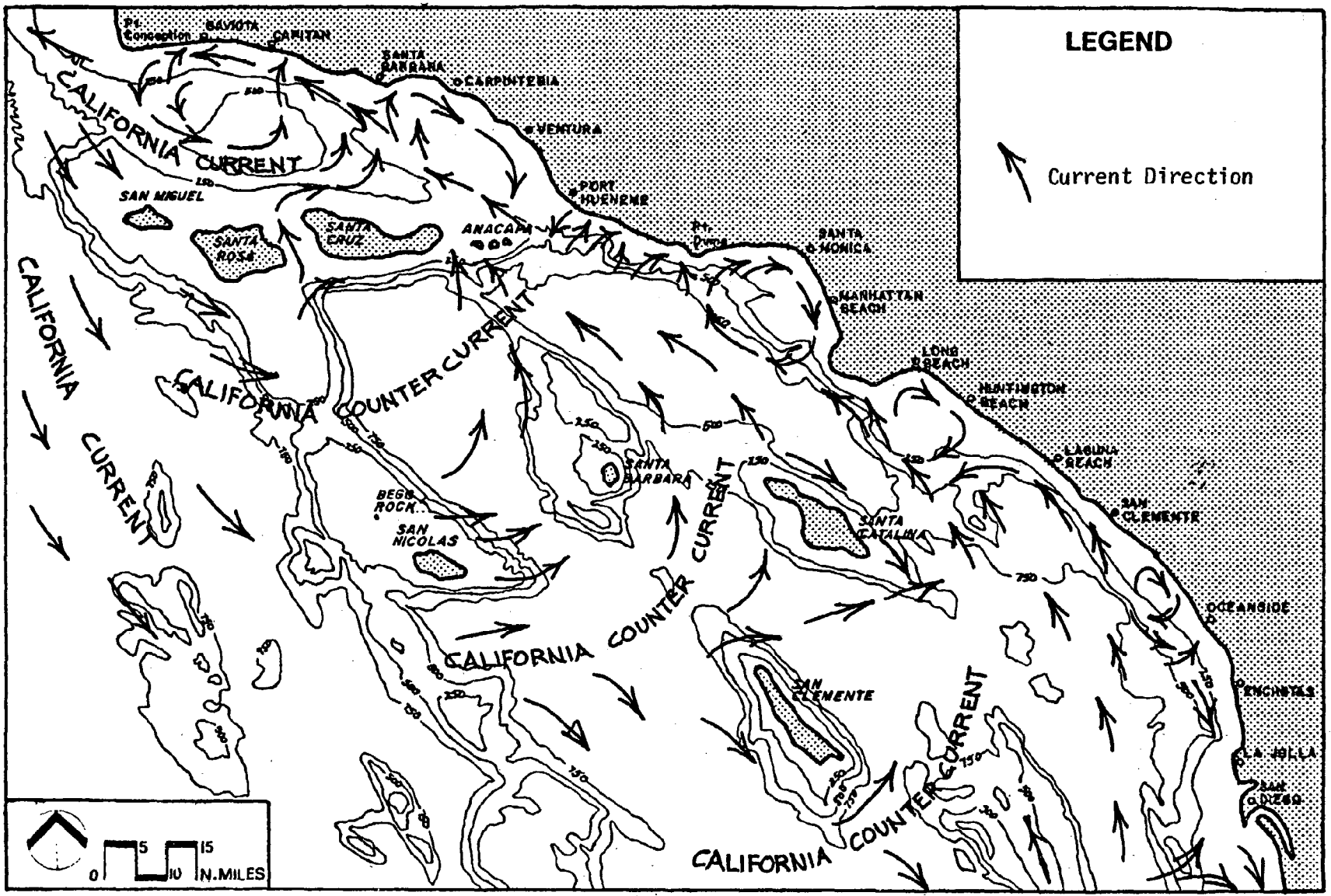

FIGURE E-3. Generalized Southern California Surface Currents for Oceanic Period (Modified from U. S. Bureau of Land Management, 1979).

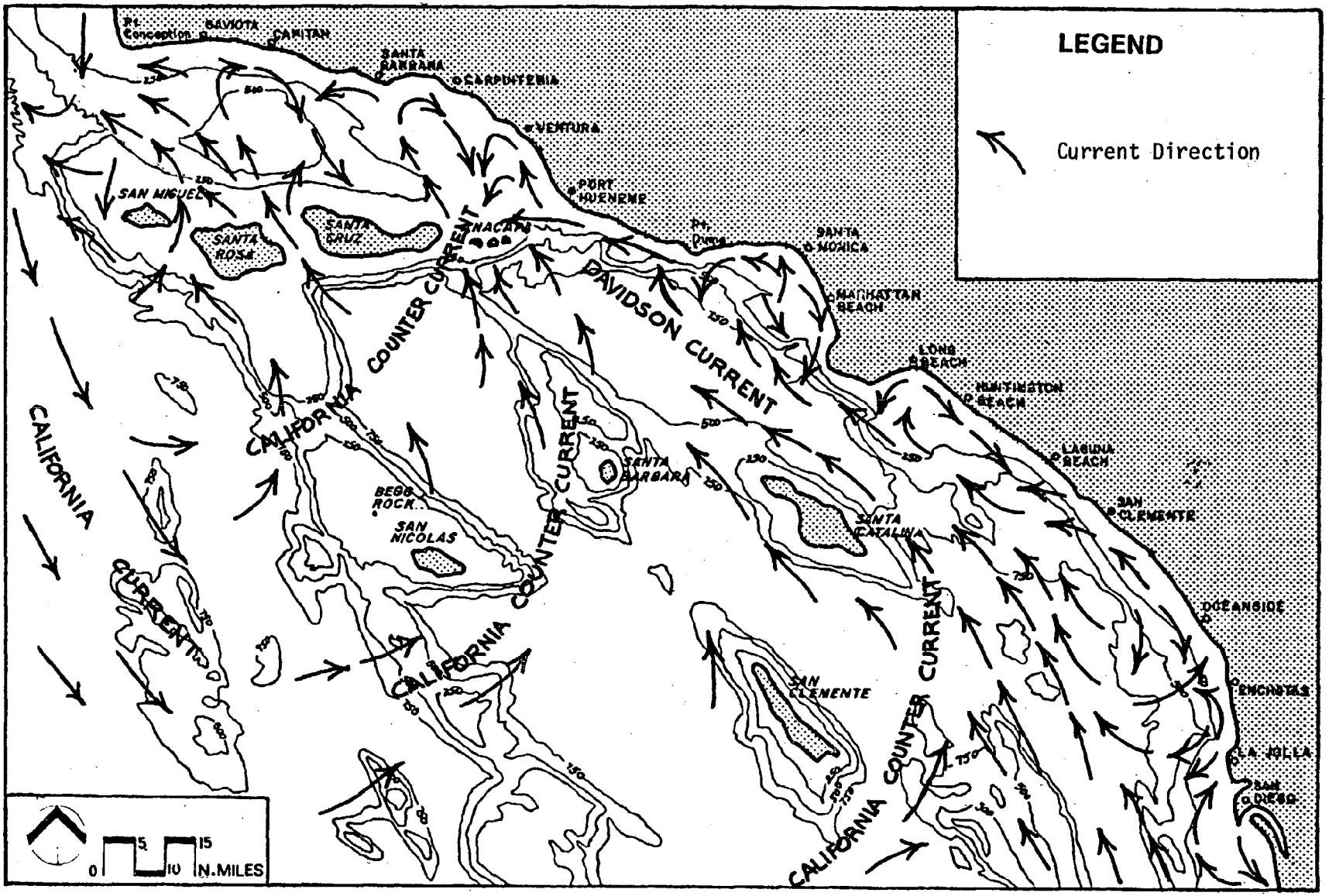

FIGURE E-4. Generalized Southern California Surface Currents for Davidson Period (U. S. Bureau of Land Management, 1979).

Another extremely important feature of the Southern California Bight and the northern Channel Islands area in particular is the accentuated bottom relief and varied bottom substrate. The northern Channel Islands and Santa Barbara Island are actually peaks of extensive offshore ridges. A relatively shallow island shelf extending to a depth of about 330 ft (100m) surrounds the islands, usually extending from 3 to 6 nmi (5.6 to 11.1km) from the island coast. At this depth the bathymetry either plunges steeply to a deep coastal basin perhaps 1600 to 2500 ft (500 to 750m) in depth (such as to the north of the northern Channel Islands) or slopes more gradually to the peak of a submerged ridge perhaps 600 to 1200 ft (180 to 350m) in depth (such as to the southeast of Santa Rosa Island) (see Figure E-5).

The abrupt change in depth provides a spectrum of marine habitats which support a wide diversity of benthic and other marine organisms. As cited in the U.S. Bureau of Land Management (1979) Final Environmental Statement on OCS Sale #48, Jones and Fauchauld (1976) indicate that "... the single most important environmental variable governing the distribution of (benthic) species within (the Southern California Bight) sampling areas was depth." Although depth may be the most important factor contributing to the area's diverse benthic communities, a gradation of substrate material from soft muddy deep-water trenches to sandy island shelf flats to rocky submerged outcrops also adds a significant dimension to the bottom species diversity. Finally, and as described further in Section E.2, the number of species and abundance of both bottom living and mid-water species increases dramatically as the depth decreases from deep coastal basins to island shorelines.

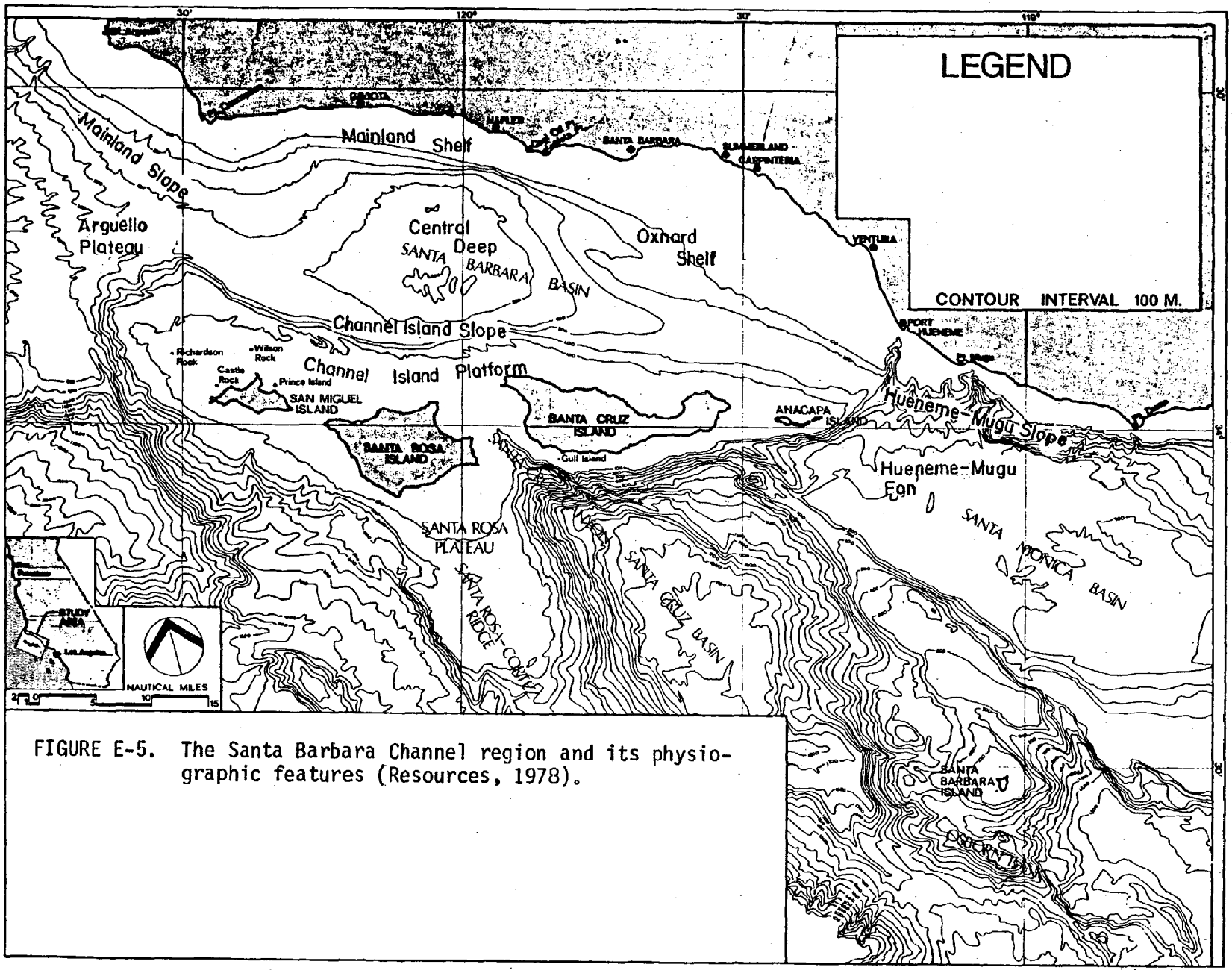

FIGURE E-5. The Santa Barbara Channel region and its physiographic features (Resources, 1978).

Two crucial pathways, which are addressed more fully in Section E.2 below, are the migratory movements of species to and from the northern Channel Islands area and biologic food chains. In both instances, the movement of living organisms and nutrients indicates the importance in the immediate sanctuary area of dynamic marine processes and conditions in areas as far away as the Bering Sea.

Although the influence of geographically wide-ranging factors is clearly significant, it does not diminish the exceptional importance of the localized marine habitat and resources of the waters surrounding the northern Channel Islands and Santa Barbara Island. Their location (1) at the confluence of two major biogeographic provinces; (2) in an area of upwelling and thus exceptionally high productivity; and (3) on a submarine ridge possessing a wide variation of open water marine habitat, makes the waters surrounding these islands one of the biologically richest and most diverse marine environments in the United States.

E.2 Natural Resources of Exceptional Value

E.2.a Marine Mammals

More than 30 species of marine mammals have been sighted in the Southern California Bight including 27 species of whales and dolphins (cetaceans); 6 species of seals and sea lions (pinnipeds); and the sea otter (a member of the weasel family) (See Table E-1). While several species of whales and dolphins are common and important transient inhabitants of the waters surrounding the Channel Islands, the area is especially significant for seals and sea lions which require the island shelves and

TABLE E-1 Marine mammals of the Southern California Bight (Point Conception-Mexican Border). Daugherty, 1965; University of California, Santa Cruz, 1976; Resources, 1978.

Common Name	Genus/Species	Estimated Population 1976
Pinnipeds		
California sea lion	(Zalophus californianus)	40,000
Steller sea lion	(Eumetopias jubatus)	5-20
Northern fur seal	(Callorhinus ursinus)	1,200
Guadalupe fur seal	(Arctocephalus townsendi)	1-5
Northern elephant seal	(Mirounga angustirostris)	16,600
Harbor seal	(Phoca vitulina)	1,400
Fissipeds		
Sea otter	(Enhydra lutris)	1-5
Cetaceans		Number of individuals sighted in 1975-76 study
Bryde's whale	(Balaenoptera edeni)	-
Minke whale	(Balaenoptera acutorostrata)	60
Blue whale	(Balaenoptera musculus)	7
Sei whale	(Balaenoptera borealis)	-
Finback whale	(Balaenoptera physalus)	23
Humpback whale	(Megaptera novaeangliae)	6
Gray whale	(Eschrichtius robustus)	336
Common dolphin	(Delphinus delphis)	33,564
Pacific pilot whale	(Globicephala macrorhynoa)	4,333
Risso's porpoise	(Grampus griseus)	556
White-sided dolphin	(Lagenorhynchus obliquidens)	10,007
Northern right whale dolphin	(Lissodelphis borealis)	1,848
Killer whale	(Orcinus orca)	122
Harbor popoise	(Phocena phocoena)	0
Dall porpoise	(Phocoenoides dalli)	647
False killer whale	(Pseudorca crassidens)	0
Long-beaked dolphin	(Stenella coeruleoalba)	0
Pacific bottlenose dolphin	(Tursiops gilli)	557
Sperm whale	(Physeter catadon)	0
Pygmy sperm whale	(Kogia breviceps)	0
Baird's beaked whale	(Berardius bairdii)	-
Ginko-toothed whale	(Mesopolodon ginkgodens)	-
Cuvier's beaked whale	(Ziphius cavirostris)	0
Pacific right whale	(Balaena glacialis)	0
Pacific spotted dolphin	(Stenella graffmani)	0
Rough-toothed dolphin	(Steno bredanensis)	0
Hubb's beaked whale	(Mesoplodon carlhubbsi)	0
TOTAL SIGHTED		52,066

shoreline habitat for haulout and feeding purposes. San Miguel Island, particularly the west end around Point Bennett, is the only location in the U.S. and one of the very few places in the world where breeding populations of 5 species of pinnipeds can be found virtually side by side, with transient individuals of a sixth, the Guadalupe fur seal, also being occasionally sighted. The islands and surrounding waters are made even more important since the southern California mainland coast does not have major rookeries.

The pinnipeds, along with cetaceans, seabirds, and humans, represent one of the top carnivore groups in the Southern California Bight (University of California, Santa Cruz, 1976). Approximately 75,000 seals and sea lions have been estimated to live in the Bight where they consume some 185,625 metric tons (168,750,000 kg) of food annually (University of California, Santa Cruz, 1976). This makes pinnipeds a major link in the Bight's food chain and ecological balance. Although information on the role of pinnipeds in the ecology of the Bight is limited, their large food requirements indicate that they could provide important functions with regard to maintaining species abundance levels through the food chain. The unusually large population levels of pinnipeds (as well as whales, dolphins, and seabirds) is indicative of the region's high productivity rate which can be traced back to the aforementioned upwelling phenomenon.

In general, the two most important pinniped concentration areas in the Bight are on the western tip of San Miguel Island around Point Bennett (see Figures E-6a-d) and on the southwestern side of San Nicolas Island (University of California, Santa Cruz, 1976). As shown on Table E-2 however, Santa Rosa, Santa Cruz, Anacapa, and Santa Barbara Islands also act as pinniped haulout and rookery

FIGURE E-6a. Location of major breeding and haul out sites of four pinniped species on San Miguel Island. Source: University of California, Santa Cruz. Draft Final Report 1975-1978. Marine Mammals and Seabird Survey. Volume III Pinniped Investigators Report.

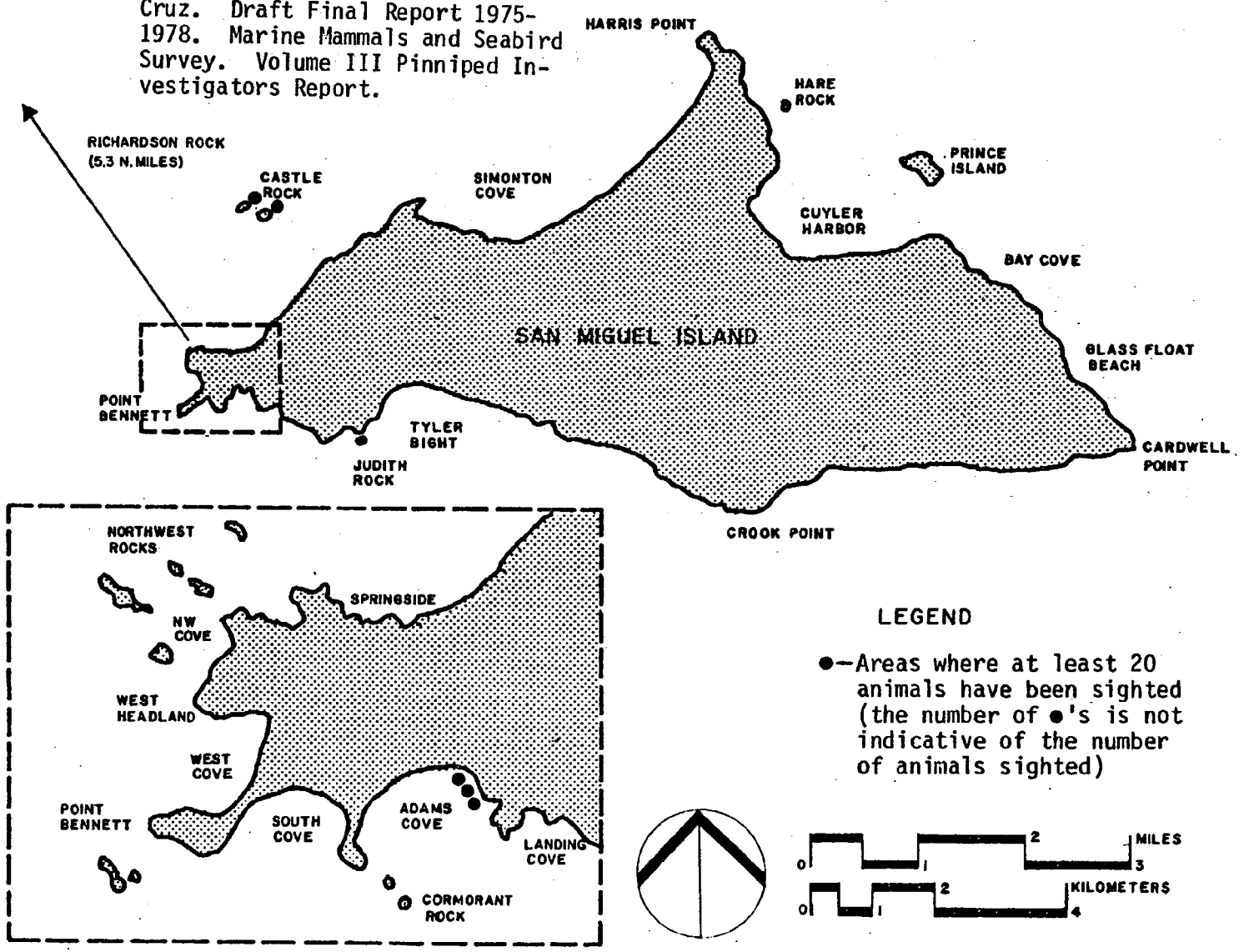

FIGURE E-6b. Location of major breeding and haul out sites of four pinniped species on San Miguel Island. Source: University of California, Santa Cruz. Draft Final Report 1975-1978. Marine Mammals and Seabird Survey. Volume III Pinniped Investigators Report.

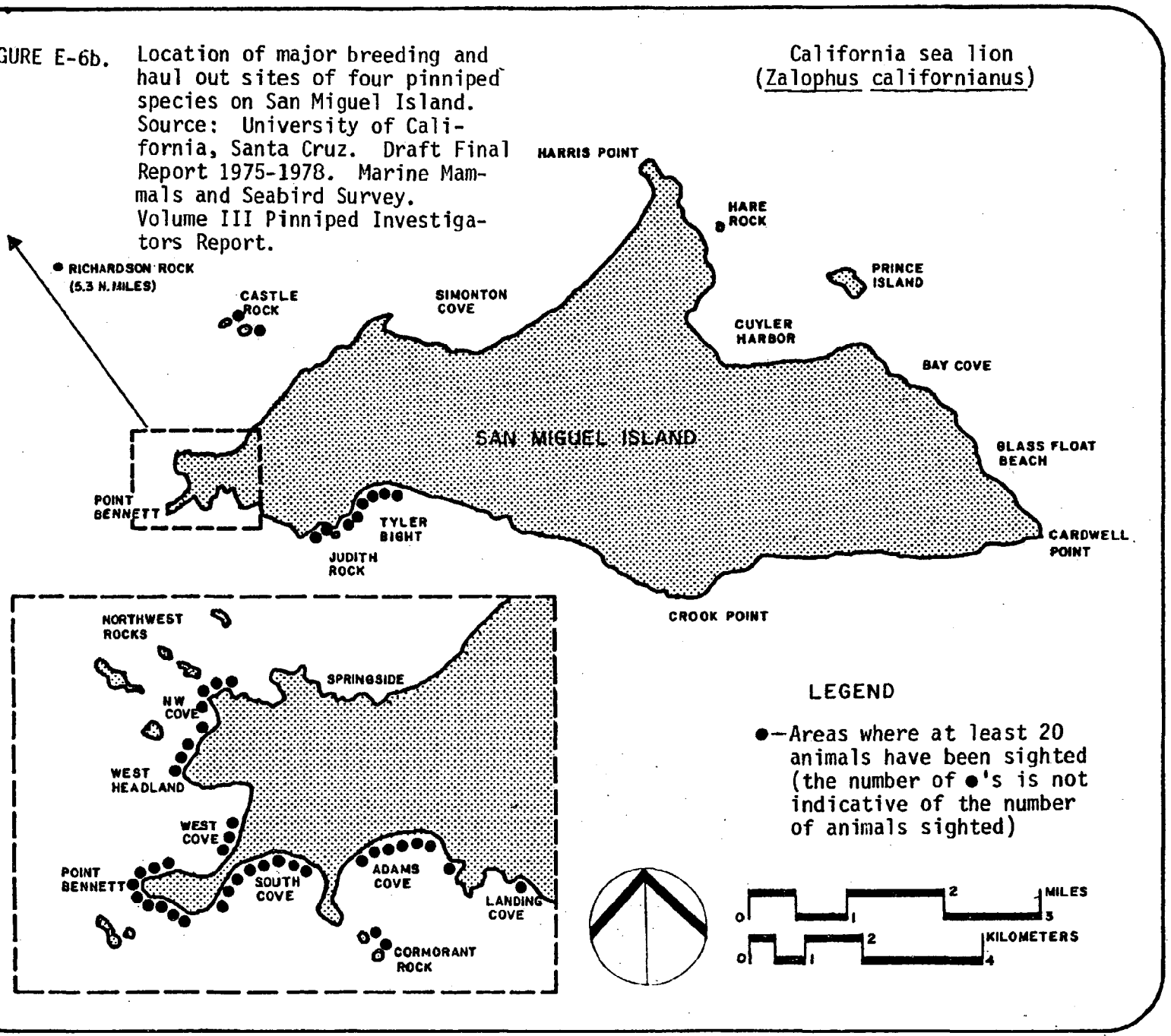

FIGURE E-6c. Location of major breeding and haul out sites of four pinniped species on San Miguel Island. Source: University of California, Santa Cruz. Draft Final Report 1975-1978. Marine Mammals and Seabird Survey. Volume III Pinniped Investigators Report.

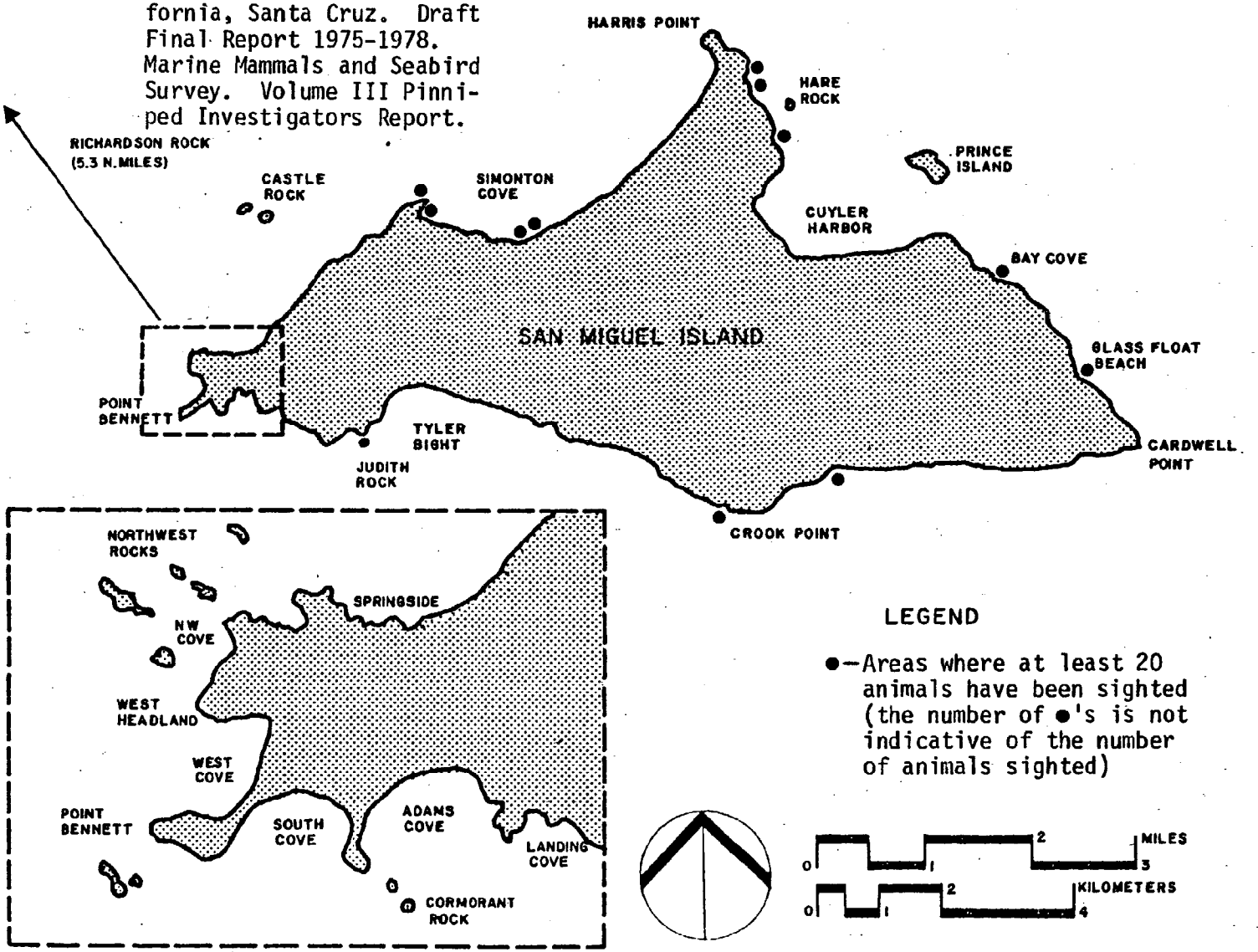

FIGURE E-6d. Location of major breeding and haul out sites of four pinniped species on San Miguel Island. Source: University of California, Santa Cruz. Draft Final Report 1975-1978. Marine Mammals and Seabird Survey. Volume III Pinniped Investigators Report.

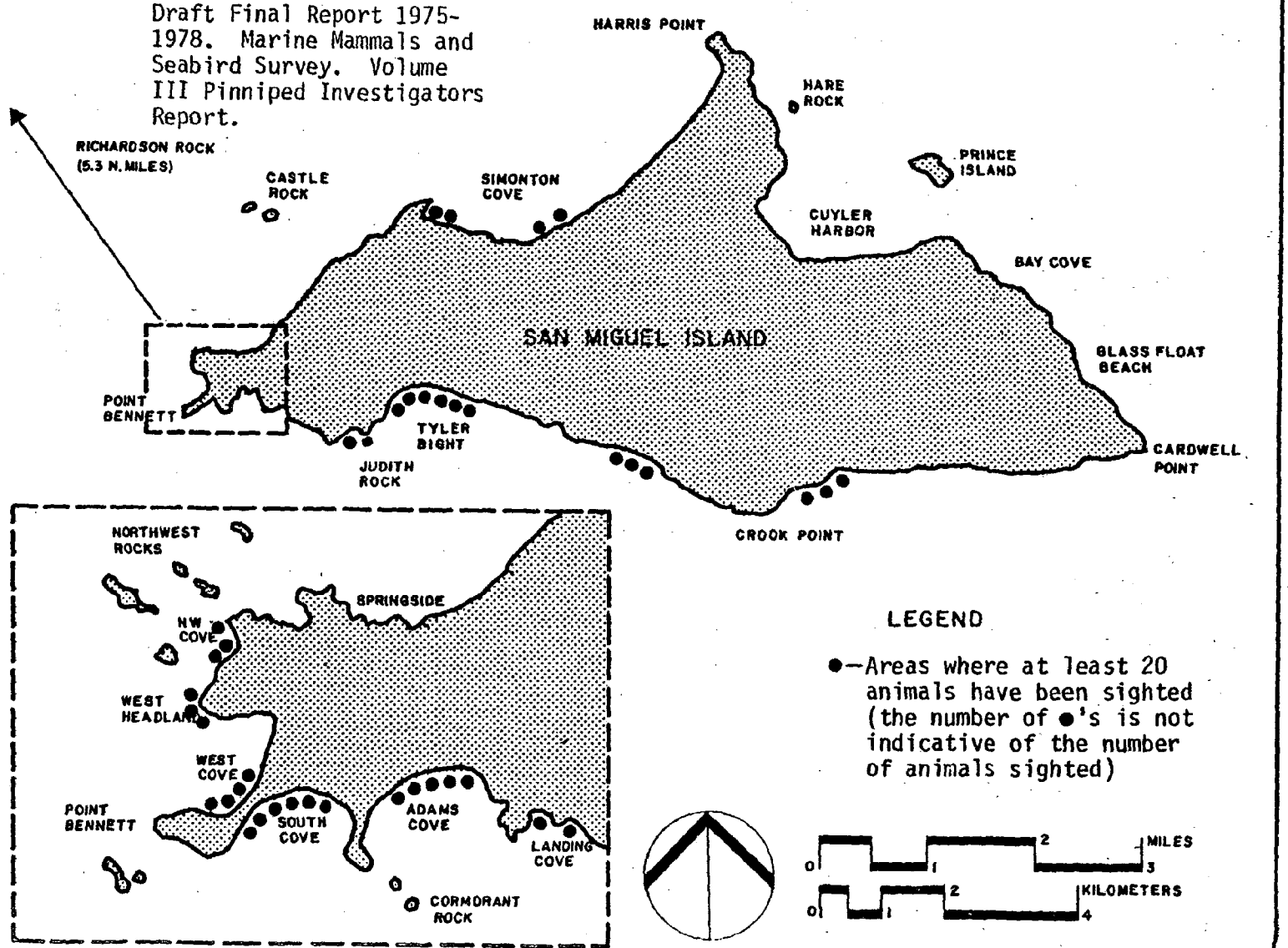

TABLE E-2. Pinniped rookery and haul out areas of the study area (University of California, Santa Cruz, 1976; Resources, 1978).

Nameplace	Species Present	Activity
Richardson Rock (San Miguel Is.)	California sea lion	Breeding-pupping *
	Northern fur seal	Breeding-pupping
Castle Rock (San Miguel Is.)	California sea lion	Breeding-pupping
	Northern fur seal	Breeding-pupping
	Steller sea lion	Breeding-pupping
Point Bennett Rock (San Miguel Is.)	Guadalupe fur seal	Haulout only
Point Bennet-Adams Cove (San Miguel Is.)	Northern fur seal	Breeding-pupping
	California sea lion	Breeding-pupping
	Northern elephant seal	Breeding-pupping
	Steller sea lion	Breeding-pupping
Simonton Cove (San Miguel Is.)	Harbor seal	Breeding-pupping
	Northern elephant seal	Breeding-pupping
Cuyler Harbor Area (San Miguel Is.)	Harbor seal	Breeding-pupping
Sandy Point-Blockhouse Beach (Santa Rosa Is.)	Harbor seal	Breeding-pupping
Beechers Bay (Santa Rosa Is.)	California sea lion	Breeding-pupping *
Fraser Point (Santa Cruz Is.)	California sea lion	Breeding-pupping *
Arch Rock East (Sant Cruz Is.)	Harbor seal	Breeding-pupping
Scorpion Anchorage (Santa Cruz Is.)	Harbor seal	Breeding-pupping
Kinton Point South/Morse Point (Santa Cruz Is.)	Harbor seal	Breeding-pupping
Gull Island (Santa Cruz Is.)	California sea lion	Breeding-pupping *
	Harbor seal	Breeding-pupping
Anacapa Island	California sea lion	Breeding-pupping *
	Harbor seal	Breeding-pupping
Santa Barbara Island	California sea lion	Breeding-pupping
	Northern elephant seal	Breeding-pupping
	Harbor seal	Breeding-pupping

*The use of these areas as rookeries by California sea lions is only speculative; however, all are definitely used as haul out areas.

areas. Some of the more significant ecological information on pinnipeds is summarized in Table E-3. This information indicates that the island shelf waters probably provide important feeding areas for the pinnipeds in the area. Surrounding island waters also provide 1) island-bred pups with their first aquatic habitat and feeding areas; 2) a source of refuge for hauled-out animals startled by aircraft, nearshore boats, or land-based disturbance; and 3) a buffer area against the impacts of ocean development and use occurring greater distances from shore. Table E-4 shows the seasons for different pinniped activities.

Although none of the six pinniped species are currently listed as endangered or threatened under provisions of the Endangered Species Act of 1973, the National Marine Fisheries Service has expressed an intent to consider the Guadalupe fur seal for listing as an endangered species (Loughlin, 1979, personal communication). Also, two species of pinnipeds, the Guadalupe fur seal and northern elephant seal, are listed in the "Convention on International Trade in Endangered Species of Wild Flora and Fauna" and in the International Union for Conservation of Nature's (IUCN) "Red Book" list of endangered and threatened wildlife. The Guadalupe fur seal is shy, secretive, and rare; San Miguel Island is one of the few areas in Southern California where it has been sighted in recent years.

As mentioned above, whales and dolphins tend to be more transient inhabitants of surrounding island waters. Because cetaceans cannot haul out on island shores, they tend to be less dependent than pinnipeds on habitats adjacent to the islands. Although present information is inconclusive, available data has led some marine mammal experts to think that dolphins might cluster over submerged areas of high topographic relief such as ridges, banks,

TABLE E-3. Summary of ecological information for seals, sea lions, and sea otters found in waters around San Miguel, Santa Rosa, Santa Cruz, Anacapa, and Santa Barbara Islands. (National Marine Fisheries Service, 1978; Woodhouse et al., 1977; Daugherty, 1965; University of California, Santa Cruz, 1976.)

California sea lion (*Zalophus californianus*)	Most abundant pinniped in Southern California Bight; range from British Columbia into Mexico; northernmost established rookery on San Miguel Island; breed in June and July and disperse in Fall and Winter; adult males migrate north after breeding season while female and pups move southward into Mexican waters; major sites of activity in Southern California Bight on San Miguel, San Nicolas, Santa Barbara, and San Clemente Islands; generally opportunistic feeders preferring squid, hake, anchovy, other small fish, and mollusks; feed in waters relatively near hauling grounds over island shelves.
Northern elephant seal (*Mirounga angustirostris*)	Largest and second most abundant pinniped in Southern California Bight; range from Alaska to Mexico; numbers increasing; breeding season from December through March with breeding range from Point Reyes to Baja California; 9 breeding colonies including one on San Miguel (the second largest) and one on Santa Barbara; spend most of the year in the water but haulout once to breed in Winter and once to molt in Spring; feed both near shore and in deep water on squid, hake, sharks, skates, rays and ratfish.
Northern fur seal (*Callorhinus ursinus*)	Range from the Bering Sea to Mexico; abundant in the northern part of their range but scarce to the south; small breeding population on San Miguel represents the southern breeding limit; San Miguel population increasing; breeding season begins in early Summer; pups tended on shore through early Fall; from Fall to Spring maintain an oceanic existence rarely touching land; during Winter found over the Santa Rosa Ridge and San Nicolas Basin near Tanner Banks and beyond the continental shelf; feed on anchovy, saury, hake, squid, and other small fish; particularly susceptible to oil pollution.

TABLE E-3 Cont.

Harbor seal (*Phoca vitulina*)	Eastern Pacific range from Bering Sea to Mexico; also in western Pacific and Atlantic; breeding season from April to early July; pups usually born on land but may be born in water; pups nursed 4 to 6 weeks; pups have been observed on San Miguel, Santa Rosa, Santa Cruz, Santa Barbara, San Nicolas and Santa Catalina; adults probably remain in Southern California Bight area after breeding; greatest Bight population density around northern Channel Islands and in the Santa Barbara Channel near Santa Rosa Island; feed principally on fish, crustaceans, and mollusks; apparently prefer relatively shallow warmer coastal waters; extremely shy and secretive.
Northern (Steller) sea lion (*Eumetopias jubatus*)	Range from Bering Sea to California Channel Islands in the eastern Pacific, also in western Pacific; abundant in Alaskan waters but rare in South California; numbers have decreased precipitously for unknown reasons (possibly due to temperature fluctuations) since 1930's in Channel Island area while increasing in Alaska; breeding season from late May to early July; feed on clams, rockfish, squid, octopus, flounder, and other fish and crustaceans; indications that feeding may be near land and in shallow (less than 600 ft. or 182m) water.
Guadalupe fur seal (*Arctocephalus townsendi*)	Range from northern Channel Islands to Mexico; once abundant, hunting reduced numbers to near extinction in early 1900's; now one of rarest pinnipeds in Southern California; numbers appear to be increasing; breeding season from May to July or August; most sightings of this species in the Southern California Bight have been made on San Miguel in May.
Sea otter (*Enhydra lutris*)	Range from Alaska to Baha California; a few individuals believed to be transient males sighted off Anacapa and San Miguel; California population (*Enhydra lutris nereis*) almost decimated by hunting in 18th and 19th centuries but populations now expanding from central California; not migratory although long distance wandering by young males reported; in California it is believed (not well documented) pups are born in water; rarely haul out of water; feed primarily on benthic mollusks, crabs and sea urchins but occasionally take fish; diving for food limited to about 120 ft. (36m) thus habitat is primarily limited to areas within 120 ft. (36m) depths; prefer rocky bottom and kelp habitat but also found in sandy bottom areas.

Table E-4: Approximate times of pinniped activity in the study area. (U. S. Geological Survey, 1976.)

Species	On Land	Pupping	Breeding	Nursing
Northern fur seal	May to about 15 November	Late May to mid-August	Late May to late August	Late May to about 15 November
Northern sea lion	May through November[a]	June	June	June to November. A few may nurse all year
California sea lion	All year	June	June to July	June to November. A few all year
Northern elephant seal	All year except when feeding	Late December to late February	January to mid-March	Late December to mid-March
Harbor seal	All year	March April	April May	March to May
Guadalupe fur seal	A few all year			

[a]A few may be on land at any time.

plateaus, or island/mainland shelves (Evans, 1975). At least one team of marine scientists has suggested the hypothesis that the biota of the entire Southern California Bight ecosystem (including pinnipeds, cetaceans, seabirds, benthic organisms and others) might tend to concentrate over such high relief areas rather than the relatively flat and deeper plains and basin areas (University of California, Santa Cruz, 1976).

At least 27 species of cetaceans have been seen in the waters of the study area. These waters may function as the home range of the common dolphin, Pacific white-sided dolphin, and the Pacific bottlenose dolphin. Pilot whales also use the area as a feeding ground; large concentrations of pilot whales have been sighted feeding on squid (Patterson, 1979, personal communication). The Pacific right whale, one of the rarest of the great whales, has occasionally been viewed in the Channel Islands area. The study site may be of considerable importance to the right whale both as habitat and foraging area but further research appears necessary to substantiate this assertion (Patterson, 1979, personal communication).

The entire eastern Pacific stock of gray whales migrates along the North American coast and passes through the area twice each winter (Nickerson, 1977; RESOURCES, 1978). Estimated populations range as high as 10,000 to 12,000 (Patterson, 1979, personal communication). Furthermore, observations of gray whales with calves close to the islands indicate that the study site is one of the prime focuses of returning calf migrations. Scientists have also observed cows and calves "hanging out" in the kelp beds (Patterson, 1979, personal communication). One possible explanation for this behavior may be that nearshore kelp beds offer protection from strong seas and provide a resting spot for calves (Leather-

wood, 1979, personal communication).

The area is also important for several endangered species, including the blue, fin, and humpback whale. Both blue and fin whales have been observed over long periods of time in waters just seaward of the study area (Patterson, 1979, personal communication). Local fishermen have reported sighting "stationary" blue whales during the early summer, which suggests that whales feed nearby (Patterson, 1979, personal communication).

Table E-5 lists 10 of the more common cetaceans observed in the study area, details information on historical sightings, and provides brief ecological notes.

In general, the large size, high mobility, and wide pelagic range of these whales have discouraged compilation of more complete ecological species accounts. It is clear, however, that toothed whales and dolphins, like most pinnipeds, represent a major link in the overall food chain within the study area and, due to their apparent attraction to high relief areas, frequent island shelves. Furthermore, it is probable that cetaceans play a significant role in influencing relative species abundance levels of other marine biota.

Another marine mammal in the waters around the northern Channel Islands is the sea otter. Currently, this species is known to the area only by occasional sightings of a few individuals (probably transient males) off the islands of San Miguel and Anacapa (Resources, 1978). As noted in Table E-3, the sea otter rarely hauls out, is limited to shallow (less then about 120 ft (37m)) coastal waters, and is a voracious feeder on mollusks and shellfish.

TABLE E-5. Historical species accounts and ecological information for cetaceans sighted over or adjacent to island shelves off San Miguel, Santa Rosa, Santa Cruz, Anacapa, and Santa Barbara. (Daugherty, 1965; National Marine Fisheries Service, 1978.)

Species	Historical Sightings around the Northern Channel Islands and Santa Barbara Island	Historical Sightings throughout the Southern California Bight and Beyond	Ecological Notes
Gray whale (Esochrichtius robustus)	14 sightings between Jan. - Mar.; all around the northern Channel Islands; none sighted during rest of the year.	East Pacific population ranges from Beaufort Sea to Baja Mexico; abundant in Channel Islands between Jan. and Mar.; scattered sightings remainder of the year.	Species summers in the northern waters and migrates south along the coast to Baja California and the Gulf of California in Winter; feeds on benthic amphipods and invertebrates during Summer; fasts during Winter; calves born in Winter; listed as "endangered"; numbers are increasing.
Fin whale (Balenoptera physalus)	1 sighting south of Santa Rosa in the Oct. - Dec. period.	Worldwide in distribution; found south to California in Summer; more southerly in Winter; scattered sightings in Bight. year round	Second largest whale; feeds on plankton (especially euphausiids) and occasionally fish; mating and calving season in Winter; calf weaned at about 7 months; listed as "endangered".
Humpback whale (Mogaptera novaeangliae)	1 sighting off western Anacapa Island between Jan.-Mar.	Worldwide range except for polar pack ice zones; between 1949 and 1973, 20 recorded sightings in Bight.	Noted for sound producing capabilities; migrates extensively from high latitudes in Summer to continental and island coasts in low latitudes in Winter; a baleen whale; feeds on krill and also anchovies and sardines when available; calving season from Oct. to Mar.; listed as "endangered".
Killer whale (Orcinus orca)	5 sightings off northern Channel Islands; all sightings between Jan. - Sept.	Worldwide range; 29 sightings in Bight throughout the year but mostly in cooler months.	Most common in highly productive coastal waters; known to lie off seal and sea lion rookeries during pupping season to feed on animals entering or leaving the water; usually found in groups of 10 to 100; also feed on squid, dolphins, flatfish, octopus and whales.

TABLE E-5 Cont.

Species	Historical Sightings around the Northern Channel Islands and Santa Barbara Island	Historical Sightings throughout the Southern California Bight and Beyond	Ecological Notes
Pilot whale (short finned) (Globicephala macrorhynchus)	2 sightings off western Santa Cruz Island between Oct. and Dec.	Range through North Pacific and North Atlantic; fairly abundant around California Channel Islands year round but most common in Winter.	Travel in schools; feed on squid and schooling fish; appear to calve year round; prefers offshore waters but moves closer to land in search of food.
Pacific white-sided dolphin (Lagenorhynchus obliquidens)	10 sightings over all seasons and off all islands.	Range north Pacific south to Baja California; sighted frequently throughout the year in the Bight.	Occurs in schools of usually less than 100 animals; prefers continental shelf and slope areas; breeds in Spring and Autumn; feeds on squid, octopus and small schooling fish; concentrates in numbers in San Miguel area in Summer months.
Dall's porpoise (Phocoenoides dallii)	15 sightings throughout the year and off all islands; most common between Jan. - Mar.	Range east and west north Pacific; frequent sightings throughout the year; most abundant in Fall and Winter.	Usually found in groups of 2 to 20; feed on squid and small schooling fish at both mid-water and deep-water depths.
Common dolphin (Delphinus delphis)	9 sightings throughout the year and off all islands.	Range worldwide in temperate and tropical waters; probably most common cetacean in Bight.	Congregate in schools of a few to several thousand; feed on anchovy, squid, hake, mackerel, sardine, sea bass, and lantern fish; rarely found in waters less than 182m (600 ft.) but frequents deeper ridges and sea mounts; 2 mating seasons Jan.-April and Aug.-Nov. and 2 calving seasons Mar.-May and Aug. - Sept.
Northern right whale dolphin (Lissodelphis borealis)	1 sighting off southeast Santa Rosa between Oct.-Dec.; 1 sighting south off Santa Cruz between July-Sept.	Range temperate north Pacific; scattered sightings throughout Bight, mostly between Oct.-Mar.	Travels in schools of 100 to over 1,000; found in open ocean but observed most commonly along continental slope, near ridges and submerged plateaus, and close to islands and mainland; feed on squid, lantern fish, and miscellaneous fish.
Bairds beaked whale (Berardius bairdii)	6 animals observed in 1970 south of Santa Cruz Island.	Range north Pacific from Alaska to Southern California, only 1 other sighting in Bight area over Tanner Banks.	Usually travel in tight schools of up to 30 animals; feed on deep-water fish and squid; migrations poorly known; rare as far south as Southern California.

Because of its consumption of sea urchins, abalone, and other shellfish, the sea otter is an important factor in determining the abundance of other marine species and possibly even the type of habitat (Woodhouse et al., 1977; Yellin, 1977). At least some scientists have suggested that the otter's consumption of sea urchins, which graze on the attachment points of kelp, may indirectly lead to an expansion of kelp beds (Yellin, 1977). (Kelp beds, as discussed in Section E.2.c., provide a special habitat for many organisms in much the same manner as coral reefs.)

Ranging throughout the Southern California Bight and beyond, the marine mammals in the waters around the islands affect the food chain and natural ecosystem stability in a broad region. Mainland-based coastal pollution and intensive littoral development have (both directly and indirectly) reduced and in some cases eliminated mainland haulout areas for seals and sea lions here. Therefore, the remaining populations on shorelines and in adjacent waters provide an important indicator of broad environmental health and conditions as well as an extremely valuable vestige of marine wilderness and species distribution. Seals, sea lions, and possibly whales and porpoise also provide an invaluable research and public educational potential.

Finally, marine mammals, particularly the migratory gray whale (see Figure E-7), support recreational benefits of considerable economic importance. As these whales travel along the shore, charter boats carry paying customers in increasing numbers out for closer observation. In some cases, whale watchers even charter planes.

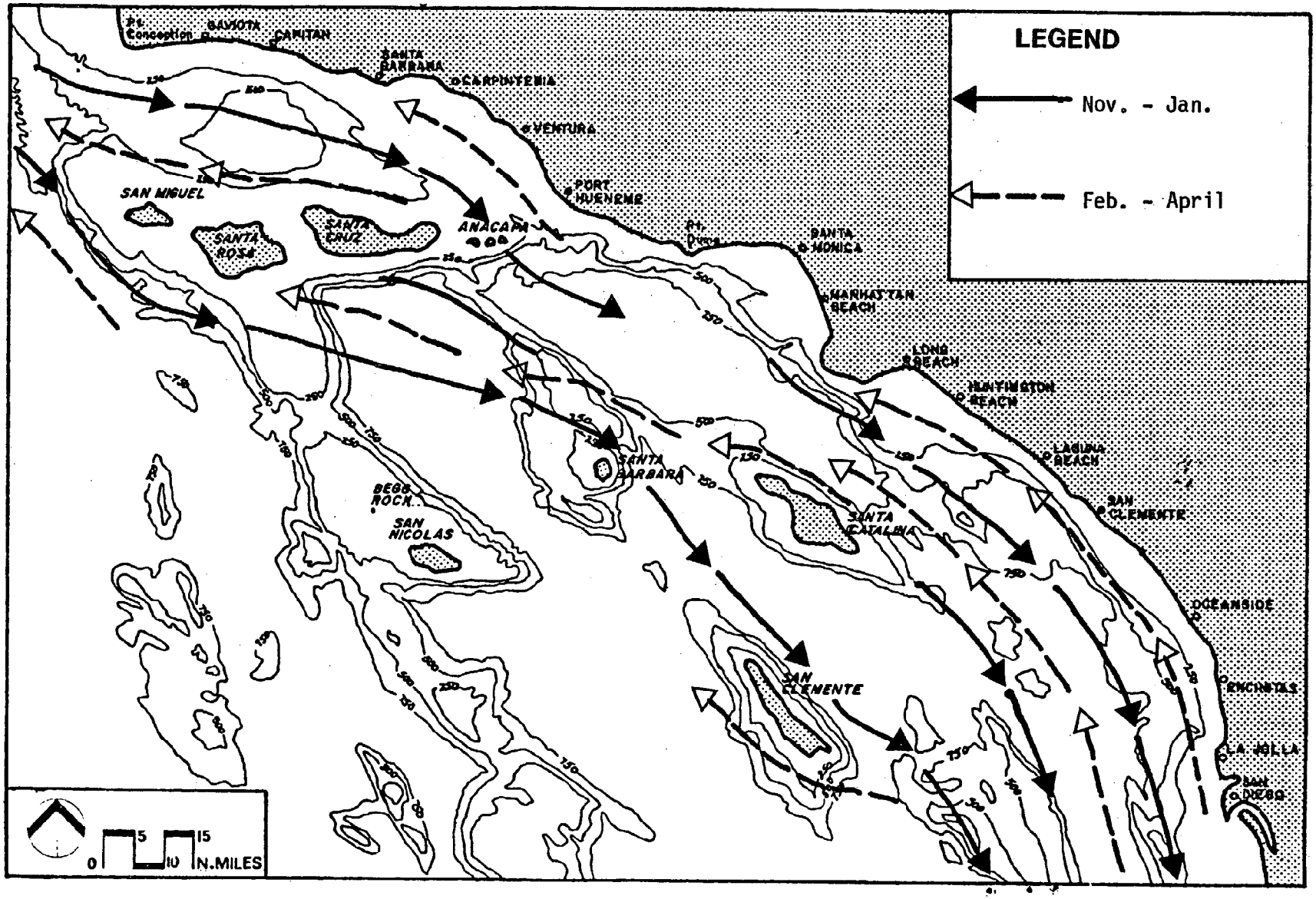

FIGURE E-7. Migration routes of the gray whale (Modified from Resources, 1978).

E.2.b. Marine Birds

The northern Channel Islands and Santa Barbara Island are a focal point for one of the richest resource areas for marine birds in the United States. This richness is based on both numbers and species diversity. Seabird concentrations occur not only on the islands and offshore rocks themselves (which provide nesting habitat for nine of southern California's 12 species of breeding seabirds) but also on the productive waters around the islands over which many species forage for food. A recent study of Southern California Bight marine avifauna (University of California, Santa Cruz, 1976) collected baseline data on 64 species of seabirds including nesting species, year-round visitors, summer visitors, winter visitors, transients, and strays (see Table E-6). Because of their highly mobile and migratory habits, probably all of these seabird species appear at least occasionally around the northern Channel Islands and Santa Barbara Island.

The brown pelican is the only breeding seabird species found on the Channel Islands which is listed as endangered due to low population levels. Among the other endangered terrestrial species currently or formerly found on the Islands are Beldings's savannah sparrow, the peregrine falcon, and the southern bald eagle.

Of greatest significance to the proposed sanctuary are the large number of marine bird species which use the relatively shallow marine waters around these islands (see Table E-7). For example, seabirds nesting on the northern Channel Islands tend to forage near their rookeries and close to island shores. Limited tracking and observation data, described more fully below, indicate that

TABLE E-6. The marine avifauna of the Southern California Bight (developed from University of California, Santa Cruz, 1976).

1. Nesting Species

Ashy storm-petrel (on Channel Islands)
Brown pelican (on Channel Islands)
Double-crested cormorant (on Channel Islands)
Brandt's cormorant (on Channel Islands)
Pelagic cormorant (on Channel Islands)
Western gull (on Channel Islands)
Pigeon guillemot (on Channel Islands)
Xantus' murrelet (on Channel Islands)
Cassin's auklet (on Channel Islands)
Least terns (on mainland only)
Caspian terns (on mainland only)
Elegant terns (on mainland only)

2. Year-round Visitors (do not breed on the Islands but can be expected any time of the year)

California gull
Ring-billed gull
Forster's tern
Black storm-petrel
Royal tern
Black-footed albatross

3. Summer Visitors

Least storm-petrel
Red-billed tropicbird
Craveri's murrelet
Leach's storm petrel
Pink-footed shearwater
Sooty shearwater

4. Winter Visitors

Heermann's gull
Northern fulmar
Common loon
Arctic loon
Red-throated loon
Horned grebe
Eared grebe
Western grebe
Short-tailed shearwater
Manx shearwater
Fork-tailed storm petrel
White-winged scoter
Surf scoter
Red-breasted merganser
Red phalarope
Pomarine jaegar
Glaucous-winged gull
Herring gull
Common murre
Thayer's gull
Mew gull
Bonaparte's gull
Black-legged kittiwake
Rhinoceros auklet

5. Transients (pass through Southern California waters while migrating)

New Zealand shearwater
Brant
Parasitic jaeger
Long-tailed jaeger
Skuas
Sabine's gull
Common tern
Horned puffins

6. Strays (occur in small numbers but not considered part of Bight's avifauna)

Red-necked grebe
Ancient murrelet
Laysan albatross
Cape petrel

TABLE E-7. Marine birds of the Southern California Bight sighted or reported near the northern Channel Islands and Santa Barbara Island (adapted from University of California, Santa Cruz, 1976).

Species	
Common loon (Gavia immer)	Present Oct. - May; remain inshore near to island and mainland coasts; migrate north during Summer.
Arctic loon (Gavia arctica)	Present Oct. - June; some may remain during Summer; in Nov. 1975 they were observed throughout the Bight but in Jan. they had concentrated in protected inshore waters around northern Channel Islands; most abundant loon in Bight.
Red-throated loon (Gavia stellata)	Present Oct. - April; numerically dominant loon inshore along mainland coast but with some nearshore island records; virtually absent offshore.
Horned grebe (Podiceps auritus)	Present Nov. - April; usually along mainland coast also present in small numbers around northern Channel Islands.
Eared grebe (Podiceps nigricollis)	Present Sept. - June; move to inland nesting sites in late Winter; concentrate around northern Channel Islands in mid-Feb.; out number other Grebes in Channel area and constitute a significant portion of nearshore avifauna.
Northern fulmar (Fulmarus glacialis)	Present Nov. - June; appear to concentrate over Santa Barbara Channel, northern islands chain, northern Patton Escarpment, Tanner, Cortes and Fortymile Banks, and Coronado Escarpment.
Pink-footed shearwater (Puffinus creatopus)	Present year round but most abundant June to Sept.; second most abundant Shearwater; most frequent around northern Channel Islands, along Santa Rosa-Cortes Ridge, in Santa Barbara Channel, in San Nicolas Basin and east of longitude 118° along U.S.-Mexican border.
New Zealand shearwater (Puffinus bulleri)	Transient species seen rarely Sept. - Nov.; sightings seen in 1975-76 survey, 4 to 7 individuals were seen in Sept. near San Miguel Island; also seen in May.
Sooty shearwater (Puffinus griseus)	Most abundant Bight shearwater; summer visitor, greatest concentrations around northern Channel Islands, and over northern Santa Rosa-Cortes Ridge; may concentrate north and west of Santa Rosa and San Miguel Islands in Sept. before beginning southward migration; Summer and Spring feeding appears to be just west of San Miguel Island; remain closer to shore during upwelling season.
Fork-tailed storm petrel (Oceanodroma furcata)	Identified as a Winter visitor but sighted only on four occasions during 1975-76 survey; one siting was directly over Osborn Bank near Santa Barbara Island in Nov.
Leach's storm petrel (Oceanodroma leucorhoa)	Summer visitor with peak numbers in July; generally more than 16 nmi (30km) offshore over shallower banks; also most numerous storm petrels in San Miguel Island and Cortez Bank areas; prefer upwelling areas.

TABLE E-7 Cont.

Species	
Glaucous-winged gull (Larus glaucescens)	Present Oct. - May, appears to concentrate over San Miguel and Santa Rosa Island but also San Nicolas, Santa Cruz, and Santa Barbara, occasionally wander offshore; scavenge around pinniped hauling grounds.
Western gull (Larus occidentalis)	Present throughout year; in Spring and early Summer greatest numbers around breeding colonies on San Miguel, Anacapa, San Nicolas and Santa Barbara Islands and 5.4 to 16.2 nmi (10 to 30km) offshore of these areas; move to southeast in late Summer and early Winter.
Herring gull (Larus argentatus)	Present Nov. - April; mostly from Jan. - Mar.; scattered along mainland and northern Channel Islands in Jan. but more on islands in March.
California gull (Larus californicus)	Year round; numbers peak on mainland and offshore at Santa Rosa and Santa Catalina Islands in January.
Mew gull (Larus canus)	Present Nov. - April; found along mainland beaches, at sea, and near the shores of the northern Channel Islands in Jan.
Heermann's gull (Larus heermanni)	Present June - Mar.; found infrequently in offshore waters, rather often on beaches of the Channel Islands, and commonly on mainland beaches.
Black-legged kittiwake (Rissa tridactyla)	Present Nov. - May; local concentrations northwest of San Miguel Island and southeast of Anacapa in Dec.; uncommon on beaches but abundant offshore in Jan.
Common tern (Sterna hirundo)	Near mainland coasts between April - June and Aug. - Nov.; one sighting reported near Santa Cruz Island.
Royal tern (Thalasseus maximus)	Present Aug. - Feb.; more numerous among Channel Islands than mainland beaches; two major concentration areas in Bight, one of which is around northern Channel Islands.
Pigeon guillemot (Cepphus columba)	Common during Spring and Summer near nesting sites on San Miguel, Santa Rosa, Santa Cruz, Anacapa, and Santa Barbara Islands; rarely more than 2.2 nmi (4km) from shore; present from March - July.
Xantus' murrelet (Endomychura hypoleuca)	Present in moderate to high densities near breeding colonies on Santa Barbara during Spring; common northwest of Santa Barbara Island in Jan. - Feb.
Cassin's auklet (Ptychoramphus aleuticus)	Present throughout Bight; Winter concentrations near San Miguel Island, Anacapa Passage, along Santa Rosa-Cortes Ridge, and near San Diego; Summer concnetrations near large breeding colonies on San Miguel Island.
Horned puffin (Fratercula corniculata)	Present May - June; possibly increasing numbers; seen during 1975 survey in small numbers west of Santa Barbara Island.
Tufted puffin (Lunda cirrhata)	Sighted rarely but most frequent in the vicinity of Santa Cruz Basin and offshore of San Miguel Island during January.

TABLE E-7 Cont.

Species	
Ashy storm petrel (Oceanodroma homochroa)	Appear to prefer offshore ridge areas; most common in northern Bight area, nests in northern Channel Islands.
Brown pelican (Pelecanus occidentalis)	Year round with peak abundance Sept. - Dec. due to influx of individuals from Mexico; nest on Anacapa Island; areas of greatest concentration northern and central Channel Islands.
Double crested cormorant (Phalcrocorax auritus)	Almost exclusively on the immediate Channel Island coastlines, particularly near known nesting colonies at San Miguel (Prince Island), Santa Barbara, and Anacapa Islands; greatest numbers in Sept. and Winter months.
Brandt's cormorant (Phalacrocorax penicillatus)	Most abundant onshore and in nearshore waters; nesting colonies among the four northern Channel Islands—particularly San Miguel Island; occasionally seen offshore but return to islands each day.
Pelagic cormorant (Phalacrocorax pelagicus)	Probably year round, almost totally restricted to the waters immediately around the northern Channel Islands and Santa Barbara Island; rarely occurring offshore; breeding population on Channel Islands.
Brant (Branta bernicla)	Transient between Oct. - Nov. and Mar. - April; present in large numbers in April during northward migration.
White-winged scoter (Melanitta deglandi)	Present Sept. - April; distributed throughout Bight with peak concentrations around northern Channel Islands in Jan. - Feb.
Surf scoter (Melanitta perspicillata)	Present Oct. - June; present in inshore waters of mainland coast and northern Channel Islands; gradually decrease numbers from April - June; widely reported offshore (more than 2.7 nmi or 5km) around certain islands in Nov.; concentrate near Santa Rosa Island in March.
Red-breasted merganser (Mergus serrator)	Present Sept. - May; in fall concentrate along mainland coast and coast of Santa Cruz Island; by Feb. cluster inshore around northern Channel Islands and P.M.T.C.; somewhat reduced concentrations in March.
Red phalarope (Phalaropus fulicarius)	Present Aug. - May; scattered through inshore and offshore waters with moderate densities over and beyond Santa Rosa-Cortes Ridge in Nov. - Dec.
Northern phalarope (Lobipes lobatus)	Present at scattered locations among northern Channel Islands and San Pedro Channel in April - May; most numerous in waters inshore of the Santa Rosa-Cortes Ridge.
Pomarine jaegar (Stercorarius pomarinus)	Present Aug. - May; scattered in offshore waters between the Channel Islands and the mainland; highest densities between Sept. - Nov.; most common far out to sea over offshore banks and ridges.

during the breeding season some species prefer to forage over the island shelves which may vary from 3 to 6 nmi (4.8 to 9.6km) in width. The birds found in island breeding colonies may, therefore, be among those most dependent on the waters around the northern Channel Islands and Santa Barbara Island. If nesting birds must use more distant feeding areas, the energy (food) expended in travel to and from these more remote waters could decrease the amount of regurgitated food available for chicks and potentially reduce the number of successfully reared young.

The islands surrounded by the waters under consideration provide rookery areas for 9 of the 12 species of nesting marine birds in the Bight (see Table E-8 and Figures E-8, 9, 10, 11, and 12); the remaining 3 species breed only on the mainland. The approximately 15,700 to 19,800 nesting pairs of seabirds on the northern Channel Islands and Santa Barbara Island include the Bight's most important rookeries. Table E-9 shows that in numbers the San Miguel-Prince Island complex is the most important rookery in the Bight while Santa Barbara Island has the greatest number of breeding species; the area is also the largest marine bird rookery in southern California (U.S. Bureau of Land Management, 1979). Anacapa Island supports the second largest number of seabirds including a rookery for the endangered brown pelican. Colonies found on Santa Barbara Island are the third largest in the Bight and support the only U.S. rookeries for the Xantus' murrelets.

Although most of the 9 species found nesting on these islands are known to have once bred on the mainland, intensive development along most mainland coasts now restricts breeding habitat to offshore islands (California Department of Fish and Game, 1979). Reduction of habitat, along with other factors, has reduced present populations of pelican, cormorant, and auklet to only a

Table E-8. Known marine bird colonies located on the northern Channel Islands and Santa Barbara Island. (Modified from: University of California, Santa Cruz, 1976; Resources, 1978; University of California, Irvine, 1980).

LOCATION	BREEDING SPECIES	ESTIMATED POPULATION 1975-1977
Castle Rock (San Miguel Is.)	Pigeon guillemot	200
	Brandt's cormorant	432
	Cassin's auklet	NC*
	Pelagic cormorant	30
	Xantus' murrelet	50
San Miguel Island	Pigeon guillemot	400
	Pelagic cormorant	62
	Brandt's cormorant	84
Prince Island (San Miguel Is.)	Western gull	1,160
	Cassin's auklet	20,000
	Brandt's cormorant	1,720
	Pigeon guillemot	300
	Double crested cormorant	40-80
	Ashy storm petrel	NC*
	Pelagic cormorant	100
Santa Rosa Island	Pigeon guillemot	250
	Pelagic cormorant	10
	Brandt's cormorant	400
Gull Island (Santa Cruz Is.)	Cassin's auklet	138
	Western gull	62
	Brandt's cormorant	46
	Pelagic cormorant	34
Scorpion Rock (Santa Cruz Is.)	Western gull	200
	Brown pelican	160
Anacapa Island	Western gull	5,000
	Brown pelican	152-834
	Pigeon guillemot	8
	Pelagic cormorant	2
	Brandt's cormorant	2
	Xantus' murrelet	2
Santa Barbara Island (including Sutil Rock)	Double crested cormorant	24
	Brandt's cormorant	240
	Pelagic cormorant	2
	Western gull	1,600-2,400
	Xantus' murrelet	2,000
	Pigeon guillemot	120
	Brown Pelican	80-120

*NC=No Count Available

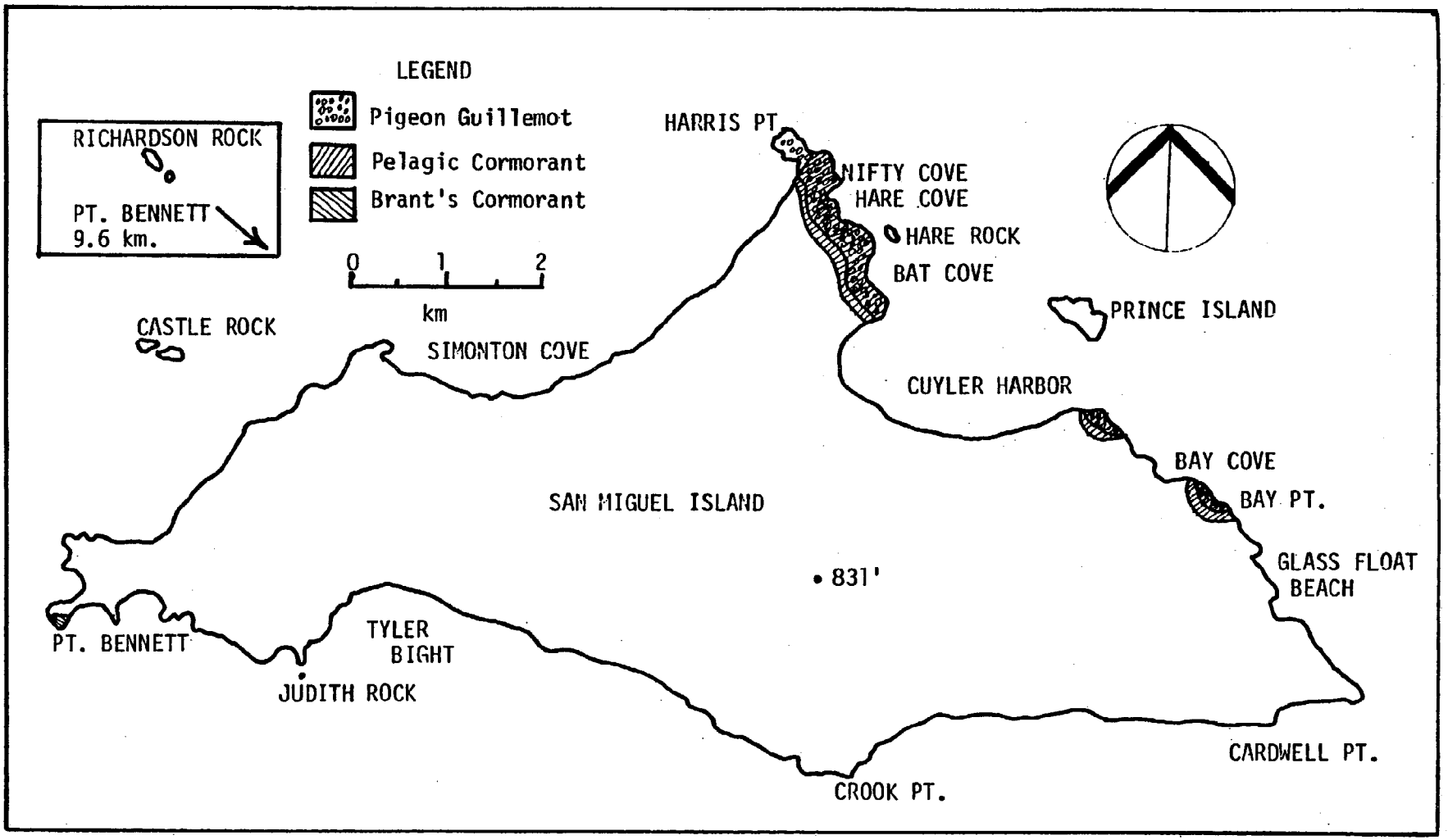

FIGURE E-8. Distribution of nesting colonies on San Miguel Island (University of California, Santa Cruz, 1976).

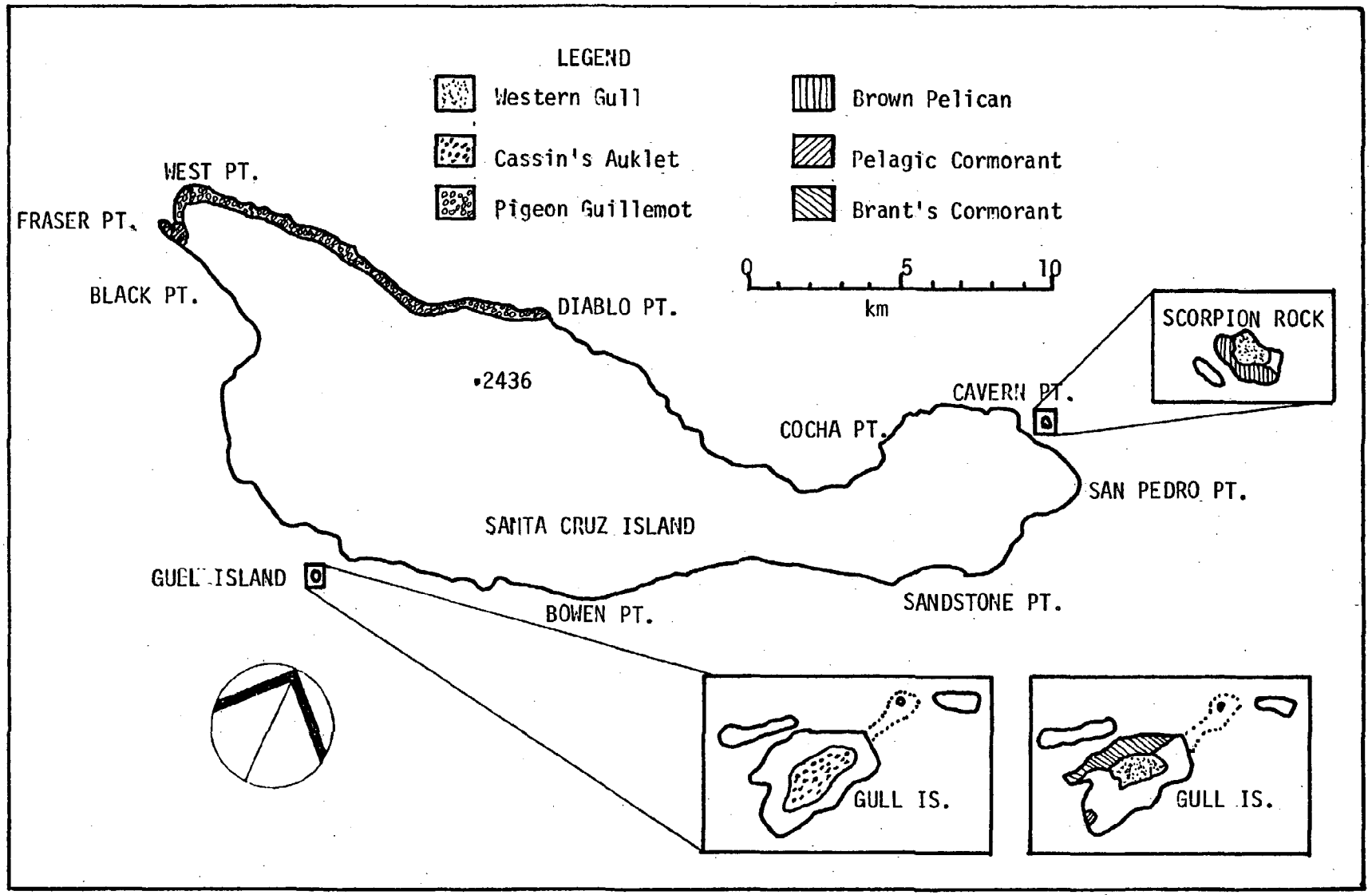

FIGURE E-9. Distribution of nesting colonies at Santa Cruz Island. Distributions of Brandt's and double-crested cormorants incompletely known. (University of California, Santa Cruz, 1976).

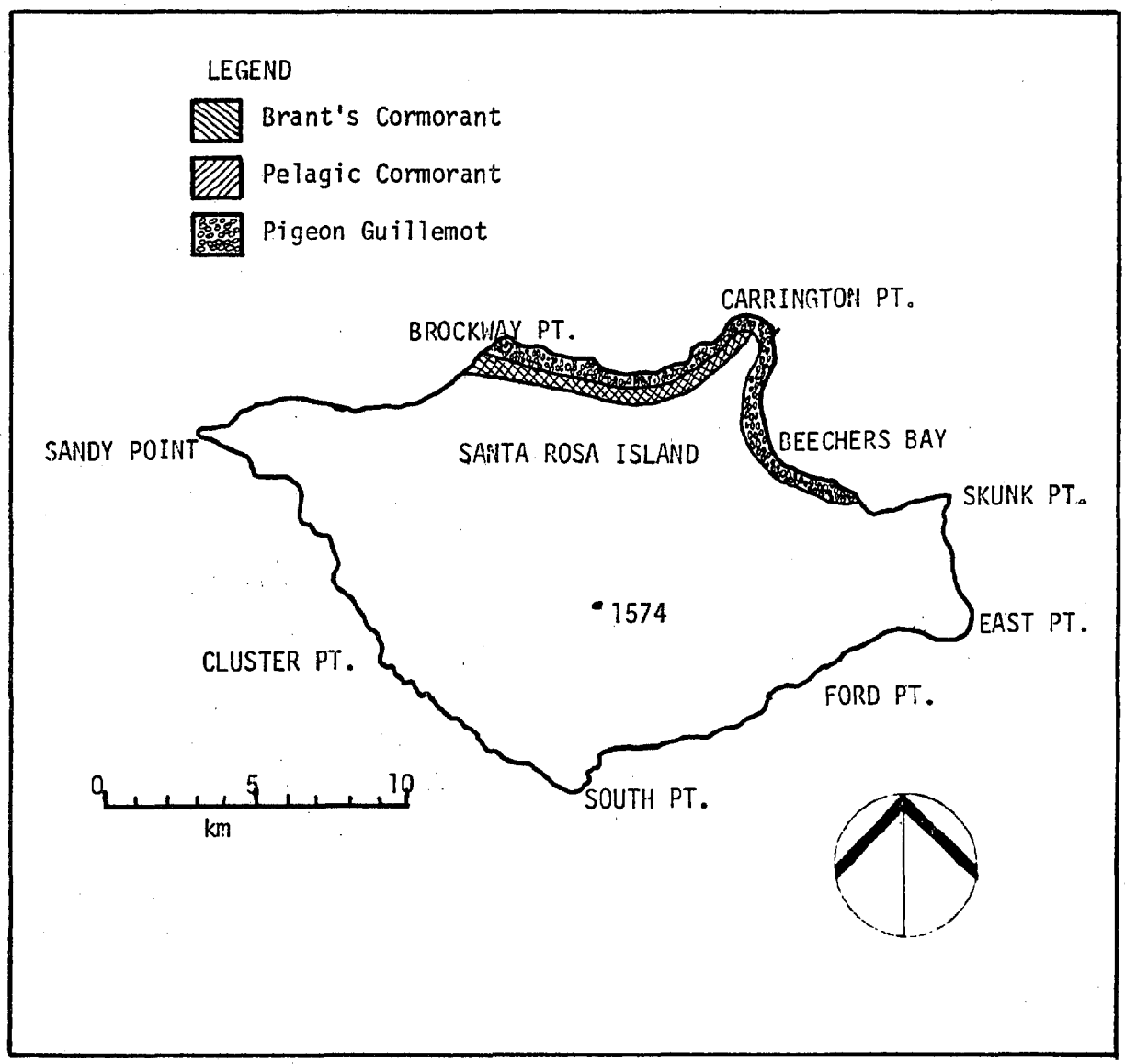

FIGURE E-10. Distribution of nesting colonies on Santa Rosa Island. Distributions of Brandt's cormorant and pigeon guillemot incompletely known. (University of California, Santa Cruz, 1976).

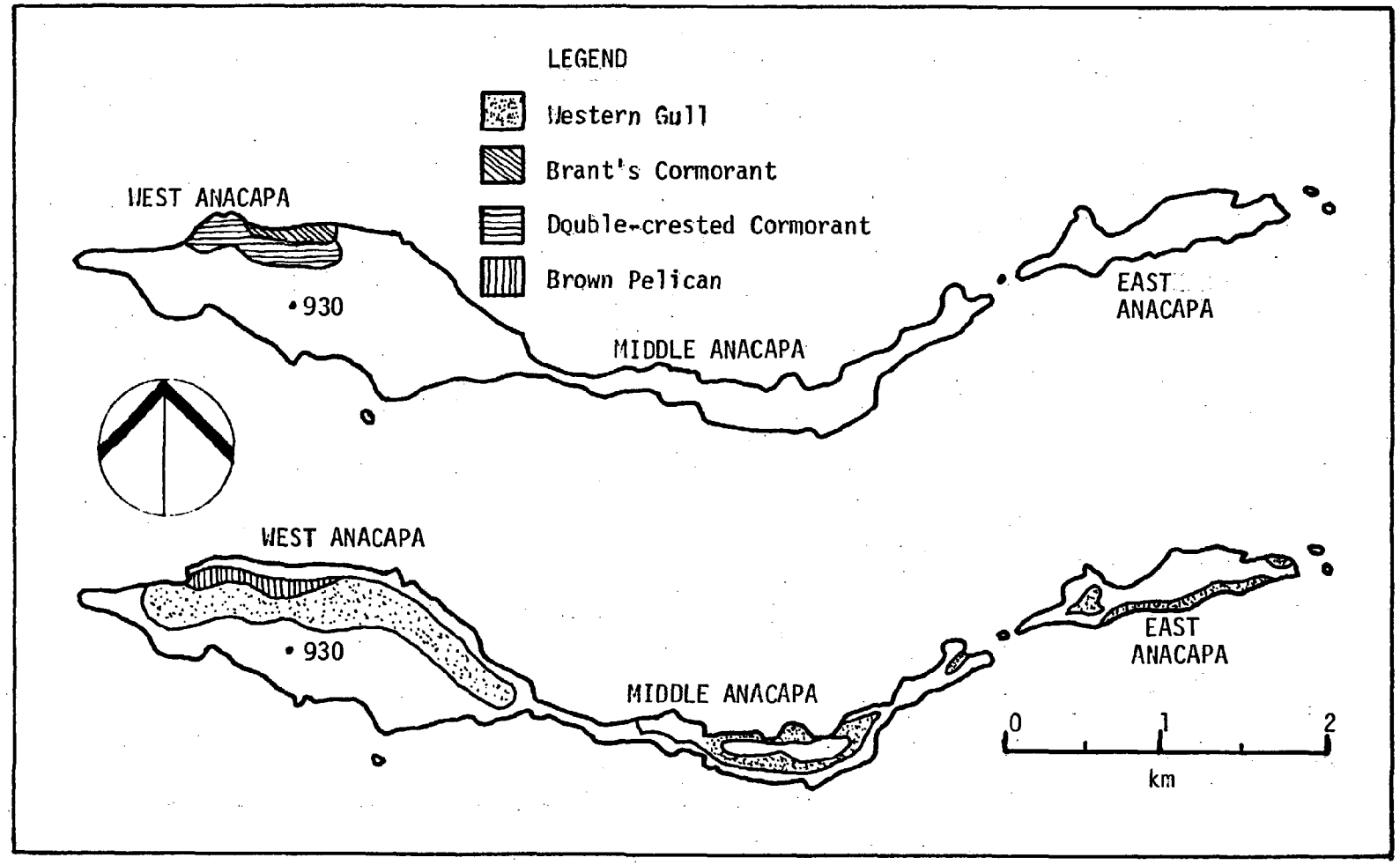

FIGURE E-11. Distribution of nesting colonies on Anacapa Island (Distribution of Brandt's cormorant incompletely known). (University of California, Santa Cruz, 1976.)

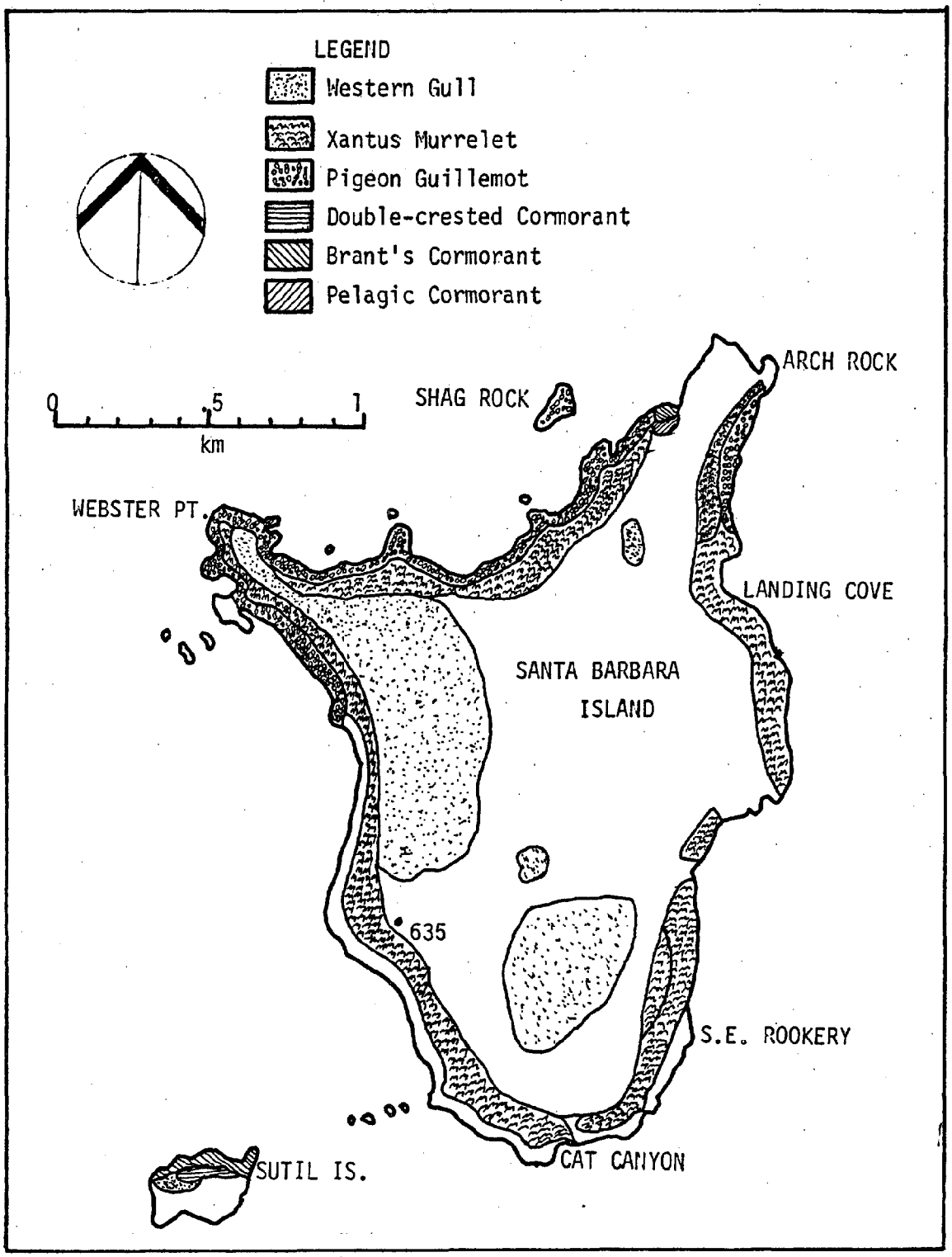

FIGURE E-12. Distribution of nesting colonies of seabirds on Santa Barbara Island (University of California, Santa Cruz, 1976).

TABLE E-9. Numbers of seabird pairs nesting on the California Channel Islands in 1975 (University of California, Santa Cruz, 1976).

	Island	Species								
		ASP	BP	DC	BC	PC	WG	PG	XM	CA
1.	San Miguel	?	-	-	42	31	+	140	?	?
	Castle Rk.	?	-	-	216	15	+	40	?	+
	Prince Is.	+	-	20-40	860	1	600	200	+	10,000
	Richardson Rk.	?	-	-	-	-	?	-	-	?
2.	Santa Rosa Is.	?	-	-	200	+	+	+	?	?
3.	Santa Cruz Is.	?	-	-	?	?	?	+	?	?
	Gull Is.	?	-	-	23	4	31	-	?	30
	Scorpion Rk.	?	80	-	?	-	50	1	?	?
4.	West Anacapa Is.	?	212	+	1	1	+	?	?	?
	Middle Anacapa Is.	?	-	-	-	-	1000	-	?	?
	East Anacapa Is.	?	-	-	-	-	3000	-	?	?
5.	Santa Barbara Is.	?	-	2	27	1	1162	60	ca.1000	?
	Sutil Is.	?	-	8	93	-	?	20	?	?
	Shag Rk.	?	-	-	-	-	?	?	?	?
6.	Santa Catalina Is.	?	-	-	-	-	?	-	?	?
	Bird Rk.	?	-	-	-	-	25-30	-	?	-
	Ship Rk.	?	-	-	-	-	-	-	?	-
7.	San Nicolas Is.	?	-	-	365	-	720	-	?	?
8.	San Clemente Is.	?	-	-	12	-	?	-	?	?
	Castle Rk.	?	-	-	1	-	?	-	?	?
	Bird Rk. (NW Harbor)	-	-	-	-	-	31	-	-	-

Symbols: - = not present; ? = possibly present, but not found; + = present, but no estimate of numbers obtained.

ASP = Ashy stormy petrel
BP = Brown pelican
DC = Double-crested cormorant
BC = Brandt's cormorant
WG = Western gull
PG = Pigeon guillemot
XM = Xantus' murrelet
CA = Cassin's auklet
PC = Pelagic cormorant

fraction of their former numbers. Two other marine species which nested in the Channel Islands 75 years ago (the tufted puffin and common murrelet) no longer nest there. As noted above, the brown pelican is listed as endangered on the U.S. Fish and Wildlife Service's Endangered Species List. In addition to seabirds, two land-oriented species also designated as endangered (the bald eagle and the peregrine falcon) once nested on the northern Channel Islands but have not been observed in the area for several years. These two species, although known to feed along beaches and over waters very close to the coast, are not true seabirds.

Although distribution and movement vary between species and time of year, seabirds, like marine mammals, tend to concentrate over areas of high bottom relief including ridges, island shelves, and plateaus, During summer, for example, the brown pelican, western gulls, and Cassin's auklets in the Bight are found in greatest numbers northwest of San Miguel Island, in the eastern end of Santa Barbara Channel, close inshore around all eight islands, and in waters overlying the northern Santa Rosa-Cortes Ridge and Santa Cruz Basin (University of California, Santa Cruz, 1976).

As mentioned above, nesting birds have been observed to forage in waters close to their rookeries, usually within several miles of shore. For example, the three species of cormorants, pelican, Xantus' murrelet, and pigeon guillemot were predominantly within 6 nmi (10km) of their colonies while Cassin's auklets concentrated between 6 to 15 nmi (10 to 25km) offshore (University of California, Santa Cruz, 1976). Radio telemetry studies on the movements of radio-banded Xantus' murrelets and western gulls at Santa Barbara Island and transects for Cassin's auklet at San Miguel Island and Xantus' murrelet at Santa Barbara Island also demonstrate patterns of movement close to island shores. The relative

importance of the waters near the northern Channel Islands and Santa Barbara Island for all species of marine birds is indicated by the large number of individuals sighted there as compared to the other more southern Channel Islands (see Table E-10).

Seabirds also tend to feed in the kelp bed canopy. Kelp, as discussed below in Section E.2.c, grows principally on rocky bottom areas shallower than 100 ft (30m). The kelp canopy provides a resting and foraging ground to many seabirds (California Department of Fish and Game, 1979). For instance, the great blue heron uses the surface kelp as a platform from which it hunts. The pigeon guillemot swims within the forests for its prey. The brown pelican plunges after fish in clear water between the canopy growth. Cormorants also feed about the kelp. Gulls of many species and sea ducks use the kelp canopy and clear water between as resting areas. Some examples are:

Larus occidentalis	Western gull
Larus californicus	California gull
Larus philadephis	Bonaparte's gull
Melanitta deglandi	White-wing scoter
Melanitta perspicillata	Surf scoter
Aythza affines	Lesser scaup

Marine birds as a predatory group are one of the most important food chain consumers in the Bight along with pinnipeds, cetaceans, and man. Although their principal food sources are poorly known and vary by species, squid and small schooling fish such as anchovies, sardines, and saury probably predominate. Estimates of annual consumption are not available, but as a major predator at the top of the food chain, their importance in maintaining a balance in the Bight's species diversity and abundance is un-

Table E-10 Sightings of all species combined (total individuals) on and near Channel Islands and beaches, April 1975 through March 1976. Dash indicates area not surveyed or survey incomplete (University of California, Santa Cruz, 1976).

Location	Apr-Jun 75	Jul-Sep 75	Oct-Dec 75	Jan-Mar 75
SAN MIGUEL ISLAND				
Richardson Rock	102	233	179	93
West	1427	1313	1365	810
South	304	194	372	216
East	1846	894	1616	755
North	130	272	245	281
SANTA ROSA ISLAND				
West	289	188	1563	633
South	80	116	613	2756
East	437	653	626	1136
North	691	822	734	546
SANTA CRUZ ISLAND				
West	163	247	749	186
South	230	442	783	1454
East	375	356	928	173
North	582	448	632	502
ANACAPA ISLAND	1865	--	--	7482
SAN NICOLAS ISLAND				
Northwest	140	587	1756	1513
Southwest	69	25	78	95
Southeast	37	0	1608	944
Northeast	127	477	302	416
SANTA BARBARA ISLAND	1187	597	2141	813
SANTA CATALINA ISLAND				
Northwest	11	63	103	852
Southwest	84	40	120	1171
South	48	13	24	94
East	43	54	34	1620
Isthmus	56	65	41	1096
SAN CLEMENTE ISLAND				
Northwest	303	571	790	2141
West Central	66	130	611	579
Southwest	18	42	161	107
Pyramid Cove	10	29	40	0
East	30	0	0	16

doubtedly significant.

The shallow island shelf waters surrounding the northern Channel Islands and Santa Barbara Island provide significant feeding areas for the largest concentrations of seabirds in the Southern California Bight. From an ecologic point of view, this concentration of top predators represents a significant factor determining the Bight's trophic (food) pathways. The breeding colonies of seabirds on the islands represent remnants of former ranges that once included mainland areas. Now, however, most mainland breeding colonies south of Point Conception have been destroyed (California Department of Fish and Game, 1979).

The marine feeding areas in waters surrounding these remaining rookeries provide significant food sources to support these breeding colonies. The large concentrations of marine birds also afford exceptional research opportunities, particularly for the study of ecologic pathways related to the birds, as well as an important resource for ornithologists and nature lovers.

E.2.c. Fish and Plant Resources

Marine fish resources, finfish, invertebrates, and plants, are discussed below under two groupings: nearshore species (found in waters shallower than 180 ft (55m) and offshore species (found in water of greater depths). The outer margin of the nearshore zone approximates the depth at which the island shelf plunges down a steeper slope to the deeper offshore basins, plateaus, and submerged ridges. In most cases, the division between the two zones is 3 to 6 nmi (4.8 to 9.7km) from shore.

California's nearshore fish assemblage (i.e., fish favoring the island and mainland shelves) has been found by Horn (1974) to include some 213 species, or about 44 percent of all species reported by Miller and Lea (1972) to occur in all southern California waters (U.S. Bureau of Land Management, 1979). This diversity (Figure E-13) is at least partly due to the convergence near the northern Channel Islands of two major biogeographic regions. A detailed list of all fish in the island shelf area of the northern Channel Islands and Santa Barbara Island has not been compiled.

The California Department of Fish and Game (1979) has identified fish species of recreational and commercial interest that occur off each of the northern Channel Islands and Santa Barbara Island (see Appendix 2). Among the more notable finfish are the rockfishes and surfperches. Among the invertebrate and plant species are the abalones (red, black, white, pink), rock scallops, California sea mussels, piddocks, sea urchins, lobster, bay mussels and kelp. The most frequently occurring shellfish on the island shelves are the bivalves Parvilucina tenuisculpta and Tellina carpenteri (U.S. Bureau of Land Management, 1979). Two of the most prominent nearshore marine habitats are the kelp bed/rocky bottom areas and the sand flat areas. Of these, kelp beds are the most important island shelf habitat in terms of diversity and abundance of fish species.

In southern California kelp beds only grow on rocky bottom areas with depths between 9 to 284 ft (3 to 86m). Greatest abundances occur between about 25 to 100 ft (8 to 30m).

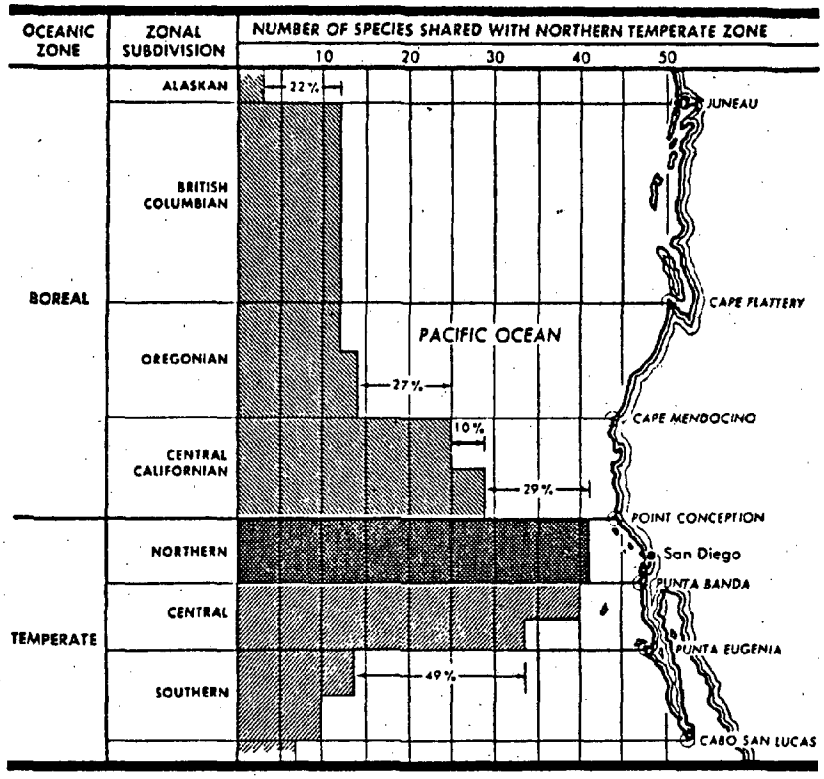

FIGURE E-13. Diversity of fish species along the Pacific coast (North and Hubbs, 1968).

Kelp beds are found throughout the region, around all the Channel Islands and along the mainland coast (Figure E-14). The U.S. Bureau of Land Management (1979) identifies the abundant kelp beds off the island's shores as a major reason behind its (BLM's) conclusion that island waters represent one of the most important of southern California's marine habitats. They describe this vital resource as follows (U.S. Bureau of Land Management, 1979):

> "About 40 percent of all the kelp beds in the Southern California Bight occur around the Channel Islands. These kelp beds are some of the most highly developed submarine forests in the world. Over 800 plant and animal species are known to be associated with these kelp beds including many valuable sport and commercial species."

Kelp beds (see Figure E-15) offer sessile, resident, and transient marine life protection, food, and special benthic (in holdfasts) and pelagic (stipes, fronds, and canopy) niches. Southern California kelp beds harbor some 125 fish species although perhaps only 20 or 30 are common (Quast, 1968). Ebeling et al. (In process) reports that most fish species prefer either the bottom or canopy zones, bypassing the intermediate depths.

Particularly important to repopulation rates, many kelp bed fishes such as the kelp bass and some rockfish show little seasonal movement. Ebeling et al. (In process) cite sources which state that adults of kelp bed fish may spend most of their lives within an area of but a few hundred square yards. Ebeling et al. (In process) also suggest that northern Channel Island kelp bed fishes

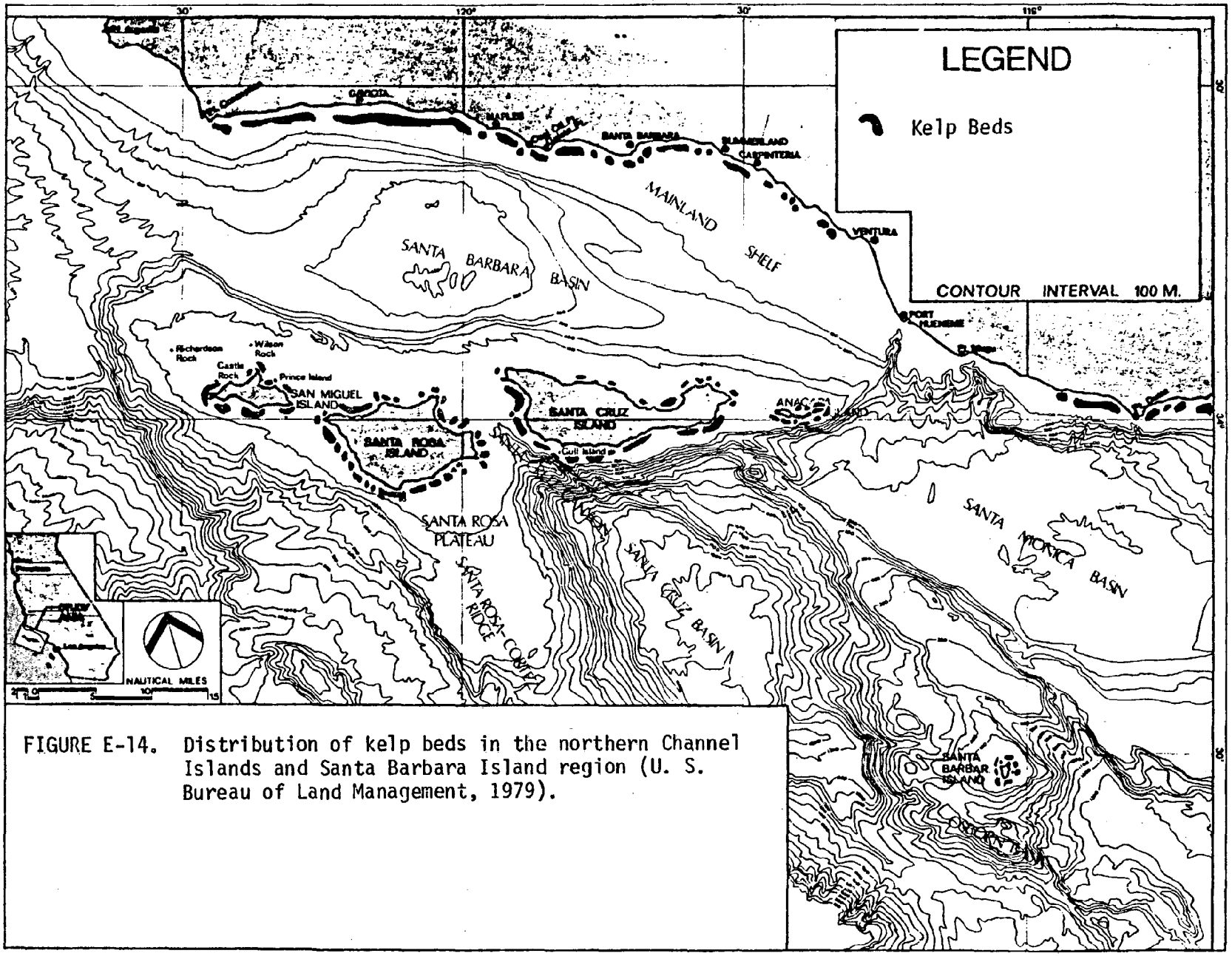

FIGURE E-14. Distribution of kelp beds in the northern Channel Islands and Santa Barbara Island region (U. S. Bureau of Land Management, 1979).

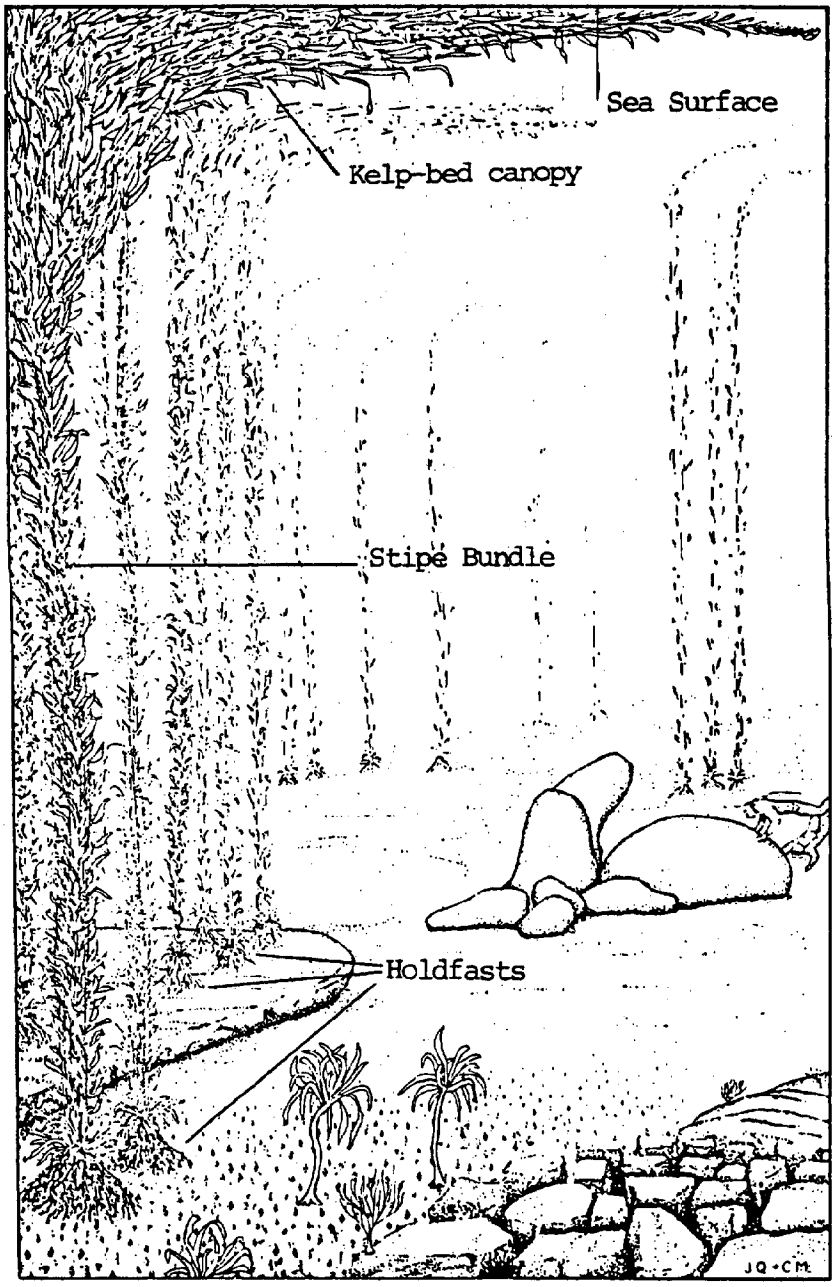

FIGURE E-15. Underwater diagram of a kelp bed (North and Hubbs, 1968).

tend to have a higher fish density and diversity than do mainland beds. They attribute this "island effect" to habitat differences such as clearer water, more continuous high-relief rocky bottom, and perhaps more fish food on the island shelves.

Many of the fish species found in more open waters over island sand flats and in offshore pelagic areas beyond the island shelves are presented in Appendix 2. In these areas, the small schooling species such as the northern anchovy, Pacific saury, sardine, mackerel, and squid are particularly important because of their vital role in the marine food chain. The nutrient rich waters fed by regional upwellings support exceptionally abundant populations of these species which in turn are fed upon by other fish, the seabirds, marine mammals, and humans. The abundance of these fish is undoubtedly a significant factor supporting the large concentrations of marine mammals and seabirds in the area.

The northern Channel Islands' surrounding marine waters are also habitat for the hydrocoral Allopora californica. With an incomplete sampling record, it is difficult to call this a rare or endangered species; however, the species is presently known in only 12 locations in Southern California. The U.S. Bureau of Land Management (1979) cites this finding as a reason for identifying these southern California offshore islands as one of Southern California's most important marine habitats.

In general, the fish resources around the northern Channel Islands and Santa Barbara Island include a species array representative of the high diversity of fish found throughout the Southern California Bight. As indicated in commercial and recreational catch statistics maintained by the California Department of Fish and Game (discussed more completely under fishing and plant harvesting

in Section E.3.c.), many of these species are found in abundance.

E.2.d. Intertidal Organisms

The intertidal habitats on the northern Channel Islands and Santa Barbara Island include primarily rocky shorelines with some scattered sandy beaches. This is in contrast to the mainland shoreline which is only 20 percent rocky (U.S. Bureau of Land Management, 1979).

Rocky intertidal shorelines are an important marine habitat zone in southern California. Describing these areas, the Southern California Ocean Sciences Studies Consortium (1974) states that "...the intertidal area of a rocky coast is considered to have the greatest diversity of plant and animal life of any ecological area. Few major habitats so clearly show richness and variety of life." A variety of marine organisms characterize this habitat, including encrusting abalone, barnacles, and limpets, several species of attached marine algae, starfish, sea urchins, tidepool fish, foraging shorebirds, and marine mammals (see Table E-11).

Sandy beaches extend over a much smaller stretch of the island shorelines and provide habitat to fewer marine oganisms; nevertheless, quite a few species occur in this habitat, including burrowing clams, amphipods, isopods, and other invertebrates. The area provides an important feeding habitat for several species of shore birds. Marine mammals using the upper beach for haulout purposes must pass through the area when moving from the water to shore.

TABLE E-11. Examples of intertidal species of the northern Channel Islands and Santa Barbara Island (California Department of Fish and Game, 1979).

ROCKY INTERTIDAL HABITAT

Chlorophyta - green algae

Enteromorpha spp.	Chaetomorpha spiralis
Urospora wormskioldii	Coduim curreatum

Phaeophyta - brown algae

Pachydictyon coriaceum	Hesperophycus harveyanus
Taonia lennebackariae	Dictyoneuropsis reticulata
Eisenia arborea	Pelvetia fastigiata

Rhodophyta - red algae

Porphyrella californica	Gloriopeltis furcata
Acrochaetium barbadense	Iridaea flaccida
Acrochaetium pacificum	Iridaea lineara
Helminthora stricta	Botryocladia neushulii
Gelidium robustum	Callithamnion rupicolum
Bossiella californica	Endocladia muricata

Porifera - sponges

Esperiopsis originalis	Leuconia heathi
Isociona lithophoenix	Rhabdodermella nuttingi

Coelenterata - hydroids, sea anemones, etc.

Abietinaria amphora	Plumularia alica
Aglaophenia struthionides	Synthecium cyclindricun
Anthopleura elegantissina	Epiactis prolifera

Annelida - worms

Arabella iricolor	Sabellaria californica
Nereis pelagica	Salmacina tribranchiata

Echinodermata - starfish, sea urchins, sea cucumbers, brittle stars, etc.

Astrometis sertulifera	Patiria miniata
Pisaster giganteus	Pisaster ochraceus
Strongylocentrotus franciscanus	Cucumaria lubrica
Strongylocentrotus purpuratus	Amphipholis squamata
Amaroucium aequali siphonis	Euhardmania claviformis
Archidistoma psammion	

Mollusca - limpets, snails, octopus, etc.

	Littorina scutulata
Nuttallina californica	Acanthina spirata
Collisella digitalis	Tegula funebralis
Collisella scabra	Cyoraea spadiosa
Fisurella volcana	Mytilus californianus
Haliotis cracherodii	Haliotis fulgens
Littorina planaxis	Chama pellucida
Octopus bimaculatus	

TABLE E-11 Cont.

Arthropoda - barnacles, crabs, isopods, amphipods, shrimps, etc.

- Hyale frequens
- Cirolana harfordi
- Ligia occidentalis
- Crago nigricauda
- Balanus glandula
- Balanus tintinnabulum
- Alpheus clamator
- Cancer jordani
- Pachygrapsus crassipes
- Pagurus hirsutiusculus
- Mitella polymerus

Osteichthyes - boney fishes

- Cebidichthys violaceus (monkeyface eel)
- Micrometrus aurora (reef surfperch)
- Oligocattus snyderi (fluffy sculpin)
- Xiphister atropurpureus (black prickleback)
- Gibbonsia elegans (spotted kelpfish)
- Gibbonsia metzi (striped kelpfish)
- Girella nigricans (opaleye)
- Clinocottus recalvus (bald sculpin)
- Xererpes fucorum (rockweed gunnel)

Aves - shore birds

- Haematopus palliatus frazari (American oystercatcher)
- Haematopus bachmani (black oystercatcher)
- Aphriza virgata (surfbird)
- Arenaria melanocephala (black turnstone)
- Heteroscelus incanus (wandering tattler)

Pinnipeds - seals and sea lions

- Zalophus californianus (california sea lion)
- Phoca vitulina (harbor seal)
- Mirounga angustirostris (northern elephant seal)

SANDY INTERTIDAL HABITAT

Mollusca - clams

- Tivela stultorum
- Olivella biplicata

Arthropods - crabs, amphipods, isopods, etc.

- Alloniscus pereonvexus
- Lepidopa californica
- Emerita analoga
- Orchestoidea californiana
- Lophopanopeus heathii

Aves - shore birds

- Squatarola squatarola (black-bellied plover)
- Limosa fedoa (marbled godwit)
- Numenius phaeopus (whimbrel)
- Catoptrophorus semipolmatus (willet)
- Crocethia alba (sanderling)

Because the northern Channel Islands are remote and thus, until recently, subject to little human disturbances, the island intertidal areas include some of the best representative areas in southern California. Mainland intertidal areas, which are more easily accessible to the public and used intensively as areas for specimen collecting, are typically in poorer condition than comparable island areas.

E.2.e. Cultural and Historic Resources

Cultural and historic resources located in the marine waters surrounding the northern Channel Islands and Santa Barbara Island include underwater archaeological sites and artifacts and ship and aircraft wrecks. No extensive onsite inventory of the cultural and historic resources of the study area has yet been conducted, although Science Applications, Inc. (1978) conducted a thorough survey of the relevant literature for the Southern California Bight for BLM.

Numerous archaeological and paleontological resources exist on the land areas of the northern Channel Islands and Santa Barbara Island (U.S. Bureau of Land Management, 1978c). It has been determined with an acceptable degree of accuracy that sea levels were as much as 180 ft (55m) lower during previous eras of geologic time (Science Applications, 1978). Since known prehistoric sites on land document the presence of man in the Channel Islands area during these eras, it is generally thought that the exposed areas of the continental shelf were extensively inhabited (Science Applications, 1978). The potential exists, therefore, that undiscovered archaeological sites are present in the submerged

lands of the study areas. The BLM literature survey (U.S. Bureau of Land Management, 1978c) mapped three zones of different probability levels for the presence of cultural resources. The zone of highest probability was the area from 0 to 330 ft. (0 to 100m) in depth, where all known sites have been discovered. Medium and low probability zones 330 to 485 ft (100 to 150m) and deeper than 485 ft (150m) respectively are less likely to contain significant resources.

The discipline of underwater archaeology is relatively new and has not yet been extensively applied in the study area. As a result, most of the information which is currently available concerning underwater sites identified within the study area is based on the reports of amateur collectors and sport divers. The location and value of identified sites are depicted on Table E-12 and Figure E-16.

Due to natural hazards and prevailing current and weather patterns, the seas around the northern Channel Islands have been highly prone to shipwrecks throughout history. Such wrecks are of interest to historians as time capsules representing the period in which they sank and of interest to sport divers as marine habitat and curiosities. Science Applications, Inc. (1978) identifies 573 shipwrecks and 9 aircraft wrecks covering a period from approximately 1540 to the beginning of World War II in the Southern California Bight.

Table E-12. Shipwrecks recorded around the northern Channel Islands and Santa Barbara Island (U. S. Bureau of Land Management, 1979c).

ID NO.	NAME	VESSEL TYPE	CAUSE	DATE OF SINKING
San Miguel Island				
167 1	Comet	Schooner	stranded	8/30/11 Simonton
194 1	Cuba	St. Scr.	stranded	9/8/23
415 1	J. M. Colman	Schooner	stranded	9/3/05
411 a	J. F. West	Schooner	sunk	1898
444 a	Kate & Annie		sunk	1902
661 a	Pectan			
1029 1	Unk.	Galleon	sunk	1801
1068 a	Watson A. West	Schooner	stranded	2/23/23
Santa Rosa Island				
17 1	Aggi	Steel 4-mast	sunk	5/2/15
199 1	Dora Bluhm	Schooner	stranded	5/25/10
192 1	Crown of England	St. Scr.	sunk	11/7/1894
101 a	Blue Fin	Oil Scr.	stranded	9/3/44
68 a	Aristocratis		sunk	1949
335 a	Goldenhorn	Barkentine	stranded	9/12/1892
1026 1	Unk.	Wreck		
Santa Cruz Island				
99 1	Black Dolphin	Barkentine	stranded	? dynamited
154 1	City of Sausalito	Oil Scr.	burned	12/11/41
82 a	Babina	Gas Scr.	burned	3/3/23
393 a	International No. 1	Barge	stranded	9/13/18
571 a	Nancy Lee		sunk	1946
888 a	Thornton		sunk	1910
1113 a	Yukon	Barge	sunk	1/6/38
Anacapa Island				
671 1	Pinnacle			
760 1	San Francisco	Oil Scr.	burned	10/31/49
86 a	Balboa	Oil Scr.	burned	1/18/49
260 a	Equator	Oil Scr.	sunk	7/2/49
467 a	Labor	Gas Scr.	sunk	10/2/24
1008 1		Diesel	sunk	?
1098 1	Winfield Scott	St. side wheel	stranded	12/2/1853
Santa Barbara Island				
13 a	Adriatic	Oil Scr.	sunk	12/28/30
Fed.207 1	Dante Aleghieri II	Gas Scr.	sunk	11/30/38
253 a	Emperor	Oil Scr.	sunk	7/15/32

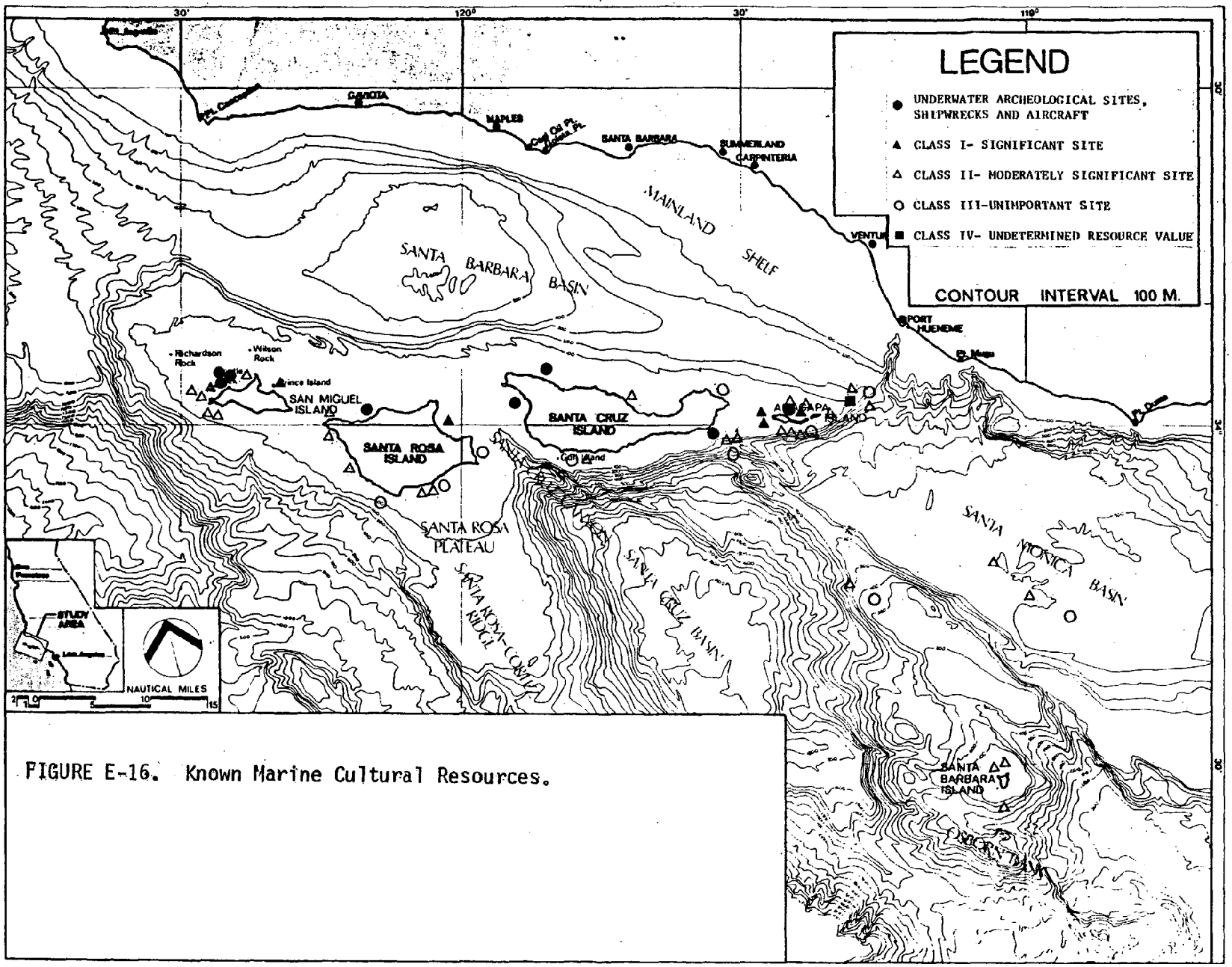

FIGURE E-16. Known Marine Cultural Resources.

E.3 Human Activities

E.3.a. Introduction

The northern Channel Island's proximity to one of the most heavily urbanized areas along the United States' west coast exposes the surrounding waters to many different (and often competitive) types of human activities. The following section describes the scale and intensity of the major area uses including oil and gas exploration and production, commercial and sport fishing, kelp harvesting, commercial shipping, military operations, scientific research, and recreation. Wherever possible, uses are identified on a site-specific basis and discussions of both current patterns and future trends are incorporated.

E.3.b. Oil and Gas Activities

Offshore oil and gas development began in the United States in the State tidelands of the Santa Barbara Channel in 1896. The first leases in State tidelands were sold in 1950. Development of the Federal OCS lands within the Channel began in 1966 with the sale of one drainage tract to allow development of a known field (Carpinteria) in federal waters. In 1968, the first Federal lease sale was held in the Channel. Federal development in the Channel continued with OCS Lease Sale #35 in 1975 and Lease Sale #48 in June 1979. BLM plans to hold two additional sales in the Southern California Bight (which includes the Santa Barbara Channel) in the next five years; Sale 68 in 1982 and Sale 73 in 1983. Significant milestones in the history of oil and gas development in the Santa Barbara Channel and in the vicinity of the northern Channel Islands are summarized on Table E-13. Appendix 3 briefly reviews stages in the OCS oil and gas development process.

TABLE E-13. Milestones in Santa Barbara Channel and the Northern Channel Islands Area Oil and Gas Development.

Date	Event
1896	First offshore development occurred in the Santa Barbara Channel.
1950	California grants first leases in State tidelands of Santa Barbara Channel.
1966	State lands in Carpinteria field (state portion) leased.
1966	First federal lease in Carpinteria field (federal portion).
1968	Additional federal leases in the Santa Barbara Channel.
1969	Santa Barbara Oil Spill at Union's Platform A in the Dos Cuadras Field.
1975	OCS Lease Sale #35.
1978-1979	DES and FES on proposed Lease Sale #48.
1979	Lease Sale #48 held June 29.
1982	Lease Sale #68 proposed for Southern California (including Santa Barbara Channel) in July, 1982
1983	Lease Sale #73 proposed for California.

Approximate oil and gas reserves have been determined for the major outer continental shelf basins (National Oceanic and Atmospheric Administration, 1980). The Santa Barbara region contains an estimated 1.50 billion barrels of oil and 1.70 trillion cubic feet of gas. The U.S. Geological Survey (USGS) has ranked this area seventh among twenty-one offshore basins for the size of its reserves. It is estimated to hold 3.9% of the total energy equivalent of oil and gas resources calculated to be found on the outer continental shelf. In terms of resource potential over the current 5-year OCS oil and gas leasing schedule, the Santa Barbara area was ranked third by industry and sixth by USGS (U.S. Department of the Interior, 1979c). The nearby Los Angeles and Ventura Basins, which together contain about the same amount of acreage as the proposed sanctuary, have proven reserves of 9 billion barrels of oil (Tell, 1980, personal communication). Industry projections indicate that the Channel area could produce as much as 400,000 barrels of oil per day by the mid-to-late 1980s, about 5 percent of the total domestic supply (Magee, 1980, personal communication).

Table E-14 shows estimates of the magnitude of recoverable reserves in the Southern California Bight. These estimates are an important factor in determining areas likely to be developed, as well as the amount and types of facilities to be used in the area.

Figure E-18 shows existing leases around the northern Channel Islands and Santa Barbara Island and the operators of these leases, relevant tract numbers are shown on Figure E-19. Until now, most of the oil and gas activity in the area has occurred in the State tidelands and on those OCS leases closest to the mainland. Production platforms in the Channel area are shown on Table

TABLE E-14. Estimated oil and gas reserves for currently leased tracts in the Southern California Bight (tracts leased in 1966, 1968, OCS Sale #35, and OCS Sale #48). (Meekins, 1980, personal communication; data based on open file report dated January 1979.)

	Oil (million barrels)	Gas (billion cubic feet)
Reserves*		
Total Southern California Bight:	695	1575
Undiscovered Resources**		
Total Southern California Bight:	394	1295
Santa Barbara Channel:	152	516
Santa Rosa Plateau:	10	45
Santa Barbara Island:	15	15

*Reserves are defined as known technologically recoverable quantities of hydrocarbons.

**Undiscovered resources are defined as those quantities of oil and gas which are reasonably expected to occur in existing favorable geographic settings but are completely undiscovered, and which after discovery can be expected to be produced under present technology.

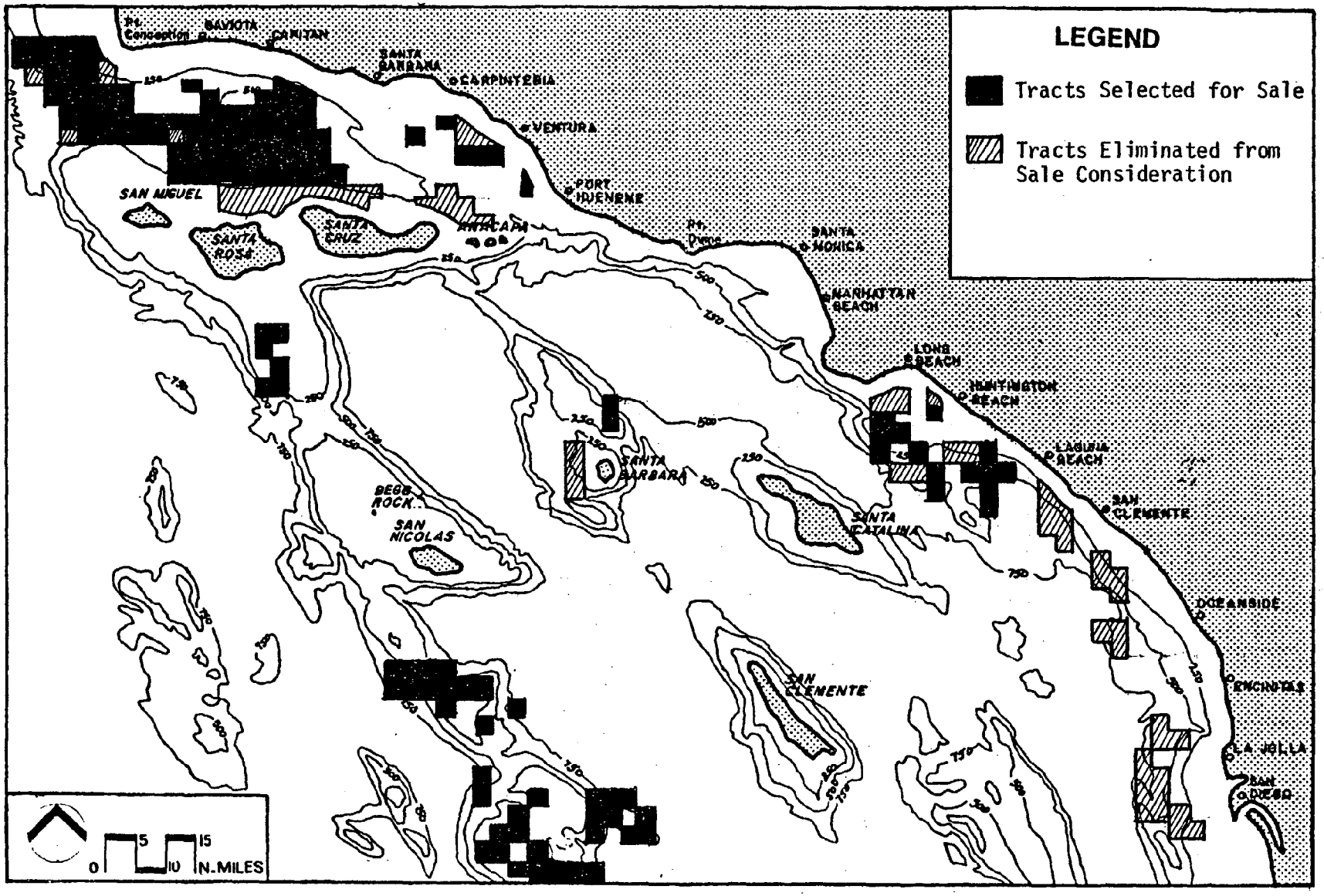

FIGURE E-17. Tracts withdrawn from OCS Sale #48 by the Secretary of Interior. (Also see Figures E-18 and E-19 for withdrawn tracts in the vicinity of the northern Channel Islands.) Source: U. S. Department of Interior, 1979a.

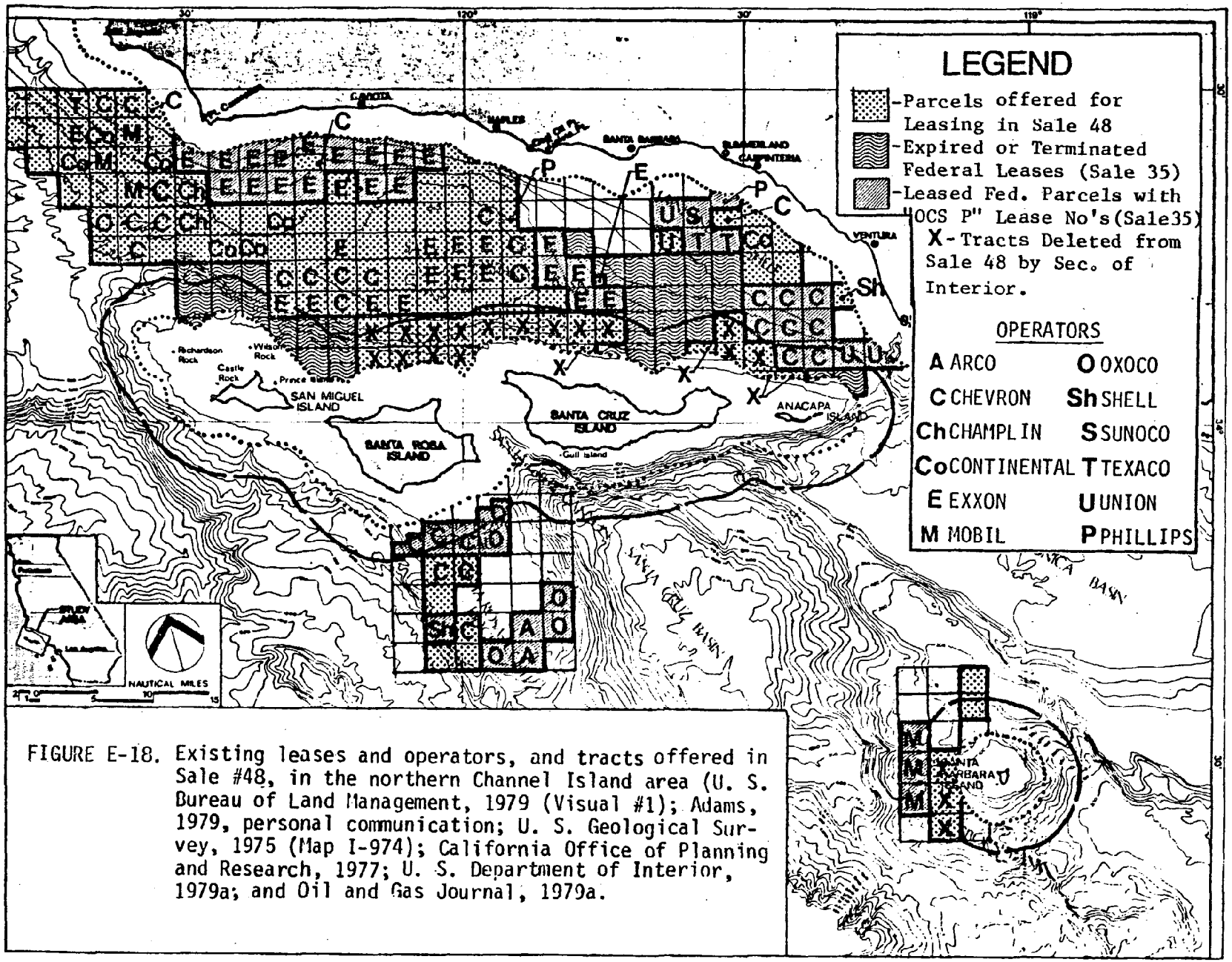

FIGURE E-18. Existing leases and operators, and tracts offered in Sale #48, in the northern Channel Island area (U. S. Bureau of Land Management, 1979 (Visual #1); Adams, 1979, personal communication; U. S. Geological Survey, 1975 (Map I-974); California Office of Planning and Research, 1977; U. S. Department of Interior, 1979a; and Oil and Gas Journal, 1979a.

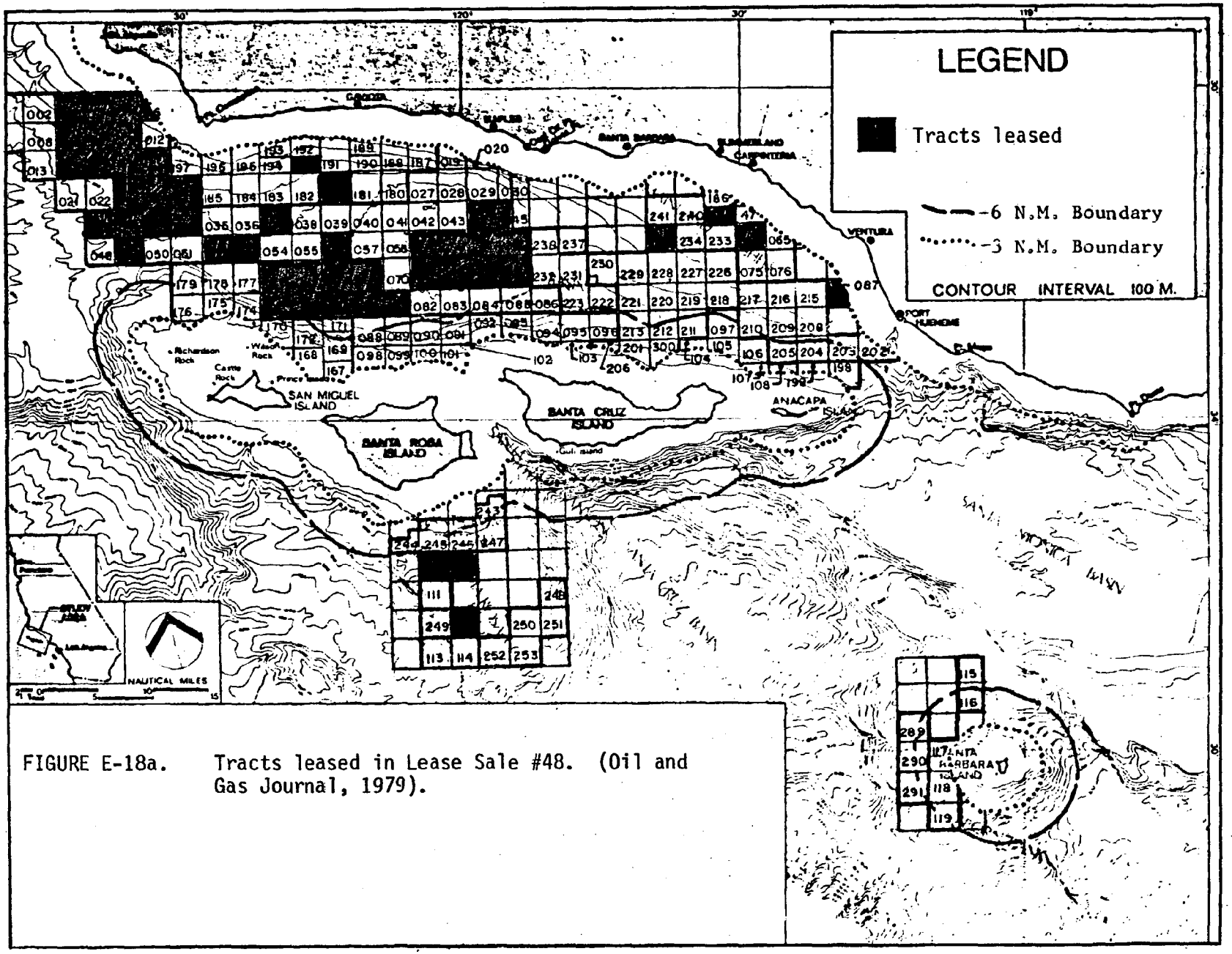

FIGURE E-18a. Tracts leased in Lease Sale #48. (Oil and Gas Journal, 1979).

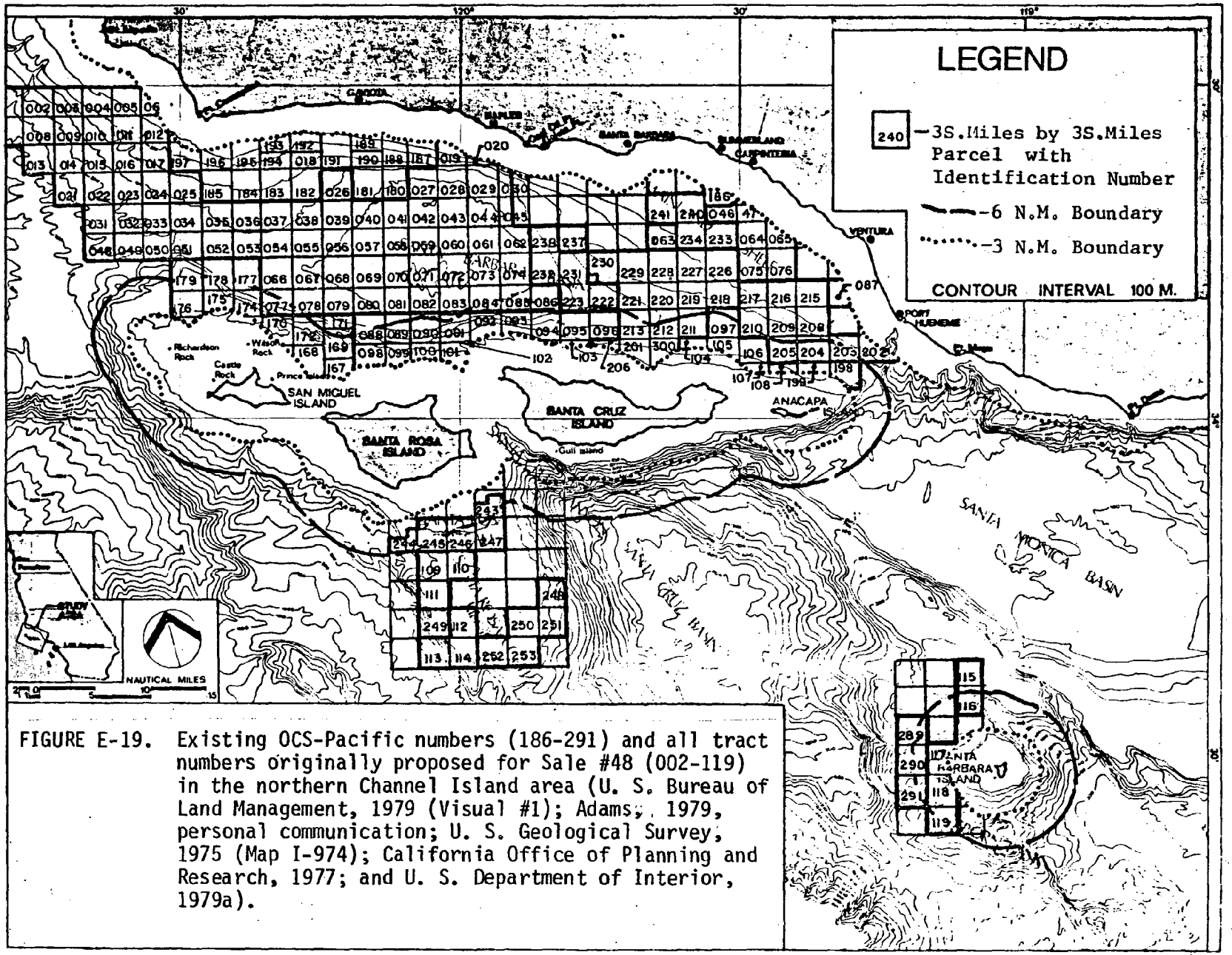

FIGURE E-19. Existing OCS-Pacific numbers (186-291) and all tract numbers originally proposed for Sale #48 (002-119) in the northern Channel Island area (U. S. Bureau of Land Management, 1979 (Visual #1); Adams, 1979, personal communication; U. S. Geological Survey, 1975 (Map I-974); California Office of Planning and Research, 1977; and U. S. Department of Interior, 1979a).

E-15; all of these are on tracts either in State waters or on OCS leases on the mainland side of the Channel. Platform Grace, once installed, will be the furthest platform offshore (approximately 10 nmi or 18.5km) and the closest to the northern Channel Islands (approximately 8 nmi or 14.8km from the tip of Santa Cruz Island). Several exploratory wells have been drilled close to the northern Channel Islands. Tracts on which wells have been drilled and the number of wells drilled per tract are shown on Table E-16.

Two plans for exploration on leases near the northern Channel Islands have recently been approved by the USGS and certified as consistent with California's coastal plan by the California Coastal Commission (CCC). The CCC found Chevron's exploration plan to drill four wells on tracts 204, 208, 209, and 215 (in the Santa Clara Unit) to be consistent with California's Coastal Plan on December 12, 1978 (California Coastal Commission, 1978). The most southerly of Chevron's proposed wells lies approximately 8 nmi (14.8km) north of the Anacapa Islands (Chevron, 1978). On March 23, 1979, the CCC also found Exxon's exploration plan to drill up to 15 exploratory wells from tracts 222, 223, 230,231,232, and 238 in the Santa Rosa Unit to be consistent with the coastal plan (California Coastal Commission, 1979). The southern tip of tracts 222 and 223 are approximately 6 nmi (11.1km) from Santa Cruz Island.

Table E-15. Platforms in the Santa Barbara Channel area (U. S. Bureau of Land Management, 1979 (Visual No. 1); U. S. Geological Survey, 1975 (Map I-974); Resources 1978; Adams, 1979, personal communication; and California Office of Planning and Research, 1977).

PLATFORM NAME	UNIT	TRACT	OPERATOR
State Waters			
Hope	Carpinteria	PRC-3150	Chevron
Hazel	Summerland	PRC-1824	Chevron
Heidi	Carpinteria	PRC-3150	Chevron
Hilda	Summerland	PRC-1824	Chevron
Holly	South Ellwood	PRC-3242	Arco
Helen	Cuarta	PRC-2206	Texaco
Herman	Conception	PRC-2725	Texaco
Rincon (Artificial Island)		PRC-1466	Arco
Federal Waters			
Union A	Dos Cuadras	P-0241	Union
Union B	Dos Cuadras	P-0241	Union
Union C	Dos Cuadras	P-0241	Union
Hillhouse	Dos Cuadras	P-0240	Sun
Henry (Planned)	Carpinteria	P-0204	Sun
Houchin	Carpinteria	P-0166	Phillips
Hogan	Carpinteria	P-0166	Phillips
Grace (Planned)	Santa Clara	P-0217	Chevron
Hondo	Santa Ynez	P-0188	Exxon
Gina (Planned)	Hueneme	P-0202	Union

TABLE E-16. Number of wells drilled on existing leases, all or partially within 6 nmi (11.1km) of the northern Channel Islands and Santa Barbara Island (also see Figure E-22). (Adams, 1979, personal communication; U.S. Bureau of Land Management, 1979 (Visual No. 1); U.S. Bureau of Land Management, 1978a).

Tract	Closest Island	Number of Wells	Operator	Future Status
167	San Miguel	1	—	Expired or Terminated
168	San Miguel	0	—	Expired or Terminated
169	San Miguel	1	—	Expired or Terminated
170	San Miguel	1	—	Expired or Terminated
172	San Miguel	0	—	Expired or Terminated
174	San Miguel	0	—	Expired or Terminated
175	San Miguel	0	—	Expired or Terminated
176	San Miguel	2	—	Expired or Terminated
177	San Miguel	0	—	Expired or Terminated
178	San Miguel	0	—	Expired or Terminated
179	San Miguel	1	—	Expired or Terminated
243	Santa Rosa	0	Oxoco	?
244	Santa Rosa	0	Chevron	?
245	Santa Rosa	0	Chevron	?
246	Santa Rosa	0	Chevron	?
247	Santa Rosa	0	Oxoco	?
200	Santa Cruz	0	—	Expired or Terminated
201	Santa Cruz	0	—	Expired or Terminated
206	Santa Cruz	0	—	Expired or Terminated
210	Santa Cruz	0	Chevron	?
211	Santa Cruz	0	—	Expired or Terminated
212	Santa Cruz	1	—	Expired or Terminated
213	Santa Cruz	0	—	Expired or Terminated
198	Anacapa	0	—	Expired or Terminated
199	Anacapa	2	—	Expired or Terminated
202	Anacapa	4	Union	Development
203	Anacapa	4	Union	Exploratory Drilling
204	Anacapa	1*	Chevron	Exploratory Drilling
205	Anacapa	2	Chevron	Exploratory Drilling
208	Anacapa	1*	Chevron	Exploratory Drilling
209	Anacapa	1*	Chevron	Exploratory Drilling
215	Anacapa	1*	Chevron	Exploratory Drilling
289	Santa Barbara	1	Mobil	?
290	Santa Barbara	0	Mobil	?
291	Santa Barbara	0	Mobil	?

* Chevron's exploration plan for exploratory wells P-0204-1, P-0208-2, P-0209-2 and P-0215-2 was recently approved by USGS. The plan was certified as consistent with California's coastal plan by the California Coastal Commission on December 12, 1978.

? As yet undetermined

E.3.c. Commercial and Recreational Fishing and Plant Harvesting

Harvesting of living marine resources (see also Section E.2.c.) by commercial and recreational fishermen and kelp harvesters currently represents the most intensive human use occurring over the shelves adjacent to the northern Channel Islands and Santa Barbara Island. Depending on the species sought, commercial fishermen use gill nets, purse seines, traps, trawls, and other assorted gear while recreational fishermen typically use their hands, hook and line or sometimes spear guns. Commercial fishermen may seek any of a large variety of species which are of little interest to recreational fishermen. However, commercial and recreational fishermen may compete with each other for a few species such as rockfish and abalone.

Catch statistics maintained by the California Department of Fish and Game (DFG) indicate that for the marine sanctuary study area, the greatest commercial fishing catch by weight occurs north of Anacapa Island in the Santa Barbara Channel (see Figure E-20). The tonnage of fish taken from these waters is typical of nearshore southern California coastal waters. The weights are well below those off San Pedro, the most productive commercial fishing area in the Southern California Bight; however, while much of the tonnage landed in San Pedro consists of migratory schooling fish, due to the extensive shallow water island shelf areas, the island waters are major southern California producers of species such as abalone, sea urchin, and rockfish.

In addition to the fish and shellfish fisheries, the northern Channel Island waters and those off Santa Barbara Island support southern California's most productive kelp harvests, In 1978, the kelp beds around the northern Channel Islands produced over 24,000 wet tons (22,000 metric tons) of kelp while the beds around Santa Barbara Island produced 1,867 wet tons (1,600 metric tons) (Cali-

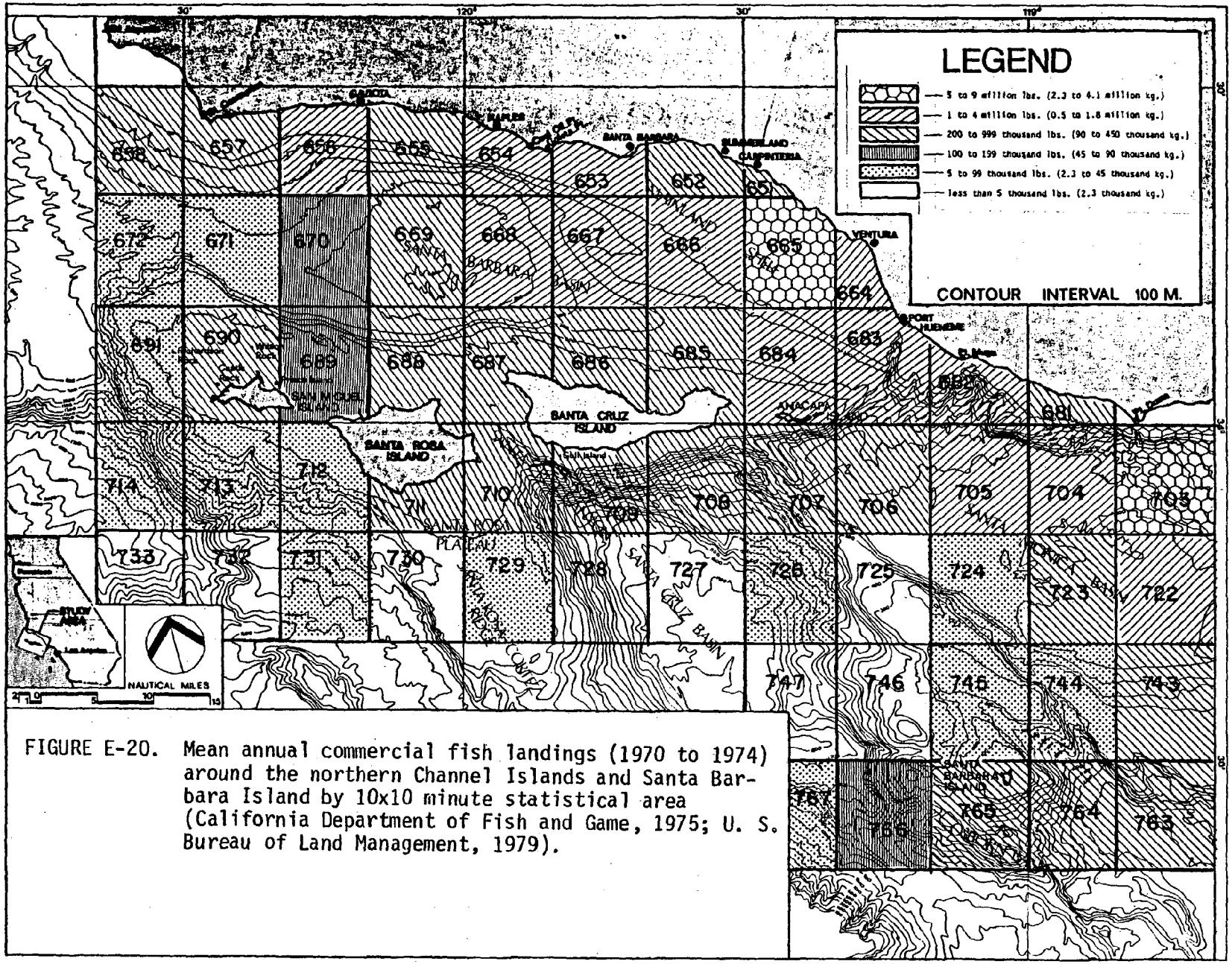

FIGURE E-20. Mean annual commercial fish landings (1970 to 1974) around the northern Channel Islands and Santa Barbara Island by 10x10 minute statistical area (California Department of Fish and Game, 1975; U. S. Bureau of Land Management, 1979).

fornia Department of Fish and Game, 1979). Kelp is harvested by specially designed ships, kelp cutters, which cut off and scoop up the top 4 ft. (1.3m) (depth of cut is limited by law) of the kelp while leaving the remainder of the plant alive and intact. Rapid growth of up to a foot or more per day under extremely favorable conditions permits several annual kelp harvests (California Department of Fish and Game, 1971; North and Hubs, 1968).

Kelp harvesting has occurred for almost 30 years around the northern Channel Islands although harvesting around Santa Barbara Island has only been started recently (Trabert, 1979, personal communication). The industry uses almost all of the well-developed kelp bed areas. Table E-19 illustrates fluctuations in landings between 1974 and 1978.

One of the major kelp harvesters, Kelco, uses small, single engine aircraft to survey the condition and size of kelp canopy so that kelp harvests can be scheduled after optimum regrowth of kelp vegetation. These craft operate at altitudes of approximately 500 ft. (152m) and move to within a quarter nmi (0.5km) of the Channel Islands (Trabert, 1979, personal communiction).

The species and total catch of fish landed by commercial fishermen may vary significantly from year to year (see Table E-17). For example, between 1971 and 1975, annual sea urchin harvests rapidly expanded from zero to several million pounds as this new regional fishery developed. Conversely, lobster catches declined steadily over the same period. Comparable trends in the landings of other species such as abalone and rockfish are less clear. Table E-18 lists the species caught most abundantly around the northern Channel Islands and Santa Barbara Island during 1975 (the most recent year for which comprehensive statistics were compiled).

TABLE E-17. Commercial fish landings for selected species caught off the northern Channel Islands and Santa Barbara Island between 1971 and 1975 (developed from California Department of Fish and Game, 1979).

Species	Weight in 1000 lbs.									
	1971		1972		1973		1974		1975	
	northern Channel Islands	Santa Barbara Island	northern Channel Islands	Santa Barbara Island	northern Channel Islands	Santa Barbara Island	northern Channel Islands	Santa Barbara Island	northern Channel Islands	Santa Barbara Island
Abalone:										
Black	56.5	0.9	780.3	6.4	1251.3	18.1	718.4	15.7	454.1	48.7
Red	488.5	44.6	386.3	87.9	297.7	39.2	268.9	95.4	250.7	124.6
Green	3.6	0.9	1.5	1.3	2.1	0.1	2.5	--	1.7	0.2
Pink	102.8	6.0	97.1	21.1	118.5	2.9	140.1	19.1	124.6	31.1
All Others	0.2	--	0.1	--	0.7	--	0.8	0.1	1.1	0.2
Sea Urchins	--	--	--	--	911.8	--	1679.6	--	2604.3	--
Lobster	23.9	2.5	32.6	15.7	19.2	7.9	12.4	9.8	10.7	--
Pacific Bonita	314	22	346	34	760	20	60	101	--	--
Jack Mackerel	274	1110	50	732	26	130	146	1138	344	66
Northern Anchovy	--	148	2200	--	2804	436	2150	50	1302	6
Market Squid	434	--	22	--	530	82	1844	44	2170	--
Rockfish	126	--	244	--	340	--	180	--	214	--
Swordfish	--	16	--	4	--	12	--	20	--	30
All Other finfish	944	40	1602	74	3044	20	3120	54	4370	66
TOTAL	2771	1390	5762	976	10,105	768	10,327	1548	11,839	409

Table E-18. 1975 commercial fish landings by species (in 10 x 10 minute blocks) around the northern Channel Islands and Santa Barbara Island. Note: Block numbers refer to numbered areas shown on Figure E-20. Only species with landings in excess of 10,000 lbs. (4,500kg) are listed. (Based on statistics from the California Department of Fish and Game.)

Island/ Block	Species	Weight (in lbs.)	Month of Greatest Catch
ANACAPA ISLAND			
684	Northern anchovy	5,932,650	Dec.
	Sea urchin	209,624	Jan.
	Bluefin Tuna	198,850	Aug.
	Bocaccio	168,969	Oct.
	Rockfish	147,045	May
	English sole	81,765	Mar.
	Petrale sole	16,490	Sep.
	California halibut	11,284	Jul.
	Sablefish	10,321	Oct.
	20 other species	24,272	---
	Total for Block	6,801,270	
707	Sea urchin	406,704	Jun.
	Northern anchovy	194,300	Oct.
	Swordfish	20,733	Aug.
	3 other species	4,207	---
	Total for Block	625,944	
SANTA CRUZ ISLAND			
685	Market squid	1,080,648	May
	Northern anchovy	718,600	Jan.
	Jack mackerel	123,500	Sep.
	Sea urchin	67,513	May
	Rockfish	22,585	Jun.
	18 other species	41,997	---
	Total for Block	2,054.843	
686	Sea urchin	372,605	Dec.
	Market squid	356,200	May
	Bocaccio	32,742	Dec.
	21 other species	32,871	---
	Total for Block	794,418	

Table E-18 Cont.

687	Market squid	936,525	May
	Sea urchin	78,639	Jan.
	Pink abalone	10,542	Oct.
	18 other species	28,799	---
	Total for Block	1,054,505	
708	Sea urchin	134,265	Dec.
	Pink abalone	40,808	Oct.
	Red abalone	26,732	Mar.
	Swordfish	26,603	Sep.
	Black abalone	10,452	Oct.
	10 other species	4,977	---
	Total for Block	243,837	
709	Sea urchin	224,206	May
	Jack mackerel	173,455	Sep.
	Bluefin tuna	96,035	Jul.
	Market squid	71,829	Jun.
	Pink abalone	46,181	Apr.
	Red abalone	25,318	Jul.
	Swordfish	18,620	Aug.
	13 other species	13,722	---
	Total for Block	669,366	
SAN MIGUEL ISLAND			
690	Black abalone	319,959	Jul.
	Sea urchin	225,423	Jan.
	Red abalone	116,336	Jan.
	Rockfish	71,576	Nov.
	Yelloweye rockfish	47,520	May
	Bocaccio	31,713	Nov.
	26 other species	56,336	---
	Total for Block	868,863	
713	Jack mackerel	48,000	Jan.
	7 other species	12,571	---
	Total for Block	60,571	
SANTA ROSA ISLAND			
688	Northern anchovy	584,300	Oct.
	Spot prawn	23,713	Jul.
	Rockfish	16,194	Apr.
	Market squid	14,844	Jun.
	16 other species	36,481	---
	Total for Block	675,532	

Table E-18 Cont.

711	Sea urchin	970,038	Apr.
	Black abalone	62,119	Sep.
	Bluefin tuna	57,391	Jan.
	Rockfish	49,595	Jul.
	Red abalone	35,305	Jun.
	13 other species	30,506	---
	Total for Block	1,204,954	
712	No species over 10,000 lbs.		
	12 species reported	31,037	---
SANTA BARBARA ISLAND			
744	Swordfish	11,832	Nov.
	3 other species	11,852	---
	Total for Block	23,684	
745	Swordfish	2,386	Jul.
	No other species reported		---
764	Jack mackerel	66,500	Nov.
	Bluefin tuna	22,165	Aug.
	4 other species	3,422	---
	Total for Block	92,087	
765	Swordfish	13,739	Oct.
	Rockfish	12,599	Jul.
	8 other species	20,841	---
	Total for Block	47,179	

Among the species taken from the area in the greatest amounts were the jack mackerel, northern anchovy, market squid, bocaccio, sea urchin, abalone, and rockfish, the latter three being mainly limited to the island shelves.

Although commercial fishing occurs throughout the year around the northern Channel Islands and Santa Barbara Island, individual fisheries may vary seasonally. For example, 1975 DFG data show that squid were taken most frequently in spring while the northern anchovy was fished primarily during the fall and winter. Sea urchin, rockfish, and abalone* were taken throughout the entire year. Compared to the northern Channel Islands, fisheries around Santa Barbara Island were generally less productive and dominated more by open water pelagic fish species.

Commercial abalone divers, through the Abalone Association and the Abalone Seeding Association, sponsor an abalone mariculture hatchery in Santa Barbara. Abalones are cultivated for future restocking; the seeding association has a monthly planting at San Miguel Island, near Cuyler Harbor (Pirog, 1979, personal communication).

Recreational fishing is a major use of the fish resources around the northern Channel Islands and Santa Barbara Island. Although some fishermen seek tuna, albacore, marlin, or swordfish in the deeper waters seaward of the island's slope, most recreational fishermen, particularly those on commercial partyboats, are attracted to the nearshore island shelf waters, especially the areas over kelp beds. According to partyboat fishing statistics compiled by the California Department of Fish and Game (1979),

*The commercial taking of abalone is prohibited during the months of February and August.

rockfish, kelp, and sand bass are the species caught in greatest abundance, supplemented by regular takings of a variety of other species (see Tables E-19, E-20, E-21 and Figure E-21). Sport-divers collect lobster, abalone, and other invertebrates.

Recreational fishermen visit offshore waters either as passengers on commercial partyboats or on private pleasure craft. Waters toward the center of the northern Channel Islands chain, primarily off Santa Cruz and Santa Rosa Islands, are most heavily frequented by partyboats (see Figure E-22). Although statistics on the concentrations of private fishing boats are not available, most private boats probably fish the north side of Anacapa and Santa Cruz Islands (Ono, 1979, personal communication).

Most visitors to northern Channel Island waters leave from harbors on the mainland side of the Santa Barbara Channel, including Oxnard, Ventura, Port Hueneme, Santa Barbara, and Gaviota, some 14 to 42 nmi (25 to 75km) from the northern Channel Island waters. Visitors to Santa Barbara Island waters come primarily from more southerly ports in the Los Angeles area or from Santa Catalina Island. Based on California Department of Fish and Game partyboat statistics for 1975, most recreational anglers fish during the warmer months of June through September, but year-round activities persist at a lower use level.

E.3.d. Commercial Shipping

Due to the study area's location near a major shipping route and the presence of active oil and gas leases, commercial vessels regularly navigate the Santa Barbara Channel region. Furthermore, numerous proposed projects, some of which are imminent, will add

TABLE E-19. Kelp harvests off the northern Channel Islands and Santa Barbara Island between 1974 and 1978 (California Department of Fish and Game, 1979).

Area	(Weight in Wet Tons) 1974	1975	1976	1977	1978
Northern Channel Islands (San Miguel, Santa Rosa Santa Cruz, Anacapa)	19,858	11,538	5,535	15,304	24,588
Santa Barbara Island	—	—	—	—	1,867
Total	19,858	11,538	5,535	15,304	26,455

TABLE E-20. Commercial passenger fishing vessel catch in number of fish for the northern Channel Islands between 1970 and 1974 (California Department of Fish and Game, 1979).

Species	1970	1971	1972	1973	1974
Rockfish	337,820	215,906	358,641	436,486	303,425
Kelp and Sand bass	67,061	109,679	84,875	74,352	58,925
Halfmoon	319	93,305	32,782	34,012	3,613
California Sheephead	7,474	9,755	9,626	14,369	7,051
Ocean Whitefish	5,972	4,933	7,373	7,171	4,092
Lingcod	5,387	4,569	5,940	6,248	5,872
Cabezon	1,217	1,754	1,526	1,037	490
Bonito	11,529	40	3,539	5,543	582
Flatfish, misc.	1,132	488	976	1,816	737
California halibut	1,622	643	859	1,228	303
All Others	2,220	5,856	5,071	3,048	4,408
Total	441,743	466,928	511,208	585,310	389,498

TABLE E-21. Commercial passenger fishing vessel catch in number of fish for Santa Barbara Island between 1970 and 1974 (California Department of Fish and Game, 1979).

Species	1970	1971	1972	1973	1974
Rockfish	65,674	39,809	48,729	68,858	66,026
Kelp and Sand bass	2,614	191	10,774	6,098	250
Ocean Whitefish	2,408	1,431	729	1,890	358
Halfmoon	939	27	1,374	3,352	50
Sheephead	1,657	593	2,417	2,239	309
Flatfish, misc.*	317	185	91	1,275	354
Bonito	1,704	0	27	64	40
Sculpin	102	178	243	19	113
Lingcod	93	75	79	122	66
Cabezon	16	12	87	66	10
All Others	291	6	343	1,506 +	35
Total	75,815	42,505	64,893	85,489	67,611

* includes halibut + predominately Pacific mackerel

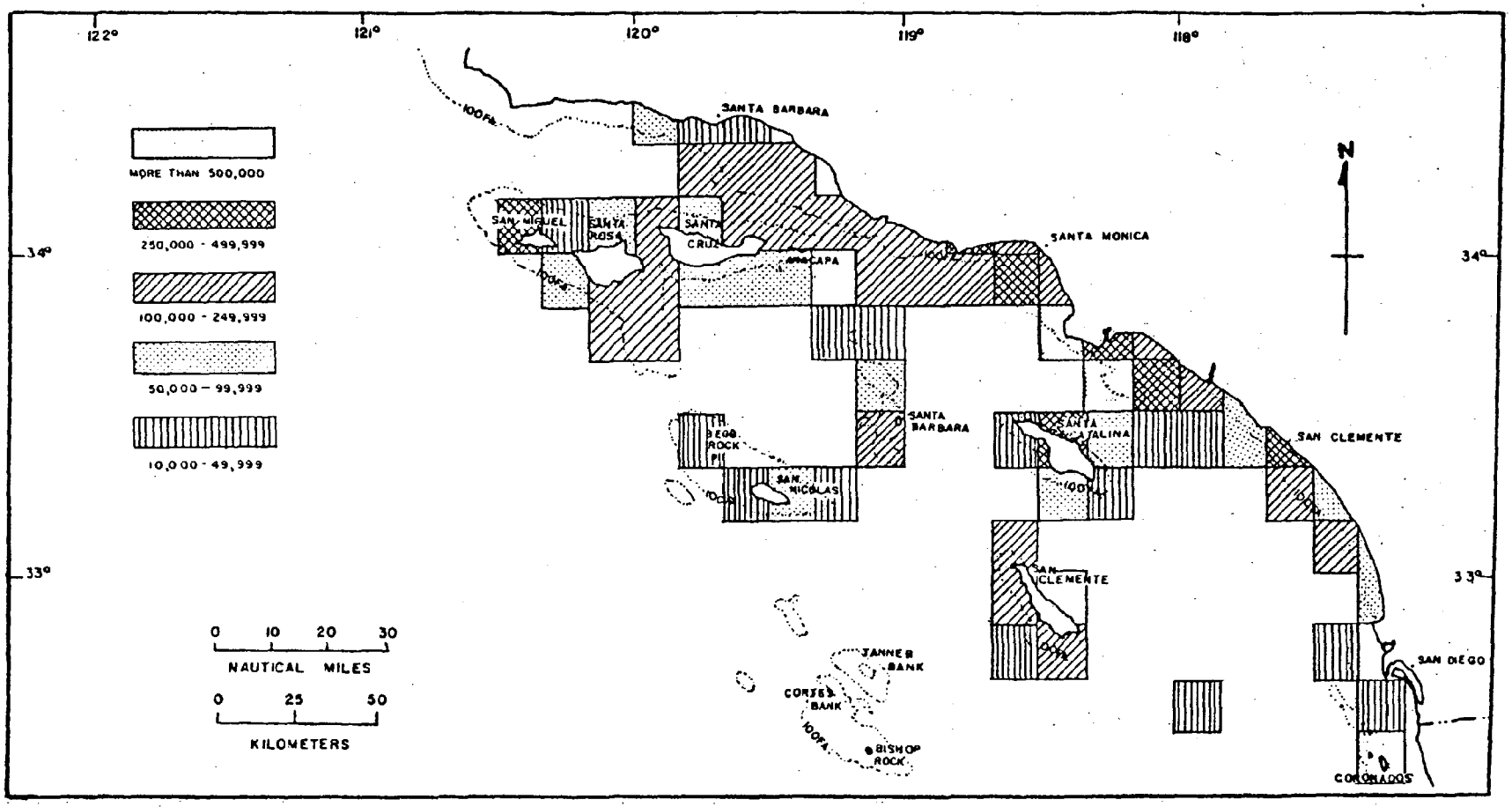

FIGURE E-21. Cumulative density of partyboat fish landings between 1973 and 1975 (California Department of Fish and Game Marine Sport Catch Studies as presented in U. S. Bureau of Land Management, 1979).

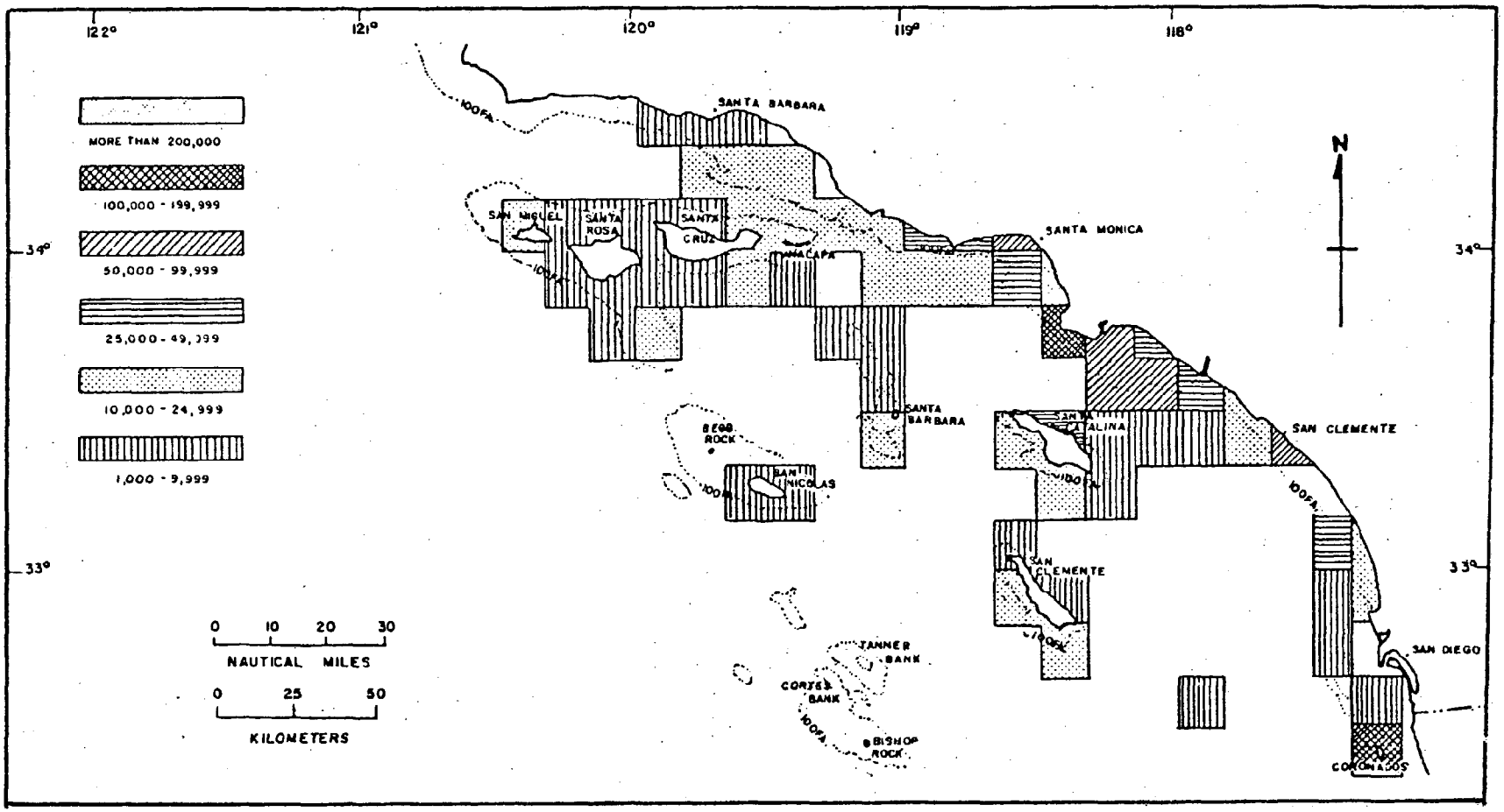

FIGURE E-22. Cumulative density of anglers fishing from partyboats in the southern California partyboat fleet (California Department of Fish and Game Marine Sport Catch Studies as presented in U. S. Bureau of Land Management, 1979).

to the overall level of shipping.

A Traffic Separation Scheme (TSS) established by the Coast Guard runs just north of, and roughly parallel with, the northern Channel Islands. It approaches to within 2 nmi (3.7km) of Anacapa in the east end of the Channel and is about 20 nmi (35km) from San Miguel Island in the west end of the Channel (Figure E-23). The TSS is used by many commercial vessels travelling between northern Pacific ports (e.g., Alaska, San Francisco, and Seattle) and those situated in southern California, as well as by traffic using the Panama Canal or heading to and from Indonesia and other western Pacific ports. Large vessel traffic (i.e., vessels larger than 100 gross tons) has been estimated to pass through the Channel at a rate of 6.5 vessels per day in a northbound direction and 5.5 vessels per day in southbound direction (McMullen, 1977).

Another Channel area survey, conducted by the Coast Guard at Port Hueneme and assisted by radar data collection procedures, reported a daily average traffic load of nine large vessels (300 feet or longer) heading north within, or closely paralleling the TSS (Cherney et al., 1978). This study also recorded a daily combined average of seven medium (100-299 feet long), small (less than 100 feet long), and tug-in-tow vessels en route along the TSS in a northerly direction. In addition, an averge daily load of 32 vessels (incuding vessels of all sizes) were observed crossing the lanes from one side of the Channel to the other. The majority of these were probably linked to service/supply boat activity between Port Hueneme and offshore oil and gas platforms and associated facilities.

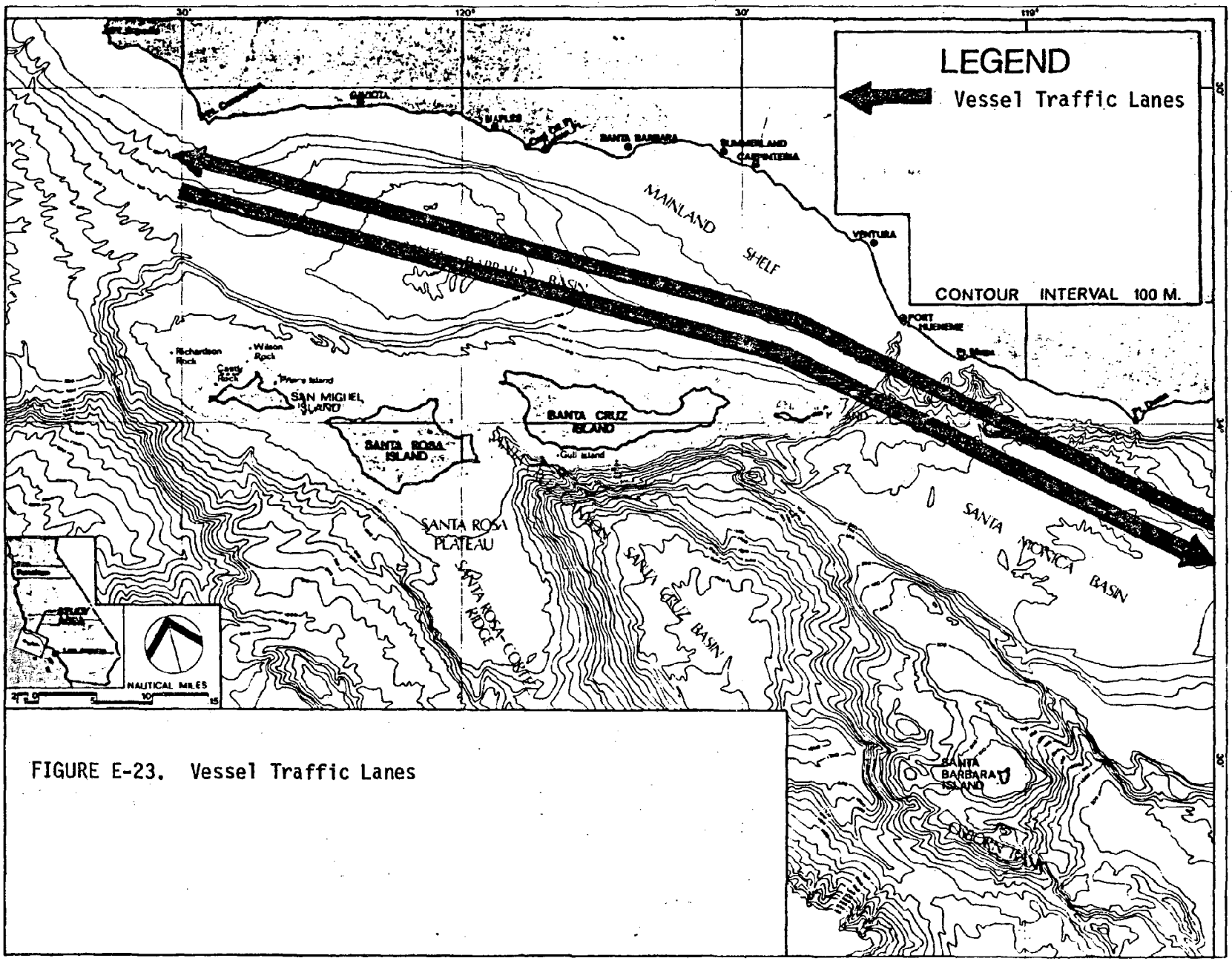

FIGURE E-23. Vessel Traffic Lanes

The most common cargo aboard ships transitting the study area appears to be petroleum products, both crude and refined. In 1976, these products accounted for approximately two-thirds (66 percent) of the total cargo (by weight) received at or shipped from Long Beach Harbor, Los Angeles Harbor, and Port Hueneme -- the three major ports closest to the study area (U. S. Army Corps of Engineers, 1976). In order of decreasing tonnage, the predominant petroleum products handled at these ports were crude petroleum, residual fuel oil, and distillate fuel. Commodities such as fresh fruits and nuts, limestone, basic chemicals, coke, iron, steel, nonmetallic minerals, and lumber made up much of the remaining non-petroleum related cargo passing through these ports.

Although precise traffic log counts are not kept, it is reported that the majority of vessels passing within or close to the study area are of foreign registry (Bannon, 1979, personal communication).

The waters around the northern Channel Islands are also used by ships servicing offshore oil and gas lease tracts in the immediate Channel region. Because there is currently limited onshore pipeline capacity from the Channel area to Los Angeles Basin refineries, most offshore production must be transported either by tanker or barge or both.

In the future, vessel traffic in the Channel is likely to increase both as a result of new southern California offshore oil production and the realization of a number of external projects now in the planning stages. As many as 40 new round trips per month can be expected as a result of offshore Santa Barbara Channel oil

production if platform-to-shore pipelines are not constructed (California Office of Planning and Research, 1977). Specifically, this increase would consist of new production from the South Ellwood, Summerland, and Carpinteria State offshore fields, and the Santa Ynez, Santa Clara, and Hueneme Units. However, the recent approval of an oil and gas pipeline system by the South Central Coast Regional Commission should significantly lower the number of projected tanker and barge vessels transitting the Channel (California Coastal Commission, 1979b). Tanker traffic can also be expected to increase as a result of exploration and development of other OCS Sales #35 and #48 leases.

Projects not originating in the Santa Barbara area may also lead to increased vessel traffic in the Channel.

However, there is a possibility that current levels of vessel traffic in the Santa Barbara Channel due to the transport of Alaskan oil will decrease. Tankers carrying Alaskan crude now pass through the Channel at a rate of about 183 per year (Stark, 1979, personal communication). Congressman Lagomarsino (R., Calif.) has introduced a bill in the House of Representatives which would prohibit vessels transporting Alaskan oil from using routes through waters lying shoreward of the Channel Islands (HR 1056, 96th Congress 1st. Sess., 1979). This legislation is currently pending before the Coast Guard subcommittee of the House Merchant Marine and Fisheries Committee. In addition, President Carter has officially approved the Northern Tier Pipeline Company's project to build a west-east crude oil transmission system for Alaskan oil (Turnbull, 1980, personal communication). The proposal involves a marine terminal at Port Angeles, Washington, and 1,491 miles of new pipeline to a terminal at Clearbrook, Minnesota. The project is currently being evaluated by several

federal regulatory agencies and the State of Washington. Construction time is estimated to be 2 years (Oil and Gas Journal, 1979b).

A project which might increase Santa Barbara Channel tanker traffic involves shipment of Naval Petroleum Reserve oil. Pursuant to the Naval Petroleum Reserves Production Act of 1976, facilities will be acquired or constructed to ship not less than 350,000 barrels per day of crude oil from Elk Hills, California to unspecified marketing terminals.

One transportation option being considered would involve piping this oil to Port Hueneme and then transferring it by tanker to market. Tankers bound for Pacific coast destinations north of Port Hueneme such as San Francisco would have to enter the Channel shipping lanes. If this option were put into operations, an estimated 207 additional northbound vessel trips per year could be expected through the Channel (U. S. Bureau of Land Mangement, 1979).

Another proposed project which might add to the present level of commercial shipping in the Santa Barbara Channel is the construction of a liquified natural gas (LNG) terminal and gasification plant in southern California. To date, a variety of sites have been proposed and considered by the California Coastal Commission (CCC), the California Public Utilities Commission (PUC), and the Federal Energy Regulatory Commission (FERC). A final decision has not as yet been made. The site at Point Conception, preliminarily approved by the PUC, would result in little if any additional traffic in the study area -- LNG tankers would approach no closer than 20 nmi (37km) from San Miguel Island. A site further south at Oxnard, which is currently favored by FERC (which has permit-

ting authority along with PUC) would result in a steady flow of tankers through the Channel. The CCC has suggested alternative offshore siting options near the northern Channel Islands, however, neither the PUC, FERC, nor the applicant have seriously considered them (Reese, 1979, personal communication).

Finally, the Space Shuttle Vehicle System at Vandenberg Air Force Base, when in operation, will also lead to increased vessel traffic. Barges transporting expendable external tanks will be moved from Port Hueneme through the Channel to Vandenberg. Ten round trips per year by barge are expected (U. S. Bureau of Land Management, 1979). Also, boosters recovered after launch in an impact zone southwest of Point Arguello are likely to be towed across the Channel, thus adding to the region's traffic.

E.3.e. Military Operations

The United States Navy and Air Force conduct a wide range of military operations in the general southern California Bight area. All of these operations are strictly controlled whether on sea or in the air, and all require that extensive danger zones be free of non-participants in order that the conduct of an operation may safely proceed. Current operations include air to air, air to surface, surface to air, and surface to surface missile launch, bomb drop exercises (inert bombs with spotting charges), aerial mining exercises, and some submarine activities in the hydrophone array area south of Santa Cruz Island. Additional military operations planned for the near future are those in conjunction with the Air Force Space Shuttle Vehicle Flight System. The Navy maintains a weather station on San Miguel Island. No permanent personnel stay on the island in connection with the station, but occasionally personnel visit the station by helicopter to check equipment.

Bomb drop exercises in the area at San Miguel Island are conducted against a target buoy in ocean waters approximately 1 nmi (1.8km) south of the eastern tip of the island. Light attack aircraft from the Naval Air Station, Lemoore, California are the primary users of this facility. The present rate of these operations is approximately 200 times a year, with an average of five aircraft per flight--a total of 1,000 individual sorties per year. Planes making the bombing runs cruise at an altitude of 12,000 ft (3063m) and descend to an altitude of approximately 2,000 ft (606m) when dropping practice bombs. A surface danger zone extends 3 nmi (5.6km) from the shoreline of the eastern half of San Miguel Island. Prior to the conduct of bomb drop exercises, boaters are advised to remain clear of this area (U.S. Department of Navy, 1979, personal communication).

San Miguel Island has not been intentionally struck by ordnance items for many years. Occassionally, however, missile danger zones may overlie the island, forcing evacuation of personnel for the duration of such activities.

A practice aerial mine range is maintained by the Navy in Beecher's Bay on the northeast side of Santa Rosa Island and in the channel area between Santa Rosa and Santa Cruz Islands. The mines used are inert and consist of a mine casing filled with sand and concrete. The altitude of aircraft involved in mine laying operations is often as low as 200 ft (61m). Mine recovery by divers occurs approximately once each month. This activity requires the presence of recovery craft for a period of approximately three days.

The Navy maintains an undersea hydrophone array extending south from the east end of Santa Cruz Island for a distance of approximately 10 nmi (18.5km). The facility is operated by the General Motors Corporation, Delco Division, and is used for acoustic measurement purposes approximately 50 times a year (Scruggs, 1979, personal communication).

As noted, a future Air Force use of the area involves the development and operation of the Space Shuttle Vehicle System. Approximately twenty operation flights are planned for the system and will be launched for Vandenberg Air Force Base on Point Conception (beginning in December, 1982, and extending over an eight year period), although only seven or eight polar orbit flights will pass directly over the Island shortly after takeoff. Flight profiles indicate that the launch vehicle would be between 160,000 and 180,000 feet (48,480 to 54,500m) as it passes over the study area (Pfeiffer, 1979, personal communication). Overpressures felt on the islands will vary widely, however, depending on the angle of inclination chosen upon launching.

As part of the space shuttle system a splashdown area to the west and southwest of San Miguel Island is planned for the recovery of space shuttle booster rockets. Most returning shuttles will approach the study area at altitudes ranging from 80,000 to 100,000 feet (24,200 to 30,300m) along a reentry path passing near, and for one return orbit directly over, San Miguel Island. Overpressures of variable intensity (1 1/2-2 pounds per square foot) are projected to resemble aircraft sonic booms in these cases (Pfeiffer, 1979, personal communication). The towing of spent booster rockets by barge from Port Hueneme to Vandenberg AFB is also envisioned and is addressed in Section E.3.d. above.

E.3.f. Research

Because of the exceptional abundance and condition of marine birds, marine mammals, fish and intertidal populations (see Section E-2), the marine ecosystem surrounding the northern Channel Islands and Santa Barbara Island provides an especially valuable natural laboratory for investigating species interactions with other marine life and with their environment. These natural attributes have encouraged extensive scientific oceanographic research by government and university groups. Many research institutions located throughout the southern California area have conducted (see Table E-22) or funded (see Table E-23) scientific investigations in the area.

E.3.g. Recreation

Water-based recreational activities in the northern Channel Islands and Santa Barbara Island region are pursued by three often interrelated user groups: pleasure boaters (sail and power); SCUBA divers and spearfishermen; and those interested in photography and nature study (e.g., marine bird and mammal observers). Although the dominant means of recreational access is by boat, charter aircraft overflights also provide a form of access which appears to be increasing in popularity (Coffin, 1979, personal communication). For a discussion of sport fishing see Section E.3.c.

The attractiveness of the northern Channel Islands as a destination for recreationists is generally on the upsurge; still there is currently no indication that congestion among recreational users is a problem. Natural controls upon public accessibility --

Table E-22. Major research organizations which have or are likely to conduct marine related scientific investigations on the coastal ocean environment in southern California

University of California at
Santa Cruz*
Irvine*
Berkeley*
San Diego*
Los Angeles*
Santa Barbara*
Scripps Institute (part of the University of California and San Diego)
Santa Barbara Museum of Natural History
California State Colleges (at Long Beach and Fullerton)
California Institute of Technology
Los Angeles County Museum
Planning Research Corporation
Point Reyes Bird Observatory
San Diego State College
University of Southern California*
Allan Hancock Foundation
Hubbs Seaworld in San Diego
California Department of Fish and Game
U.S. Bureau of Land Management
National Marine Fisheries Service
National Park Service

* Sea Grant Universities

TABLE E-23. Examples of research funding entities with potential or demonstrated relevance to the northern Channel Islands and Santa Barbara Island waters.

FEDERAL GOVERNMENT	
1. Department of Interior	
a) U.S. Bureau of Land Management	supports environmental baseline studies as well as special studies on hydrocarbon/heavy metal pollution; supported sea and air surveys of marine mammals and seabirds in the southern California Bight.
b) U.S. Fish and Wildlife Service	supports research on sea otters in southern California as well as migratory birds and endangered species.
c) National Park Service	has supported research on resources of the Channel Islands National Monument; will conduct biannual resource inventories in the Channel Islands National Park.
2. Department of Commerce	
a) National Marine Fisheries Service	supports research concerning marine mammals (including seals and sea lions on San Miguel), fishery resources, and endangered marine species.
b) Office of Sea Grant	supports a full range of marine related research through its system of Sea Grant colleges.
c) Office of Coastal Zone Management	supports research and monitoring at marine sanctuaries as well as coastal management concerns
d) Office of Environmental Data Service	supports a full range of oceanographic and climatological data collection, analysis and archiving functions.
3. Environmental Protection Agency	supports studies and monitoring of pollutant levels in coastal and pelagic marine organisms and environments.
4. National Aeronautics and Space Administration	supports oceanographic research utilizing telemetric and remote sensing capabilities of aircraft and satellites.
5. Marine Mammal Commission	supports research pertaining to conservation and protection of marine mammals including abundance and distribution studies, ecological studies, and biological studies.
6. National Science Foundation	supports a variety of pure and applied marine science and engineering projects.
7. Department of Energy	supports research and monitoring of marine pollution levels in coastal and pelagic marine organisms and environments.
8. Department of Defense	
a) U.S. Air Force	supporting research on the effects of the space shuttle's supersonic booms on marine mammal and seabird life in the northern Channel Islands.
b) Office of Naval Research	supports bioacoustic and biomedical research on marine mammals as well as other marine studies.
c) Naval Undersea Center adn Other Units	supports bioacoustic research on marine mammals.
STATE GOVERNMENT	
1. California Department of Fish and Game	supports research concerning state fisheries as game species maintains sport and commercial fishing statistics, conducts monitoring research.
2. California Coastal Commission	supports research related to coastal water resource and use management.

most notably lengthy boat travel distances from the mainland and occasionally adverse weather conditions -- are matched by as yet fairly strict landing permit controls.

Together these controls favor rather sparse activity densities. This is not to say, however, that future recreational trends in southern California might not alter the activity patterns around the northern Channel Islands over the long run. Regional water-oriented leisure demands already appear to be exceeding supplies available along the mainland coast and Santa Catalina Island to the south (California Department of Parks and Recreation, 1979). Consequently, it is possible that the Islands will increasingly function as an "overflow" destination for the greater southern California region.

Another potential stimulant to the growth of water-based recreational activities is the rising popularity of the Channel Island National Monument (i.e., Santa Barbara and Anacapa Islands) for public visits. The National Park Service's (NPS) policy encourages tightly-monitored visits, while at the same time cautioning the public (in preventative fashion) against overuse. This popularity may increase with the recent creation of the Channel Islands National Park, which includes Santa Cruz, Santa Rosa, and San Miguel Islands as well as Santa Barbara and Anacapa Islands. However, the law establishing the Park states that the Park "shall be administered on a low-intensity, limited-entry basis" and that "in recognition of the special fragility and sensitivity of the park's resources, it is the intent of Congress that the visitor use within the park be limited to assure negligible adverse impact on the park resources" (P.L. 96-199). In light of this mandate, it seems unlikely that recreation levels will rise significantly.

Most private boaters frequenting waters surrounding the Channel Islands are either en route to activities on the islands or engaged in activities such as diving, fishing, or casual nature observation. A small percentage of users is comprised of "through" boating parties destined for other points along the California coast. Many of these transients often frequent passages separating Santa Cruz, Santa Rosa and Anacapa Islands (Figure E-24) (U. S. Bureau of Land Management, 1979). While extensive data on vessel types and seasonal use densities are unavailable, it is also probable that these parties occasionally make island stopovers, if only to seek shelter within approved overnight mooring areas (e.g., San Miguel's Tyler Bight and Cuyler Harbor).

Many recreationists visit the Channel Islands National Monument. En route, they often partake in nature observation and occasional diving. Other boaters travel to nearshore zones merely to enjoy the islands' scenery (from on-board) or the exhileration of a day's relaxation at sea. In the absence of detailed boater surveys, however, there is no way of differentiating between levels of private passive boaters, multi-activity boaters (i.e., divers/nature observers), and those solely concerned with reaching the monument islands for other land-based pursuits. The most popular staging points for private vessels with destinations on or around the northern Channel Islands are situated along the coast between Point Conception and Point Mugu. They include Santa Barbara, Ventura, Oxnard, Gaviota, Goleta, and Port Hueneme (U. S. Bureau of Land Management, 1979).

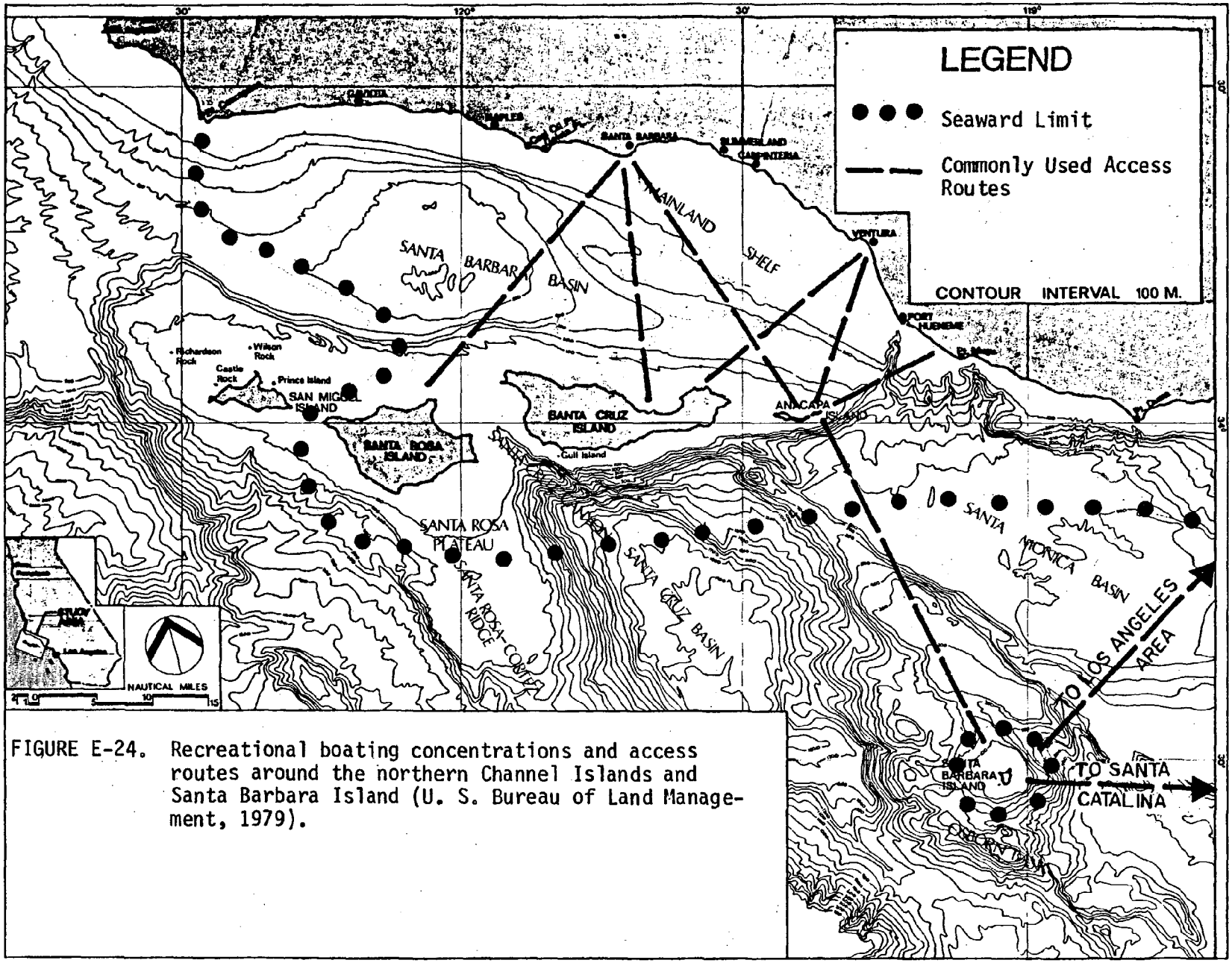

FIGURE E-24. Recreational boating concentrations and access routes around the northern Channel Islands and Santa Barbara Island (U. S. Bureau of Land Management, 1979).

Whereas private recreational boaters are apt to cruise throughout the northern Channel Islands region and can partake of diving and/or nature watching in innumerable nearshore locales, the majority of visitors to the Channel Monument Islands of Anacapa and Santa Barbara now arrive on commercial pay-as-you-go charters. For example, one publicly-licensed common carrier operating out of Ventura to Anacapa (and a few other island destinations nearby) carries most of the total visitor traffic to the monument. Day-long, as well as overnight, camping drop-off/pick-up arrangements, are provided throughout the year, reaching their peak activity season (6 trips per day) between June and September (Duthie, 1979, personal communication). Although aimed at conducting visitors on guided tours of the monument islands of Anacapa and, to a lesser extent, San Miguel and Santa Cruz, this service also facilitates en route nature observation. Boat captains regularly seek out gray whale pods during their northward (Jan.-March) migrations in the Santa Barbara Channel to observe and photograph (Connelly, 1979, personal communication). In the course of approaching Anacapa (west end) and Santa Cruz (north side), moreover, boats regularly pass at a safe distance from sea lion rookeries for similar purposes. Until recently, when they were restricted by California Department of Fish and Game's Ecological Reserve regulations for West Anacapa, such observational forays reportedly also included observations of brown pelican nesting grounds (Connelly, 1979, personal communication).

While the brunt of commercial boat visits by recreationists to the northern Channel Islands are centered upon Anacapa Island, more recently a special permit process has also been initiated for restricted tours (i.e., small ranger-accompanied) of San Miguel Island (which the NPS manages in league with the Department of the Navy). On Santa Cruz Island, having assumed majority ownership in late 1978, the California Nature Conservancy hopes to expand

public visits as well, relying mostly upon commercial charter services such as the one currently in operation (Grumbine, 1979, personal communication). The management plan which the National Park Service must develop for the Channel Islands National Park may change recreational patterns around the Islands but must by law administer visitor access to the Park on a low-intensity, limited entry basis (Whelen, 1980, personal communication).

Along the passive pleasure boating and nature observation, near-shore water zones around the northern Channel Islands and Santa Barbara Island are frequented by divers and spearfishing enthusiasts. Despite rather cold year-round water temperatures (normally necessitating wet suits), visual clarity is of such good quality, and protected cove shallows and kelp beds so numerous, that both SCUBA and limited snorkeling activities thrive here. The presence of substantial stocks of lobsters and abalone also serves to attract many participants to this recreational use sector (Duthie, 1979, personal communication).

As inventoried by the California Governor's Office Task Force on the Offshore Continental Shelf, some 25 skin and SCUBA diving sites are evident in the northern Channel Islands, including 7 off Santa Cruz, 3 off Santa Barbara and 5 off each of Anacapa, Santa Rosa, and San Miguel (California Office of Planning and Research, 1977) (see Figure E-25).

Both party boaters and commercial charter operators engage in or facilitate diving activities, but there is as yet little information on their proportional contributions to total user demand or quantified areal concentrations. One "open" charter boat operator from Santa Barbara, for example, regularly transports paying SCUBA divers to San Miguel (Wilson Rock, Richardson Rock and Prince

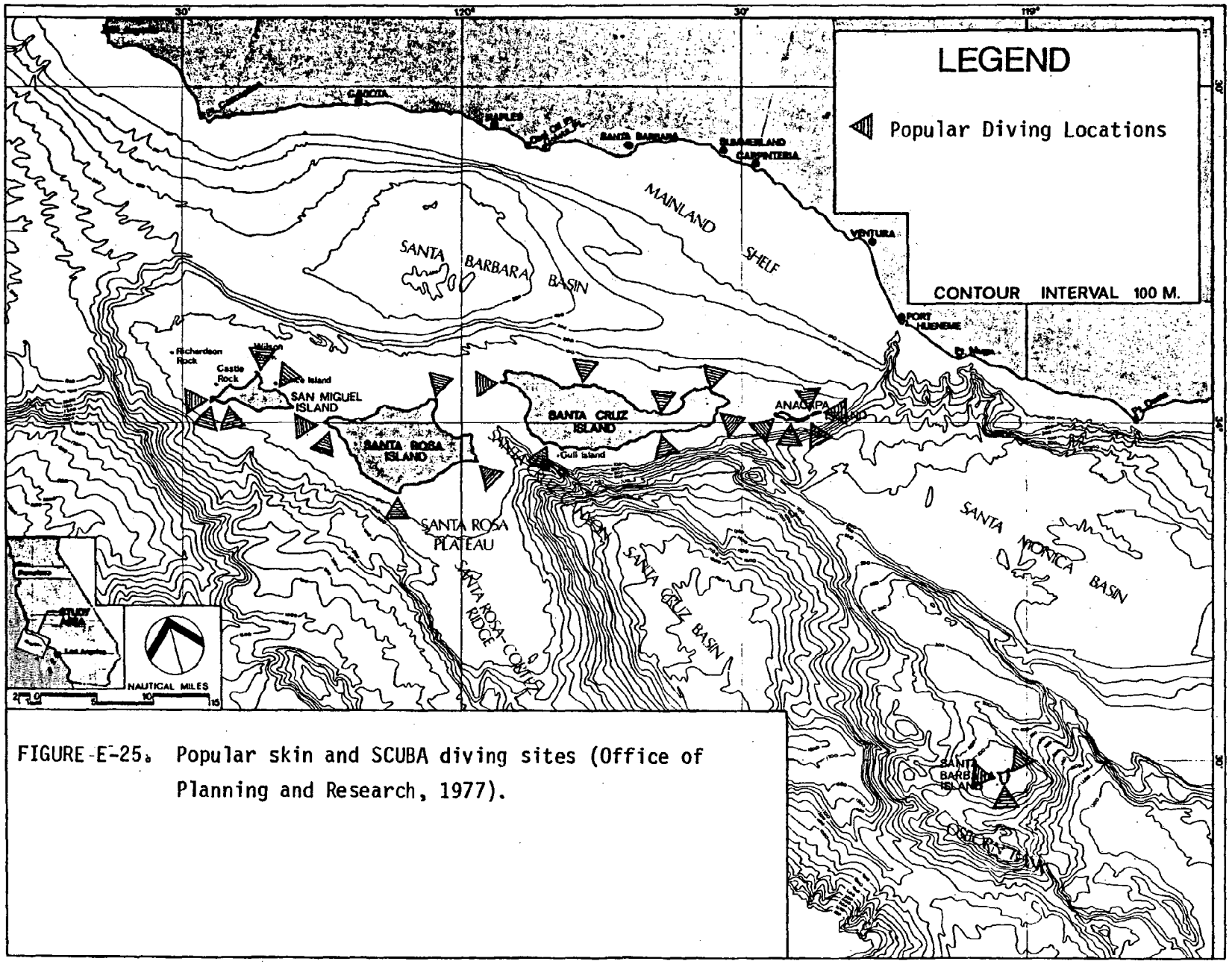

FIGURE E-25. Popular skin and SCUBA diving sites (Office of Planning and Research, 1977).

Island), Santa Rosa (Talcott Shoals), and Santa Cruz (Gull Island and Smuggler's Cove) (Duthie, 1979, personal communication). In these areas, most dives occur well within one-quarter mile of shore, and frequently in kelp beds. An estimated 50 percent of these recreationists carry spear guns on board and take both lobster and abalone. This particular operator indicated few, if any, concerns about user congestion, again highlighting the abundance of both open water space available in general and quality diving sites. Local diving clubs from communities along the mainland coast and elsewhere generate most of this operator's business (Duthie, 1979, personal communication).

Although not strictly marine-based, recreational flying is also a growing leisure pastime in the Santa Barbara Channel (Coffin, 1979, personal communication). Airports such as a county facility situated in Santa Barbara function as the primary staging points for this activity. Presently, two charter firms in the nearby mainland coastal region offer offshore overflights. Nature-watching during the gray whale's north and southward migration season is reportedly the most popular motive (90 percent) behind the demand for plane trips; a much smaller proportion of users charter aircraft purely to enjoy the unique scenic vistas provided by the offshore area's marine/island environment (Coffin, 1979, personal communication).

One of the charter companies, Santa Barbara Aviation, reports that they receive approximately 6 or 8 requests per month for flights in and around the Channel for nature observation (Glendinning, 1979, personal communication).

The peak season for recreational overflights lasts from April through September; and given the evidence of widening public interest in this activity, the frequency of charter services is likely to increase (Coffin, 1979, personal communication).

F. ALTERNATIVES

F.a. INTRODUCTION

Section F discusses six alternative actions for NOAA to take regarding the area under consideration. The first alternative presented is the possibility of not designating a sanctuary but instead relying on the existing system of controls. Alternative 2 is NOAA's preferred alternative, namely the designation of a marine sanctuary with the controls set forth in the draft designation document and proposed regulations in Appendix 1. Alternatives 3 through 6 include several different boundary, regulatory, and management options. These alternatives are discussed in comparison to the preferred alternative. Table F-1 summarizes the boundaries and controls considered for designation alternatives 2 through 6.

F.1 STATUS QUO ALTERNATIVE

F.1.a. INTRODUCTION

An alternative to designating a marine sanctuary is to rely solely on the State and Federal authorities currently in effect. This section sets forth the existing controls in the area under consideration and the environmental consequences of relying only on current controls. The following section (F.1.b, Existing Management Authorities) includes a brief description of each of the authorities now in effect in the study area. Some readers may prefer to review Table F-1 and Figure F-1a which provide an

TABLE F-1. Summary of boundary, activity regulation, and management alternatives for a marine sanctuary designation excluding the status quo alternative.

Alternative	Boundaries	Oil and Gas activities	Discharges	Seabed alterations	Vessel traffic	Disturbing marine mammals and birds by overflights.
2 pref.)	6 nautical miles around the northern Channel Islands and Santa Barbara Island	No operations on new leases. Require best state of the art oil spill contingency plans.	Prohibit except for vessel cooling waters, etc.	Prohibit within 2 nmi of the Islands.	To the extent consistent with int. law, prohibit vessels in the trade of carrying cargo or servicing offshore installations w/in 1 nmi of the Islands except to land.	Prohibit below 1000 feet within 1 nmi of the Islands, except to land on the Islands and to survey kelp beds.
3	6 nautical miles around the northern Channel Islands and Santa Barbara Island	No operations on new leases. No new rigs or platforms except on existing leases entirely in the sanctuary. Require best state of art oil spill contingency plans.	Same as alternative 2.	Prohibit within the sanctuary.	Require vessels to stay in VISS's. Prohibit vessels in the trade of carrying cargo or servicing offshore installations w/in 1 nmi of the Islands except to land.	Prohibit below 1000 feet within 1 nmi of the Islands and below 500 feet in the sanctuary, except to land on the Islands and to survey kelp beds.
4	The entire Santa Barbara Channel and 12 nautical miles around the northern Channel Islands and Santa Barbara Island.	No operations on new leases within 6 nmi of the Islands. Require best state of art oil spill contingency plans. No structures in VTSS's.	Same, except within 3 nmi of the mainland.	Prohibit within 2 nmi of the Islands.	Same as alternative 3.	Same as alternative 2.
5	3 nautical miles beyond the territorial sea around the Islands.	No operations on new leases. Require best state of art oil spill contingency plans.	Same as alternative 2.	—	Relying on existing authorities.	
6	The entire Channel excluding State waters and 12 nautical miles around the northern Channel Islands and Santa Barbara Island.	No operations on new leases within 6 nmi of the Islands. Require best state of art oil spill contingency plans. No structures in VTSS's.	Same as alternative 2.	—	Require vessels to stay in VTSS's.	

TABLE F-1, cont.

Alternative	Firearms	Historical resources	Fishing & Plant Harvesting	Research/ Education	Military Activities	Management
2		Prohibit removal and damage. Seek listing under the National Historic Preservation Act.	Rely on the California Department of Fish and Game and the Pacific fishery management Council.	Allow. Issue permits for some research or education to conduct activities otherwise prohibited.	Allow military activities necessary for national defense or emergency. NOAA will consult with the Department of Defense concerning specific activities.	Monitor resources and consult with other authorities. Establish Sanctuary Information Center. Maintain register of research projects. Encourage scientific research. Promote awareness of sanctuary resources. Compile an inventory and map historical resources. U.S. Coast Guard, National Park Service, National Marine Fisheries Service, and CDFG will enforce sanctuary regulations.
3	Prohibit use, except for military operations.	Same	Rely on CDFG and PFMC.	Same as alternative 2.	Same as alternative 2.	Same, but establish research zones.
4		Same	Rely on CDFG and PFMC	Same	Same	OCZM will coordinate management by existing authorities and establish a Channel Sanctuary Management Advisory Committee. Otherwise same as alternative 2.
		—	Rely on PFMC.	Same	Same	OCZM will coordinate and seek memoranda of understanding regarding consistency with the State. The U.S. Coast Guard, National Marine Fisheries Service, and possibly National Park Service will enforce sanctuary regulations. NOAA will not compile an inventory or map historical resources; otherwise same as alternative 2.
		—	Rely on PFMC.	Same	Same	OCZM will coordinate and seek memoranda of understanding regarding consistency with the State. The U.S. Coast Guard, National Marine Fisheries Service, and possibly National Park Service, will enforce sanctuary regulations. NOAA will not compile an inventory or map historical resources; otherwise same as alternative 4.

Managed Resources and Activities	Management Authorities																			
	Federal Authorities													State Authorities						
	AA	CAA	CWA/RHA	ESA	FCMA	MBTA	MMPA	NHPA	OCSLA	OPA	PMR	PWSA	SSVS	AQCA	ASBS	CAA	ER	FGC	HCRPA	OGS	WQCA
Resource Protection																					
1. Marine Mammals				FWS NMFS			NMFS FWS									CCC	DFG	DFG			
2. Marine Birds				FWS		FWS										CCC	DFG	DFG			
3. Fish/Shellfish					NMFS PFMC												DFG	DFG PFMC			
4. Research	NPS			NMFS			NMFS								WRCB						
5. Recreation	NPS											USCG				CCC					
6. Historic/ Cultural	NPS HCRS							NPS HCRS									DFG		HRC		
Activity Management																					
1. Oil and Gas Development																					
--Exploration & Development		EPA	COE EPA						BLM USGS							CCC				SLC	
--Platform Placement			COE						BLM USGS COE							CCC				SLC	
--Pipelines			COE						BLM USGS COE							CCC					
--Water Discharges			EPA												WRCB	CCC					WRCB
--Air Discharges		EPA							USGS					ARB		CCC					
2. Fishing					NMFS PFMC												DFG	PFMC DFG			
3. Shipping		EPA	EPA							USCG		USCG		ARB			DFG				WRCB
4. Military Operations	NPS										Navy		Air Force				DFG	DFG			
5. Research						FWS	NMFS FWS										DFG	DFG			
6. Recreation	NPS		USCG EPA														DFG	DFG			

FIGURE F-1. Existing Federal and State management authorities as they relate to resources and activities.

TABLE F-1a. Abbreviations of Authorities and Agencies

Abbreviations of Authorities

Federal

- AA - Antiquities Act; 16 USC §§461-469i
- CAA - Clean Air Act; 42 USC §§7401-7642
- CWA - Clean Water Act; 33 USC §§1251-1376
- ESA - Endangered Species Act; 16 USC §§1531-1543
- FCMA - Fishery Conservation and Management Act; 16 USC §§1801-1882
- MBTA - Migratory Bird Treaty Act; 16 USC §§703-711
- MMPA - Marine Mammal Protection Act; 16 USC §§1361-1407
- NHPA - National Historic Preservation Act; 16 USC §§470-470n
- OCSLA - Outer Continental Shelf Lands Act; 43 USC §§1331-1343
- OPA - Oil Pollution Act of 1961; 33 USC §§1001-1016
- PMR - Pacific Missile Range; U.S. Navy
- PWSA - Ports and Waterways Safety Act; 33 USC §§1221-1227
- SSVS - Space Shuttle Vehicle System; U.S. Air Force
- RHA - River and Harbor Act of 1899; 33 USC 403 Sec. 10

State

- AQCA - Air Quality Control Act; California Health and Safety Code, §§39000-42708
- ASBS - Areas of Special Biological Significance; California Water Code §13260
- CCA - California Coastal Act; California Public Resources Code §27000
- ER - Ecological Reserves; California Fish and Game Code §1580
- FGC - Fish and Game Code; California Fish and Game Code, California Administrative Code, Title 14
- HCRPA - Historical and Cultural Resources Protection Act; California Public Resources Code §5000
- OGS - Oil and Gas Sanctuaries; California Public Resources Code §6870
- WQCA - Water Quality Control Act; California Water Code §13000

Abbreviations of Agencies

Federal

- BLM - Bureau of Land Management - Department of the Interior
- COE - Army Corps of Engineers - Department of Defense
- EPA - Environmental Protection Agency
- FWS - Fish and Wildlife Service - Department of the Interior
- HCRS - Heritage Conservation and Recreation Service - Department of the Interior
- MMC - Marine Mammal Commission
- NMFS - National Marine Fisheries Service - Department of Commerce
- NPS - National Park Service - Department of the Interior
- PMFC - Pacific Fisheries Management Council; Joint Federal-State
- USCG - United States Coast Guard - Department of Transportation
- USGS - United States Geological Survey - Department of the Interior

State

- ARB - Air Resources Board
- CCC - California Coastal Commission
- DFG - Department of Fish and Game
- HRC - Historic Resources Commission
- PFMC - Pacific Fisheries Management Council; (Joint Federal-State-Private Body)
- SLC - State Lands Commission
- WRCB - Water Resources Control Board

overview of the authorities in the area before proceeding to Section F.1.c, which describes the environmental consequences of relying on the existing regulatory structure.

F.1.b EXISTING MANAGEMENT AUTHORITIES

F.1.b.i. STATE AUTHORITIES

The State's jurisdiction in the area under consideration extends three nmi (5.6km) miles offshore from the mean low tide line. State authorities range in approach and scope from broad regional management programs such as the California Coastal Act to laws intended to control specific threats or protect specific resources. The authorities with broad jurisdiction are described first, followed by those addressing a specific threat or resource, respectively.

The California Coastal Act of 1976 (CCA) (Cal. Pub. Res. Code 30000 et seq. (the CCA)

The California Coastal Act of 1976, Cal. Pub. Res. Code 30000 et seq. (the CCA), the foundation of the California Coastal Management Program, establishes a comprehensive set of specific policies for the protection of coastal resources and the management of orderly economic development thoughout the coastal zone. The Act defines the coastal zone as the land and water area of the State extending seaward to the outer limit of the State's jurisdiction, including all offshore islands, and extending inland generally 1,000 yards from the mean high tide line. In significant coastal estuarine, habitat and recreational areas it extends inland to the

first major ridgeline or five miles from mean high tide, whichever is less.

Activities in State waters must comply with the policies established by the CCA. In addition, seaward of State jurisdiction, Federal activities directly affecting the coastal zone and activities which require a Federal license or permit must be conducted in a manner consistent with these policies to the maximum extent practicable.

Provisions of the CCA which address activities or concerns relevant to the consideration of a marine sanctuary include:

- Article 4, Section 30230, granting "special protection to" areas and species of special biological or economic significance and requiring uses of the marine environment to be carried out so as to maintain biological productivity.
- Article 4, Section 30233, limiting dredging and filling in coastal waters to situations where "there is no feasible less environmentally damaging alternative and it is related to specific listed purposes."
- Article 5, Section 30240, protecting sensitive habitat areas against "any significant disruption of habitat values" and against impacts from adjacent development which would "significantly degrade" the area.
- Article 7, Section 30262, regulating oil and gas development.

The CCA establishes the California Coastal Commission (CCC) and six temporary commissions to implement the Act granting the CCC permit authority until such times as local governments adopt local coastal plans (LCP) approved by the Commission. The Southern

Central Coastal Commission is currently supervising the preparation of local coastal programs which will include the study area.

The Local Coastal Plans for Ventura and Santa Barbara Counties will only marginally affect Anacapa, Santa Barbara, and San Miguel Islands, because these lands are currently owned by the Federal government (Stanley, 1979, personal communication, and Berry, 1979, personal communication). Santa Cruz and Santa Rosa Islands, although included in the newly created Channel Islands National Park, will be affected by the LCPs however, since Park acquisition of these lands will take time (Whelan, 1980a, personal communication).

In ocean areas, the California Coastal Commission will continue (after approval of local coastal programs) to be the permitting agency and will be responsible for certifying consistency for Federal activities. Local governments, with jurisdiction over areas affected by OCS activity, are invited by the CCC to participate in the public hearing(s), CCC deliberations, and to present determinations of whether OCS activity is consistent with the local coastal plan.

To facilitate early containment of an oil spill, the Commission has required several lease holders (For example, Exxon on Tracts 222, 223, 230, 231, 232, and 238) to have certain oil spill containment and cleanup equipment, beyond that required by the USGS's OCS Order #7, on drillships or within 15 minutes of the site at all times:

1) 1500 feet (424m) of open ocean containment boom and a boat capable of deploying the boom, 2) one oil skimming device capable of open ocean use, and 3) fifteen bales of oil sorbent material. Coastal Commission policy, for reasons of navigation safety and environmental protection, holds the placement of drillships in or within 500 meters of sea lanes established by the U. S. Coast Guard to be inconsistent with the Coastal Act.

Finally, the California Coastal Act requires the Commission to designate "Sensitive Coastal Resource Areas" which must then be acted upon by the Legislature within two years. The Commission, however, has preliminarily determined such designation may be unnecessary in view of the existing mechanisms available through the local coastal planning process.

Ecological Reserves (California Fish and Game Code §1580 et seq., Cal. 14 Admin. Code §630 et seq.)

The California Department of Fish and Game (DFG) has established ecological reserves in the ocean waters and tide and submerged lands surrounding San Miguel, Santa Barbara, and Anacapa Islands from the mean high tide line seaward 1 nmi (1.8km) (see Figure F-2).

Within these reserves, the California Department of Fish and Game has the authority to prohibit any activity which may harm the resources including specifically fishing, collecting, swimming, boating, aircraft, and public entry (California 14 Administrative Code §630(a)). General regulations provide that "no person shall disturb geological formations or archaeological artifacts or take

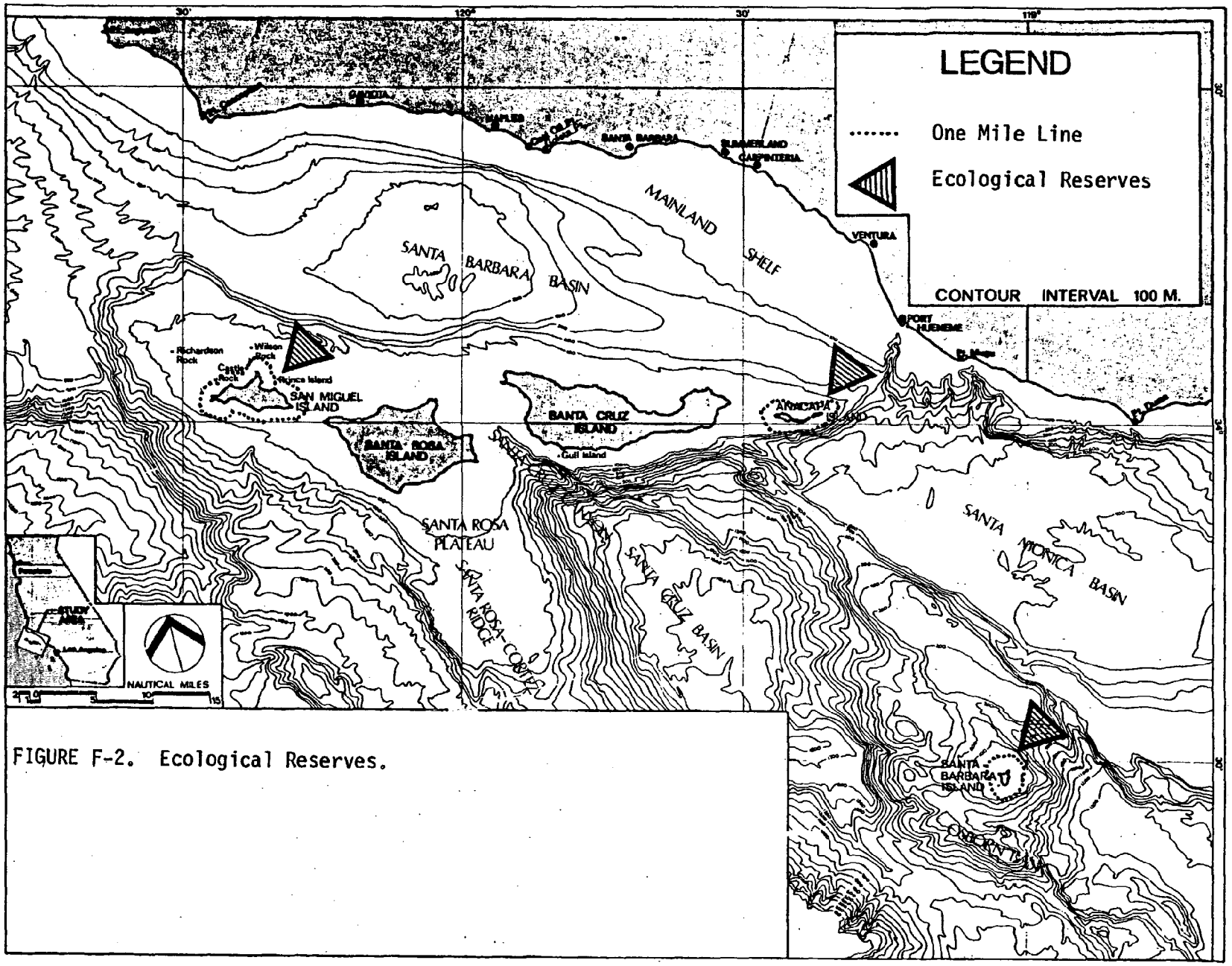

FIGURE F-2. Ecological Reserves.

or disturb any bird or nest, or eggs thereof, or any plant, mammal, fish, mollusk, crustacean...or any other form of plant or animal life in an ecological reserve" (California 14 Administrative Code §630 (a) (1)). These activities are, however, permitted by the Department of Fish and Game in particular reserves or in certain areas of particular reserves pursuant to specific regulations.

Boating is permitted in the San Miguel Island Reserve, except between Judith Rock and Castle Rock (Figure F-3) where all boat entry is prohibited within 300 yards (270m) of shore. However, boats may approach the Island between Judith Rock and Castle Rock to a distance of 100 yards (91m) from shore during the periods from March 15 through April 30 and October 1 through December 15. Persons who have been issued permits by the DFG to take sea urchins within the Point Bennett area or to dive for abalone may enter the 300 yard (270m) area between Judith Rock and Castle Rock for the purpose of fishing for abalone and sea urchins during the same periods. The DFG may rescind permission for boats to enter within 300 yards between Judith Rock and Castle Rock if it finds that impairment to the marine mammals of the Island is imminent. Boats traveling within 300 yards (270m) of the shoreline of the Island must operate with a minimum of noise and not exceed speeds of five miles per hour (14 California Administrative Code §630(b)(28)(C)) (Edgerton, 1979, personal communication). Overnight anchoring of boats, however, is permitted only at Tyler Bight and Cuyler Harbor. Furthermore, landing is allowed only by permit and only at the designated landing beach in Cuyler Harbor. Access to offshore rocks and islands within the reserve is allowed only by permit (California 14 Administrative Code §630(b)(28)(C)).

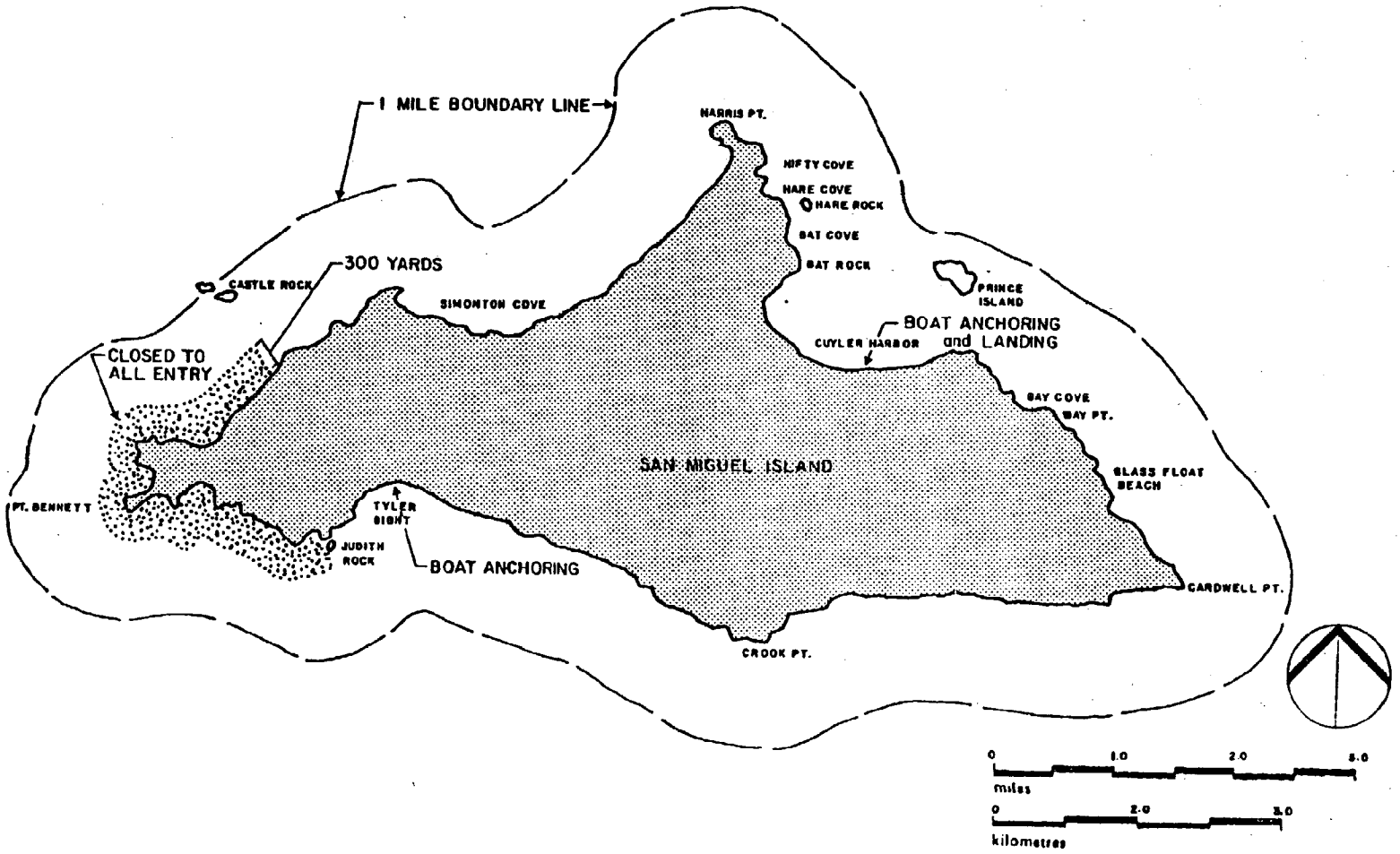

FIGURE F-3. San Miguel Island Ecological Reserve

In the San Miguel Island Ecological Reserve, swimming and diving are permitted in areas where boating is authorized (California 14 Administrative Code §630(b)(28)B)). Fishing from shore or in areas closed to boating is prohibited. Recreational fishing from boats is permitted in other areas of the reserve. Commercial fishing, except using hook and line gear or pursuant to abalone, lobster or sea urchin permits, is only allowed pursuant to a special permit (California 14 Administrative Code §630(b)(28)(A)).

The most direct resource protection in the Anacapa Island Ecological Reserve is a brown pelican fledging area established off the north shore of West Anacapa Island (see Figure F-4). Entry is prohibited during breeding season, March 1 to May 31 (California 14 Administrative Code §630(b)(31)(E)).

Boating, swimming and diving are otherwise allowed within the Anacapa Island Reserve (California 14 Administrative Code §630(b)(31)(A)). No nets or traps may be used anywhere within 450 ft (135m) of the island. Harvesting of kelp is prohibited within the reserve except by special permit.

A "natural area" has been established off the north shore of East Anacapa Island from which it is unlawful to take any native plant, fish, wildlife, aquatic organism or disturb any natural geological feature (California 14 Administrative Code §630(b)(31)(B)). Zones have been established off the southeast shore of the West Anacapa Island and the north shore of Middle Anacapa Island where taking of invertebrates from the mean high tide line to a depth of 20 ft (6.1m) is prohibited (California 14 Administrative Code §630(b)(31)(C)) (see Figure F-4). Commercial and sportfishing are

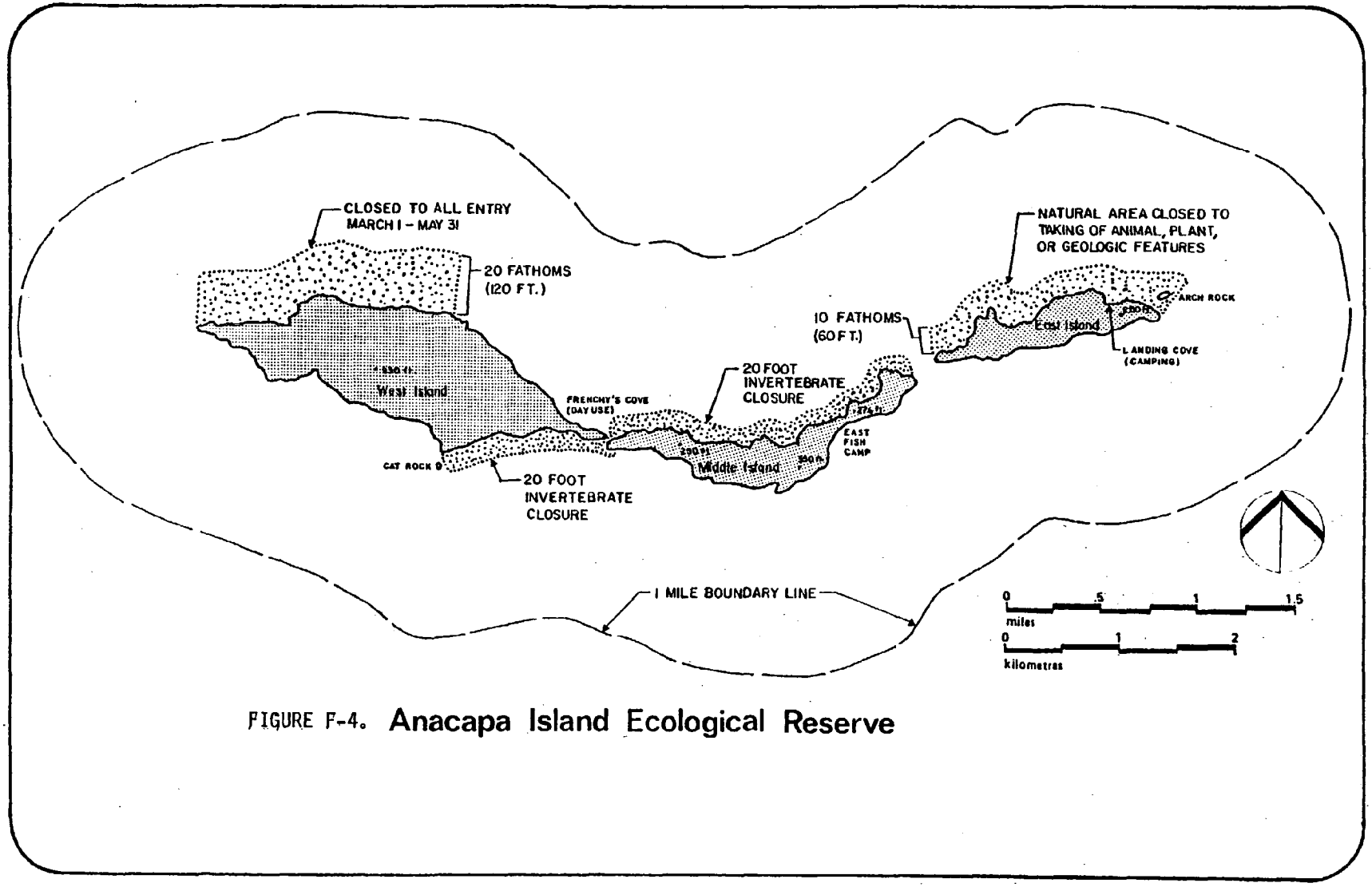

FIGURE F-4. **Anacapa Island Ecological Reserve**

allowed elsewhere in the reserve.

Boating, swimming, sport and commercial fishing, and diving are generally permitted within the Santa Barbara Ecological Reserve (California 14 Administrative Code §630(b)(32)(A)). Within an area off the east shore of the Island, extending from the mean high tide line to a depth of 20 ft (6.1m) no invertebrates may be taken and no nets or traps may be used (California 14 Administrative Code §630(b)(32)(B) and (C) (see Figure F-5).

DFG personnel and facilities for enforcement of ecological reserve regulations consist of ten wardens and four boats. In addition to the ecological reserves, these personnel and facilities are responsible for enforcement of all of the Fish and Game Code and regulations for San Luis Obispo, Santa Barbara, and Ventura Counties. The four boats are: a 50-foot patrol boat with a small skiff on board, a 20-foot skiff, and a 17-foot skiff. The level of enforcement effort is dependent to a large extent on unpredictable weather conditions. Trips are made daily, weather conditions permitting, to Anacapa Island with the 50-foot patrol boat, the only boat large enough to cross the Santa Barbara Channel, manned by two wardens. Whenever possible, the patrol boat will then move on to other islands. Occasionally, stakeouts will be made for specific targets when violations are suspected (Martin, 1979, personal communication).

A cooperative agreement was established between the Department of Fish and Game and the National Park Service (NPS) for the enforcement of California Fish and Game regulations in these reserves. The agreement was initiated to fully utilize the on-site enforcement capabilities of the Park Service, in terms of both personnel and facilities. Pursuant to this agreement, the seven Park

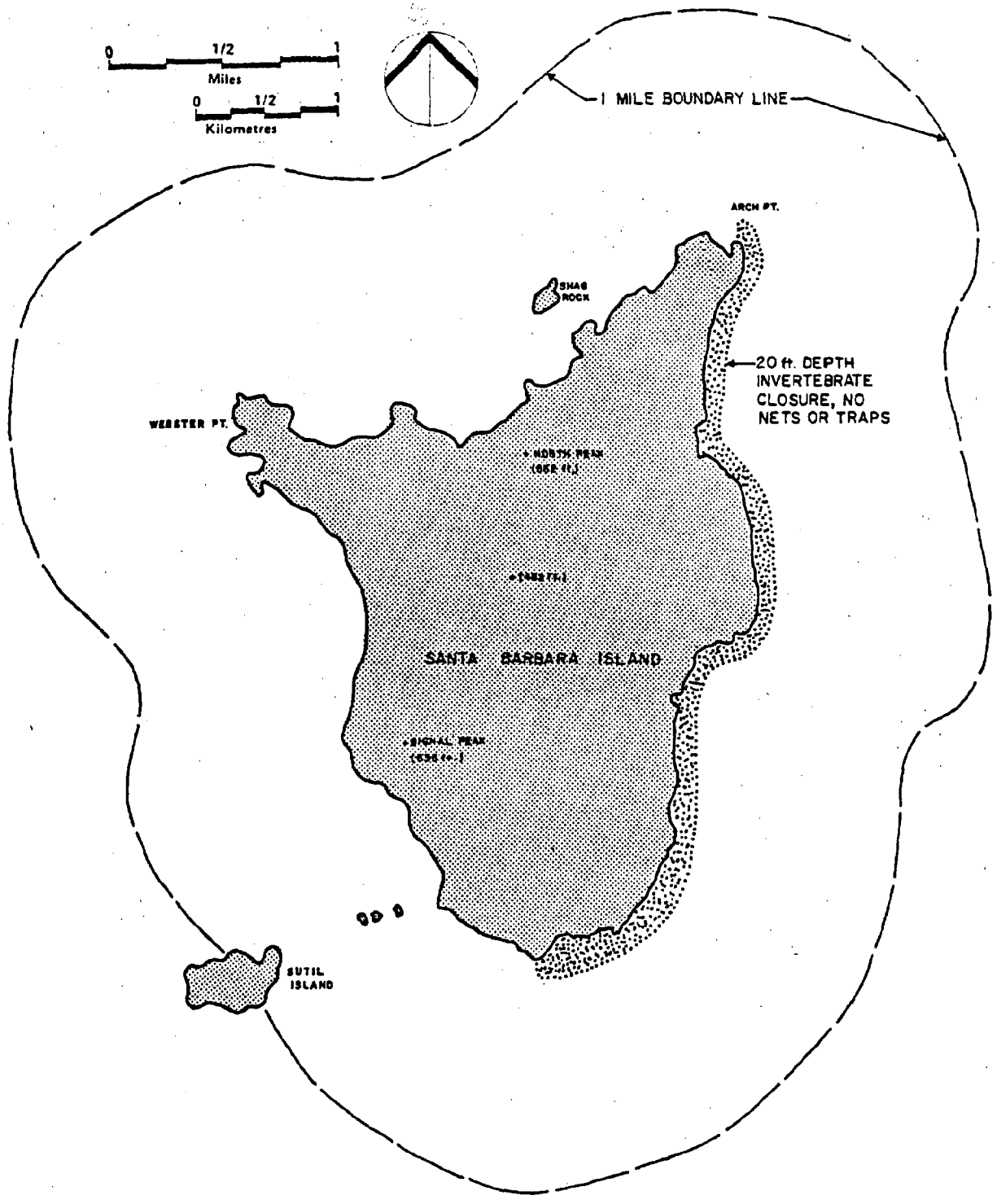

FIGURE F-5. Santa Barbara Island Ecological Reserve.

Service rangers associated with the Channel Islands National Monument were deputized as Department of Fish and Game wardens and conduct patrol operations within the reserves. Regular joint training meetings have been conducted by the DFG to keep NPS personnel abreast of changes in DFG regulations and policy (Cooperative Agreement between California Department of Fish and Game and U. S. National Park Service, 10/78; Johnson, 1979, personal communication; and Martin, 1979, personal communication). This cooperative agreement will probably be extended and expanded in light of the creation of the Channel Islands National Park (Whelen, 1980b, personal communication).

Fish and Game Code (Chapter 14, Administrative Code)

The California Department of Fish and Game, under the Fish and Game Code (and Chapter 14 of the Administrative Code), regulates and manages a wide variety of activities affecting the fish and game resources found in the land and water areas under State jurisdiction. Specific Department of Fish and Game programs, other than ecological reserves (discussed above), of relevance to the study area include management of sport and commercial fishing, and plant harvesting, protection of endangered species, protection of migratory birds, coordination of the oil spill contigency plans, and restriction of overflights.

--Sport and commercial fishing and kelp harvesting management (California Fish and Game Code §7100 et seq.)

The Department of Fish and Game regulates sport fishing through license and bag limit systems. A sport fishing license is required for the taking and possession of fish for any non-commercial purpose (California Fish and Game Code §7100). Sport fishing of spiny lobster is restricted to collection by hoop nets or hand, and clam, mollusk, and crustacean collection are limited to the period between one-half hour before sunrise to one-half hour after sunset (California Fish and Game Code §7256, 7290, and 7332). The Code does not specify bag limits for these resources.

Commercial fishing is also governed by a licensing system. Every person who operates or assists in using any boat or gear to take fish for profit must procure a license (California Fish and Game Code §7580); party boat operators must get special licenses (California Fish and Game Code §7920 et seq.). Vessels used in commercial fishing operations must also carry a Department of Fish and Game registration number (California Fish and Game Code §7880). Fishing reports, described in Sections 8010 et seq., must be supplied by buyers, processors, and anyone else who receives fish from fishermen. These reports form the basis of Department of Fish and Game statistics used in formulating fishery management policies. Species near the northern Channel Islands and Santa Barbara are subject to the seasonal, size, and catch restrictions listed in Table F-2.

Under the Submerged Lands Act of 1953 (43 USC §130(c)), California has jurisdiction over kelp within state waters as a seabed resource. Generally, a license is required to harvest kelp for profit (California Fish and Game Code §6650). As with other commercial fisheries, a record book must be maintained (California Fish and Game Code §6652).

TABLE F-2. Catch restrictions for species of commerical fish in the northern Channel Islands area (references are to the California Fish and Game Code).

Catch restrictions for species of commercial fish in the northern Channel Islands area (references are to the California Fish and Game Code).

Sardines	Catch limited to 20,000 tons (or other DFG allowance) of the spawning population (Section 8150.7).
Anchovies	Restricted according to the PFMC plan.
Lobster	Fishery open between the first Wednesday in October and the first Wednesday after March 15 (Section 8251). Lobster permit required (Section 8254.7). Size restrictions exist (Section 8252).
Crab	Fishery open between the second Tuesday in November and June 30th (Section 8276).
Abalones	Fishery open each month but February and August (Section 8300). Abalone permit required (Section 8306). Size limits exist (Section 8304). Abalone diving permits exist and are limited in number (Sections 8306.1 and 8306.4). Black abalone taking within one mile of Santa Cruz and Anacapa Islands prohibited with some exceptions (Sections 8307.5, 8307.6).
Clams, Molluscs	Fishery open year round (Sections 8340 and 8341).
Scallops	Illegal to sell or purchase (Section 8345).
Saltwater and Anadromous fish	Kelp bass, sand bass, and spotted bass may be sold (Section 8372); yellowfin and bluefin tuna may be taken at any time (Section 8374); bluefin tuna must exceed 7 1/2 lbs to be marketed (Section 8375); albacore and skipjack may be taken any time (Section 8376 and 8378); white seabass, barracuda, and yellowtail not less than 28 in. in length may be taken by hook and line any time (Section 8382).
Mackerel	Catch limited as stock is enhanced (Section 8388.3).
California halibut	May be taken any time (Section 8391).
Swordfish	May be taken any time (Section 8394).

Through a cooperative agreement recently reached between the Department of Fish and Game and the National Marine Fisheries Service, officials of both agencies may enforce each other's laws (see discussion below).

--Endangered species (California Fish and Game Code §2050 et seq.).

The California Department of Fish and Game maintains a list of rare and endangered species. It is unlawful within the state to take or possess any listed species. "Taking" is defined (California Fish and Game Code §2050 et seq.) in a manner analogous to the interpetation under the Federal act (see below). Listed species found in the study area are the Guadalupe fur seal, the California brown pelican, the California least tern, the light-footed clapper rail, and the Belding's savannah sparrow.

--Protection of Migratory Birds (California Fish and Game Code §355 et seq. and 3500 et seq.

In accordance with the Migratory Bird Treaty Act, California has provided protection for migratory birds, their nests and eggs by fixing areas, seasons, and hours plus bag and possession limits by species for migratory game birds (California Fish and Game Code §356). The peregrine falcon, brown pelican, California black rail and clapper rail, California least tern, light-footed clapper rail and southern bald eagle (California Fish and Game Code §3511) have all been accorded "fully protected" status, which protects these birds from taking except as authorized for scientific research.

--Oil Spill Contingency Plans (California Fish and Game Code §5650 et seq.)

It is unlawful to "deposit or permit any petroleum to pass into the waters of the State" (California Fish and Game Code §5650). The California Department of Fish and Game together with an Interagency Committee coordinates the State's oil spill contingency plan. Because Federal law preempts State regulation of oil spill cleanup operations, the State's role is that of observer, assistant, and advisor--with the important exception that the State has veto power over the use of chemical agents in State waters. In practice, State Department of Fish and Game personnel: 1) investigate all spills in State waters and many spills in Federal waters; 2) monitor, assist, and advise Federal and industry cleanup operations; and 3) maintain liaison between various government agencies and industry.

--Overflights (California Fish and Game Code §10501.5)

The California Department of Fish and Game prohibits overflights below 1000 ft (305m) over San Miguel, Santa Barbara, and Anacapa Islands.

Water Quality Control Act (California Water Code §13300 et seq.)

The Porter-Cologne Water Quality Control Act is designed to enhance and maintain water quality in the waters under the jurisdiction of the State. The State Water Resources Control Board and the nine regional water quality control boards have primary

authority for regulating water quality in California.

The Water Quality Control Plan for Ocean Waters of California (1978), which sets standards for water quality characteristics for ocean waters within State jurisdiction, places particular emphasis on maintaining water quality in Areas of Special Biological Significance (ASBSs). The State Water Resources Control Board has designated ASBSs in the waters around the northern Channel Islands and Santa Barbara Island to a distance of 1 nmi (1.8km) offshore or to the 300 ft (90m) isobath, whichever is greater.

To be classified as an ASBS, an area of ocean water must be considered to contain biological communities of such extraordinary value that no risk of change in their environments resulting from human activities can be considered acceptable (California Water Resources Control Board, 1976). Dischargers must ensure that their wastes are discharged a sufficient distance from designated ASBSs to assure that the natural water quality conditions within the area are not affected. This is accomplished (i.e., administered) by Regional Water Quality Control Boards (RWQCBs) which, via a permit procedure, set waste discharge restrictions upon:

a) elevated temperature wastes;

b) discrete, point source sewage or industrial process wastes; and

c) non-point source wastes such as, but not limited to, storm water runoff, silt, and urban runoff.

ASBS designations have no impact on vessel wastes, dredging control, or dredge spoil deposition because the California Ocean Plan, of which ASBS's are a part is not applicable to those activities.

RWQCBs are responsible for integrating ASBS designations into their area-wide basin plans which outline waste discharge prohibitions and restriction. A routine ASBS reconnaissance survey conducted by the SWRCB provides RWQBs with detailed resource information as well as data on existing or future activities apt to threaten their environmental quality. ASBS surveillance and monitoring is the responsibility of RWQCBs which ensure compliance with discharge regulations in the broader context of basin-wide enforcement. Should either an actual discharge violation or a threat therefore become apparent, the regional board is empowered with specific administrative procedures and remedies to enforce compliance (see California Water Code, Section 13300).

Though the primary intent of the designation is to protect marine life from waste water discharges, petroleum discharges into an ASBS are also covered (California Water Resources Control Board, 1976). Several study stations for the worldwide Mussel Watch Program, coordinated domestically by the U. S. Environmental Protection Agency, have been established within these ASBSs. Mussel watch stations are located in the shallow waters off Santa Barbara, Santa Cruz, and Anacapa Islands and two stations each have been established off San Miguel and Santa Rosa Island (California Water Resources Control Board, Annual Report, 1978). This program involves periodic tissue analysis of collected mussels as indicators of pollution levels. The establishment of these stations provides no special management of or protection for the research value of these sites, but does provide some information

for monitoring purposes.

Regulation of Offshore Oil and Gas Development Activities, Cunningham-Shell Tidelands Act, as Amended(California Public Resources Code §6850 et seq.)

Leasing of state submerged lands (extending from the mean high tide line seaward 3 nmi (5.5km) for oil and gas development activities and regulation of these activities is the responsibility of the State Lands Commission. Both the State Lands Commission and the Coastal Commission regulate these activities to ensure that they proceed safely and that marine resources are adequately protected. In this regard, the State Lands Commission enforces requirements similar to those of the United States Geological Survey concerning blowout prevention, drilling practices, production procedures, pollution control, and oil spill prevention, containment and cleanup (see below).

In order to protect sensitive resource areas, the California State Legislature may designate Oil and Gas Sanctuaries in which petroleum development is prohibited within submerged lands. Oil and gas sanctuaries have been established in the waters around the northern Channel Islands. The sanctuaries extend from the mean high tide line seaward three nautical miles (California Public Resources Code §6871). Although leasing is normally excluded from the sanctuaries, if underlying oil and gas deposits might be drained by wells located on adjacent Federal lands, thereby threatening the State's proprietary interest in the resource, the State Lands Commission may open up the affected sanctuary areas for a drainage sale. The waters around Santa Barbara Island have not been declared an oil and gas sanctuary.

Control of Oil Discharges from Vessels (California Harbors and Navigation Code §133)

The California Harbors and Navigation Code generally applies to the activities of vessels operating in state waters. One of its purposes is to prevent the activities of vessels from adversely affecting the marine environment. To achieve this purpose, the discharge of oil from any vessel in the state's navigable waters is prohibited except in cases of "unavoidable accident, collision, or stranding" (California Harbors and Navigation Code §133).

Any person who intentionally or negligently causes or permits any oil to be deposited in the waters of the State is liable for cleanup costs and subject to a $6,000 civil penalty (California Harbors and Navigation Code §151).

Air Resources (California Health and Safety Code §3900 et seq.).

The California Air Resources Board (ARB) is charged with the maintenance and enhancement of the ambient air quality of the State. The ARB has set air quality standards designed to meet National Ambient Air Quality Standards and delegated their implementation to local Air Pollution Control Districts (APCDs). The northern Channel Islands and Santa Barbara Island are located partly within the Santa Barbara County Air Pollution Control District and partly within the Ventura County Air Pollution District.

Generally, offshore oil and gas development facilities located within state waters must both obtain a permit from the appropriate APCD and meet ARB emission standards.

Emissions from tankers which dock at onshore facilities located in California are also considered together with those of the related onshore facility. As with onshore oil and gas development facilities, the total emissions level of the tanker and the related onshore facility must meet standards set by the ARB as implemented by the appropriate APCD. Unlike other offshore facilities, however, neither the ARB nor an APCD has authority to issue permits solely for tanker emissions (Stamey, 1979, personal communication).

Preservation of Historic Resources (California Public Resources Code §5020.4)

Preservation of representative and unique archaeological, paleontological, and historical sites in the land and water areas of the State is the responsibility of the California Historical Resources Commission. The Commission evaluates and makes recommendations to the State Historic Preservation Officer on nominations to the National Register pursuant to the National Historic Preservation Act (see below). The Commission also recommends State registration of sites as landmarks and points of interest to the Public Resources Department which is responsible for maintenance of registered sites (California Public Resources Code §5020.4). Registration as a point of interest qualifies a site only for the placement of informational signs. Landmarks, along with properties listed on the National Register and city or county

registers or inventories, become eligible for "qualified historic property" status for which special protection may be afforded by the Commission (California Public Resources Code §5031). At present, no sites within the study area have been registered as either landmarks or points of interest (Berry, 1979, personal communication).

Underwater State Parks

In order to protect special marine resources and water-based recreational values in ocean waters within State jurisdiction and to expand coastal park units beyond the water's edge, the California Department of Parks and Recreation has established an Underwater Parks Program (California Department of Parks and Recreation, 1979). As a result of a recently initiated underwater park study, underwater parks are being considered near San Miguel, Santa Cruz and Santa Rosa Islands (Kelly, 1979, personal communication), but at present, there are no underwater parks in the study area.

F.1.b.ii FEDERAL AUTHORITIES

Except where specified otherwise, Federal authorities apply throughout the entire area under consideration. The major exceptions are management of petroleum and fishery resources, which fall under State jurisdiction within three nautical miles (5.6km) of the shore.

Fishery Conservation and Management Act (FCMA) (16 USC §1801 et seq.)

The FCMA provides for the conservation and management of all fishery resources in the zone between three and two hundred nautical miles (5.6-370km) offshore. In the Channel Islands area, this authority is vested in the Pacific Fishery Management Council (PFMC). The National Marine Fisheries Service (NMFS) is charged with establishing guidelines for and approving those fishery management plans (FMPs) prepared by the PFMC for selected fisheries within its jurisdiction. These plans will determine the levels of commercial and sport fishing consistent with achieving and maintaining the optimum yield of each fishery.

The PFMC has already completed a management plan for anchovy and is currently preparing plans for groundfish and jack mackerel--all of which are found in the study area. The final anchovy FMP (Pacific Fishery Management Council, 1978a) proposes several fishing area closures, but none in the study area. Four different fishing seasons were proposed in the plan, some of which would prohibit fishing during important times of the life cycle of marine mammals and birds. A final decision on the preferred season is pending. The draft FMPs for groundfish (PFMC, 1978b) and jack mackerel (PFMC, 1979) address limitations on catch but do not consider closures. Although the FMP for groundfish is only in a draft stage, it does appear possible that the final FMP may aim to protect intertidal spawning grounds and kelp bed habitats such as those found in the study area, which are vital to the survival of lingcod, bocaccio, and numerous rockfish.

The FCMA also applies to marine plant life. Therefore, the harvesting of kelp beds in Federal waters, such as Osborn Bank, south of Santa Barbara Island, could be regulated. No such plan is now being developed.

Benthic continental shelf fishery resources located outside state waters, such as abalone, lobster, crabs, sea urchins, and corals, are within the jurisdiction of the PFMC, the NMFS and the Bureau of Land Management (BLM) pursuant to the Outer Continental Shelf Lands Act (see below).

Endangered Species Act (16 UCS §§1531-1543)

The Federal endangered species program provides protection for listed species of marine mammals, birds, and fish in both State and Federal waters. The U. S. Fish and Wildlife Service (FWS) and NMFS determines which species need protection; FWS maintains a list of endangered and threatened species. The most significant protection provided by the Endangered Species Act is the prohibition on taking. The term "take" is defined quite broadly to mean "harrass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in such conduct" (16 USC §1532(14)). Fish and Wildlife Service regulations interpret the term harm to include significant environmental modification or degradation and acts which annoy listed species to such an extent as to significantly disrupt essential behavior patterns (50 CFR 17.3).

The Endangered Species Act also provides for the protection of endangered species and their habitat by establishing a consultation process designed to insure that projects authorized, funded or carried out by Federal agencies do not jeopardize the continued existence of endangered of threatened species, or "result in the destruction or modification of habitat of such species which is determined by the Secretary (of the Interior or Commerce) to be critical" (16 USC §1536). Critical habitat areas for endangered species are designated by the U. S. Fish and Wildlife Service and the National Marine Fisheries Service. The 1978 amendments to the Act establish a Cabinet level committee authorized to exempt Federal agencies from compliance with a determination by the Secretary of the Interior through an elaborate review process should an irreconcilable conflict occur. No critical habitat has been designated in the study area at this time.

Several species of marine mammals found in the waters around the northern Channel Islands and Santa Barbara Island are listed as endangered or threatened species. These include: 1) sea otter, 2) gray whale, 3) fin whale, and 4) humpback whale. The blue whale, sei whale, and sperm whale, all of which have been sighted elsewhere in the Southern California Bight, but not immediately around the northern Channel Islands, are also listed as endangered species.

Species of birds listed under the Endangered Species Act are found in the waters around the northern Channel Islands including: 1) California brown pelican, 2) light-footed clapper rail, and 3) California black rail, (44 CRF 3636, 1/17/79).

Marine Mammal Protection Act (MMPA) (16 USC §1361 et seq.)

The MMPA applies to any person subject to the jurisdiction of the United States in both State and International waters. It is designed to protect all species of marine mammals. While the MMPA allows States to petition for the return of management responsibility over marine mammals, California has done so only with regard to the sea otter and that petition was later withdrawn.

Provisions of the Act are implemented by the Department of Commerce, National Marine Fisheries Service (NMFS), which is responsible for whales, porpoises, and pinnipeds other than the walrus, the Department of Interior, U. S. Fish and Wildlife Service (FWS), which is responsible for all other marine mammals. An independent Federal body, the Marine Mammal Commission, advises these implementing agencies and sponsors relevant scientific research. The primary management features of the Act include: (1) a moratorium on the "taking" of marine mammals; (2) the development of a management approach designed to achieve an "optimum sustainable population" (OSP) for all species or population stocks of marine mammals; and (3) protection of populations determined to be "depleted".

The MMPA defines "take" quite broadly to include "harass", hunt, capture, or kill any marine mammal" or to attempt to engage in such conduct (16 U.S.C. Sec. 1362(13), emphasis added). The term has been interpreted to encompass both intentional and negligent acts, including the operation of motor boats, which result in the disturbing or molesting of marine mammals (50 CFR 18.4; 50 CFR 216.3).

The MMPA provides for limited exceptions to the moratorium. Pursuant to these exemptions, marine mammals in the Channel Islands area may be taken for scientific research, for public display, and incidental to commercial fishing operations, under specifically authorized permits. Similarly, stranded or debilitated marine mammals may be taken for the protection and welfare of the marine mammal or for the protection of the public health and welfare.

The Secretaries of the Interior and Commerce may also waive the moratorium on taking for particular species or populations of marine mammals under their jurisdiction provided that the species or population being considered is at or above its determined optimum sustainable population. No such waiver, however, has been granted concerning any marine mammal found in the area under consideration.

Secondly, the Act directs officials to seek "an optimum sustainable population (of marine mammals)" (16 USC §1361(6)). Optimum sustainable population (OSP) is defined to mean "the number of animals which will result in the maximum productivity of the population or species keeping in mind the carrying capacity of the habitat and health of the ecosystem of which they form a constituent element" (16 USC §1352(9)).

Marine mammal species whose population is determined to be depleted receive additional protection (16 USC §1362). During the moratorium no permit may be issued for the taking of a marine mammal determined to be depleted unless the taking is for scientific research purposes. Seven species of marine mammals in or near the study area (the fin whale, the humpback whale, the gray whale, the blue whale, the southern population of sea otter, the sperm

whale, and the sei whale), are treated as "depleted" based on their listing as endangered or threatened species under the Endangered Species Act.

Migratory Bird Treaty Act (MBTA) (16 USC §§703 et seq,)

In the northern Channel Islands area, hunting for migratory birds other than species of ducks, geese, coots, gallinules, and doves is generally prohibited throughout the year, pursuant to the Migratory Bird Treaty Act which implements international conventions with Great Britain and Japan. Each convention establishes a "close season" during which no hunting is permitted, which for migratory birds other than game birds is year round. The essential provision of the Act makes it unlawful except as permitted by regulations "to hunt, take, capture...any migratory bird, any part, nest or egg" of any bird protected by the Convention (16 USC §703). The California Department of Fish and Game has supplemented this authority with its own regulations (see Fish and Game Code discussion, above).

Clean Water Act (CWA) (33 USC §1751 et seq.).

It is the goal of the CWA to restore and maintain the chemical, physical, and biological integrity of the nation's waters. Waters in the territorial sea, the contiguous zone, and in the ocean beyond are subject to varying requirements under the CWA.

The CWA's chief mechanism for preventing and reducing water pollution is the National Pollutant Discharge Elinimation System (NPDES), administered by the Environmental Protection Agency (EPA). Under the NPDES program, a permit is required for the discharge of any pollutant from a point source into navigable waters (which include State waters, the contiguous zone, and the ocean). Within California State waters, EPA has delegated NPDES permitting authority to the State government.

Since oil and gas development resulting from Federal lease sales will occur outside State waters, an NPDES permit from EPA will be required for discharges associated with this activity. EPA's decision to grant a NPDES permit for offshore oil and gas developments is based primarily on the effluent guidelines shown in Table F-3 (40 CFR §435). Other conditions beyond these guidelines can, however, be imposed by the Regional Administrator on a case-by-case basis. For instance, special conditions for NPDES permits have been applied to several leases from OCS Sale No. 35 in the vicinity of Tanner and Cortes Banks, a hard bank community southwest of the northern Channel Islands. To protect the bank resources, discharges of drilling mud are not allowed over the banks.

The CWA prohibits the discharge of oil and hazardous substances in such quantities as may be harmful (33 USC §1321(b) (3)), except discharges outside the territorial sea permitted by the International Convention for the Prevention of Pollution of the Sea by Oil, 1954 (see Oil Pollution Act below). When such discharges do take place, the National Contingency Plan (NCP) for the removal of oil and hazardous substance discharges (33 USC §1321(c); Executive Order 11735, Aug. 3, 1973), which is designed to minimize the

TABLE F-3. EPA Effluent Guidelines and Standards for Far Offshore* Oil and Gas Extraction Facilities (40 CFR Pt 435).

	Effluent limitations		
	Oil and Grease		
Pollutant parameter waste source	Maximum for any 1 d, milligram per liter	Average of daily values for 30 consecutive days shall not exceed, milligram per liter	Residual chlorine, minimum for any 1 d, milligram per liter
Produced Water-----	72	48	NA
Deck Drainage------	No discharge of free oil	No discharge of free oil	NA
Drilling muds------	(1)	(1)	NA
Drill cuttings-----	(1)	(1)	NA
Well treatment-----	(1)	(1)	NA
Sanitary:			
M10----------	NA	NA	1[2]
M9IM[3]----------	NA	NA	NA
Domestic[3]----------	NA	NA	NA
Produced sand------	(1)	(1)	NA

[1]No discharge of free oil.

[2]Minimum of 1 mg/l and maintained as close to this concentration as possible.

[3]There shall be no floating solids as a result of the discharge of these wastes.

NOTE: M10 means facilities continously manned by ten (10) of more persons. M9IM means facilities continously manned by nine (9) or less persons or intermittently manned by any number of persons.

*beyond 3 nmi.

impacts on marine resources, will take effect. The Coast Guard, in cooperation with EPA, administers the Plan, which applies to all discharges of oil in the contiguous zone and to activities under the OCSLA. As a result of a memorandum of understanding between the Secretaries of Transportation and the Interior, however, the USGS has exclusive authority to institute measures to abate the source of pollution (United States Departments of the Interior and Transportation, Memorandum of Understanding, (8/16/71)). The NCP establishes the organizational framework whereby oil spills are to be cleaned up. To carry out the national plan, regional plans have been established; the Coast Guard has issued such a plan for Federal Region 9 which encompasses the northern Channel Islands and Santa Barbara Island. Under the plan, Coast Guard personnel are to investigate all reported offshore spills, notify the party responsible (if known) of his obligation to clean up the spill, and supervise the cleanup operation. The Coast Guard retains final authority over the procedures and equipment used in the cleanup. If the party responsible for the spill does not promptly begin cleanup operations, the Coast Guard can hire private organizations.

Permits from the Army Corps of Engineers, which are based on EPA-developed guidelines, are required prior to filling actions, discharging dredged materials within three miles of shore (33 USC §1344), or the transportation of dredged material for the purpose of dumping it into ocean waters (33 USC §1413) (see discussion of the Ocean Dumping Act below.)

Finally, the CWA requires noncommercial craft to comply with marine sanitation regulations issued by EPA and enforced by the Coast Guard (33 USC §1322).

Ports and Waterways Safety Act, as amended (PWSA) (33 USC §1221)

The Ports and Waterways Safety Act (PWSA), as amended by the Port and Tanker Safety Act of 1978, is designed to promote navigation and vessel safety and the protection of the marine environment. The PWSA applies both in State waters and in high seas out to 200 nmi (370km).

The PWSA authorizes the U. S. Coast Guard to establish vessel traffic services and systems for ports, harbors and other waters subject to congested vessel traffic. In the Santa Barbara Channel, the U. S. Coast Guard has established a Traffic Separation Scheme (TSS) consisting of two one-mile wide vessel traffic lanes, with a two-mile separation zone.

The lanes are designed to prevent vessel collisions by separating vessels going in opposite directions. The TSS has been officially recognized by the Intergovernmental Maritime Consultative Organization (IMCO), and appears as recommended traffic routes on all navigation charts of the area.

The TSS, which applies to commercial ships other than fishing vessels, is violated when a vessel is in a designated lane but moving in the wrong direction. Violators are subject to flag state enforcement if their violation occurs outside the three mile territorial sea. If a violation occurs within the territorial sea, the U. S. may take enforcement action. The use of the TSS as established is mandatory for vessels proceeding to and from the Los Angeles/Long Beach area when the vessel is in the vicinity of,

and traveling in the general direction of, the TSS. All vessels not using a TSS should avoid it by as wide a margin as possible. Outside the traffic lanes, vessels may proceed in any direction consistent with good seamanship.

In addition to vessel traffic control, the Coast Guard regulates other navigation and shipping activities related to vessel design, construction, and operation designed to minimize the likelihood of an accident and reduce vessel source pollution.

The 1978 Amendments establish a comprehensive program for regulating the design, construction, operation, equipping, and manning of all tankers using U. S. ports to transfer oil and hazardous materials. These requirements are, for the most part, in agreement with protocols passed in 1978 to the International Convention for the Prevention of Pollution from Ships, 1973, and the International Convention on Safety of Life at Sea, 1974 (33 USC §1221).

The 1978 Amendments also require the U.S.C.G. to conduct a nationwide study on the need for Port Access Routes (PARs) and to designate such routes as necessary to reconcile competing uses and protect marine resources. If a PAR is established in the sanctuary study area, the Secretary of Transportation, through the Coast Guard, could make its use mandatory by all vessels proceeding to or from the Ports of Los Angeles and Long Beach via the Santa Barbara Channel. The PAR study results may reveal that the existing TSS is inappropriate and dictate a modification of its location. The PAR study is actively considering all of the various uses of the waters, including marine sanctuaries, which may be affected by the designation of a PAR. A notice of proposed rule making incorporating the recommendations made in the study is scheduled for publication in the Federal Register in July 1980.

The USCG is also vested with the primary responsibility for maintaining boater safety, including the tasks of conducting routine vessel inspections and coordinating rescue operations.

Oil Pollution Act of 1961 (33 USC §§1001-1016)

The Oil Pollution Act of 1961 (which implements the International Convention for the Prevention of Pollution of the Sea by Oil of 1954) regulates discharges of oil or oily mixtures from vessels with the exception of tankers of less than 150 gross tons and other vessels of less than 500 gross tons. With the exception of discharges from machinery space bilges, tankers subject to the act may not discharge oil or oily mixtures unless they are 50 nmi (93km) from the nearest land and the total quantity of oil discharged does not exceed 1/15,000 of the total cargo capacity. Discharges from other vessels regulated by the act, and discharges from the machinery bilges of tankers, must be made as far as practicable from land and may not have an oil content of more than 100 parts per million. In addition to the above requirements, a discharge by any vessel regulated by the act must be made while the vessel is en route and the instantaneous discharge rate must not exceed sixty liters per mile.

Clean Air Act (42 USC §7401 et seq.)

The Clean Air Act (CAA) sets general guidelines and minimal air quality standards on a nationwide basis in order to protect and enhance the quality of the nation's air resources. States are responsible for developing comprehensive plans for all regions within their boundaries. Thus, as noted above, discharges of air

pollutants within California State waters are subject to the control of the California Air Resources Board.

Beyond State waters, EPA Region IX, relying on an EPA Office of General Counsel's opinion, has asserted that the new source and prevention of significant deterioration (PSD) provisions of the CAA apply to new sources on the OCS that can adversely affect air quality over the United States (EPA Office of General Counsel Opinion (4/18/78)). These regulations would supplement DOI OCS air quality regulations. The new source and PSD provisions apply only to stationary sources which emit, or could emit, at least 100 tons per year of any air pollutant. Exxon's platform Hondo in the Santa Ynez Unit north of the northern Channel Islands (which includes an oil processing plant) is an example of such a major facility near the sanctuary study area.

Outer Continental Shelf Lands Act (43 USC §1331 et seq.)

The Outer Continental Shelf Lands Act, as amended in 1978 (OCSLA), establishes Federal jurisdiction over the mineral resources of the Outer Continental Shelf (OCS) beyond three nmi (5.6km) and gives the Secretary of Interior responsibility for managing OCS mineral exploration and development. The Secretary's responsibility has been delegated to two bureaus within the Department: the Bureau of Land Management (BLM) and the U. S. Geological Survey (USGS).

BLM has overall responsibility for leasing OCS lands. In the Santa Barbara Channel, lease sales have been held in 1966, 1968, 1975 (Sale #35), and 1979 (Sale #48).

In unique or special areas, the BLM may impose special lease stipulations designed to protect the specific geological and biological resources found in those areas. These stipulations may vary from lease tract to lease tract and sale to sale.

In the FEIS on Sale #48 (U. S. BLM, 1979), BLM has recommended seven lease stipulations (see Appendix 5), three of which are of particular importance to resource protection.

Stipulation Number 3 concerns the protection of cultural resources. If surveys indicate the possibility of a cultural resource, the lessee shall: (1) locate all structures so that they will not adversely affect the resource or (2) establish to the satisfaction of the U. S. Geological Survey Area Supervisor either that no adverse effects will result from the operation or that the potential cultural resource suggested by the survey does not exist. Stipulation No. 5 requires prevention, to the maximum extent possible, of harm to newly discovered areas of special biological interest including: (1) areas containing rare ecosystems; (2) areas of abundant numbers and/or high diversity of species; (3) areas containing species of limited regional distribution; (4) areas critical to the life cycle of species; and (5) areas which are protected by fishery management plans as singularly important to a species (U.S. Bureau of Land Management, 1979). Stipulation No. 4, which only applies to tracts 001-108* (see Figures E-19 and E-20), in the Santa Barbara Channel, concerns protection of commercial trawl grounds from subsea completion systems and pipelines.

The USGS is charged with approving plans for exploratory drilling and development and supervising OCS operations. Several types of regulatory authority are used by USGS in carrying out the latter responsibility. These include enforcement of regulations pursuant to the OCSLA (30 CFR Part 250) and the stipulations applicable to particular leases discussed above. In addition, OCS Orders have been issued by the USGS to supplement regulations in particular regions. Twelve such Orders have been issued for the Pacific region and three more are under review (see Appendix 6). These Orders apply to various aspects of the day-to-day drilling and production operation, including: (1) marking of platforms and structures; (2) general drilling well procedures; (3) testing of blowout preventers; (4) characteristics and use of drilling muds; (5) plugging and abandonment of wells; (6) contingency plans; (7) oil spill pollution equipment; (8) oil spill reports; (9) subsurface safety devices; (10) pollution and waste disposal; and (11) design and maintenance of oil and gas pipelines.

The USGS also issues Notices to Lessees and Operators when clarifications, corrections, or additions to OCS Orders and Regulations are necessary. These notices have the same status as OCS Orders and Regulations and are used to keep lessees and operators informed of USGS's requirements (see Appendix 6).

*Note that tracts 088-108 were withdrawn by the Secretary of the Interior from Sale #48 (U.S. Department of Interior,1979).

Certain provisions of the 1978 OCSLA Amendments are of importance. If the Secretary of the Interior determines that continued OCS operation threatens "serious, irreparable, or immediate harm or damage to life, including fish and other marine life" or the "the marine, coastal or human environment, such operations may be suspended (16 USC §1334 (c)(1)). In addition, if it is found that regulations, lease provisions, or exploration and development plans, are violated by the lessee, the lease may be cancelled and forfeited (16 USC §1334 (d)).

Finally, the DOI, through the USGS, is developing regulations to control air emissions occurring on the OCS that significantly affect a State's air quality. According to Proposed Rule 30 CFR Part 250 (43 Fed. Reg. 27449 (5/10/79)), activities on the OCS will not be approved if they prevent any State from achieving or maintaining national ambient air quality standards (NAAQSs) or if they will cause significant deterioration of onshore air quality. The DOI proposes to require lessees to include in their exploration, development, and production plans specific information concerning emissions and their effects on coastal areas.

Other agencies within DOI--including the FWS, NPS, and HCRS--are consulted on various potential impacts from OCS development including necessary stipulations pursuant to Secretarial Order No. 2974 of August, 1978.

In addition to DOI, both the Army Corps of Engineers (COE) and the U. S. Coast Guard (USCG) have some responsibility over OCS mineral development. COE is responsible for ensuring, through a permit system, that OCS structures including pipelines, platforms, drill ships, and semi-submersibles do not obstruct navigation or national security (43 USC §1333 (f)). USCG ensures that struc-

tures on the OCS are properly marked (43 USC §1333 (e)).

Marine Protection, Research, and Sanctuaries Act (33 USC §§1401-1444)

Title I of the Marine Protection, Research and Sanctuaries Act (MPRSA), also known as the Ocean Dumping Act, regulates the dumping of materials into the territorial sea (i.e., State waters), The contiguous zone and the ocean beyond. EPA regulates, through the issuance of permits, the dumping of all materials except dredged materials; COE exercises authority over the dumping of dredged materials.

Five dredge material disposal sites have been established in the Southern California Bight, with the closest one to the Channel Islands being near Port Hueneme, about 16.6km (9 nmi) from Anacapa Island. No ocean dumping of non-dredged materials has occurred in the Bight since 1972. Prior to 1972, munitions, toxic wastes, and radioactive materials were dumped in the vicinity of the Channel Islands, but more than 18.5km (10 nmi) from the Islands. The nearest disposal site for drill muds and cuttings under consideration currently by EPA is located at 32° 55'N, 119° 17'W, over 40 nmi (74km) beyond the proposed sanctuary.

Fish and Wildlife Coordination Act (16 USC 661-667e)

The Fish and Wildlife Coordination Act authorizes the Secretaries of Commerce and the Interior to cooperate with Federal, State, public, and private agencies to conserve and develop fish and wildlife resources and their habitats and directs that Federal

agencies conducting or licensing any project that impounds, diverts, channels or otherwise controls or modifies any body of water shall consult with the appropriate Secretary and the head of any State agency exercising administration over the resources. Reports received are made an integral part of the administrative record.

National Historic Preservation Act (16 USC §470)

The National Historic Preservation Act (16 USC §470) authorizes the Secretary of the Interior to maintain a national register of "districts, sites, buildings, structures, and objects significant in American history, architecture, archaeology, and culture". Sites have been listed on the National Register which include or are composed entirely of ocean waters and submerged lands within state waters or on the Outer Continental Shelf (Lebovich, 1979 , personal communication). No sites in the area under consideration are listed on the National Register at the present time.

Any Federal agency conducting, licensing, or assisting an undertaking which may affect a site listed on the National Register must provide the Advisory Council on Historic Preservation a reasonable opportunity to comment on the action (16 USC §470f). The criterion applied by the Council is whether the undertaking will change the quality of the site's historic architectural, archaeological or cultural character (36 CFR §800).

National Parks and Recreation Act of 1978, as amended (P.L. 96-199)

Channel Islands National Park

The National Parks and Recreational Act of 1978, as amended in 1980 established the Channel Islands National Park, which includes the northern Channel Islands and Santa Barbara Island and the waters within one nautical mile of the Islands. The Park Service's jurisdiction in the water area of the Park is administrative rather than regulatory. The statute further prohibits the acquisition by the Secretary of the Interior of any lands, waters, or interests within the Park currently owned by the State of California. No provisions of the statute shall affect the rights and jurisdiction of the State of California within the Park, including the submerged lands and waters within the Park boundaries.

The Secretary of the Interior must devleop a natural resources study report for the Park in cooperation with the Secretary of Commerce and the State of California within two years of the enactment of this Act. Within three years of the Act, the Secretary of the Interior shall prepare a comprehensive general management plan for the Park, which will take into account recreational and other human use of the Islands. The law directs the Secretary of the Interior to manage the Park on a low-intensity, limited entry basis.

The 1980 amendments to the National Parks and Recreation Act deauthorize the Channel Islands National Monument, which was established pursuant to the Antiquities Act by Presidential Proclamation No. 2281 in 1938 (52 Stat. 1541).

Under these previous authorities, the National Park Service (NPS) had responsibility for managing the Channel Islands National Monument which included Anacapa and Santa Barbara Islands. Until May of 1978, the National Monument also included the waters surrounding the two islands out to one mile (63 Stat. 1258 (2/9/49)). Authority over these submerged lands was returned to the State in United States v. California (11 ERC 1651 (1978)).

The NPS Statement for Management for the National Monument described a land classification scheme creating Natural Zones which are to remain largely unaltered by human activity. Most importantly, West Anacapa Island was designated an "Environmental Protection Subzone," for the protection of the Brown Pelican, and East Anacapa and the Arch Rock Group are "Outstanding Natural Features Subzones" (National Park Service, 1976). The Statement for Management for San Miguel and Prince Islands established Natural Zones similar to those designated in the Monument (NPS, 1978).

Of greatest relevance to the resources of the study area have been NPS management policies concerning visiting. Except for boat access via certain areas off San Miguel Island where entry is restricted by the Navy (see below), the NPS controls visitor access to San Miguel, Anacapa, and Santa Barbara Islands as well as the activities of visitors. Prohibition of or restrictions on visitor ingress and egress to and from certain parts of the islands managed by the NPS tend to discourage other activities which could harm the marine resources found in the waters adjacent to those areas. Such activities include boat anchoring, fishing with nets, swimming, diving, and collecting of artifacts. In addition, restrictions on visitor access and the activities of visitors protect the living marine resources of the study area,

most importantly marine mammals and birds, by preventing potential disturbance. Most important in this regard is the Environmental Protection Subzone established on West Anacapa Island for the protection of the Brown Pelican rookery (NPS, 1976).

Visits to the islands managed by the NPS generally have been controlled by a permit system, through which the number of visitors, length of stay, and time of visit may be restricted. Severe restrictions are placed on visits to West Anacapa to protect the Brown Pelican rookery there. Policies for the other Anacapas and Santa Barbara are considerably more liberal. Anacapa Island receives the most visitors (Whelen, 1979, personal communication). Under the newly created Channel Islands Park, visitor use must be limited to assure negligible adverse impact on Park resources (P.L. 96-199).

Visitation levels at San Miguel are limited by restrictions on access imposed by DFG, the Navy, and the NPS and the lack of facilities on the Island. Enforcement responsibilities of the Park Service have been carried out by seven rangers. Two boats, a 40 foot patrol boat and a 20 foot skiff are utilized for patrols in marine areas (Johnson, 1979, personal communication). The Park has just acquired a new 55 foot boat, which will be manned by one ranger and one deck hand (Whelen, 1980a, personal communication).

U. S. Navy

The U. S. Navy conducts numerous military operations in and over the waters offshore of southern California. Various portions of the study area are within military districts operated by the Navy: the northern Channel Islands are within the Pacific Missile Range;

the waters south of Santa Cruz Island are part of an Acoustic Range Facility; and Santa Barbara Island is located in the southwest corner of a Fleet Operating Area and is also just north of the Santa Barbara Island Training Area. The Pacific Missle Test Center at Point Mugu schedules control of the Navy operating areas in the vicinity of the Channel Islands. Each week, the U. S. Coast Guard publishes a "Local Notice to Mariners", which projects the use of the military operating areas.

The Navy routinely conducts bombing practice and missile discrimination operations in the airspace over the waters just south of San Miguel Island. A Naval Danger Zone has been established which extends 3 nmi (5.5km) seaward of the eastern half of San Miguel Island. In this zone, the Navy permits nonmilitary uses, including recreational use, only when the area is not being used for military operations. Bombing practice runs take place in this zone approximately 200 times a year. Because of the short notice and intermittent nature of these exercises, long range planning of recreational activities in the zone will be difficult; the Navy does, however, attempt to provide some advance notification through the use of signs and map designations. The Navy retains the right to escort boaters and other recreationalists violating the zone away from the target area.

Although the Navy owns San Miguel Island, the National Park Service, by agreement with the Navy, administers the Island proper. By this agreement, the Navy has relinquished all authority to manage the resources of the Island and surrounding waters, except within the Naval Danger Zone discussed above. The Navy has agreed to attempt to conduct its operations in a manner which will cause the least impact to Island resources. The sites selected for and frequency of operations reflect this policy.

U. S. Air Force

The Air Force will regulate the Space Shuttle Vehicle System which is to operate out of the Vandenberg Air Force Base in Santa Barbara County. The Air Force is currently conducting a study to determine the impacts on the Island fauna, particularly marine birds and mammals, of the supersonic boom acompanying the flight of the shuttle.

F.1.c. Environmental Consequences

Maintaining the status quo and failing to designate a marine sanctuary in the vicinity of the northern Channel Islands and Santa Barbara Island will eliminate the potential for positive management of this rich marine area. In the absence of a sanctuary, there will be less ecosystem research, no new education or public awareness programs directed at users of the area, and no institutional mechanism to focus on long term planning and coordination issues for this particularly valuable geographic area.

There is no management system to aid in ensuring that the area's research value and potential can be maximized over the long term. While a variety of organizations conduct research in the waters around the northern Channel Islands and Santa Barbara Island, no agency serves to coordinate research projects to insure that regional information needs are addressed in a timely and adequate manner.

Similarly, no agency or group conducts a systematic scientific monitoring program to follow the conditions and fluctuations in population levels of marine birds, fish stocks, or marine mammals, or the water quality in general. While it provided general information on the Southern California Bight for OCS Sale #48, BLM's baseline monitoring program has been narrowed to focus primarily on questions affecting decision making in the OCS leasing process (DOI, 1978). The area's potential to serve as an ecologic baseline indicator of regional environmental quality conditions is underutilized. Thus a mechanism for monitoring and evaluating the long term adequacy of environmental protection efforts and decisions affecting these resources does not currently exist.

Presently, 11 Federal, 7 State, and a multitude of regional and local government agencies are vested with some regulatory authority over certain activities within the area. These authorities provide a considerable degree of protection for marine resources in general; the Channel Islands National Park and the Ecological Reserves around San Miguel, Santa Barbara, and Anacapa Islands protect the resources within those areas in particular. In general, however, each of the statutes described above and the agencies administering them are directed at a single purpose, region or activity. No entity looks to the welfare of all the living resources or the ecosystem of this marine area. Cumulative impacts on the resources, arising from various activities subject to the jurisdiction of separate agencies, may escape the attention of any agency.

The extraordinary diversity of natural resources concentrated in the waters around the northern Channel Islands and Santa Barbara Island deserves additional attention beyond that provided by the present institutional structure. For instance, the resource protection afforded by the Channel Islands National Park is aimed primarily at the land based resources of the northern Channel Islands and Santa Barbara Island, and the ecological reserves discussed above include only the extreme nearshore zone, providing no buffer against outside activities.

Although certain uses of the area do not now seriously threaten resource quality here, they could have more significant impact if and when activity intensities grow. The current multitude of regulatory authorities, many of which have different objectives and jurisdictions, may not be able to respond on the basis of ecosystem issues to future activities. Furthermore, some agencies suffer from limited enforcement resources. Because these waters contain so many valuable resources which in turn support so many benificial uses, they require the special acknowledgement and study possible in a marine sanctuary to ensure that they are used and preserved in the future as effectively as possible.

Some particular problems which may arise if the present institutional and regulatory structure continues to control activities in the absence of the proposed sanctuary are discussed below.

Habitat and Species Protection

The Marine Mammal Protection Act (MMPA) and the Endangered Species Act (ESA) prohibit the "taking" of marine mammals and threatened or endangered species, including marine species. The Migratory Bird Treaty Act prohibits the hunting of seabirds. The term "taking" has been interpreted broadly by the administering agencies, so that the ESA and MMPA provide considerable protection. However, the potential threats to marine mammals and endangered species range from direct injuries to a specific animal or population to indirect or cumulative degradation of habitat, and neither the MMPA nor the ESA address cumulative or indirect degradation of habitat. Section 7(a) of the ESA does provide protection against actions which jeopardize endangered species or their critical habitats, but this section applies only to activities authorized, funded or carried out by Federal agencies, not to private or State actions. There is no explicit provision for designation or protection of the habitat of marine mammals under the MMPA. This is particularly significant because of the small number of prime habitats remaining in and around the study area.

The California DFG, through the establishment of Ecological Reserves, has the ability to protect exceptional marine habitats in territorial waters. Reserves have been established in relatively small yet sensitive areas off San Miguel, Anacapa, and Santa Barbara Islands. While the Ecological Reserves protect particularly important breeding grounds and haul-out areas, marine mammals and seabirds (and the resources they feed on) are themselves dynamic entities and normally utilize areas much larger than these designated protection zones.

As discussed in section F.1.b., the California DFG has only three boats to enforce all the California Fish and Game regulations applicable to the Channel Islands and along the mainland counties of San Luis Obispo, Santa Barbara, and Ventura. These regulations concern not only Ecological Reserves, but also commercial and sport fishing, endangered species, and migratory birds. Because of the wide geographic expanse which must be covered and the relatively small enforcement staff at hand to do so, the enforcement capabilities of the DFG appear somewhat strained.

To provide additional enforcement, the National Park Service (NPS) rangers have assisted the DFG in enforcing California Fish and Game regulations in the waters within 1 nmi (1.8km) of Santa Barbara, Anacapa, and San Miguel Islands. This relationship has been formalized (since 1978) in a cooperative agreement between the DFG and the NPS. However, this additional enforcement assistance is only provided within 1 nmi (1.8km) of the three islands. In addition, NPS enforcement capabilities are also rather limited--eight rangers, one 41-foot and one newly acquired patrol boat available for observing all three islands, and one small boat on each island (Johnson, 1979, personal communication; Whelen, 1980a, personal communication). Most of their attention is devoted to the land-based resources of the islands, however. As a result of the new national park status of the Islands and surrounding waters, this cooperative agreement may be expanded (Whelen, 1980a, personal communication).

Petroleum Development

The State of California has designated the State submerged lands around the Northern Channel Islands, except Santa Barbara Island, as an oil and gas sanctuary withdrawing the area from leasing except as may be necessary for drainage sales. Under the California Coastal Zone Management Program, the State comprehensively controls oil and gas activities involving State lands and waters around Santa Barbara even though this area has not been declared an oil and gas sanctuary. Regulations governing protection of marine resources, oil spill control equipment, and the siting of development adjacent to environmentally sensitive areas may prohibit or severely restrict any such activities in this area.

Beyond State waters, California's coastal policies, applied through Federal consistency, also may prohibit or restrict hydrocarbon exploration, development, or production activities. For instance, the California Coastal Commission's concurrrence with Chevron's certification of consistency of its application for a U.S. Geological Survey Exploratory Well Drilling Permit on Tract 245 states that a production platform within 6 nautical miles of the Islands would not be found consistent with the program. There has been extremely limited experience in the application of consistency to hydrocarbon activities within the 6 nmi area, therefore, predicting a pattern of decisions is somewhat speculative.

Under the OCSLA, the Secretary of the Interior can comprehensively regulate activities associated with oil and gas leasing. While the Secretary is responsible for protecting the marine environment, this responsibility is exercised in the context of carrying out the primary objective of the OCSLA to expedite OCS oil and gas development. Of course, this responsibility is carried out in

consultation and coordination with other affected agencies and parties as mandated by general environmental protection statutes such as the National Environmental Policy Act and the Fish and Wildlife Coordination Act. Nevertheless, these priorities and objectives could result in administrative decisions on leasing, exploration or development that differ from those which would be reached where preservation of marine resources has first priority.

The actual leasing decisions reached by the Secretary of the Interior in the past indicate both the sensitivity of DOI to environmental concerns and the primacy of the development mission which is required by the OCSLA. For example, DOI withdrew 24 tracts within 6 nmi of the northern Channel Islands and Santa Barbara Island from Lease Sale #48 (see Figure E-22). In Lease Sale #35 and sales held in 1966 and 68, however, several (34) tracts within 6 nmi of the Islands were leased, despite recommendations by the National Park Service and the U.S. Fish and Wildlife Service that these Islands were particularly sensitive and should be shielded from petroleum development. DOI also tentatively included some waters within 6 nmi of the northern Channel Islands and Santa Barbara Island in its call for nominations for Lease Sale #68, to be held in June 1982.

Development of hydrocarbon resources within 6 nmi of the Channel Islands poses certain risks. In its FEIS on Lease Sale #48, DOI estimated the likelihood of a major oil spill reaching sensitive areas within 30 days to be 100 percent (see Table F-7). This estimate assumed that certain tracts within 6 nmi of the Islands would be offered in the Lease Sale, although the estimate did not account for the significant reduction in estimated economically recoverable resources. Nor did it take the possibility of future lease sales in account.

In addition, the USGS's OCS Order #7 (pertaining to pollution prevention and control) and BLM's present stipulations, in tandem, do not require certain oil spill containment equipment onsite (see Section F.2.b.1). The presence of adequate onsite equipment, in particular a boat to deploy the equipment, is especially important near the Islands because of the rather long time required for the local oil spill cooperative (Clean Seas, Inc.) to respond to a spill in the more distant parts of the Channel or on the seaward side of the Islands and because of the need to contain spills, if they do occur, before they reach nearshore resources. The California Coastal Commission has required additional contingency equipment on Exxon's tracts 222, 223, 230, 231, 232, and 238 under the Federal consistency provision of the Coastal Zone Management Act. However, development proposals are reviewed for Federal consistency on a case-by-case basis, and there are no guarantees that the State will impose the same requirements on all the tracts near the Islands.

The potential impacts of oil and gas exploration and exploitation are discussed in Section F.2.b.1. below.

Discharges

Numerous laws and regulations apply to the disposal of waste in the marine environment. However, most decisions are made on a case-by-case basis, which provides less certainty of protection than would a designation of no discharge areas. Certain gaps remain in the regulatory framework.

All discharges within the territorial sea are subject to EPA requirements under the Clean Water Act (CWA) (administered by the State) (or COE requirements under the River and Harbors Act for discharges that might obstruct navigation). The EPA requirements are designed to protect marine resources, but may not effectively prevent overboard disposal of trash from ships and similar problems.

Beyond the territorial sea, the discharge of oil and listed hazardous substances is generally prohibited, but, at present, tank washing and bilge pumping are permitted for tankers of less than 150 dead weight tons (dwt) and other vessels of less than 500 dwt. EPA approval is needed for ocean dumping, but the regulations do not apply to discharges of substances that were not transported from the U.S. with the intention of dumping, i.e., casual litter. The CWA does not apply to discharges from vessels beyond the territorial sea. For actual dumping, EPA regulations take the ecological productivity and sensitivity of an area into consideration, but again on a case-by-case basis.

Ocean dumping, municipal outfalls, and dredge spoil disposal can adversely affect benthic biota and introduce toxic substances into the marine environment which may have sublethal effects on fish, bird, and mammal resources. In addition to reducing overall water quality and lessening the aesthetic appeal of the area, the discharge of litter may harm marine mammals that sometimes ingest or become entangled in such litter (Morrell, 1979 personal communication).

Vessel Traffic and Overflights

Under the existing regulatory system commercial vessels including tankers and other bulk carriers can transit anywhere in the proposed sanctuary, even within the very sensitive nearshore areas where they could cause visual and acoustical disturbances, create an increased danger of pollution, both from operational discharges and from accidental groundings, and may occasionally strike marine mammals.

Generally, compliance with the Coast Guard's Traffic Separation Scheme has been good, although utilization is not mandatory. The Coast Guard has commenced studying the possibility of designating a port access route (PAR) in the Channel under the authority of the Port and Tanker Safety Act. Once designated, a PAR would be mandatory for vessels proceeding to or from Los Angeles. However, its designation would not necessarily preclude all undesirable traffic around and between the Islands, since these vessels would not be traveling in the direction of the PAR.

The present system for regulating the overflight of aircraft does not appear to protect fully nearshore marine mammal and seabird populations. While the existing DFG prohibition on overflights below 1000 feet (305m) over the land areas of Santa Barbara, Anacapa, and San Miguel Islands has lessened visual and acoustic disturbance to island resources, protection does not extend to Santa Cruz and Santa Rosa Island, or the nearshore water habitat of marine mammals and seabirds surrounding the five islands. Persistent low altitude overflights in nearshore waters can severely disrupt various marine mammal and seabird behavior

patterns, particularly those of breeding and nesting.

Historic and Cultural Resources

Disturbing underwater archaeological artifacts (see Table E-12) is now prohibited only in the ecological reserves around the San Miguel, Anacapa, and Santa Barbara Islands. Beyond the 1 nmi (1.8KM) boundary of these reserves, as well as around Santa Cruz and Santa Rosa Islands, no regulation currently exists to prevent the disturbance or collection of these resources, except in relation to oil and gas development (see Appendix 5, Notice to Lessees No. 77-3). Although statutory authority exists for the recognition of underwater historic sites, no sites in the waters around the northern Channel Islands have been nominated to the Federal Register of Historic Places.

F.2. ALTERNATIVE 2 -- the preferred alternative

a. Introduction

NOAA proposes the designation of a marine sanctuary to preserve the special ecological, conservation, recreational, and aesthetic values of the waters surrounding the northern Channel Islands and Santa Barbara Island. This sanctuary would extend 6 nmi (11.1km) seaward from the mean high watermark of the following islands and offshore rocks: San Miguel Island, Santa Cruz Island, Santa Rosa Island, Anacapa Island, Santa Barbara Island, Richardson Rock, and Castle Rock (see Figure F-6). The sanctuary waters would include the entire 3 nmi (5.6km) of California State waters plus an equal distance of Federal waters. The coordinates are set forth in Appendix 1.

This area possesses an exceptionally rich and diverse assemblage of living marine resources and offers a variety of benefits to human users ranging from commercial and recreational fishing opportunities to the less tangible benefits of studying and finding beauty in a relatively unspoiled wilderness area (see Section E, affected environment).

The 6-nmi (11.1km) boundary includes significant sections of several important resource areas; e.g., Santa Rosa Plateau and Santa Rosa Cortes Ridge North extending south of San Miguel, Santa Rosa, and Santa Cruz Islands, as well as the Santa Cruz-Catalina Ridge which forms an underwater connection between the Anacapa Islands and Santa Barbara Island. This boundary also coincides roughly with the 250-ft. (about 80m) bathymetric contour, and

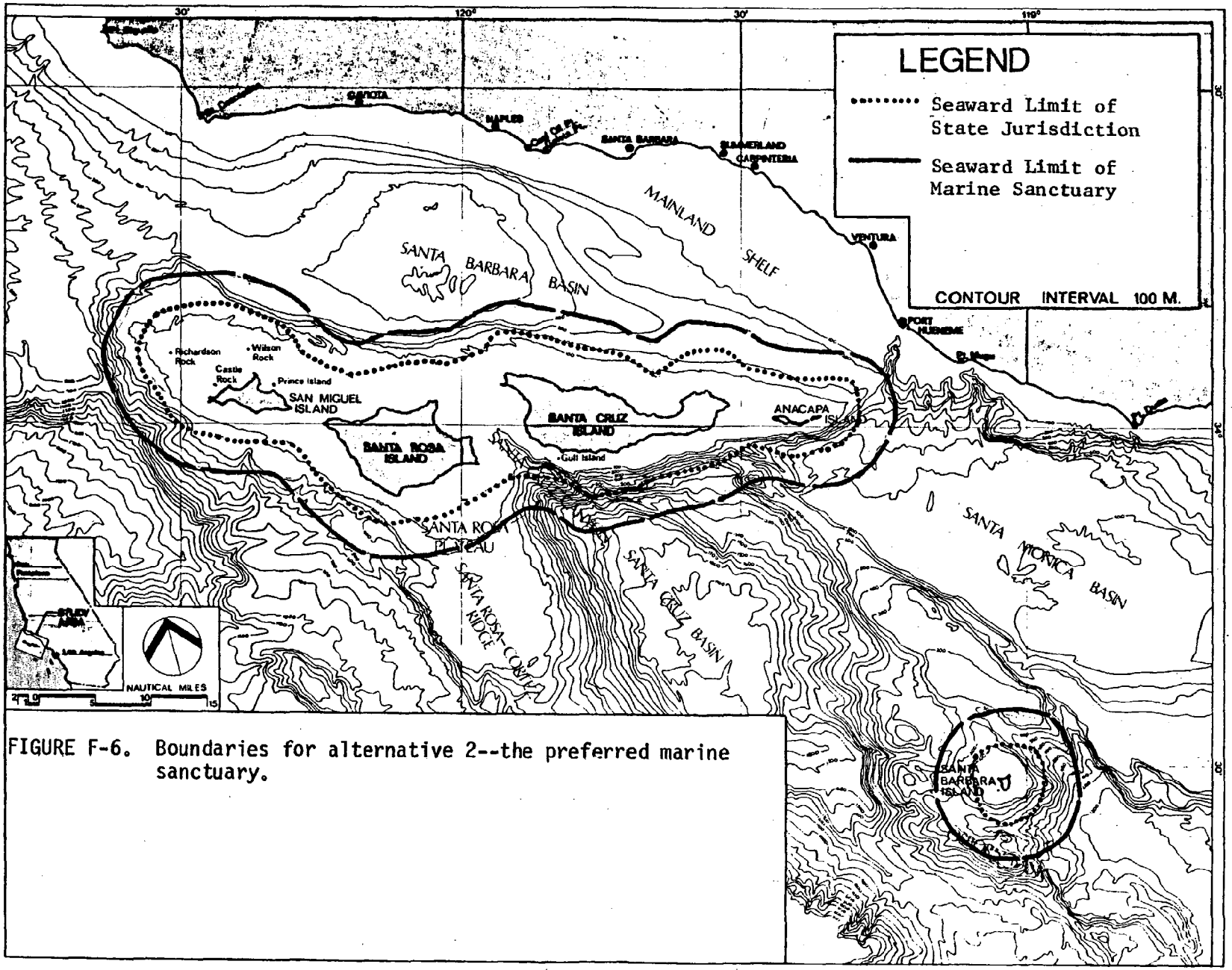

FIGURE F-6. Boundaries for alternative 2--the preferred marine sanctuary.

roughly delineates the island shelf and slope contours. It thereby encompasses the most intense concentration of resources in the area under consideration. As noted in Section E.2, many of the marine mammal, seabird, fish and invertebrate species considered to be important in the ecosystem tend to concentrate in the waters over the shallow island shelves. Populations of certain species (e.g., pinnipeds and birds) are, in fact, among the highest in the world here.

Marine sanctuary designation would allow NOAA to: (1) support research on and monitoring of the resources; (2) enhance public awareness of the value of the area; (3) aid in coordinating actions by existing authorities; (4) formulate long-range plans and respond to currently unforeseen threats which might arise; and (5) regulate activities which either pose the risk of causing significant damage or may have greater impacts as use of the area increases. Formal acknowledgement of the species value of these waters may discourage excessive new development, focus attention on the natural resources of the area under consideration and direct special attention to future development plans.

b. Management

Management of the proposed marine sanctuary would integrate and utilize all aspects of the program to provide for the preservation of the special values of this marine area. These program elements--research, education, coordination, long-term planning, and necessary regulation, including effective enforcement--will be the subject of a formal management plan (MP) for the proposed sanctuary which will be developed in detail, if a sanctuary is designated. The MP will describe management goals and objectives tailored to the specific resources and uses characterizing the area.

area.

The goals and objectives will provide a framework for conserving resources and integrating sound public uses, and since they are the ends, rather than the means, they allow for alternative planning strategies. Management goals are long term and open ended and will focus on desired conditions, rather than on particular facilities and actions. Objectives of each goal represent short-term measurable steps toward achievement of the goal.

The MP for this proposed sanctuary will be developed and implemented by NOAA and an onsite manager. NOAA anticipates delegating onsite management to an existing authority in order to benefit from the expertise of agencies familiar with the area. A logical candidate for the task of sanctuary manager is the California Department of Fish and Game (DFG). DFG has submitted a proposal to NOAA which involves working with NOAA to make recommendations concerning elements of the MP for the area should it become a sanctuary. In addition, DFG proposes to investigate methods for State-Federal interagency cooperation on marine sanctuary management, particularly with the National Park Service. The new Channel Islands National Park includes the waters within 1 nmi of the northern Channel Islands and Santa Barbara Island making cooperation a crucial element for both programs.

If DFG assumes the position of onsite sanctuary manager, one possible mechanism for continuing interagency cooperation would be formation of an advisory board consisting of representatives from agencies and interest groups such as the National Park Service, the U.S. Coast Guard, the National Marine Fisheries Service, the California Coastal Commission, the State Lands Commission, the California Department of Parks and Recreation; the Santa Barbara

Commercial Fisherman, local citizen associations and industry.

Based on available information, the proposed sanctuary would have the following goals:

1. To preserve a unique and strategically located part of the California outer continental shelf where marine life, geological formations, and ocean currents combine to form an outstanding marine ecosystem by ensuring that human uses and activities do not: (a) degrade intertidal habitats or foraging, resting, migratory or other open water habitat areas of value to marine birds and mammals; or (b) otherwise threaten the continued health, stability, diversity, or numbers of seabirds or marine mammal populations using sanctuary waters;

2. To encourage scientific research consistent with Objective 1 on the significant resources of the area which will contribute to understanding of ecological relationships and to the resolution of management and regulatory issues;

3. To enhance public awareness of sanctuary resources by ensuring adequate interpretive and educational services.

During the planning process leading to the MP, quantifiable objectives will be formulated for each goal. These may include, but are not limited to objectives in research, education, coordination, and enforcement.

--Education and Research

The proposed marine sanctuary will develop and enhance education and research programs. An integral component of that effort would be the establishment of the Sanctuary Information Center, which would also serve as administrative headquarters for the sanctuary. The Sanctuary Information Center would be primarily a research and education facility intended to serve as a respository for scientific literature and information on resources and activities in the sanctuary, as well as visitor orientation and education materials such as slides, brochures, and displays. The visitor information would help tourists and recreationists more fully appreciate and enjoy the resources of the sanctuary; at the same time, it would apprise them both of regulations and the need for protecting marine resources.

The general information collection would include both technical and nontechnical reference material for public use in studying sanctuary resources and would collectively provide as complete and detailed a description of sanctuary conditions and use over time as possible. To further this end, the sanctuary managers would ask researchers to notify the Sanctuary Information Center of projects in the sanctuary and to submit reports of their research. This notification process would result in a master listing of research projects conducted from the time of designation. This listing would be continually updated and kept open for public use.

A notification procedure should ensure that research parties are not only familiar with existing regulatory controls but also that they better understand which resources are particularly susceptible to adverse research-related impacts. In addition, the master listing could: (1) provide a record of scientific investigations which might provide important management information; (2) contribute to efforts to monitor use patterns within the sanctuary; (3)

be of assistance in identifying areas of research not receiving adequate attention; and (4) insure that sanctuary managers are aware of relevant area-specific studies and literature. Finally, this notification process could provide both sanctuary managers and researchers with a record of individuals and groups who have firsthand experience with the area's resources. This would provide a valuable tool for coordinating research efforts and encouraging multidisciplinary analyses.

The notification of research projects in the sanctuary and the submission of reports on the research to the Sanctuary Information Center would constitute a slight inconvenience for researchers. However, in turn, researchers could benefit from the resources of the Information Center and, unless the research would require a permit (see above in this section) notification would not impose any delay.

The compilation of technical documents in the Sanctuary Information Center will provide a baseline of site-specific information which would help long-term environmental analysis and encourage further research within sanctuary boundaries.

In addition to providing information and coordination to attract researchers to the proposed marine sanctuary, the sanctuary manager will directly encourage research by sponsoring monitoring programs, providing partial funding for research, and encouraging researchers and funding organizations to conduct or support studies in the sanctuary. The monitoring effort will focus on the overall health of the natural resources of the area as well as the level and effects of human activities. The information gained from such monitoring efforts and other research projects should enable NOAA to manage and regulate the sanctuary more effectively,

and to assist other applicable authorities in carrying out their responsibilities.

Another research objective may be to map and compile an inventory of historical resources. As part of BLM's baseline study of the Southern California Bight, Science Applications, Inc. (1978) listed the known wrecks around the northern Channel Islands. Although some archaeological research has been conducted on the Islands themselves, no research or mapping has been done on the possible historical artifacts in the waters around the Islands.

--Coordination

The proposed sanctuary will aid coordination between all the authorities in the sanctuary, and will particularly stress consideration of the special value of the marine sanctuary's living resources in the formulation of policies affecting the area. The greater understanding of sanctuary resources and the effects of human use gained as a result of the research and monitoring described above will enable NOAA to provide valuable assistance to other authorities in the area in deciding upon the best level of protection for the natural resources of the sanctuary.

--Enforcement

NOAA presently envisions a State-Federal cooperative enforcement system for any regulations adopted, involving the California Department of Fish and Game (DFG), the U.S. Coast Guard, the National Marine Fisheries Service (NMFS), and the National Park Service (NPS). Since the proposed sanctuary would include both

State and Federal waters, close coordination between State and Federal authorities would be required. As DFG develops management recommendations, it will consult with Federal authorities on the mechanics of cooperative management. Naturally, agencies such as the U.S. Coast Guard are concerned with the extent of additional responsibilities and the resources which will be available to fulfill any new duties. As noted in Section F.1.b, the DFG and the NMFS have a cooperative agreement to enforce the Fishery Conservation and Management Act; the DFG and the NPS have a cooperative agreement concerning NPS enforcement of California Fish and Game regulations within 1 nmi (1.8km) of San Miguel, Santa Barbara, and Anacapa Islands. A new cooperative agreement, modeled after the existing ones, could be adopted within the sanctuary which would allow the DFG, NMFS, and NPS within 1 nmi (1.8km) of San Miguel, Santa Barbara, Santa Rosa, Santa Cruz, and Anacapa Islands to enforce jointly existing State and Federal regulations as well as sanctuary regulations. It is also possible that NOAA could provide funds to strengthen the present management and enforcement capabilities of the DFG, NMFS, and NPS.

Since the proposed marine sanctuary relies heavily on existing regulations for the protection of the area's resources, its enforcement agents would also enforce regulations imposed by other authorities. Thus, the marine sanctuary would provide protection for the area not only by proposing new regulations as discussed below, but also by enhancing the effectiveness of existing regulations by providing some resources for additional enforcement.

c. Regulated Activities

To protect the resources of the proposed sanctuary, NOAA proposes to subject only the following activities to sanctuary regulations:

1. hydrocarbon operations;
2. discharges or deposits of any substance;
3. alteration of or construction on the seabed;
4. vessel navigation (except within a desginated VTSS or PAR) and operations (other than fishing and kelp harvesting vessels);
5. overflights below 1000 feet (305m); and
6. removing or harming cultural and historic artifacts.

In the case of each of the above listed activities, NOAA's determination to propose regulations of particular aspects of the activity was based on an evaluation that included a review of the existence and application of current regulatory authority, the primary mission of the agencies administering such authority, and the need for any further regulation to help ensure the long term preservation of the special resources of the proposed sanctuary. In each instance, the alternative of not proposing any additional regulation for a listed activity and of relying on the authorities as described in the status quo section was considered and rejected.

The designation specifically excludes the harvesting of living marine resources from the scope of possible sanctuary regulation and leaves various other activities to existing authorities. Permits, licenses, and other authorities applicable in the proposed sanctuary would remain valid unless they would allow an

action which violates a marine sanctuary regulation. In order to prevent unnecessary and costly delays, the proposed regulations certify in advance the validity of permits and licenses which do not conflict with marine sanctuary regulations.

1. Hydrocarbon Operations

> (a) Hydrocarbon exploration, development and production pursuant to any lease executed prior to the effective date of these regulations and the laying of any pipeline is allowed subject to paragraph 935.6(b), and all prohibitions, restrictions, and conditions imposed by applicable regulations, permits, licenses, or other authorizations and consistency reviews including those issued by the Department of the Interior, the Coast Guard, the Corps of Engineers, the Environmental Protection Agency, and the California Coastal Commission pursuant to the Coastal Zone Management Act and its implementing regulations.
>
> (b) No person may engage in any hydrocarbon operation unless the following oil spill contingency equipment is available at the site of such operation.
>
> > (1) 1500 feet of open ocean containment boom on a boat capable of deploying the boom;
> >
> > (2) one oil skimming device capable of open ocean use; and
> >
> > (3) fifteen bales of oil sorbent material.
>
> (c) Hydrocarbon exploration, development and production activities pursuant to leases executed on or after the effective date of these regulations are prohibited.

These proposed regulations are designed to protect the sensitive living resources of the northern Channel Islands from threats resulting from oil and gas development by keeping such activities at a minimum within the sanctuary and by requiring protective oil

spill containment measures when drilling and other operations proceed. The regulations will reduce the likelihood of resource degradation due to: (1) the effects of oil spills; (2) noise and visual disturbances caused by drilling, presence of drill rigs or platforms, work crews, supply boats, and helicopters; and (3) pollution associated with aquatic discharges. Table F-4 summarizes the hazards to marine mammals, seabirds, and marine organisms which may result from offshore oil and gas development; Table F-5 describes how NOAA's sanctuary provisions will help mitigate these impacts. This section addresses the impacts listed above, tells how NOAA's sanctuary provisions will relieve the environmental stress, and describes the projected socioeconomic effects of these regulations.

It should be clearly noted at the outset that the present level of oil and gas activity within the 6-nmi (11.1km) proposed sanctuary is minimal due to previous actions by the Secretary of the Interior and to industry's failure to develop certain tracts. As discussed previously and as illustrated in Figures F-7, F-8, and F-8a, tracts within 6 nmi (11.1km) of the northern Channel Islands were withdrawn from Sale 48. Because this tract withdrawal does not apply to future sales, NOAA proposes to prohibit all future hydrocarbon activities on these tracts. In addition, as Figures F-7, F-8, and F-8a show, 19 other previously leased tracts, particularly off San Miguel Island, have expired or been terminated. Thus, there are only 16 active leases fully or partially within the 6 nmi (11.1km) boundary: 202, 203, 204, 205, 210 (off Anacapa island); 223 off Santa Cruz Island; 243-247 (off the south side of Santa Rosa Island); 77 and 78 off the north side of San Miguel Island; and 289-291 (off Santa Barbara Island). No development activity at all (including exploratory drilling) has occurred on the tracts south of Santa Rosa Island. However, the California Coastal Commission has concurred that a Chevron U.S.A.,

TABLE F-4. Summary of potential hazards to marine mammals, seabirds, and marine organisms resulting from offshore oil resource development and production (modified from University of California, Santa Cruz, 1976).

Activity or Facility	Chronic Hazards	Episodic/Catastrophic Events
Exploration		
Seismic Profiling	Noise, "startle" effects	Sub-surface noise - Concussion
Drilling		Siltation
Boat traffic	Prop hits	Turbidity increase
Operation		
Offshore facilities		
Production platforms	Intrusion	
Well-head	Leakage/seepage	Blow-out
Support		
Crew and supply boats	Sub-surface noise and propeller hits	
Aircraft	Noise in air	
Transport		
Pipelines	Leakage	Rupture
Pumping buoys	Leakage	
Barges and Tankers	Bilge Oil Intrusion	Collision or grounding
Clean-up		
Oil on water	Intrusion	Boat activity
Skimmers		
Burn-off		Pollution--air
Chemicals		Pollution--water
Grounded oil	Toxicity of chemical dispersants	Pollution--sediments
Booms		Disturbance to sensitive bird and mammal populations on islands by human intrusion and aircraft activity
Straw		
Chemicals		
Presence of crew and equipment		Habitat destruction

Table F-5. Potential oil and gas development impacts mitigated by NOAA's preferred sanctuary alternative

REGULATION	REASON FOR MITIGATION OF IMPACT
1. No future leasing within 6 nmi (11.1km) of northern Channel Islands and Santa Barbara Island	--Creates a buffer area providing increased response time for oil spill clean-up efforts; --Increases the distance between potential spill/pollutant discharge point (i.e., rigs and platforms) and sensitive resource areas thereby allowing for weathering and dilution of contaminants before reaching important marine life concentration areas; --Provides a buffer between noise and visual disturbances and important marine life habitats; --Reduces congestion by additional supply vessels which would otherwise frequent nearshore areas; --Reduces potential visual intrusion on aesthetic values of the National Monument, the proposed marine sanctuary, and the proposed National Park; --Reduces potential air pollution;
2. Requirement of additional on-site oil spill containment equipment on existing leases	--Increases the probability that, if a spill occurs, it can be reached and controlled before drifting to sensitive breeding ground and nesting areas.

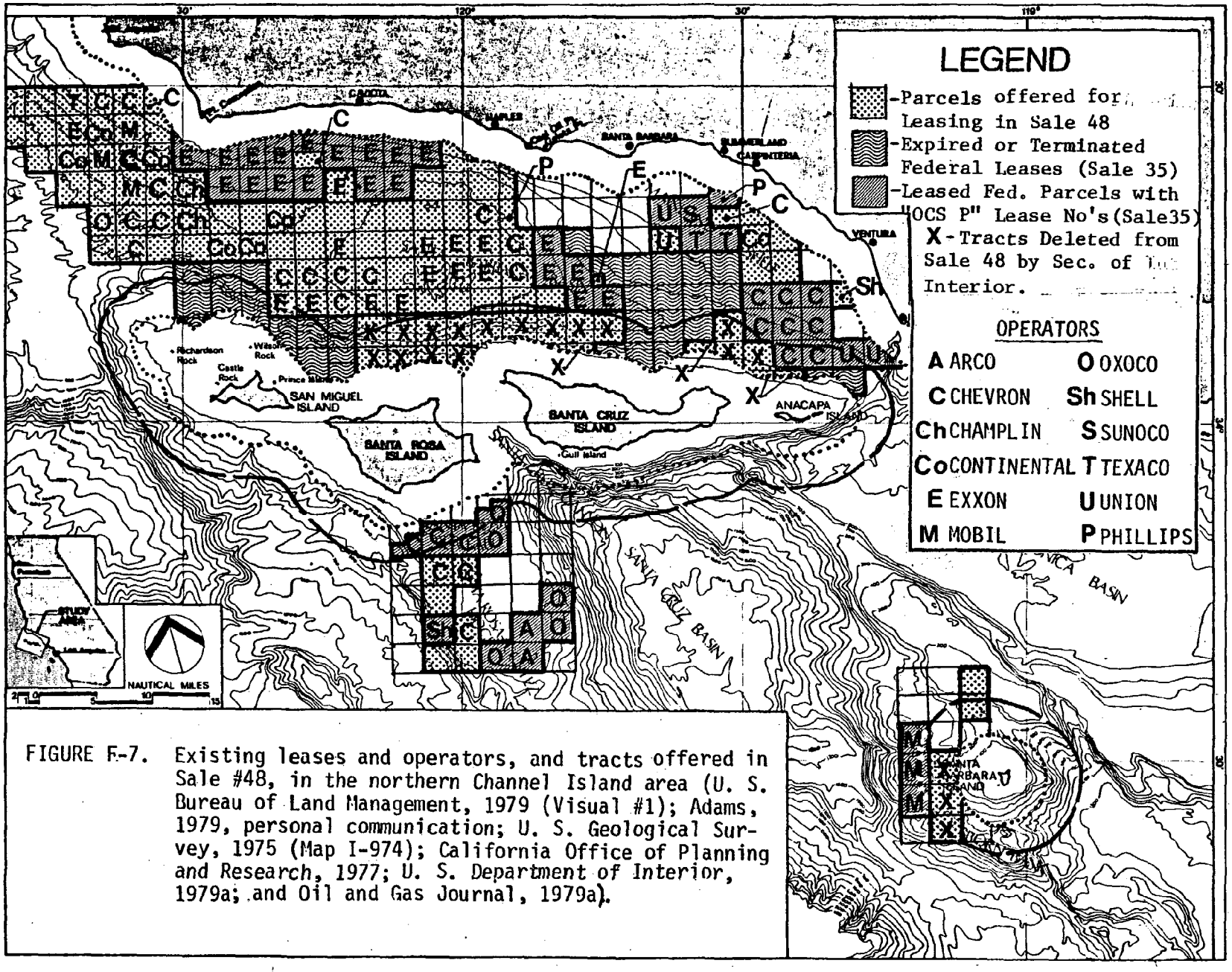

FIGURE F-7. Existing leases and operators, and tracts offered in Sale #48, in the northern Channel Island area (U. S. Bureau of Land Management, 1979 (Visual #1); Adams, 1979, personal communication; U. S. Geological Survey, 1975 (Map I-974); California Office of Planning and Research, 1977; U. S. Department of Interior, 1979a; and Oil and Gas Journal, 1979a).

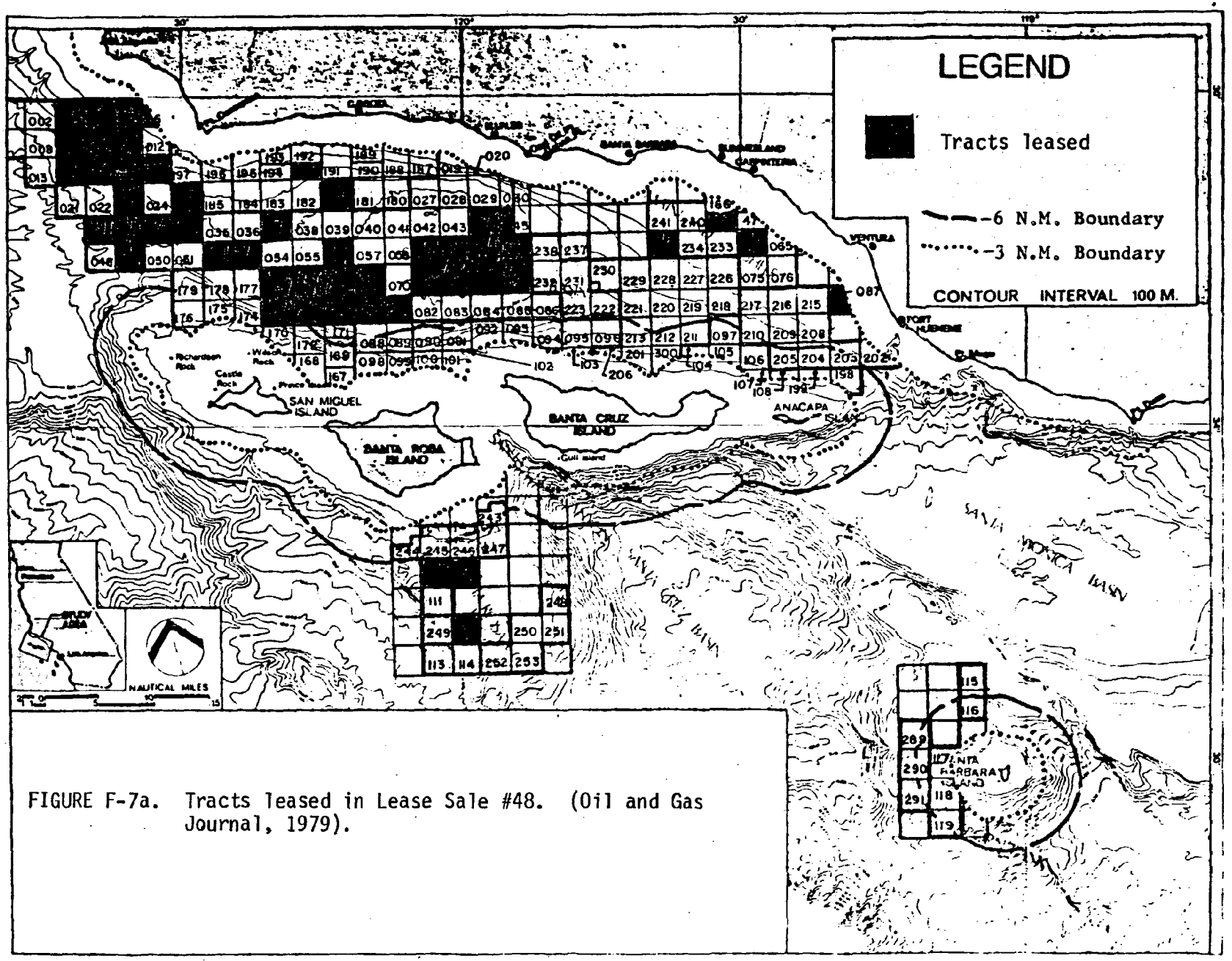

FIGURE F-7a. Tracts leased in Lease Sale #48. (Oil and Gas Journal, 1979).

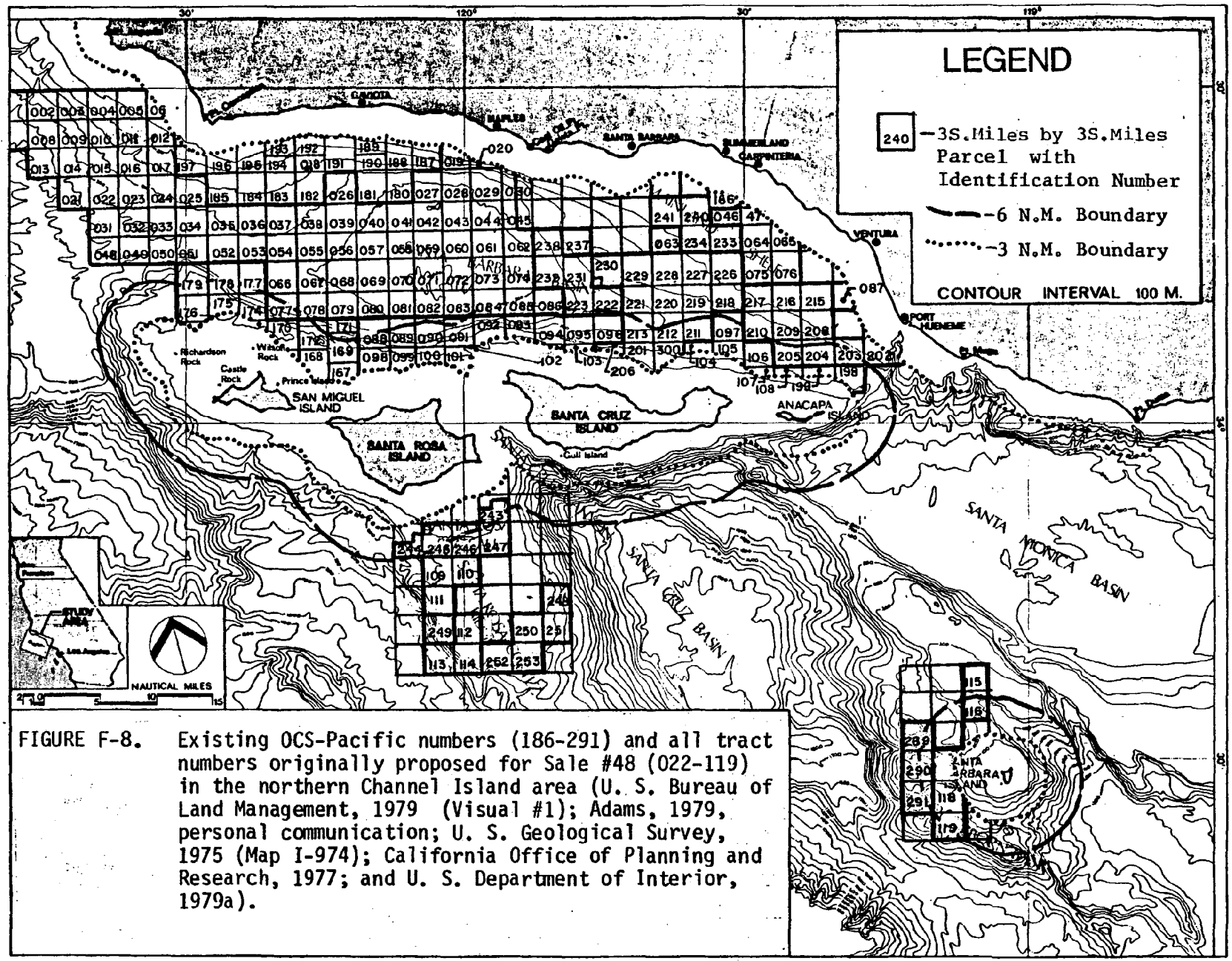

FIGURE F-8. Existing OCS-Pacific numbers (186-291) and all tract numbers originally proposed for Sale #48 (022-119) in the northern Channel Island area (U. S. Bureau of Land Management, 1979 (Visual #1); Adams, 1979, personal communication; U. S. Geological Survey, 1975 (Map I-974); California Office of Planning and Research, 1977; and U. S. Department of Interior, 1979a).

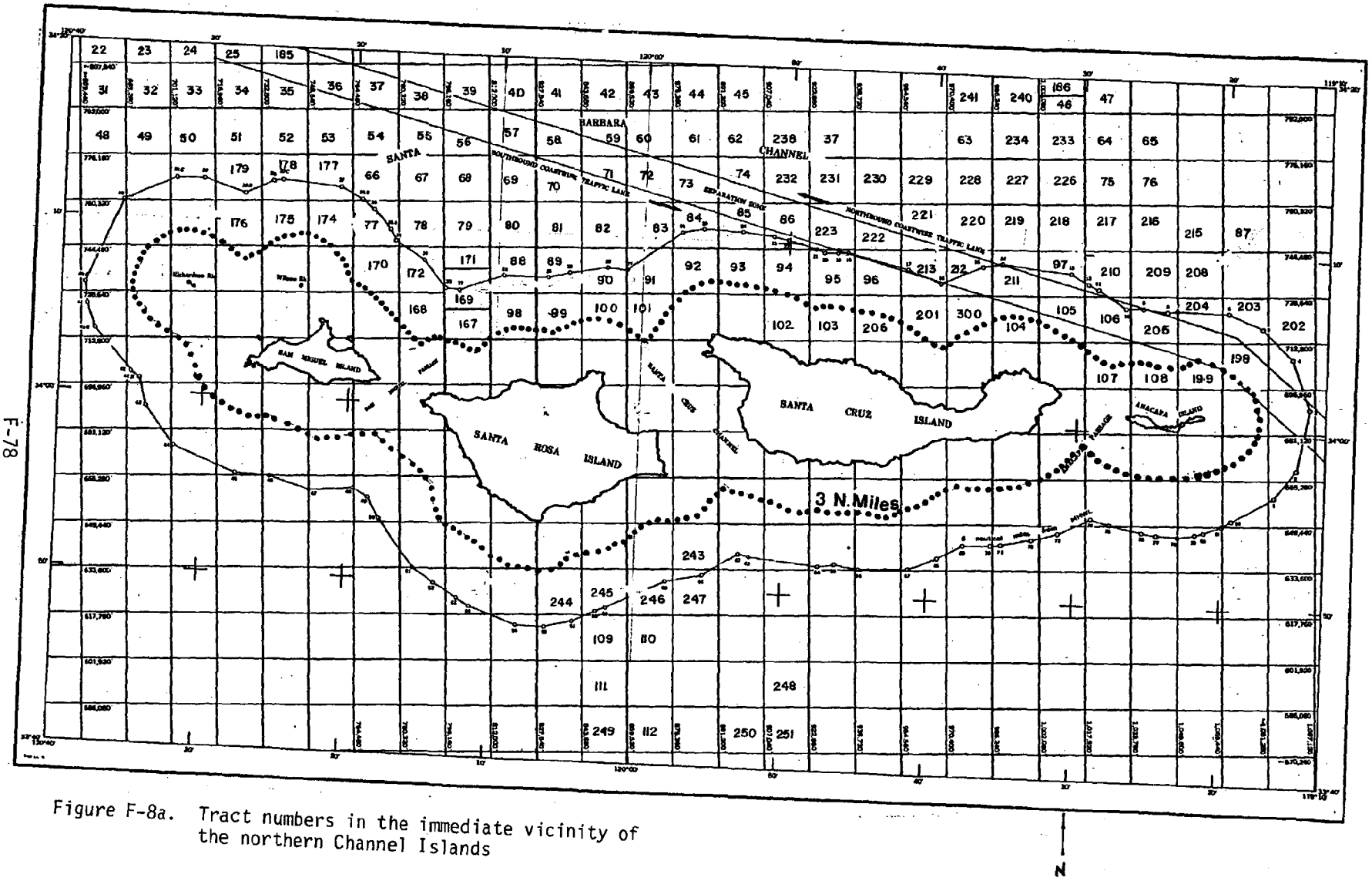

Figure F-8a. Tract numbers in the immediate vicinity of the northern Channel Islands

Inc. request to drill a single exploratory well on an existing lease south of Santa Rosa Island is consistent with the State's coastal management program (Baird, 1980, personal communication). The project calls for one exploratory well on lease block 245 approximately 1.7 nmi inside the proposed sanctuary boundary to determine both the prospects for recoverable reserves of natural gas at this location and the production potential on the remaining leases south of the Island (California Coastal Commission, 1980). Drilling operations will not be permitted to begin before June 15, 1980 in order to protect the large numbers of harbor seals present in this area in the spring (Baird, 1980, personal communication). Only one exploratory well (with no discovery) has been drilled in the tracts off Santa Barbara Island (Adams, 1979, personal communication; see Table E-16, Section E.3.b). Thus, because levels of oil and gas development activity within 6 nmi (11.1km) of the islands have so far been relatively low, the area's pristine character has been well preserved. While it does not affect future activities on existing leases the sanctuary's prohibition of operations on leases executed on or after formal designation will keep down the level of oil and gas development nearby and thus enhance long-term resource protection.

Threats to Resources

--Oil Spills

The safety record of the offshore oil and gas industry in the United States has been good. Over 23,000 wells have been drilled in coastal and offshore waters over the past 30 years with few major mishaps (Mertens, 1980, personal communication). However, accidents, natural disasters, and human error can lead to situations which result in the release of oil into the marine environ-

ment. Spills can be caused by well blowouts, barge and tanker accidents, pipeline breaks and leaks, and equipment failures. The large majority of spills involve relatively small amounts of oil, usually less than 1000 gallons (24 barrels) (BLM, 1979). In the Santa Barbara Channel and Santa Rosa and Santa Barbara Islands area, 10.20 oil spills of 1,000 barrels or more are still statistically expected to occur over the next 20 years as a consequence of oil production and transport, not including blowouts (BLM, 1979).

Oil can directly affect living marine organisms biochemically or physically (see, for instance, Boesch et al., 1973; National Academy of Sciences, 1975; and U. S. Bureau of Land Management, 1975 and 1979). Petroleum hydrocarbons can also have sublethal or indirectly lethal effects on marine organisms through the destruction or reduction of a species' food supply, chemical interference with reproductive success, and synergistic effects which may reduce resistance to disease and other stresses which alter behavioral patterns such as feeding.

The physical damage that can be caused by oil coating marine organisms, the feathers of seabirds, the fur of marine mammals, and the respiratory apparatus of fish is well documented (see, for instance, BLM, 1979). With the exceptional abundance of marine mammals and seabirds -- both of which may be seasonally present around the Channel Islands in numbers representing a significant percentage of the entire species population (as discussed in Sections E.2.a and b) -- the possibility exists that the harm to pinniped and seabird populations would be magnified if an oil spill were to coincide with a concentration period (U. S. Bureau of Land Management, 1979). The Fish and Wildlife Service, in comments on proposed Lease Sale #68, recommended that a 6nmi

buffer zone from oil and gas leasing be established in order to protect these major populations of marine mammals and seabirds (Meyer to BLM, 1980, personal communication).

Spills are not the only potential source of oil in the Santa Barbara Channel region. The area is characterized by a large number of natural oil seepage zones that are estimated to introduce a total of from 40 to as much as 670 barrels of oil per day into the marine environment (BLM, 1979). The amount of oil escaping can vary daily and by season. The major portion of the seeps are found in the northernmost part of the Santa Barbara Channel nearer the mainland (BLM, 1979). However, two seeps have been reported within the boundaries of the proposed sanctuary although the amount of oil being released is not documented (Mertens, 1980, personal communication). While the total amount of oil entering the marine waters is considerable, the number of seeps is also large and their distribution widespread. It is therefore difficult to liken the effects of oil seeps to those of a spill. A spill may involve much larger amounts of oil, perhaps with much greater concentration on or near the water's surface, in closer proximity to the valuable Island resources. In addition, while some studies indicate that the ambient oil concentrations may not effect the rich and varied marine life found in the region (Mertens, 1980, personal communication), the full impact of these chronic low level concentrations has not been evaluated and further threats posed by the additional oil influx resulting from a spill are unknown.

The Southern California offshore region also receives significant quantities of oil from other sources not related to OCS development. Rivers and creeks introduce about 91 barrels of oil and grease per day and discharges of treated municipal wastewater,

which exceeds 1 billion gallons per day, accounts for an additional 1,152 barrels per day (Bureau of Land Management, 1979). Worldwide data on petroleum hydrocarbons entering the oceans indicate that offshore production operations are responsible for only a small portion of the total (National Academy of Sciences, 1975). Inputs from natural seeps, urban and river runoff, atmospheric fallout and the various methods for transporting oil are each several times greater. The impact of oil released as a result of offshore production is not as correspondingly small as it may appear. A spill originating from offshore activities can have more serious immediate environmental effects on the significant ecological resources of this area than longer term discharges from other sources, although the effect of chronic discharges is not well understood either.

--Pinnipeds

Floating oil may adversely affect pinnipeds in four ways: by fouling the fur and through ingestion, inhalation, and the irritation of eyes and membranes (U. S. Bureau of Land Management, 1979). Oil contamination of fur can cause two very important physiological changes -- loss of buoyancy and impairment of normal thermal resistance. Of the two, impairment of the body insulation properties is probably the more damaging, particularly for fur seals which depend primarily on their fur for insulation (U. S. Bureau of Land Management, 1979).

Two species of fur seals are found in the proposed sanctuary, the northern fur seal and the Guadalupe fur seal, which may be proposed for listing as an endangered species. Both seals are at the limit of their range at the northern Channel Islands which may render them even more susceptible to stress. The sea otter, an

occasional transient in the area, is perhaps the most vulnerable marine mammal to oil contamination (Davis, 1978; Kooyman and Costa, 1978, U. S. Bureau of Land Management, 1979).

The only major oil spill occurring in the study area was the 1969 Santa Barbara blowout. Estimates of the damage to biological communities vary from essentially no damages to intertidal areas to 100 percent mortality to certain organisms and plants at some locations. All observers reported high mortality for birds (U. S. Bureau of Land Management, 1979).

The long-term effects of the 1969 Santa Barbara oil spill on marine mammals are also still unclear. Shortly after the spill, biologists surveyed the percentage of mortality and of oil contamination among the northern elephant seal and California sea lion pups and tagged both oily and clean living pups (U. S. Bureau of Land Management, 1979). While significantly more oiled than "clean" California sea lion pups were found dead, the evidence did not prove a cause and effect relationship. Although the spill occurred soon after the breeding season for northern elephant seals, the pups had already been weaned and they did not ingest oil from their mothers. Tag returns for this species showed that oily pups survived as well as clean pups. An earlier spill could have had far more severe impacts (U. S. Bureau of Land Management, 1979).

Several other circumstances of the spill may have also mitigated the effects on biological resources. Most of the oil did not reach shore until at least 3 days after the spill, thus allowing time for weathering; favorable winds, kelp beds, and a natural current barrier may have prevented much of the oil from reaching shore; and the heavy rains of that year increased sedimentation

and flotsam in the area, which may have acted as sinking and absorbent agents for the oil (U. S. Bureau of Land Management, 1979).

An oil spill in the sanctuary area would probably cause most damage to pinniped populations if it occurred during the breeding season (U. S. Bureau of Land Management, 1979). For San Miguel Island, this would be from March to August and from December to February (see Table E-4). On Santa Rosa and Santa Cruz Islands, the only species with rookeries are harbor seals; the greatest effects of a spill would be between March and May. On Santa Barbara Island, the breeding season extends from June to August and from December to February (U. S. Bureau of Land Management, 1979).

--Cetaceans

Although the impacts of oil on cetaceans are not well understood, some scientists believe that they may have both short and long-term detrimental effects (Leatherwood, 1979, personal communication). Because baleen whales (Mysticeti) are filter feeders, for example, they are susceptible to direct ingestion of oil or oily substances. The toothed whales (Odontoceti), on the other hand, would be more indirectly affected by eating organisms further down the food chain, such as cephalopods and fish. Of concern is the fact that this could trigger a magnification effect where toxic oil might build up to high levels in the top carnivores; however, such effects have not yet been demonstrated. There is no data available at present showing the bioaccumulation of oil through the food chain resulting in a biomagnification effect on cetaceans.

It is not known whether whales will swim through or around an oil slick. Humpback whales have been seen feeding in an oil slick in the northern Atlantic Ocean without apparent immediate ill effects (National Oceanic and Atmospheric Administration, 1979). Although the cumulative effects of oil on whales are not known, it is likely that it would, at least, irritate their eyes and could possibly affect their breathing apparatus given prolonged exposure. Because whales depend on blubber rather than fur for thermal regulation, however, oil would not affect their ability to withstand cold Pacific waters. Mammal reactions to an oil spill would depend on many variables including the species of whale, condition of the whale, time of year, and severity of the oil spill.

--Birds

Floating oil affects marine birds by fouling feathers and through ingestion, inhalation, and irritation of eyes and membranes. Feather contamination is the primary cause of immediate mortality because of the resulting inability to fly, avoid predators, or forage under water as well as the lowering of body temperature due to loss of insulation. Birds may also ingest oil while preening or grooming contaminated feathers, which can lead to death (U. S Bureau of Land Management, 1979).

A number of factors influence the vulnerability of different species of birds to contact with spilled oil. Species which have a tendency to form large, dense flocks on the water, spend considerable time swimming on the water, dive when alarmed, or exist in small, isolated populations are especially vulnerable (U. S.

Bureau of Land Management, 1979). To some extent, all seabirds which breed in large colonies are vulnerable to contact with floating oil during nesting season.

The study area is characterized by a number of seabird breeding colonies (see Section E.2.b. and Table E-10 above). In addition, many migrating species congregate in the offshore region for brief periods throughout the year. Potential degredation threats endangering seabirds due to oil spills and associated clean up operations are likely to be particularly severe from January to June when seabird densities are at their highest (U. S. Bureau of Land Management, 1979). Both cormorants and alcids are particularly susceptible to exposure in this respect largely on account of their sizeable breeding colonies within the study area. Brown pelicans, while present in far smaller populations here, are equally vulnerable due to their restricted area distribution, seasonally large breeding assemblages, and frequent diving (U. S. Bureau of Land Management, 1979).

Among the other seabirds generally believed to be the most susceptible to oil contamination are: murres, guillemots, auklets, murrelets, puffins, loons, grebes, and scoters (U. S. Bureau of Land Management, 1979). According to an analysis of impacts resulting from the 1969 Santa Barbara oil spill, the western grebe was apparently incapable of discriminating between oiled and clean water surfaces and thus was the one species most seriously affected by oiling (Battelle-Northwest, 1969). Shearwaters, albatrosses, petrels, gulls, terns, shorebirds, and some ducks and geese all demonstrate vulnerability to oil contamination, but less so than diver species (U. S. Bureau of Land Management, 1979) (see Table F-6).

Table F-6. Seabird species most vulnerable to impacts related to OCS oil resource exploitation. (All populations are considered vulnerable to disruption of feeding grounds wherever they aggregate in large numbers. Birds are protected under the Migratory Bird Treaty Act.) (University of California, Santa Cruz, 1978).

SPECIES	COMMENTS
Migratory waterfowl (loons, grebes, sea ducks)	Most are divers and are very susceptible to oiling of feathers; many species forage in large groups in restricted areas of shallow water nearshore.
Cormorants	Breeders in Channel Islands; very susceptible to disturbance of colonies; roost ashore in large groups and forage in flocks; susceptible to oiling of feathers.
Brown pelican	Endangered species and Channel Islands breeder; very susceptible to disturbance of colonies;
Phalaropes	Very numerous and wide-ranging but susceptible to oiling of feathers.
Western gull	Channel Islands breeder; may contaminate eggs by bringing oil to nests on breast feathers.
Nesting alcids (Cassin's auklet, pigeon guillemot, Xantus' murrelet)	Very susceptible to oiling of feathers; gather in large groups near colonies; vulnerable to disturbance of colonies and introduction of terrestrial predators.
Wintering alcids	Very susceptible to oiling of feathers; may concentrate in restricted offshore areas for feeding.

The long-term, cumulative effects of oil and gas development on seabird habitat areas and foraging grounds in the Santa Barbara Channel area are still unknown (U. S. Bureau of Land Management, 1979). Because of their direct dependence on nearshore food sources, long-term contamination of foraging grounds could cause major alterations in seabird reproductive capabilities (U. S. Bureau of Land Management, 1979).

Oil spill treatment and clean-up operations also have important impacts on the seabirds and mammals. Often the emulsifiers used and associated human activity have been more harmful than the oil (U. S. Bureau of Land Management, 1979). Because many new generation dispersants which are supposed to be no more toxic than oil have not yet been totally evaluated, their environmental effects remain largely unkown (U. S. Bureau of Land Management, 1979). As with oil spills themselves, the impacts of cleanup operations would be particularly severe at times when seabirds are highly concentrated.

--Fishery

A large oil spill in a fishing area also poses a serious threat to sport and commercial fisheries such as those encompassed by the preferred sanctuary alternative (see Section E.2.c). Potential long-term effects include not only injury to the generally more sensitive larvae and juveniles but also to adults, altered reproduction (fish egg viability or sperm-egg interaction) or behavior (feeding or migration), or disruption of the food chain. The precise type of impact depends largely on timing with respect to spawning season, migration patterns, and whether the oil sinks

(i.e., affects bottom or demersal eggs) or floats (i.e., affects pelagic eggs). A spill resulting in a surface slick could affect upper water biota such as the squid, northern anchovy, jack mackerel, and the planktonic base of the food chain. Heavier oils that sink could affect shellfish (abalone, lobster, crabs) and fishes such as the flounders and soles.

A spill could prevent or limit fishing for a period of time during and after its occurrence. In the case of the Santa Barbara spill in 1969, it is estimated that fishermen lost a minimum of two months of fishing with the area displaced by the spill (Neal and Sorenson, 1970; U. S. Bureau of Land Management, 1979). The chemical remains of spills of refined hydrocarbons in other sectors of the world's oceans, some of which are similar to portions of the marine sanctuary study area, have closed waters to fishing or other activities for many years (e.g., Hyland, 1977).

The effects of oil and gas activities on kelp, particularly in terms of kelp's role as a habitat for fish, are also important. A number of kelp bed concentrations are evident around each of the Northern Channel Islands (see Section E.2.c and Table E-14). It is generally believed that the susceptibility of kelp and other plants to oil pollution varies with its life stage and that the adult generation has an outer mucilage covering which appears to protect it against oil toxicity (U. S. Bureau of Land Management, 1979). While there appears to be little evidence to indicate that kelp is harmed by oil, it is an important habitat for fish and fauna which may ingest or come into contact with oil trapped in its fronds. In addition, kelp contamination due to oil (e.g., natural seepage) renders it unfit for human harvest unless sufficient wave action cleansing occurs (Szelenyi, 1979, personal communication).

--Invertebrates and Intertidal Organisms

The effects of a large oil spill on the invertebrate species of the study area could be devastating. These species include squid and shellfish such as the rock crab, lobster, shrimp, mussels, and abalone, all of which are commercially valuable to the region, in addition to many bottom-dwelling and intertidal organisms important to the food chain. The planktonic larval stages of shellfish are highly vulnerable to the effects of oil. Bivalve shellfish are sedentary and suffer significant mortalities in areas where sediments become contaminated with oil (NOAA, 1979).

The area supports a diversity of intertidal organisms. Many invertebrates and other types of marine species are dependent on tide pools during some part of their life cycles. The impact of an oil spill reaching these habitats could be severe. Smothering could cause extensive damage and subsequent shore clean-up efforts could serve to disrupt further the affected sites (Resources, 1978). The toxic and long-term effects of the oil are not as well known. The area contains a large number of endemic species which could be threatened with extinction by even a small spill because of their narrow range (Resources, 1978; BLM, 1979).

Low concentrations of oil or its components have been found to affect the feeding behavior in species such as snail, lobster, crab, and oyster and low levels of oil in sediments can impede the burrowing activities of certain bivalves (NOAA, 1979). The long-term effects from the Santa Barbara oil spill have not been fully determined. While high mortalities were suffered by acorn barnacles and the breeding rates of barnacles and mussels and the

larval settlement of barnacles were temporarily inhibited, certain species of molluscs and other intertidal species were able to return to the area (BLM, 1979).

--Reduced risks from spills

Based upon existing knowledge concerning trajectories of oil spilled at sites near and in the proposed sanctuary, the prohibition of hydrocarbon activities within 6 nmi (11.1km) of the islands will substantially reduce the risk to the sensitive resources therein, both by preventing some spills and providing a temporal and spatial buffer to nearshore resources.

Immediately following a spill, the oil undergoes rapid weathering and most of the toxic fractions evaporate into the atmosphere or disperse into the water. Such dilution and chemical/biological degradation lessens the damage from contact with oil spills. It is, therefore, important to note that the greater the distance between significant resources and potential oil spill sites, the greater the amount of time available for spills to be diluted and weathered to a less toxic concentration or form.

The Bureau of Land Management developed oil spill probabilities for leases predating and included in Lease Sale 48 and an oil spill model to plot trajectories of hypothetical spills. Table F-7 illustrates the probability of an oil spill (1000 barrels or more) reaching the five islands as a result of activities associated with all the tracts considered for Lease Sale 48 as well as with tracts from earlier sales premised on BLM's oil spill model and probabilities. Figure F-9 shows oil spill trajectories computed by the California Office of Planning and Research (1977).

TABLE F-7. Probability of contact by one or more 1000 BBL spills between 1979 and 2000*. (U. S. Bureau of Land Management, 1978b.)

Island	3 Days***			10 Days			30 Days			60 Days		
	P	E	B	P	E	B	P	E	B	P	E	B
San Miguel	6%	6%	12%	11%	18%	27%	14%	23%	34%	14%	25%	36%
Santa Rosa	10	20	27	15	33	44	18	37	48	19	38	50
Santa Cruz	37	53	71	50	71	86	53	75	88	53	75	88
Anacapa	12	25	34	20	40	52	23	43	56	23	44	56
Santa Barbara	<0.5	<0.5	1	2	4	6	4	8	12	5	9	14

P = Proposed Leases; **E = Existing Leases; B = Both

*These probabilities are based on USGS's original resource estimates which have subsequently been reduced by 84%.

**Proposed leases represent those analyzed in Final Environmental Statement on Sale 48 (U.S. Bureau of Land Management, 1979). Sixty-nine of these tracts, including 24 near the northern Channel Islands, were withdrawn from Sale #48.

***Days - time from release of spill to contact with Islands.

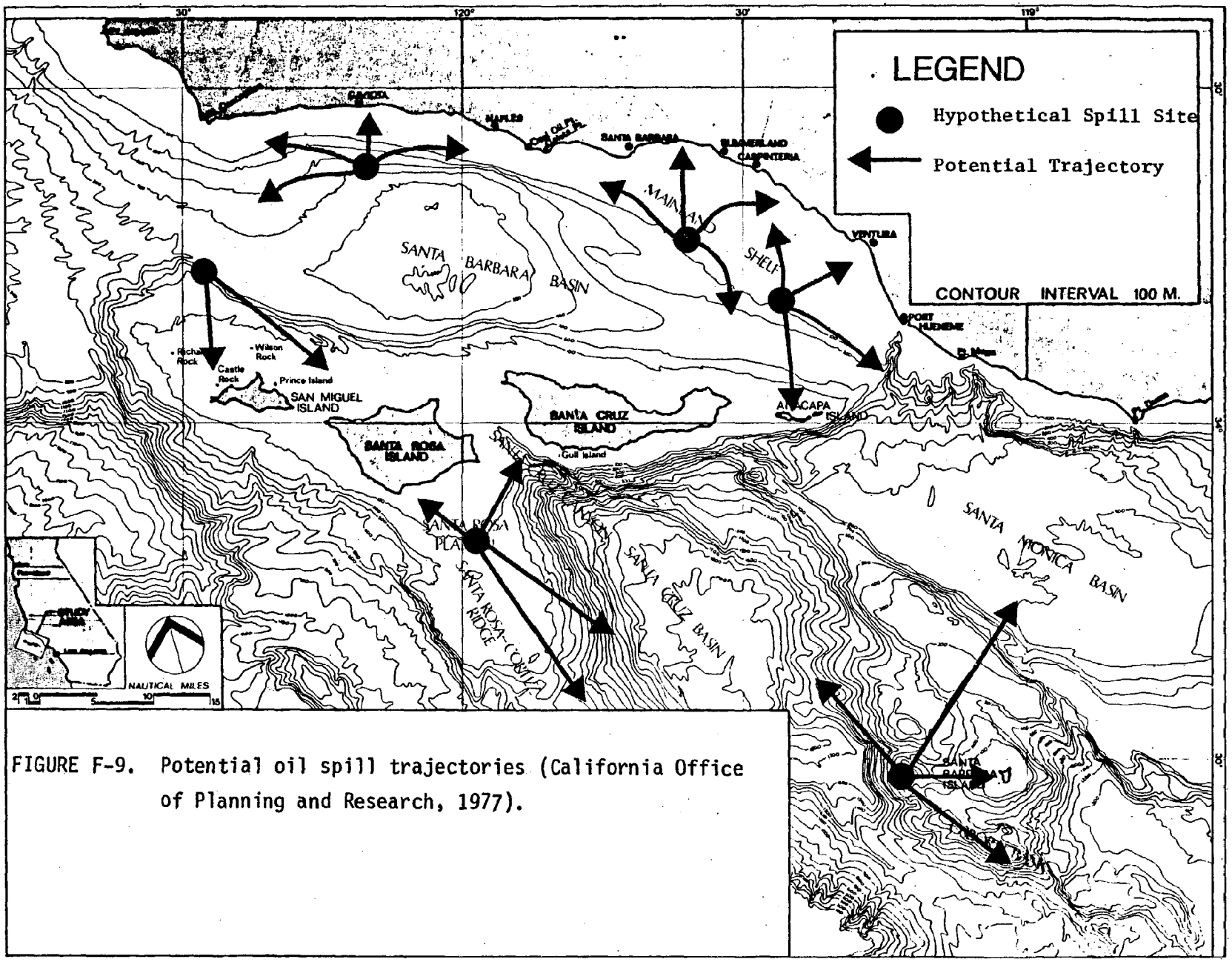

FIGURE F-9. Potential oil spill trajectories (California Office of Planning and Research, 1977).

In the Final Environmental Statement of Sale 48 (U. S. Bureau of Land Management, 1979), BLM finds that "if just San Miguel Island, as the major pinniped breeding island is considered, the probability of a major spill within the next 20 years is almost 100 percent."

As noted in Section E.3.b. and below, BLM's oil spill probabilities reflect development scenarios analyzed in the Final Environmental Impact Statement on Sale 48 (U. S. Bureau of Land Management, 1979). Since then, the Secretary of Interior withdrew 69 tracts from Sale 48, including 24 near the northern Channel Islands and Santa Barbara Island (Figure F-7). Furthermore, U.S.G.S. significantly reduced its most probable estimate of the oil and gas reserves associated with Sale #48. Although the oil spill model was not rerun to reflect changes in oil spill probabilities because of these tract withdrawals, these two changes have certainly reduced the probability of an oil spill reaching the Channel Islands. Spills can still result from operations on existing leases in the area and, potentially, from Sale 48 tracts beyond 6 nmi (11.1km). In addition, although the tracts closest to the islands have been withdrawn from Sale 48, without sanctuary designation they can still be leased in subsequent sales.

In addition to showing the probability that an oil spill will reach the islands, BLM's oil spill model also developed probabilities that an oil spill will affect: (1) major pinniped haulout and breeding areas and (2) seabird breeding and nesting areas within three days; these are shown on Table F-8*. For instance,

*The probabilities that a hypothetical spill will affect pinniped and seabird areas are not specific to the Channel Islands, but reflect areas throughout the Southern California Bight. BLM's resource maps used for this analysis do illustrate a very high correlation between location of these areas on the Channel Islands and their areal extent throughout the Bight.

probabilities of a spill reaching major pinniped haulout and pupping areas from a proposed lease within the proposed sanctuary (see P9 on Figure F-10) north of Santa Cruz and Anacapa Islands (for Lease Sale 48 which was later withdrawn) within three days range as high as 63 percent. Probabilities range as high as 68 percent that spills occurring on a proposed lease (P9) and 70 percent from existing leases (see E5 on Figure F-11) will reach seabird breeding and nesting areas. These probability figures do not reflect the fact that a significant impact could also occur at sea (i.e., not just to haulout and nesting sites) because of the intensive use of these areas as foraging grounds.

Because BLM's oil spill model has not been rerun in light of the withdrawal from Sale #48 of 24 tracts around the Islands or the USGS's reduction in estimated resource potential available from Sale #48 (see Table E-13), it is difficult to determine the specific additional protection from oil spills (i.e., a reduction in the probability of a spill hitting an Island resource) provided by the 6nmi (11.1km) buffer. NOAA also cannot project how many tracts within 6 nmi of the Islands would be leased in the future in the absence of a marine sanctuary designation. Table F-8 and Figure F-12 show the high probability of oil spills originating from tracts in the proposed sanctuary and reaching sensitive biological areas. Although these probabilities have certainly declined, given the lower resource estimates of USGS, there is no question that a prohibition on oil and gas activities on future tracts within 6 nmi of the Islands will reduce the risk of oil spills reaching nearshore resources by eliminating whatever petroleum exploration and exploitation might otherwise occur. Furthermore, while the risks of oil spilled beyond the proposed boundary reaching nearshore resources may remain high, oil spilled more than 6 nmi from Island shores is less likely to reach these

TABLE F-8. Probabilities (in percent) that an oil spill starting at a particular location in the vicinity of the northern Channel Islands will reach in three days: (1) major pinniped haul out and breeding areas and (2) seabird breeding and nesting areas (U. S. Bureau of Land Management, 1978b)*.

Hypothetical Spill location** (see Figure F-10 and F-11)	Major Pinniped Haul-out and Breeding Areas ***	Seabird Breeding and Nesting Sites***
(Proposed Leases)		
P_1	13	26
P_2	8	46
P_3	26	28
P_4	4	7
P_5	30	13
P_6	10	17
P_7****	11	17
P_8	16	14
P_9****	63	68
P_{10}	3	3
P_{11}	13	24
P_{12}****	22	52
(Existing Leases)		
E_1	10	10
E_2	8	46
E_3	23	40
E_4	34	35
E_5	55	70
E_6	49	52
E_7	2	2
E_8	2	3
E_9	18	37

* These probabilities were computed from USGS's original high resource estimate.
** See Figures F-10 and F-11 for hypothetical spill locations and their proximity to San Miguel, Santa Cruz, Anacapa, and Santa Barbara Islands. "P" stands for Proposed Sale 48 Leases and "E" for Existing Leases. BLM's Oil Spill Model also includes probabilities for spills from tankers hitting these resources.
*** As noted, BLM's Oil Spill Model does not consider the probabilities of an oil spill on these areas specifically at the northern Channel Islands and Santa Barbara Island, but rather throughout the Southern California Bight.
**** P_7, and P_9, and P_{12} correlate with the 24 tracts around the islands withdrawn from Sale 48.

n - less than 0.5 percent.

TABLE F-9. Oil spill recovery equipment in the vicinity of the northern Channel Islands--see Figure F-13 (U. S. Bureau of Land Management, 1979).

Location on Figure F-13	Equipment available at location
A	Clean Seas Getty Oil Terminal 1 trailer 1 51 T ACME Skimmer 800' of 16" Sea curtain boom
B	Clean Seas 3 Exxon Floating Weir skimmers 1 Komara Mini Skimmer 1 050 Cyclonet Skimmer 800' of 8" Sea curtain boom 400' of 16" Sea curtain boom 1,210' of Sea Sentry boom 2,000' of B-T boom 1 Vicoma sea pack (1,600' of boom) 1 trailer 1 39 T ACME Skimmer 1,500' of 43" Expandi boom 800' of 8" Sea curtain boom
C	Clean Seas Carpinteria yard 1 trailer 1 51 T ACME Skimmer 800' of 16" Sea curtain boom 400' of 8" Sea curtain boom
D	Clean Seas Union Terminal 1 trailer 1 51 T ACME Skimmer 4,400' of 43" Expandi boom 738' of 30" Expandi boom
E	Clean Seas 1 trailer 1 51 T ACME Skimmer 2,410' of 30" Expandi boom

NOTE:

At each drilling location there is a minimum of 1 skimmer, 1,000' of boom and 10 bbls of dispersant.

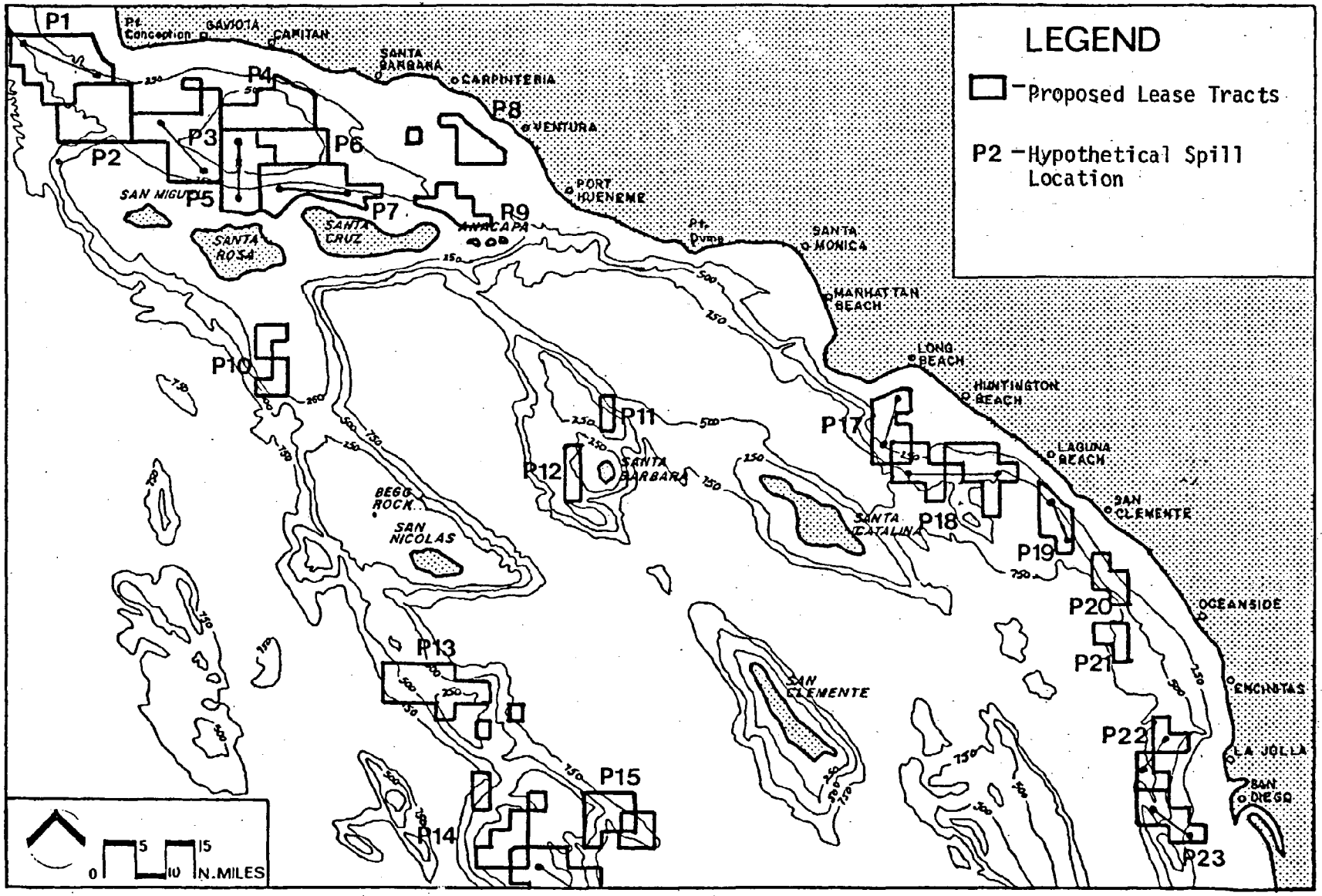

FIGURE F-10. Hypothetical spill locations from proposed Sale #48 (U. S. Bureau of Land Management, 1978b).

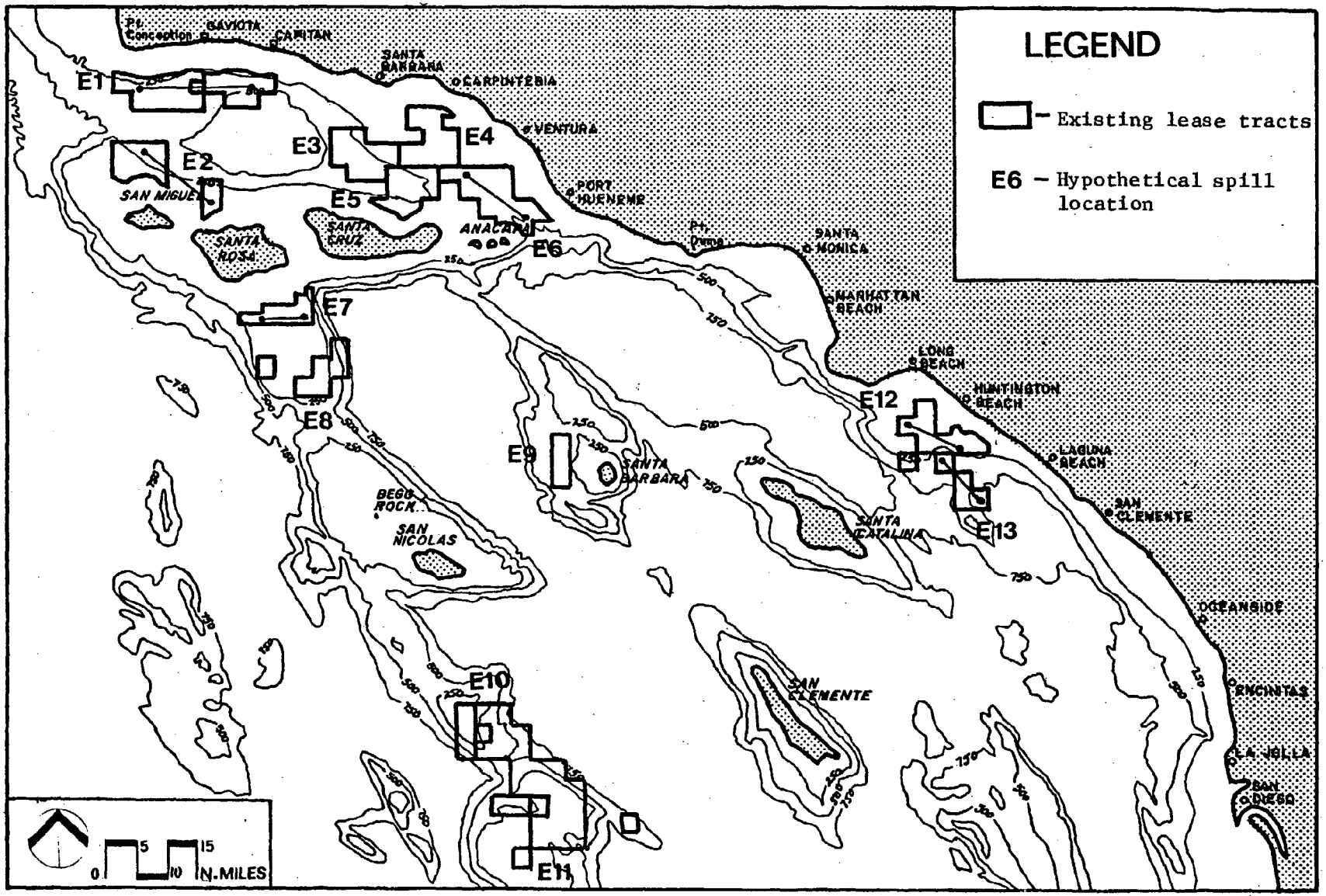

FIGURE F-11. Hypothetical spill locations from existing leases (U. S. Bureau of Land Management, 1978b).

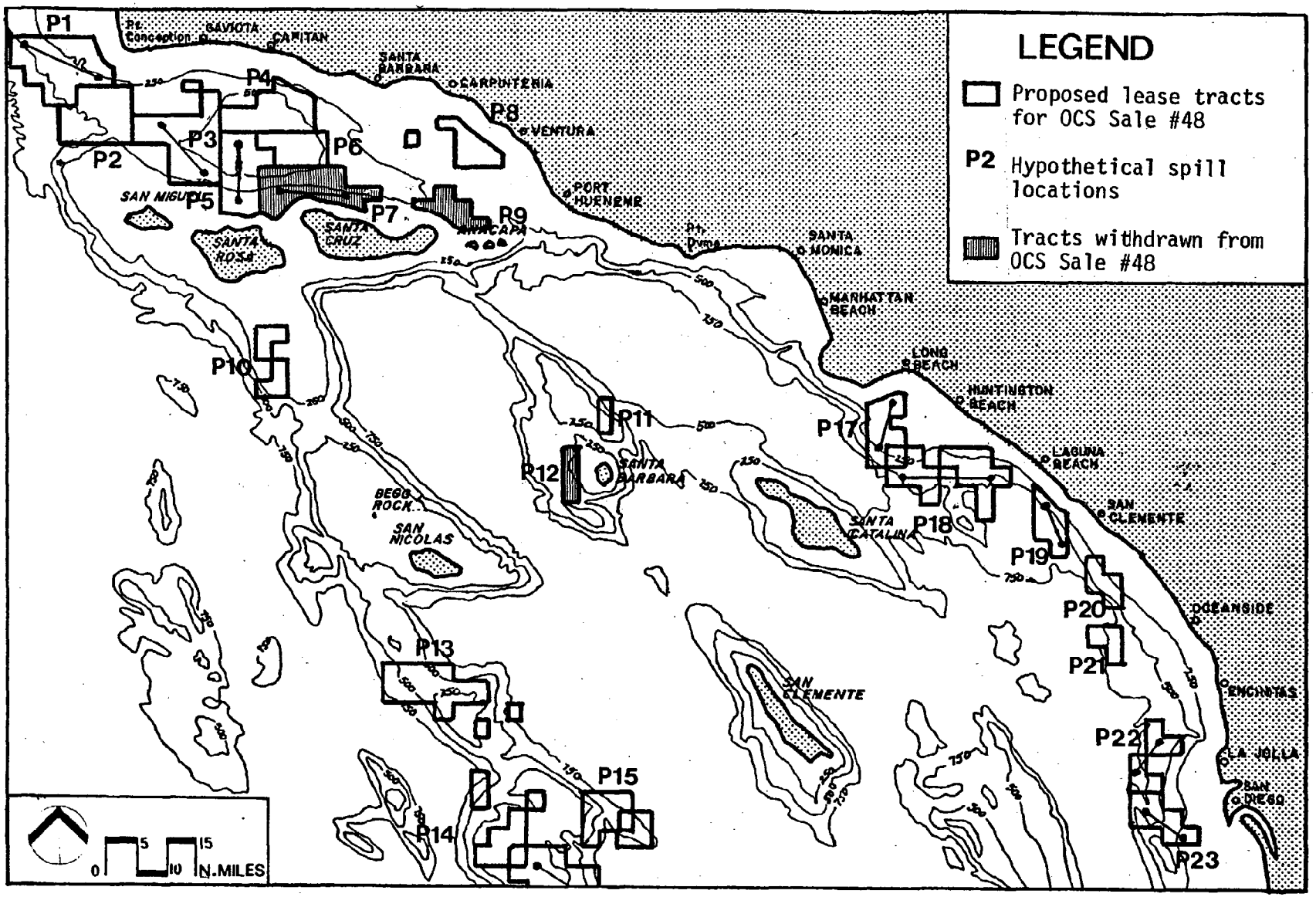

FIGURE F-12. Hypothetical spill locations which correlate with tracts withdrawn from Sale #48 (U. S. Bureau of Land Management, 1978b; U. S. Department of Interior, 1979a).

nearshore wildlife concentrations in toxic quantities, since the increased distance from shore would provide more time for natural forces to weather, mix, dilute, or redirect spilled oil.

The 6 nmi (11.1km) buffer created by NOAA's proposed regulations is necessary because oil spill containment measures do not suffice to protect the resources of these waters from the risks of an oil spill in this area. The success or failure of at-sea containment and recovery operations in the event of an oil spill depends heavily on three factors: prevailing marine conditions, the amount of time available before the oil will reach critical resources, and speed of response.

Under calm ocean conditions, existing containment and recovery equipment will function effectively, making successful at-sea recovery of the spilled oil more likely. But the effectiveness of containment booms and skimmers falls off dramatically as wave heights or wind velocities increase; the booms will not function effectively if water currents exceed one to two knots (California Office of Planning and Research, 1977). Wave period, height, and the amount of turbulence also affect performance. Skimming devices are, likewise, dependent on sea conditions. Effective skimming is unlikely when ocean conditions are not at least moderately calm (California Office of Planning and Research, 1977).

The exposure of the waters seaward of the Channel Islands to currents from the south and north and to storm swells makes sea states too rough during most periods for effective at-sea spill containment. Similarly, the seas around San Miguel Island are typically very rough and would often preclude effective containment. For instance, Clean Seas, Inc. (no date), in their site

protection and cleanup plan, state that the convergence of ocean and Channel currents at the easternmost tip of San Miguel Island results in breakers and rough seas. Access or approach for spill control in that region is extremely dangerous (Clean Seas, Inc., n.d.). Waters within the Santa Barbara Channel are more protected from offshore swells and storms, particularly in the eastern portion of the Channel. Chevron (1978) noted that average significant wave heights in the eastern portion of the Channel are less than 6 feet (1.8m) and that severe storm waves (100-year maximum) have a 95 percent probability of not exceeding 34.4 feet (10.5m) in height. Such currents and winds can still, however, make the waters rough and limit the effectiveness of oil spill containment equipment. Because of rough water conditions around the islands, even the availability of on-site containment equipment may not insure that spills are effectively recovered.

Other spill abatement methods are available in addition to, or in lieu of, at-sea containment. Dispersants act to facilitate the incorporation of the oil into the water column and can be used when conditions prevent the deployment of containment and collection equipment. The application of dispersants is contingent on authorization for their use given by the Environmental Protection Agency (CEQ, 1980). This permission is granted on a case-by-case basis depending on specific spill site conditions and is planned to result in the least overall environmental damage. Various dispersant application techniques have been evaluated (Smith, 1979). However, an insufficient amount of research, especially for newly developed dispersant chemicals, has been conducted to assess adequately their effects of the marine environment (McCarthy, 1980, personal communication). Early studies indicated that the impacts of using dispersants at times exceeded that of the oil alone (BLM, 1979; Dewling, 1979).

Because the tracts in the sanctuary are far from the mainland where Clean Seas' oil spill response equipment is located (see Figure F-13), in the event of an oil spill it is important that there be sufficient time for Clean Seas to reach the site. NOAA's prohibition on oil and gas operations within 6 nmi (11.1km) of the islands on future leases extends the response time available for possible at-sea oil spill cleanup before the spill reaches nearshore areas. This increase in response time is particularly important because, if a spill does reach shore, it is likely that cleanup crew, equipment, and associated disturbances will greatly compound the impact caused by the spill itself (U. S. Bureau of Land Management, 1979). For instance, Lindstet-Siva (1976) stated that attempts to boom rookery beaches may be counterproductive since most species of pinnipeds will abandon rookeries if repeatedly disturbed. Because suitable areas for pinniped rookeries are quite limited, abandonment of a rookery in this area could have severe consequences. Even if disturbed only once, several days may be required before activity patterns return to normal on a disturbed beach. Because of these factors, Lindstet-Siva (1976) noted that the best action is to mechanically contain the oil at the site. Lindstet-Siva (1979) recommended that human activity be kept to a minimum in nearshore waters and on beaches used by pinnipeds and that the use of chemical dispersants in the open sea (approximately 5 miles from the rookery) be considered to mitigate the effects of the spill. If oil reaches rookeries, it is probably best not to attempt cleanup since almost any method would be disturbing to these animals.

In their site protection and cleanup plans, Clean Seas Inc. recognize the potential that oil spill recovery activities may disrupt pinniped rookeries (Clean Seas, Inc., no date). The site protection plans for San Miguel, Santa Cruz, Santa Rosa, and

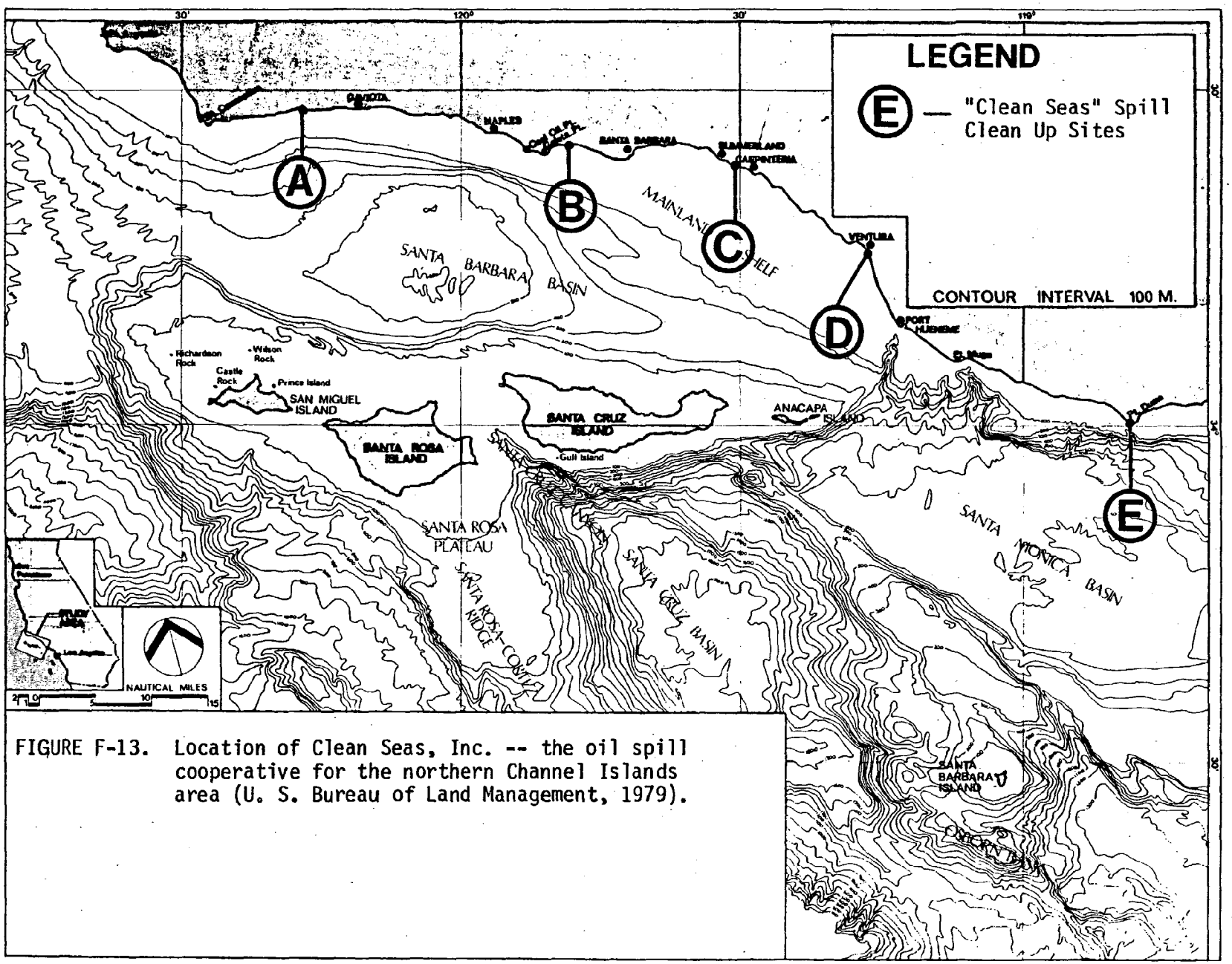

FIGURE F-13. Location of Clean Seas, Inc. -- the oil spill cooperative for the northern Channel Islands area (U. S. Bureau of Land Management, 1979).

Anacapa Islands recognize that pinnipeds are very sensitive to human disturbance and, thus, no onshore cleanup should be attempted near haulout or rookery areas (Clean Seas, Inc., no date). A site protection and cleanup plan is not yet available for Santa Barbara Island.

In order to provide at least a partial immediate response to an oil spill, NOAA's proposed oil spill equipment regulation requires possible oil and gas development on existing leases within the 6-nmi (11.1km) boundary to meet not only the existing requirements imposed by BLM, USGS, EPA, and others (see Section F.1.b), but also provide onsite oil spill cleanup equipment to assist in preventing damage to nearshore resources. Although OCS Order #7 requires that minimum containment equipment at each drilling location must include a boom, skimming apparatus, and chemical dispersants (U. S. Bureau of Land Management, 1979), this requirement may be inadequate particularly for sites near the Channel Islands. For instance, the California Coastal Commission, in its review of Exxon's Plan of Exploration on blocks 222, 223, 230, 231, 232, and 238 (see Figures F-7 and F-8) for consistency with the California Coastal Plan, has required: (1) 1500 feet (460m) of open ocean spill containment boom; (2) an oil skimming device capable of open ocean use; (3) fifteen (15) bales of oil absorbent material; and (4) a boat capable of deploying the oil spill boom at the site at all times (California Coastal Commission, 1979).

The Coastal Commission believes that effective onsite spill containment equipment is essential due to the rather long response time (approximately three hours or more) for Clean Sea, Inc. (the responsible oil spill cooperative) to get heavy cleanup equipment to this portion (relatively close to the mainland) of the Santa Barbara Channel (California Coastal Commission, 1979). Chevron

(1978), in its environmental report for a proposed exploratory well on lease block 215 in the Santa Barbara Channel, cites the Clean Seas, Inc. general manager's estimate that his firm's equipment can reach the block within seven hours. As Figures F-7 and F-8 illustrate, Block 215 is approximately 8 nmi (14.8km) from Anacapa Island (Chevron, 1978); response time to spills closer to the islands and, therefore further from the mainland, are very likely to be greater. Estimated response times to tracts southeast of Santa Rosa Island are 2-3 hours by helicopter and 7-10 hours by boat (California Coastal Commission, 1980).

In addition to the Clean Seas, Inc. cooperative, the region contains several other oil spill cleanup groups. The Southern California Petroleum Contingency Organization (SC-PCO) maintains a variety of equipment in the Los Angeles area and also on Santa Catalina Island; Clean Coastal Waters (CCW) has booms, skimmers, and other apparatus in Los Angeles (U.S. Bureau of Land Management, 1979). While their area of responsibility extends only from the Mexican border northward to Pt. Dume, these organizations do have reciprocal agreements with Clean Seas, Inc. to provide assistance in the event of a major oil spill (Barker, 1980, personal communication). This capability has yet to be used in the Santa Barbara Channel area . Response times vary with weather conditions and the size and location of the spill. SC-PCO can have a four engine propeller-driven airplane equipped to apply dispersants at Santa Barbara airport within four hours of spill notification. SC-PCO and CCW equipment on the mainland can be transported by highway on trailers and can be in Santa Barbara in 4.5 hours. SC-PCO gear on Santa Catalina Island can be readied for departure in one hour. Some of the material can be flown to the site and airdropped.

Because all the existing leases in the proposed sanctuary are more than 9 nmi away from the closest oil spill cooperative and because these tracts are located near sensitive wildlife concentrations, NOAA will require the equipment required by the California Coastal Commission for the exploration of tracts 222, 223, 230, 231, 232, and 238 (see above) as the minimum onsite oil spill containment equipment for drilling within the sanctuary. This requirement will provide some additional protection to the waters of the sanctuary from the effects of an oil spill. Additional equipment requirements set by the California Coastal Commission under the Federal consistency provision of the Coastal Zone Management Act will also apply under NOAA's certification of existing permits (see F.2.c.).

--Acoustic and Visual Disturbance

Oil and gas platforms, rigs, and activities produce both a visual intrusion on the scenic qualities of the islands' seascape and disturbances due to construction activities and the sound and movement of boats and helicopters (U. S. Bureau of Land Management, 1979).

The continuous noise and human activity associated with oil and gas development in nearshore waters and the need for a steady stream of crew and supply boats produce visual impacts and noise which may disturb seabirds and marine mammals, particularly during sensitive nesting, pupping, and migration seasons. If these disturbances occur very close to shore, stampeding by pinnipeds or sudden flight by nesting birds can occur (U. S. Bureau of Land Management, 1979). During critical breeding periods such re-

actions could result in increased mortality rates in young seabirds and marine mammals (U. S. Bureau of Land Management, 1979).

Oil and gas development may have both negative and positive impacts on the area's recreational values. Negative impacts include: increased congestion; the visual effects of platforms, tankers, and other activities on the open sea; degradation of water quality; and the risk of oil spills. Positive benefits could include the potential aid to navigation provided by development structures and communication assistance for lost or distressed boaters. Sportfishing may also improve around offshore platforms due to the attraction their artificial reef habitat provides sportfish species (U. S. Bureau of Land Management, 1979). Both shellfish and vertebrate fish cluster around offshore platforms.

NOAA's prohibition of future leasing within the 6-nmi (11.1km) sanctuary boundary would lessen the noise and human activity in nearshore waters and also decrease the need for additional supply boats to enter nearshore waters or incidently approach resting or nesting marine mammals or seabirds. NOAA's requirement is in line with the findings in the 1975 Final Environmental Impact Statement (FEIS) on Lease Sale 35 (U. S. Bureau of Land Management, 1975) which considered drilling activity and platform construction one of the greatest dangers to the pinnipeds and seabirds:

> "activities associated with platform installation, exploratory drilling and production operations off San Miguel and Santa Barbara Islands could cause significant reductions in seabird populations and the potential elimination of sea lions, fur seals, and harbor seals from their principal breeding area in Southern California" (U. S. Bureau of Land Management, 1975).

In addition, the prohibition of oil and gas activities on future leases within 6 nmi (11.1km) will reduce the potentially adverse aesthetic impact of oil and gas platforms, rigs, pipeline construction, and other activities on the Channel Island National Monument, the other islands, and boats in the area. It also serves to preserve the wilderness character of the island waters from industrial oil and gas development. While the significance of such values as undisturbed views and wilderness is difficult to quantify in monetary terms, their protection is, nonetheless, important, particularly in proximity to heavily populated urban areas such as those in southern California.

--Discharges

A wide variety of pollutant discharges are associated with OCS oil and gas develpment: drill cuttings and muds; sewage and trash; formation waters; and air pollutants (e.g., petroleum aerosols and engine exhausts).

Drilling effluent discharges include drill cuttings (pulverized rock fragments and chips removed during core drilling) and drill muds (complex chemical mixtures that cool and lubricate the drill bit, transport cuttings upward, equalize hydrostatic pressures, and minimize corrosion of the drill pipe and casing)(U. S. Bureau of Land Management, 1979).

The literature on toxic effects of drilling discharges indicates that, while certain toxic effects must be considered potentially significant, many of the chemical constituents of drilling muds are relatively unreactive in a biologic sense and disperse to

background concentrations within a few thousand feet of the drilling site (see, for instance, ECOMAR, 1978), particularly in areas with strong currents and flushing action such as the waters around the islands.

At the current lowlevel of development of hydrocarbon resources in the proposed sanctuary the data are inconclusive and do not warrant further control of normal OCS discharges, such as formation waters and drill cuttings and muds, within the proposed sanctuary beyond the regulations of the Department of the Interior, the Coast Guard, and EPA, which provide for the imposition of mitigating measures if harm to biological populations is shown. However, given the presence of many endemic benthic invertebrate species in this biological transition zone, protection from the discharge of drill muds and cuttings may be important. Many of these species, though extremely valuable for scientific research, may not show up in the biological surveys conducted by lessees (Mohr, 1979, personal communication). Given the extremely limited distribution of these species, even impacts only within a few thousand feet of each platform may be significant if the number of platforms increases. Furthermore, bioassay tests and other studies of the effects of muds have been rather site specific and cannot be considered determinative of the long-term consequences of marine disposal of muds. If evidence of the need for more stringent controls is found after monitoring and studying operations in the sanctuary, NOAA will take steps to propose further controls.

Air pollutant discharges typically disperse rapidly into the atmosphere or ocean waters and thus pose relatively minor threats to sanctuary resources. A major effect, however, would be on the area's aesthetic qualities and to adjacent regions (e.g., coastal

California). In addition, the Channel Islands National Monument (composed of Santa Barbara and Anacapa Islands) had been proposed as a Class I area under the Clean Air Act. Oil and gas development in the vicinity of these islands would greatly enhance the probability that the Class I standards (if the Monument is so designated) would be violated (U. S. Bureau of Land Management, 1979).

--State oil and gas sanctuaries

Finally, of particular importance to the State of California, the prohibition of future leasing with 6 nmi (11.1km) will also help to insure that the State Oil and Gas Sanctuaries can continue to provide protection to nearshore marine resources. If oil and gas development is allowed adjacent to the Oil and Gas Sanctuaries, it is possible that California would have to hold a drainage sale within State waters to avoid losing State reserves.

--Socioeconomic Impacts of the Proposed Regulation

The economic impact of this prohibition in large part depends on two factors: the estimated selling price of the tracts and the amount of economically recoverable hydrocarbons which would be foregone under the proposed regulations.

Amount of Oil and Gas Reserves Affected

Reliable data on the hydrocarbon reserves within the sanctuary are not available. Approximately half of the proposed sanctuary has never been considered for leasing and NOAA has no resource estimates in these areas. In the remaining half, there are 43 unleased tracts, twenty-four of which were originally considered for Lease Sale #48 and then withdrawn (Leases in the other 19 tracts have expired due to insufficient attempts at development - possibly indicating low resource potential). The U. S. Geological Survey's most recent resource estimate specifically for those 24 tracts was 5.7 million barrels of oil and 8.9 billion cubic feet of gas. This represents approximately 3 percent of the oil and 1 percent of the gas reserves estimated for all the tracts considered for Lease Sale 48 in the most recent U.S.G.S. calculations, or less than 1 day's supply of oil and gas for the United States (average daily consumption in the U. S. is about 19 million barrels of oil and 53 billion cubic feet of gas). These figures include all resources recoverable with current technology. BLM estimated that about half the estimated resources for the entire Sale #48 area would be economically recoverable. However, as the price of oil rises, the proportion of resources which will be economically recoverable will also rise.

The extent to which any resources, whatever their potential, will be unavailable under the proposed prohibition is questionable. At least some of the available reserves could be recovered by slant drilling from outside the sanctuary despite any prohibition. Eleven of the forty-three currently unleased tracts fall only partially within the proposed sanctuary. The Department of the Interior has already withdrawn 24 tracts and the number of tracts it would actually offer for lease cannot be predicted. The State of California prohibits oil and gas development within its waters around 4 of the 5 islands in the proposed sanctuary.

Since there is a limited amount of capital available for the development of OCS oil and gas reserves, the prohibition on exploration and exploitation activities on new leases in the sanctuary will have the effect of redirecting rather than stopping investment in oil and gas operations in the southern California OCS in the near future. Thus this proposed prohibition is unlikely to affect the amount invested in offshore hydrocarbon production. Judging by the area leased in OCS Sale 35 and 48 and by the area receiving two or more positive nominations for leasing in the call for nominations for Lease Sale 48, and assuming that there will be about two lease sales every five years, there will be opportunity for exploration over the next 25 years in the Southern California Bight without the excluded sanctuary tracts. However, although positive nominations provide some indication of industry interest, they are not fully accurate indicators of resource potential. In addition, the above estimate of available tracts for investment does not take into account the possibility that patterns of investment could shift toward or away from the southern California OCS.

It is important to note that the proposed prohibition on hydrocarbon activities on new leases in the sanctuary does not necessarily mean that affected reserves will be permanently unavailable. These reserves will be preserved for future use, when technology may improve or the need for resources may increase. In fact, various groups, including Get Oil Out (1978) and the Scenic Shoreline Preservation Conference, Inc. (1979), have proposed that the Channel become a hydrocarbon reserve so that resources can be saved for specific uses (such as petrochemicals) for which suitable substitutes are not yet available. Should petroleum technology improve so that the risk of injury to sanctuary resources would be sufficiently reduced, sanctuary regulations could be

changed to allow development subject to appropriate controls. However, a decision to reevaluate the prohibition on petroleum activities would be based on a requirement to permit only those activities consistent with the fundamental purposes of the sanctuary, particularly living marine resource protection.

Effect on Federal Income from OCS Leasing

The proposed prohibition could reduce U. S. income from offshore leasing. It is unlikely that the industry will bid on affected tracts located completely within the sanctuary if those tracts are offered in future lease sales. Tracts located partially within the sanctuary would probably also be less attractive to industry given a prohibition on drilling in the sanctuary and may draw lower bids or none. This change in bidding could represent a reduction of revenue to the U. S. Treasury if these leases might otherwise have been sold. The total amount of lost revenues cannot be estimated at this time. The prices of leases are based on data much of which is proprietary. Furthermore, the future prices of leases in the Channel will depend heavily on the results of exploratory activity from Sale 48. Prices for tracts leased in earlier sales do not follow any clear geographic pattern. The Department of the Interior estimated the social value of the 24 tracts deleted from Sale 48 to be $1 million* (U. S. Department of the Interior, 1979c). The social value is the savings gained by producing oil domestically rather than importing it. The Federal government obtains most of these savings through leases, royalties, and taxes.

*This estimate is based on the reduced USGS resource estimate.

Effect on Industry

Under this proposed prohibition the petroleum industry would forego the profits it could otherwise realize from the development of the affected tracts. Companies that have leased tracts in the area include Texaco, Chevron, Exxon, Mobil, Continental, Union, Phillips, and Champlin oil companies. However, as discussed above, in the short term, this prohibition will impose only minor losses, if any, on the industry, because operators can channel their capital for exploration and development to other areas of the Southern California Bight. If resources in the sanctuary were substantially higher than in other portions of the Bight, industry would forego a higher profit margin. However, the data available from USGS indicate that the resource potential in the excluded tracts is relatively low.

Finally, development on tracts and portions of tracts within 6 nmi of the Islands which are already leased would have to meet the proposed provision requiring 1500 ft of open ocean spill containment boom, 15 bales of oil sorbent material, an oil skimming device for open ocean use, and a boat capable of deploying the boom on location. Since these requirements exceed those imposed by USGS operating order #7, they would impose some additional costs on the industry. However, since it is likely that in many cases the California Coastal Commission would also require identical onsite spill containment equipment, NOAA's minimum may not impose any additional cost.

Sectors Affected

The primary sectors affected are the Federal and State of California governments because of the loss of possible revenues from lease sales. However, the State of California already has an oil and gas sanctuary surrounding 4 out of 5 of the islands in the proposed sanctuary. The oil industry would forego the profits it might otherwise realize from the sale of the oil under the affected tracts. However, as discussed above, in the short run, the regulations would redirect rather than curtail oil and gas investment activities. The oil industry might also have slightly greater costs to meet the oil spill contingency requirements. Offshore drilling and service industries may also be indirectly affected in the long run. The tourism and recreation industry in the Santa Barbara and Ventura area may benefit from the restriction on petroleum development around the Islands, but these benefits cannot be estimated. Sport and commercial fishing may also gain from this regulation, although, again, the possible economic gains cannot be projected precisely.

2. Discharge of polluting substances

No person shall deposit or discharge any materials or substances of any kind except:

(A) indigenous fish or parts and chumming materials;
(B) effluents from marine sanitation devices;
(C) nonpolluted cooling waters from ocean vessels;
(D) effluents incidental to those hydrocarbon exploration and exploitation activities with an NPDES permit.

The proposed regulation prohibiting discharging and littering within the sanctuary complements the existing regulatory system and would enhance the area's overall recreational and aesthetic appeal and help maintain the present good water quality in the sanctuary. At present, specific discharges such as oil are regulated in order to protect the marine environment. In particularly sensitive offshore zones, such as those designated by the State of California as areas of special biological significance (ASBSs), harmful discharges are prohibited (This prohibition does not apply to vessels, (see Section F.1.6)).

This regulation would ensure that solid wastes will not degrade wildlife rookeries or otherwise alter the area's aesthetic appeal. It would prevent floating or submerged waste debris (e.g., non-biodegradable plastic or metal objects) from being deposited into heavily used foraging areas, where animals could ingest or become entangled in them. Under current human activity levels casual littering is not widespread and observed adverse impacts upon resources have so far been minimal (Johnson, 1979, personal communication). NOAA's regulation would increase the probability that additional use of the area will not lead to substantial degradation. Although litter and other solid wastes do move in the marine environment subject to winds and currents, this prohibition will reduce the amount of trash in the marine sanctuary. Specifically it will prevent aesthetic and water quality degradation at nearshore anchorages if the use of those areas by recreational and other boaters rises. The prohibition will also prevent the possibility of dredge disposal or ocean dumping in the area in the future. By prohibiting dredge disposal in the immediate vicinity of marine bird and mammal breeding grounds and haulout areas, risks from the distribution of contaminant materials (e.g., toxic substances, heavy metals) are reduced. How-

ever, there has been no evidence of contamination to date within the study area.

The impacts of this regulation on sanctuary users is expected to be minor; trash will have to be kept on boats and disposed of at proper facilities, most likely on the mainland. The prohibition on locating dredge disposal or ocean dumping sites in the sanctuary could conceivably impose costs on future development in or near the Santa Barbara Channel by requiring more expensive disposal methods.

3. Alteration of or Construction on the Seabed

> Within 2 nmi (3.7km) of any island, no person shall dredge, drill, or otherwise alter the seabed in any way, nor construct any structure, except for a navigation aid or except in connection with the laying of any pipeline associated with petroleum development.

Dredging and dredge disposal activities, while not ongoing within the proposed sanctuary area, represent a potential threat to particularly sensitive marine resources. Foremost among these potentially adverse impacts would be increased turbidity levels, disruption/displacement of benthic communities, and human intrusions near seabird and marine mammal concentrations. A 2-nmi (3.7km) offshore buffer area will help ensure that these impacts do not affect breeding grounds, haulout areas, and adjacent foraging areas.

Dredging for pipeline construction (i.e., for oil, water, and gas) is allowed subject to authorization by the California Coastal Commission and all other regulating agencies.

This regulation will enhance resource protection by prohibiting the presence of large, and often noisy, dredging machinery within 2 nmi (3.7km) of the shore. Thus, both over the short and long-term, human intrusion upon marine wildlife along with potentially adverse impacts on their food supplies (e.g., benthic and pelagic fish resources) will be minimized. Dredging for pipeline placement is exempted because over the long run pipelines often have less impact on wildlife and pose a smaller risk of oil spills than barge traffic. This is particularly important in a high use area such as the Channel.

No economic impacts upon commercial firms are expected because current dredging operations are located outside of the sanctuary's boundaries and no zone within the 6 nmi (11.1km) boundary is used for dredge spoil disposal. Dredging restrictions may limit the harbor facilities of the Channel Islands if expansions are proposed in the future.

4. Operation of Commercial Vessels

> Except to transport persons or supplies to or from an Island, no person shall operate within one nautical mile of an Island any vessel engaged in the trade of carrying cargo, including but not limited to tankers and other bulk carriers and barges, or any vessel engaged in the trade of servicing offshore installations. In no event shall this section be construed to limit access for fishing (including kelp harvesting), recreational, or research vessels.

To the extent consistent with international law, within 1 nmi (1.8km), NOAA would prohibit traffic by commercial cargo vessels and offshore service vessels. Commercial fishing, kelp harvesting, research, enforcement, and recreational vessels, would not be affected.

This regulation will reduce certain environmental impacts within 1 nmi (1.8km) from large commercial vessels including: (1) visual and acoustic disruption of hauled out seals and sea lions, nesting seabirds, and whales; (2) possible accidents involving groundings or collisions with nearshore vessels; (3) routine or accidental discharge of pollutants (from ballast discharge, tank washing, and bilge bunkering) directly into important nearshore habitats; and (4) aesthetic intrusion on the view from the islands.

It is difficult to predict what level of human intrusion will disturb marine mammals and birds. Frequently, birds will act as sentinels; warning signals by birds will cause hauled out pinnipeds to flee. Shyness varies according to species, time of year, location of the animals, and nature of the disturbance, among other factors (Beach, 1979, personal communication).

DeLong (1975) reported that the mere sight of a passing vessel off crowded pinniped haulout areas has been sufficient to cause a stampede into the ocean. If pups are in the hauled-out herd, larger seals or sea lions may trample, kill, or injure smaller animals in their rush to the sea. Stampedes may also cause permanent separation of pups from their parents as a result of the confusion. Similarly, a ship passing near the shore may frighten nesting birds and leave chicks and eggs unprotected. However,

other reports indicate that on occasion pinnipeds may show relative indifference to small vessels as long as they do not land or make noise.

As noted in section E.3.d., a significant amount of vessel traffic currently uses the Santa Barbara Channel. A U.S. Coast Guard survey reported a daily average load of nine large vessels (300 feet or 90m, or even longer) and seven medium (100-299 feet or 30-90m long), small (less than 100 feet or 30m) or tug-in-tow vessels en route along the Traffic Separation Scheme (TSS) in a northerly direction (Cherney, et. al., 1978). In addition, current traffic levels are likely to increase as a result of new southern California offshore oil production and a number of other maritime projects now being planned. If vessels remain in the TSS, they will not infringe on the 1 nmi (1.8km) buffer (Figure F-14). While compliance with the TSS has been good (Adie, 1979, personal communication), it is not mandatory; vessels can and occasionally do enter nearshore waters.

In addition to disturbing marine mammal and seabird rookeries, nearshore vessel traffic would create an aesthetic impact out of character with the present wilderness and recreational features of the islands and surrounding waters. Tankers and freighters transitting the Channel are substantially larger than other craft in the area, ranging in length from slightly less than 100 feet (30m) to more than 300 feet (90m). On the other hand, commercial fishing boats range in size from about 35 feet (10m) to 85 feet (26m) and most recreational vessels average approximately 35 feet (10m) (Johnson, 1979, personal communication; Larson, 1979, personal communication). The DFG presently protects particularly sensitive areas from small boat intrusion through its Ecological Reserve Program (see Section F.1.b). OCS supply and crew boats,

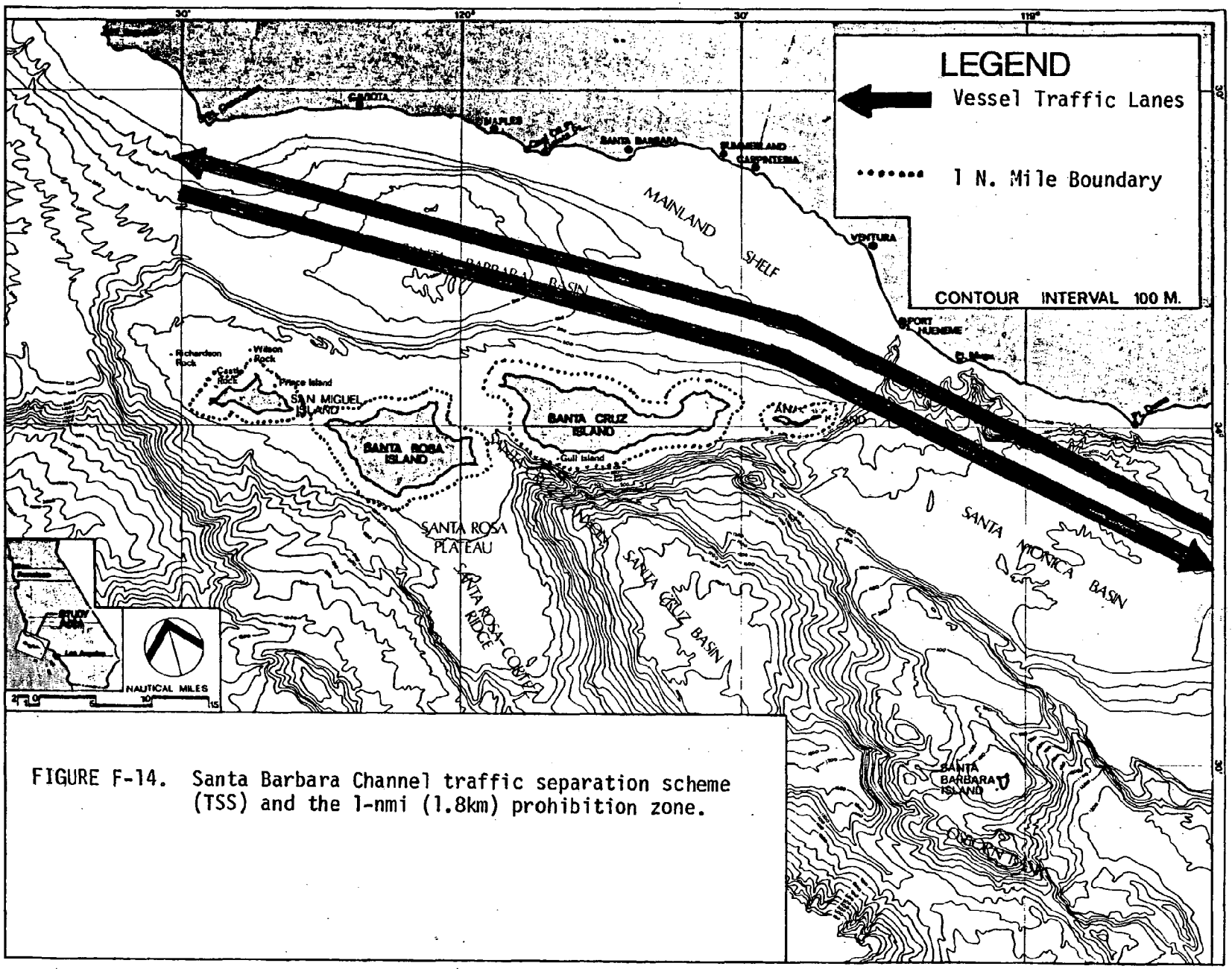

FIGURE F-14. Santa Barbara Channel traffic separation scheme (TSS) and the 1-nmi (1.8km) prohibition zone.

although they do not generally exceed 65 feet (20m) (Cassel, 1979, personal communication), have no need to enter nearshore waters and are therefore subject to the regulatory prohibition.

Finally, the restriction on some commercial traffic within 1 nmi (1.8km) reduces the risk that vessels will collide with the smaller recreational, fishing, or other boats. The nearshore area is more treacherous to navigate due to shallow rocky areas. Prohibiting nearshore navigation by larger vessels would thus reduce both near-island spills and pollution resulting either from collisions or from accidental groundings.

Exclusion of certain vessels from a 1 nmi (1.8km) band around the islands will not result in extended travel times to port or other major impacts on commercial shipping because vessels generally adhere to the TSS. In fact, it is the most direct route for transitting the region. Those vessels which have any need to be present in this particular nearshore zone are exempted from the regulation.

The final proposed Designation document precludes the regulation of navigation within the present TSS or any future port access route (PAR) designated by the Coast Guard provided such PAR is not designated within the 1 nmi area of concern. This provision ensures protection of the sensitive area while avoiding any duplication of , or interference with, the Coast Guard's navigational expertise.

5. Disturbing Marine Mammals and Birds by Overflights

No person shall disturb seabirds or marine mammals by flying motorized aircraft at less than 1000 feet over the waters within one nautical mile of any Island except:

(A) for enforcement purposes;

(B) to engage in kelp bed surveys; or

(C) to transport persons or supplies to or from an Island.

As for vessels, the prohibition on disturbance by overflights below 1000 feet (305m) is designed to limit potential noise impacts--particularly those that might startle seals and sea lions along the nearshore margins of the sanctuary. It would complement the existing California Fish and Game regulation (which prohibits overflights below 1000 feet (305m) over San Miguel, Anacapa, and Santa Barbara Islands) by extending prohibitions out over adjacent water areas where these animals forage. It would also parallel the National Marine Fisheries Service's interpretation regarding overflights under 1000 feet as harrassment in an area where disturbing whales is likely. This regulation would affect recreational aircraft and some charter airline groups which fly passengers over the islands to enjoy the scenery or observe whales. As noted in section E.3.g., two companies presently charter planes for nature observation. In addition, a number of private planes in the area may, on occasion, fly over migrating gray whales around the islands.

This regulation will contribute to the protection of natural, undisturbed behavior patterns of marine mammals and seabirds concentrating and breeding along island shorelines. Necessary and reasonable uses of the area's air space, such as Coast Guard surveillance, kelp bed surveys, landing at island airstrips, and military operations, would be exempted. Since no commercial airlines (other than the above mentioned charters) fly regular routes over the islands at these low altitudes, this regulation should pose no burden on other commercial airline carriers.

Although the charter planes often fly as low as 75-100 feet (23-30m) and private planes on occasion as low as 50 feet (15m) (Glendinning, 1979, personal communication), marine mammals can still be seen from altitudes of 1000 ft. (305m) or above.

6. Removing or Damaging Historical or Cultural Resources

No person shall remove or damage any historical or cultural resource.

This regulation is aimed at protecting archaeological or paleontological resources from damage and/or removal. Additionally, NOAA will seek listing of identified resources on the National Register of the National Historic Preservation Act. Listing in the National Register would make possible grant and survey funds from the Secretary of the Department of the Interior (DOI) (Heritage Conservation and Recreation Service) to study the artifacts and identify their distribution. Listing on the National Register also insures that proposed Federal activities which could affect the resource are carefully reviewed. This regulation should not significantly affect activities within the sanctuary, except the

collection of historical artifacts by recreational divers.

d. Other Regulations

--Amendments

California's Coastal Zone Management Program has been approved under Section 306 of the Federal Coastal Zone Management Act. Consequently, any activity conducted or supported by a Federal agency which directly affects California's coastal zone must be consistent with this program to the maximum extent practicable.

The proposed regulations provide that any significant change in the extent to which various activities are prohibited within the sanctuary automatically will be considered to have a direct effect on the coastal zone and will require NOAA to provide the State with a consistency determination.

In addition, should California determine that certain activities no longer need to be prohibited (for example, that technology has progressed to the point where hydrocarbon production no longer poses unacceptable risks even in nearshore areas) and propose to relax the restrictions on activities within State waters imposed by State law, NOAA will propose similar changes to the sanctuary regulations unless it determines such changes would be clearly inconsistent with the sanctuary. Of course, there would be no guarantee that such a change would be adopted as proposed after the rulemaking procedures were completed. In addition, California can always impose stricter requirements on activities in State waters than provided by the sanctuary. Thus California is pro-

vided with a considerable measure of assurance that the sanctuary will continue to respond to its coastal issues and need.

--Permits for certain research activities

Permits to conduct specific research activities which are otherwise prohibited by sanctuary regulations may be issued by the Assistant Administrator of the Office of Coastal Zone Management if such research is: (1) directly related to the resources of the sanctuary or (2) to further the sanctuary's education value, or (3) for salvage or recovery operations.

A permit system would allow research activities which would otherwise be prohibited by sanctuary regulations. For instance a study of the effects of introducing pollutants could be permitted if it would contribute toward increased understanding of the sanctuary area and its resources and not cause substantial harm. The primary advantages of the permits would be to allow research projects which could not be allowed on an uncontrolled basis and to enable more effective management of the resources. OCZM would seek to coordinate its permit process with that administered under The Marine Mammal Protection Act, the Endangered Species Act, and any systems implemented at the Channel Islands National Park.

--Defense Activities

The regulations shall not prohibit any activity conducted by the Department of Defense that is essential for national defense or because of emergency. Such activities shall be conducted consistently with the sanctuary regulations to the maximum extent practicable.

The Navy has ongoing efforts to protect the natural marine resources of San Miguel Island. These include turning management authority for San Miguel Island over to the National Park Service and conducting its activities in areas as far away as practicable from key marine mammal and seabird concentration points such as Point Bennett on San Miguel Island.

NOAA/Navy consultation efforts might enhance protection of marine life in the area. Increased protection might be realized through monitoring and studies which would coordinate military operations and provide guidance to assure minimum interference with critical life stage periods and habitat areas for significant marine life. Since military operations necessary for national defense or emergency will not be prohibited, the sanctuary will not significantly inhibit military activities.

A potential threat to marine birds and mammals is the United States Air Force's Space Shuttle Vehicle System (SSVS). This project is expected to create overpressures resembling jet aircraft sonic booms in and around the northern Channel Islands during both takeoff and reentry (see Section E.3.e). The Air Force is now conducting a special noise impact study to evaluate the intrusive effect which these intermittent flights could have upon island fauna, including seabird and marine mammal populations, particularly on San Miguel Island (Wooten, 1979, personal communication).

In the proposed sanctuary, NOAA and the Air Force would consult both during this impact assessment period and throughout the life of the SSVS. The effects upon marine birds and mammals could be closely monitored and, wherever possible, joint steps could be taken to minimize environmental harm without hindering the program's effectiveness

--Fishing and Plant Harvesting

Fishing and plant harvesting are not subject to sanctuary regulation (except with respect to discharges.)

In its decision advising NOAA to proceed with the preparation of a Draft Environmental Impact Statement for the proposed marine sanctuary, the California Coastal Commission (CCC) also recommended that the management of living marine resources remain under the jurisdiction of the California Department of Fish and Game (DFG) and the Pacific Fisheries Management Council (PFMC). In its evaluation of this issue, NOAA considered whether, under the present regulatory structure, sufficient protection for sanctuary resources existed. At present, fishery resources in the proposed sanctuary do not appear to be suffering from overharvesting (Frey, 1980, personal communication).

NOAA did evaluate the possibility of proposing some sanctuary management of this activity. However, the existing management authorities, the California DFG within State waters and the PFMC beyond State waters, have comprehensive management authority over these resources. Moreover, the long term interests of these agencies parallel those of the marine sanctuary: ensuring healthy stocks and protecting important habitat. Therefore, no signi-

ficant advantage would be gained by adding the additional perspective of the sanctuary managers to decisions on management of these stocks and, by relying on the existing arrangements, NOAA will avoid duplication of regulations and programs. In addition, the close coordination and consultation which has already been initiated between the DFG and NOAA and which will be expanded to include the PFMC, indicates that sanctuary concerns, if any, will be fully communicated to the authorities dealing with these ongoing management issues.

NOAA will consider the possibility of making funds available for technical assistance for studying the area's marine finfish, shellfish, and plant resources and for strengthening the present enforcement capabilities of the DFG and other enforcement entities including the National Park Service and the Coast Guard.

--Emergencies

Activities necessary to respond to an emergency threatening life, property, or the environment are exempted from the proposed sanctuary regulations described above. Thus, uses of the area such as for harbors of refuge or during air-sea rescue operations are allowed in an emergency, even though the action would otherwise violate marine sanctuaries regulations.

F.3. ALTERNATIVE 3

Boundaries

The sanctuary consists of those waters off the coast of California adjacent to the northern Channel Islands and Santa Barbara Island, seaward to a distance of 6 nautical miles (11.1km).

The non-regulatory aspects of the proposed marine sanctuary--assessment, education, long term planning and coordination--parallel those set out and discussed for the preferred alternative, with one exception. The differences between this alternative and the preferred relate generally to the degree and stringency of regulation. The boundary and the proposed regulations which were considered for discharges, removing or damaging historic or cultural resources, defense activities, and fishing and plant harvesting are the same and have the same environmental consequences as those discussed in the preferred alternative. More stringent regulations for hydrocarbon operations, seabed alterations, operations of vessels and aircraft, and firearms, as well as management provisions, are described below, and alternative 3 is compared to the preferred alternative at the end of this section.

Prohibited Activities

Hydrocarbon operations

(a) Hydrocarbon exploration, development and production activities are prohibited except pursuant to any lease executed prior to the effective date of these regulations which is located entirely within the sanctuary. Operations on such leases and the laying of any pipeline is allowed subject to paragraph 935.6(b), and all prohibitions, restrictions, and conditions imposed by applicable regulations, permits, licenses, or other authorizations and consistency reviews including those issued by the Department of the Interior, the Coast Guard, the Corps of Engineers, the Environmental Protection Agency, and the California Coastal Commission pursuant to the Coastal Zone Management Act and its implementing regulations.

(b) No person may engage in any hydrocarbon operation unless the following oil spill contingency equipment is available at the site of such operation.

(1) 1500 feet of open ocean containment boom on a boat capable of deploying the boom:

(2) one oil skimming device capable of open ocean use; and

(3) fifteen bales of oil sorbent material.

(c) Resources underlying tracts located partially within the sanctuary may be recovered by directional drilling from platforms outside the sanctuary boundaries.

The environmental consequences of prohibiting operations on future leases within 6 nmi (11.1km) are the same as those of the preferred alternative. Alternative 3 is, however, more stringent because the siting of drilling rigs and platforms within the sanctuary is prohibited, except on tracts 243 and 244 which are located entirely in the proposed sanctuary. Without this exclusion, the lessees of tracts 243 and 244 would be completely prohibited from developing their lease. The prohibition on operations affects these existing tracts: 203, 204, 205, 243, 244, 245, 246, 247, 289, 290, and 291 (see Figures F-12 and F-13).

Under this alternative, resources from these tracts may be recovered only by drilling from platforms situated more than 6 nmi (11.1km) from the islands.

Generally, this prohibition would extend the level of resource protection provided by the preferred alternative's prohibition of oil and gas operations on future leases within 6 nmi (11.1km) around the five islands (except for tracts 243 and 244). This action would further lessen the risk of oil spills and routine discharges reaching sensitive nearshore resources in toxic quantities and would increase the response time available for at-sea oil spill containment should a spill occur on an existing lease. Supply boat traffic and other disturbances associated with oil and gas development would also be reduced near the islands.

The economic effects of prohibiting the location of platforms and rigs on existing leases within 6 nmi (11.1km) of the islands are difficult to quantify. Operators can still exploit some resources in the sanctuary from platforms located beyond the 6 nmi (11.1km) boundary, but this siting requirement is likely to increase the cost of reaching these reserves and/or reduce the total amount of reserves ultimately recoverable from that lease. Although no drilling is currently occurring within 6 nmi (11.1km) of the islands, several adjacent discoveries have been made. For example, tract 202 and the adjacent tract 203, are being developed by Union; a platform--Gina--is to be located on tract 202. Platform Gina will, be approximately 9 statute miles (14.4km) from Anacapa Island (Adams, 1979, personal communication). Discoveries have also been made on tracts 204 and 205. Because of the traffic separation scheme (TSS) and policies against siting in it, the exploratory wells to define these reserves were drilled north of the TSS and thus further from the islands. Because the rest of

the reserve appears to underlie tracts 208 and 209 (north of the islands -- see Figures F-12 and F-13), the platform will probably be sited north of the northerly TSS lane and thus well beyond the 6-nmi (11.1km) boundary (Adams, 1979, personal communication).

Because tracts 245-247 south of Santa Rosa Island have had no exploratory wells and tracts 289-291 near Santa Barbara Island have had one, no reliable estimate of reserve potential, location of reserves, or possible platform location can be made (Adams, 1979, personal communication). Chevron has applied for a permit for exploratory drilling of one well on tract 245 and will carry out operations in 1980 (California Coastal Commission, 1980).

The rationale for and effects of NOAA's required additional onsite oil spill contingency equipment are discussed under alternative 2, the preferred alternative.

Alteration of or Construction on the Seabed

Within the sanctuary, no person shall dredge, drill, or otherwise alter the seabed in any way, nor construct any structure, except for navigation aids (or in connection with any hydrocarbon exploration or exploitation activity or the laying of pipelines otherwise allowed by sanctuary regulation).

This regulation differs from that of the preferred alternative by extending the prohibition over the entire sanctuary area rather than only within 2 nmi of the islands. This expanded prohibition offers slightly greater protection from displacement or sediment smothering to the benthic resources of the proposed sanctuary; however, it would provide relatively little additional protection to marine birds and mammals, and shallow subtidal and intertidal organisms.

Operation of Commercial Vessels

Except to transport persons or supplies to or from an Island, no person shall operate within one nautical mile of an Island any vessel engaged in the trade of carrying cargo, including but not limited to tankers and other bulk carriers and barges, or any vessel engaged in the trade of servicing offshore installations. In no event shall this section be construed to limit access for fishing (including kelp harvesting), recreational, or research vessels.

Within the remaining portions of the sanctuary:

> U.S. flag and, to the extent consistent with international law, foreign flag vessels (except for fishing, military, kelp harvesting, enforcement, research, and recreation vessels) traveling parallel to established shipping lanes shall remain in those lanes.

Alternative 3 incorporates from alternative 2, the prohibition on most commercial vessel traffic within 1 nmi (1.8km) of the islands. In addition, alternative 3 requires that all commercial traffic -- U.S. flag and, to the extent consistent with international law, foreign flag vessels -- traveling parallel to established shipping lanes must remain in shipping lanes while transitting sanctuary waters.

As discussed under the preferred alternative, most commercial traffic already follows the traffic separation scheme. Furthermore, the Coast Guard has begun studying the possibility of designating a port access route which would be mandatory in the Channel. This regulation would ensure that affected traffic would remain at a greater distance from the Islands than dictated by the preferred alternative which would simply prohibit certain traffic in a 1 nmi area. At least in the short term, this would add some protection from trip shortcuttings, either through Island passages or closer to shore, thus removing certain collision, intrusion, and pollution risks from the Islands' nearshore sensitive resources, discussed in the preferred alternative and in Section E. Since few large commercial vessels have used such shortcuts, neither major environmental benefits nor inconvenience to commercial shipping traffic is envisioned.

Generally speaking, requiring vessels to adhere to designated shipping lanes is an action pursued for the safety of navigation. If mandatory lanes within the sanctuary would decrease the general risk of vessel collision and subsequent spills of certain cargo, such requirements could reduce the threats of harm to sanctuary resources from pollution. The on-going Coast Guard study concerning the designation of a PAR in the Channel is considering such issues of navigational safety, but the conclusions of the study are currently unavailable.

Disturbing Marine Mammals and Birds by Overflights

Within 1 nmi of any Island, no person shall disturb seabirds or marine mammals by flying motorized aircraft at less than 1000 feet (305m) except:

(A) for enforcement purposes;

(B) to engage in kelp bed surveys; or

(C) to transport persons or supplies to or from an Island.

Within the remaining portions of the sanctuary no person shall fly any aircraft at less than 500 feet (152.1m).

NOAA's regulation of overflights under alternative 3 would include and expand upon regulations described under the preferred alternative. In addition to prohibiting overflights below 1000 feet (305m) within 1 nmi (1.8km) seaward of the mean high tide line of the islands and exposed rock, NOAA would prohibit aircraft flights below 500 feet (152m) over all other areas of the sanctuary.

This regulation would extend protection to marine mammals and birds from low flight engine noise to offshore areas of a 6-nmi (11.1km) sanctuary, as well as the more sensitive nearshore areas. The purpose of this added regulation is to protect swimming marine mammals from harassment by aircraft engaged in whale watching or other activity. As described under the preferred alternative, this regulation would affect only some charter planes and recreational flyers; commercial carriers do not fly at such low altitudes and military planes and kelp survey flights are exempt. This regulation would not supercede more stringent regulations pursuant to the Marine Mammal Protection Act.

Firearms

No person shall use firearms, except as necessary for military operations and enforcement.

This regulation is designed to protect the area's resources from direct harm and indirect disturbance, as well as to protect the safety of sanctuary users. Because State and Federal regulations (see section F.1.b.) prohibit the use of firearms in many situations, the impacts of this prohibition on sanctuary users are expected to be minimal.

Other Activities

Fishing and Plant Harvesting

Fishing and plant harvesting are not subject to sanctuary regulations, except in specified research zones (see Management, below).

The implications of restricting the harvesting of living marine resources in specified research zones are discussed in the Management section. Otherwise, the environmental consequences of this regulation are the same as those discussed in the preferred alternative.

Management

The management system applied under this alternative would be the same as that described under the preferred alternative, except that this alternative would establish specific research zones in the sanctuary. Because of similarities between alternative 3 and the preferred alternative, the discussion focuses on establishing additional research areas.

The purpose of establishing research zones would be to dedicate areas within the sanctuary to research. One of the primary purposes of these sites is to gather baseline information on sanctuary conditions which reflect as closely as possible the natural undisturbed state of ecosystem processes, biotic diversity, abundances, and general environmental conditions. Neither the exact location, number, or size of these areas has been selected; such specifics would be developed after a more thorough consultation with area researchers, area user groups, and applicable authorities, such as the California DFG. In general, the system of sanctuary research areas envisioned might include perhaps three to five sites of variable sizes dispersed throughout the sanctuary (e.g., one or two off San Miguel, one off Anacapa Island, and one off Santa Barbara Island).

Within these research zones, only selective scientific studies such as taking water samples or limited numbers of marine organisms for laboratory analysis would be allowed. Other uses within reserves zones would be limited to those with negligible impacts. Boat access would be allowed on a case-by-case basis but all consumptive or potentially polluting/disturbing uses would be prohibited. Commercial and recreational fishing would be limited to areas outside research zone boundaries. Discharges, transit by large vessels, pipelines, and other potentially disruptive uses

would similarly be excluded. Research would be allowed in these zones under permit from sanctuary managers and would be controlled to prevent significant impact to natural resources. NOAA would seek inclusion of these marine research zones in existing systems which identify and/or set aside areas solely for research purposes. Examples include the National Science Foundation's system of Experimental Ecological Reserves and the Federal Committee on Ecological Reserves' system of Research Natural Areas.

This management measure would result in an improvement in natural conditions within established research zones. The extent of improved protection would be proportional to the extent that disruptive activities are excluded. The information developed from studies within these zones will assist sanctuary managers in assessing effects other sanctuary users might have on different portions of the sanctuary. In this manner, research zones should have a beneficial effect of areas beyond their boundaries through their contribution to improved management capability. The establishment of research zones would thus recognize research interests as representing a valuable ocean use which has a right to the exclusive use of localized ocean areas in much the same manner other areas are set aside for recreation, military activities, or oil and gas development.

The establishment of research zones could limit and perhaps displace several other uses of the area's resources, most notably fishing and plant harvesting and various recreational activities. The extent of these impacts would be proportional to the size of the area and the intensity to which it is currently used.

The displacement of uses, such as recreation, from these research areas may intensify use and impacts in other ocean areas. For example, the prohibition of recreational diving from a previously available area could lead to increased diving pressure in another area. NOAA would try to minimize such potential impacts and concerns by working closely with both area users and research interests on the selection of areas. Areas with high research value and minimal use for fishing and plant harvesting and recreation would be sought.

Comparison with the Preferred Alternative

Although Alternative 3 proposes more stringent regulation of certain activities and might be viewed as more environmentally protective than the preferred alternative, it has been rejected for several reasons.

The proposed sanctuary prohibition of any exploration, development and production activities on existing leases within the proposed sanctuary does not appear appropriate at this time. In some situations, depending on geologic and other factors which vary in each case, the slant drilling which might be required to explore and extract resources may pose a range of technical problems for operators, including increased time and cost on site, and increased risk of adverse geological conditions. These questions, as well as the extent to which the requirement may dimish the extent of recoverable resources, appear to be appropriate for case-by-case consideration, evaluating all information available.

NOAA has rejected the possibility of sanctuary review and certification of each application for activities on existing leases within the 6 nmi boundary primarily because such review is now exercised by both the United States Geological Survey and the California Coastal Commission. In particular, the review by the California Coastal Commission gives primary consideration to the protection and preservation of the sensitive Island and marine resources within the State's coastal zone. The Commission applies policies and regulations governing the protection of marine resources, location of oil spill control equipment, and the siting of development adjacent to environmentally sensitive areas. For instance, in its review of Chevron's consistency certification of its permit for drilling one exploratory well on Tract 245, approximately 1.7 nmi inside the proposed sanctuary boundary, the Commission required that operations not begin before June 15, 1980, in order to reduce the risks to the large number of harbor seals present in the spring, and required a special drill for deployment of oil spill containment equipment (Baird, 1980, personal communication). In its staff recommendation which found Chevron exploratory permit consistent, the Commission noted that location of a production platform within 6 nmi of the Channel Islands would not be consistent with the California Coastal Management Program because a production platform would involve various activities posing unacceptable threats to the sensitive marine resources in this zone and emphasized that the exploratory operations were to proceed with full knowledge of this policy (California Coastal Commission, 1980).

In light of the existing case-by-case agency reviews by the USGS and the California Coastal Commission, and because there are only sixteen tracts presently leased within the 6 nmi boundary which restricts significantly the extent of possible operations in any

event, sanctuary restrictions do not presently appear necessary. Should future data support reconsideration of this matter, regulatory changes can be proposed and subjected to public review and comment.

The regulation prohibiting seabed alteration and construction throughout the sanctuary would provide little protection beyond the preferred alternative to marine birds and mammals and intertidal and nearshore subtidal organisms. These resources are most vulnerable to disturbance in the nearshore areas close to breeding and haulout sites. Known concentrations of special benthic and intertidal organisms also occur primarily close to the Islands. Although there may be important benthic resources beyond 2 nmi from the Islands which could be smothered or otherwise damaged by seabed alteration, there is not enough evidence of resource concentration to justify a blanket prohibition on seabed alteration dredging, and construction beyond 2 nmi from the Islands. Existing authorities (the California Coastal Commission and the Corps of Engineers) already provide case-by-case review of such activities.

The regulation prohibiting most commercial vessels from the waters within one nautical mile of the Islands is identical to the regulation in the preferred alternative. Vessel traffic beyond one nautical mile from the Islands is considerably less likely to disrupt critical bird and mammal behavior, and since most vessels observe the TSS anyway, additional regulation requiring vessels to stay within the shipping lanes does not seem necessary. Furthermore, of course, such a requirement could be applied to foreign flag vessels only to the extent consistent with international law, which may limit its impacts in an area like the Channel where foreign flag traffic is substantial. Most importantly, the U.S.

Coast Guard has authority to designate mandatory port access routes (PAR) and has an ongoing PAR study to determine the desirability of such a measure. If this study indicates that mandatory shipping lanes are necessary in the Santa Barbara Channel, the Coast Guard presumably will designate them on a Channel-wide basis, after considering the complicated issues of use and location, which would provide greater navigational safety than a mandatory VTSS applying only within a 6 nmi sanctuary. In light of this study and the extensive consideration that the Coast Guard is devoting to accommodating other uses and resources of the Channel, including a possible marine sanctuary, imposing mandatory shipping lanes within the 6 nmi boundary through sanctuary regulations is not advisable.

The 500 foot (152m) overflight restriction from 1 nmi (1.8km) to 6 nmi (11.1km) offshore is also not warranted because, as described above in the preferred alternative, the greatest danger from disturbance to marine birds and mammals is at rookeries, resting places, and in the nearshore waters. Beyond one mile from shore, the harassment provisions of the Marine Mammal Protection Act probably provide adequate protection.

The need to restrict firearms is presently unclear. Federal and State laws regulate the use of firearms and hunting of most species in the area; additional regulation does not appear warranted at this time.

The additional controls imposed upon uses, including fishing and plant harvesting, in specified research areas would provide some protection for the area's resources beyond that afforded by the preferred alternative. At the present time, however, the need for an additional level of protection is unclear. Although the

establishment of research zones could have substantial benefits for research, NOAA prefers to work with the California DFG through the State's ecological reserve program to accomplish this. The other aspects of sanctuary management are the same as those in the preferred alternative.

ALTERNATIVE 4

Boundaries

The sanctuary consists of the entire Santa Barbara Channel from Point Arguello to Point Mugu and 12 nautical miles around the northern Channel Islands and Santa Barbara Island.

This sanctuary includes the Santa Barbara Channel from Point Arguello north of Point Conception to Point Mugu east of Anacapa Island and extends 12 nmi (22.2km) seaward from the high water mark around the northern Channel Islands and Santa Barbara Island.

In addition to the resources contained in the preferred alternative, this boundary would encompass other habitats of marine birds and mammals and intertidal and subtidal flora and fuana on the mainland shelf and coast and the Santa Rosa-Cortes Ridge and Plateau. As discussed in Section E, numerous kelp beds dot the mainland coast, fish are harvested throughout the Santa Barbara Channel, seals haulout on the mainland, gray whales migrate through the Channel twice yearly, and recreational boating, surfing, diving, and beach visits are important uses of mainland coast. Several biologically valuable wetlands are also included in this boundary alternative.

At the same time, development and use levels are high beyond 6 nmi for the Islands. Most of the current and past hydrocarbon development in the Channel is near the mainland. Tankers and freighters travel through the Channel in large numbers. Coastal develop-

ment, both residential and industrial, results in the discharge of wastes into the Channel and dredging and construction. Other economically important projects, such as the planned construction of a liquid natural gas terminal at Point Conception, are planned for the waters encompassed in this expanded alternative boundary.

Prohibited Activities

There did not appear to be any need for different regulation of overflights, removing or damaging historical or cultural resources, defense activities, and fishing and kelp harvesting in the expanded area than have already been discussed in the preferred alternative. The possibility of prohibiting discharges in the expanded sanctuary was considered, as was the advisability of alternative regulation of vessel traffic, hydrocarbon operations and placement of structures. Various restrictions on these activities and their relation to the objectives of preserving the marine resources at acceptable costs without significant duplication of existing processes are discussed below.

Hydrocarbon Operations

(a) Except as provided in paragraph 935.6(c), hydrocarbon exploration, development, and production, and the laying of any pipeline is allowed subject to paragraph 935.6(b), and all prohibitions, restrictions, and conditions imposed by applicable regulations, permits, licenses, or other authorizations and consistency reviews, including those issued by the Department of the Interior, the Coast Guard, the Corps of Engineers, the Environmental Protection Agency, and the California Coastal Commission pursuant to the Coastal Zone Management Act and its implementing regulations.

(b) No person may engage in any hydrocarbon operation unless the following oil spill contingency equipment is available at the site of such operation.

(1) 1500 feet of open ocean containment boom on a boat capable of deploying the boom;

(2) one oil skimming device capable of open ocean use; and

(3) fifteen bales of oil sorbent material.

(c) Hydrocarbon exploration, development and production activities within 6 nmi of the Islands pursuant to leases executed on or after the effective date of these regulations are prohibited.

Placement of Structures

Within any vessel traffic separation scheme (VTSS) or port access route (PAR) designated by the Coast Guard or within a quarter nmi thereof, no person shall locate any structures which could be struck by a vessel using or likely to use the VTSS or PAR, except for a navigation aid.

The primary threat to the preservation of the rich and fragile ecosystem in the nearshore Island waters originating from activities beyond the 6 nmi zone and to the wetlands and other resources of the expanded sanctuary under review in Alternative 4 is the risk of major spills from hydrocarbon exploration, development and transporation. A large spill anywhere in the Channel or within a considerable distance seaward of the Islands could reach the Islands and might heavily impact their living marine resources. The results of the 1969 Channel blowout and the Ixtoc incident are cited as evidence of the dangers to the nearshore zones from distant activities. Similar observations are possible concerning

accidents involving tankers transporting hydrocarbons, LNG, or other hazardous substances. Such activities also threaten the nearshore mainland waters and their resources. Various approaches to possible sanctuary control of these risks were considered, with detailed evaluation given to the restrictions embodied in the regulations set forth above.

Within 6 nmi (11.1km) of the northern Channel Islands and Santa Barbara Island, alternative 4 proposes the same restrictions as the preferred alternative, except that the location of structures is prohibited in the tanker lanes and separation zone and within one-quarter nmi (0.45km) of the lanes. In particular, this provision would affect hydrocarbon exploration and production on tracts 203, 204, 205, and 210 within 6 nmi (11.1km) and development on certain leases (including 202, 209, 221, 222, 223, 230A, 231, and 232) beyond 6 nmi (11.1km) from the islands which are traversed by the current tanker lanes or separation zone.

NOAA's restriction on the location of structures in and within 0.25 nmi (0.45km) of shipping lanes in the sanctuary is similar to the California Coastal Commission's (CCC) stated policy for consistency review that location of structures within vessel traffic lanes or within 1650 ft. (500m) of them is inconsistent with the policies and objectives of the California Coastal Plan (California Coastal Commission, 1979). NOAA's restriction would also be consistent with the special condition attached by the Army Corps of Engineers on the recommendation of the Coast Guard to Exxon's permit to anchor a drillship in navigable water for exploratory drilling on tracts 222, 223, 230, 231, 232, and 238. The special condition provided "(t)hat vessels shall not engage in drilling inside sea lanes or within one-quarter nmi (0.45km) of established sea land boundaries" (California Coastal Commission,

1979). The purpose of this prohibition is to eliminate the hazard of a collision or ramming and possible subsequent oil spills, that the presence of a fixed structure within a designated vessel traffic lane or buffer poses to navigation. The Coast Guard is undertaking a major study of the necessity of designating fairways in the Channel within which such structures would be prohibited or a modified version of a fairway where placement would be restricted.

NOAA's requirement for onsite oil spill containment equipment has has the same environmental consequences as discussed in the preferred alternative and is applied for the same reason--to insure more effective at-sea oil spill containment. In alternative 4 however, this stipulation applies to all development around the Islands and in the Channel.

Vessel Traffic

In evaluating the expanded sanctuary, NOAA reviewed the possibility of requiring vessels to adhere to shipping lanes designated by the Coast Guard to the degree consistent with international law. The routing of vessels laden with hydrocarbons and other hazardous substances outside the Channel was also considered. Both requirements are among the actions being evaluated by the Coast Guard in its on-going study of the need to designate port access routes in the Channel area.

Discharges

NOAA considered the possibility of regulating discharges in the entire area included in alternative 4. The limitations on discharges in the nearshore Island zone of the preferred alternative are designed to protect the waters which are heavily used by marine mammals, seabirds and recreationists. There is no discharge from municipal or industrial sites occurring in this smaller area. The territorial waters on the mainland coast receive a variety of discharges and, although recreational use is high, the populations of mammals and birds are fairly scattered in this area. Discharges of various sorts are currently regulated by permit requirements of State and Federal agencies.

Comparison with the Preferred Alternative

Consideration of this larger sanctuary where current and potential development is much greater than within the 6 nmi of the Islands raises issues of resource focus, the practicality of management of the area, and the reasonable form of possible sanctuary regulation.

The marine sanctuary proposal emphasized first and foremost the existence of special resources, worthy of national attention and preservation. The nearshore Island waters contain the most intense concentration of valuable biological resources within the larger area. The use of the nearshore Island waters by seabirds and marine mammals appears to be qualitatively different than their use of other waters of the Channel, although assuredly the birds and mammals do range beyond the 6 nmi boundary. While the territorial mainland waters also have high recreational use, and include valuable wetlands and significant kelp beds, from a

resource perspective, NOAA concluded during its evaluation of the potential sanctuary, that the Island waters comprised an identifiable unit, which also could benefit from the long term planning, research, monitoring, education, and management which a marine sanctuary can provide. While the expanded area described in Alternative 4 also is a valuable marine area rich in ecological and recreational resources, the intensity of certain resources varies considerably. Because the resources are diffuse, among other reasons, the waters of the larger area do not constitute a readily identifiable unit from a management perspective.

While this larger sanctuary might also benefit from management activities, the impact of the program would be diminished. Limited program resources for research, monitoring, surveillance and enforcement would be spread over a much greater area. The benefit to the expanded sanctuary would be less than that for a smaller management area.

With respect to regulatory alternatives, since the expanded boundary includes an area of variable resource concentration and an area which is presently heavily developed and proposed for expanding development, overall prohibitions of activities beyond those already discussed for the 6 nmi area were rejected. That is, even should a large sanctuary be designated, NOAA concluded that only the nearshore Island waters, where development is minimal and resources concentrated, should reasonably be subject to prohibitory regulations. In the nearshore zone prohibitions such as those restricting discharges, activities on new hydrocarbon leases, and certain vessel operations and overflights can add to the protection available for the resources without imposing unacceptable costs. The level and diversity of economic development, in combination with the dispersed resources, renders prohi-

bitions inappropriate in the larger area.

The alternative regulatory approach in the expanded sanctuary would be case-by-case review by the sanctuary of each decision to discharge, perform hydrocarbon operations, or locate a structure in a VTSS. Almost all these decisions are now subject to at least two levels of case-by-case review--once by a Federal agency and once by California Coastal Commission. Given the existence of this case-by-case review, where environmental concerns are taken into account, institution of another level of review for each situation appeared inappropriate.

For instance, NOAA considered the possibility of restricting hydrocarbon activities on any new lease within the Alternative 4 boundaries, either indefinitely or for a specified period, such as a five year moratorium. Even though a majority of the tracts in the Channel, including those near the mainland, have already been leased and other tracts near Santa Barbara have been designated informally as a non-leasing area by DOI and the State of California, such a provision would still affect over 50 tracts. The likelihood of substantial recoverable petroleum resources underlying the tracts still unleased on the mainland side of the Channel, in combination with the concern of industry and other regulating agencies to allow orderly development of resource basins, weighed heavily against a flat prohibition. Furthermore, the resources of particular concern in relation to hydrocarbon operations occur in dispersed areas of concentration and this scattering militates against a prohibitory regulation for the entire expanded area. This conclusion is reinforced by the fact that two levels of agency review of all hydrocarbon operations on new leases already occur. The Federal agencies take environmental considerations into account in lease sale, exploration and devel-

opment decisions and the California Coastal Commission has long exercised its consistency review with a special concern for the preservation of the Islands' nearshore ecosystems.

In summary, the potential economic costs and the differences of the resources indicated a prohibitory regulation was inappropriate. Since the current system provides at least two levels of case-by-case review, a third level of sanctuary review was rejected.

NOAA reached similar conclusions concerning other possible regulations in the expanded sanctuary after an evaluation of the economic costs of prohibition in the sanctuary, the diffuse nature of the resources, and the existing levels of case-by-case review. Prohibitions on discharges in the expanded sanctuary were considered unworkable given the degree of development, particularly along the mainland territorial sea. The blanket prohibition against locating of structures in vessel traffic lanes was rejected in part because there may be extraordinary situations in which such location is necessary. Additionally, as discussed in Alternative 3, action to require adherence to vessel traffic lanes was rejected as premature, since most vessels now adhere to established lanes and the subject of mandatory lanes is under intense study by the Coast Guard.

The role of the sanctuary as a coordinator for all activities on a case-by-case basis in the expanded sanctuary was considered. The primary management need in the larger boundary appears to be coordination of various on-going uses, such as location of drilling structures and routing of vessels. Some coordination questions are currently subject to case-by-case review each time a permit application is considered by a Federal agency and each time

the California Coastal Commission reviews a consistency certification. Some are under review by the Coast Guard in its study of port access routes. The existing institutional structures, while not fully centralized, do provide some coordination of activities. A marine sanctuary overlaid on the existing institutional structures now dealing with questions of coordination on a case-by-case basis is unlikely to add sufficiently to the degree of information exhanged, the data available, or the points of view considered to justify the additional burden which would be placed on limited program resources.

Finally, NOAA also considered whether the expanded boundary and regulation of activities there were required to preserve the nearshore Island resources. The nature of the marine environment is such that restricting activity a considerable distance from the concentration of the resources might be required in order to minimize or eliminate the risk of any harm. This seems particularly true of the risks involved in hydrocarbon exploration, development and transport. NOAA concluded that, while certain activities outside the 6 nmi zone would continue to pose a threat of some harm to the nearshore Island resources, there was no meaningful way to reduce the level of risk without completely banning the activity. Eliminating all drilling and tanker traffic would add to the protection of the proposed sanctuary, but the margin of safety would be purchased at an enormous cost. The objective of the sanctuary program to preserve certain valuable marine sites cannot in every situation be equated with the elimination of all risk of harm at the cost of all other socially and economically valuable activities. Therefore, prohibitory regulations on hydrocarbon production and transport were rejected. Case-by-case review was similarly rejected for the reasons outlined above and because it seemed unlikely to add significantly to the protection of the nearshore Island resources.

In summary, because of the diffuse resource characteristics, the level of economic development, and the present regulatory structure which assures case-by-case review by Federal and State agencies, both overall prohibitory regulation of the activities at issue and case-by-case sanctuary review were rejected as regulatory approaches in any expanded sanctuary. In addition, the greater area and dispersed resources would dilute the impact of sanctuary research, monitoring, and education programs. The resources of the preferred alternative comprise an identifiable unit capable of sanctuary management and likely to benefit from certain regulatory sanctuary measures. On balance, the smaller sanctuary is more appropriate given present program goals and resources.

ALTERNATIVE 5

Boundaries

The sanctuary boundary consists of the waters 3 nautical miles (5.6km) beyond the territorial Sea (State waters) around the northern Channel Islands and Santa Barbara Island.

The 3-nmi (5.6km) "donut" around the northern Channel Islands and Santa Barbara Island excludes State waters. Hence, many of the most important habitats of valuable marine resources that concentrate in the upper Island shelf waters would not be included in the sanctuary. This exclusion, even if cooperative agreements were executed between NOAA and the State, renders long term planning, research, and educational programs less significant because they would not address fully the most important resource areas. This failure to include important natural resource areas within the boundary compromises the potential for the sanctuary designation to assure long term preservation of the critical resources.

Provisions to establish: (1) a Sanctuary Information Center, (2) a registry of research projects, (3) a monitoring program for human uses and sanctuary resources, and (4) an effort to encourage non-consumptive research would be similar to those described under the preferred alternative, except they would apply to a smaller geographic area of less direct resource significance. In terms of research, the exclusion of State waters will significantly lower the number of research projects subject to sanctuary management because: (1) the inshore waters (where marine life tends to

concentrate) are attractive to a greater variety and number of research projects, and (2) the geographic area is significantly smaller. The benefits of this alternative, while covering the same types of impacts described under the preferred alternative, will thus be considerably smaller both in terms of coordination and protection of marine life.

Since the sanctuary boundaries under this alternative almost exclusively include deeper waters where the likelihood of finding archeological resources is remote, initiation of a cultural resource inventory is not considered appropriate. NOAA would seek cooperative agreements with appropriate State agencies to ensure that protective provisions applied in the sanctuary complement and further the resource protection objectives of the adjacent State waters. These agreement would be designed to coordinate State and sanctuary decision making and to reduce the potential that actions by either party would negate resource protection policies and objectives of the other.

The potential regulations concerning hydrocarbon development, discharges of polluting substances, vessel traffic and overflights, defense activities, and fish and plant harvesting, as well as the management provisions, are the same as those in the preferred alternative. Because of the exclusion of State waters from alternative 5, they offer less protection to the resources.

Alternative 5 would offer no additional protection from nearshore vessel traffic and overflights, from alteration of or construction on the seabed, or from damage or removal of historical or cultural resources. Also, because State waters are not included in this alternative, it is possible that oil and gas development could occur within the 3-nmi (5.6km) limit. This is not likely, how-

ever, particularly at San Miguel, Santa Cruz, Santa Rosa, and Anacapa Islands, since State Oil and Gas Sanctuaries have been established in the waters out to 3 nmi (5.6km) around these islands. Within these sanctuaries, oil and gas development is prohibited, except in certain instances to allow a "drainage" sale to protect the State's economic interests. Since oil and gas development would be prohibited in adjacent Federal waters, it is unlikely that State petroleum resources will be drained.

Under alternative 5, littering and discharges could continue shoreward (in State waters) of sanctuary boundaries.

Comparison with the Preferred Alternative

This alternative has been rejected in favor of the preferred alternative for the following reasons. First, in terms of the regulation of the discharge of polluting substances, the regulation as stated is the same, but no protection is provided the particularly important nearshore waters The regulation provides a buffer from the potential impacts of oil and gas development on the Federal OCS, but does not insure that oil and gas development is prohibited in State waters, particularly around Santa Barbara Island.

Primarily, in terms of management, even with cooperative agreements with other agencies and the other sanctuary provisions relating to the information center, promoting awareness of sanctuary resources, registering research projects and encouraging nonconsumptive research, the failure to include the most important natural resource areas within sanctuary boundary compromises and restricts the potential that sanctuary designation will achieve long-term protection of critical resources.

ALTERNATIVE 6

Boundaries

The entire Santa Barbara Channel from Point Arguello to Point Mugu and 12 nautical miles around the northern Channel Islands and Santa Barbara Island, excluding State waters.

This "donut" sanctuary resembles alternative 4, but excludes all State waters -- i.e., all waters within the 3-nmi (5.6km) territorial sea. The remaining waters include portions of the forage and migration areas of important resources, yet leave out the vital waters overlying the upper island shelf. This boundary alternative is the same as that nominated by the County of Santa Barbara, California (Resources, 1978).

The non-regulatory management aspects of the marine sanctuary program would be subject to the same limitations and deficiencies as discussed in Alternative 5.

The regulations on discharges, and policies on defense activities, and fishing and plant harvesting were considered the same as in the preferred alternative except that they would not apply in State waters and would apply throughout the Santa Barbara Channel (excluding territorial waters) and out to 12 nmi around the islands. They therefore, provide no direct protection for the nearshore resources.

Under alternative 6, NOAA would not regulate overflights or the alteration of or construction on the seabed because the exclusion of the nearshore waters renders such prohibition unnecessary. The possible regulation of hydrocarbon activities, location of structures, and vessel traffic considered parallel those discussed in Alternative 4 except that no regulation of nearshore vessel traffic in the most sensitive areas is possible because of the exclusion of the territorial sea.

Comparison with the Preferred Alternative

This alternative has been rejected in favor of the preferred alternative based on a combination of the deficiencies identified in the discussion of Alternative 5 which also excluded the territorial sea and the problems elaborated in the discussion of Alternative 4.

G. RESPONSES TO COMMENTS RECEIVED ON THE PROPOSED CHANNEL ISLANDS MARINE SANCTUARY DRAFT ENVIRONMENTAL IMPACT STATEMENT

This section summarizes the written and verbal comments received on the Draft Environmental Impact Statement (DEIS) and provides OCZM's response to these comments. Generally, responses are made in one or more of the following ways:

(1) Expansion, clarification, or revision of the EIS

(2) Generic responses to comments raised by several reviewers, and/or

(3) Specific responses to the individual comments made by each reviewer.

OCZM will publish all comments in a compendium and distribute it to persons who commented on the DEIS, or anyone else upon request. Comments received after March 7, 1980, are not addressed.

The following are some of the most common issues raised by reviewers:

Generic Comments and OCZM's Responses

GENERIC COMMENT A

Alternative 4 (the entire Santa Barbara Channel from Point Arguello to Point Mugu and the waters extending 12 nautical miles (nmi) around the northern Channel Islands and Santa Barbara Island) should be designated as a marine sanctuary instead of alternative 2 (the proposed sanctuary) for the following reasons:

(1) The natural resources described in the DEIS are found throughout the Channel; indeed, some are most prevalent beyond the boundaries of alternative 2.

(2) Because of the circular nature of the water currents in the Channel, activities occuring in the Channel beyond the 6 nmi sanctuary proposed in the DEIS are extremely likely to affect the waters near the Islands.

(3) Coordinated management of the resources and activities of the proposed sanctuary is only realistically possible on a Channel-wide basis.

GENERIC RESPONSE A

NOAA acknowledges that important biological and ecological resources occur in the Channel beyond the proposed marine sanctuary; for example, numerous kelpbeds dot the mainland coast, fish are harvested throughout the Santa Barbara Channel, seals haul out on the mainland, gray whales migrate through the Channel twice yearly, and recreational boating, surfing, diving, and beach visits are important uses of mainland coast.

Several biologically valuable wetlands are also included in the larger boundary alternative. At least some of these resources are substantially dispersed and some areas within the Alternative 4 boundary are not characterized by particular concentrations of living marine resources.

At the same time, development and use levels are high beyond 6 nmi from the Islands. Most of the current and past hydrocarbon development in the Channel is near the mainland. Tankers and freighters travel through the Channel in large numbers. Coastal development, both residential and industrial, results in the discharge of wastes into the Channel and dredging and construction. Other economically important projects, such as the construction of a liquid natural gas terminal at Point Conception, are planned for the waters encompassed in the Alternative 4 boundary.

In comparison, the nearshore Island waters contain the most intense concentration of certain valuable biological resources within the larger area and the use of the nearshore Island waters by seabirds and marine mammals appears to be qualitatively different than their use of other waters of the Channel, although they do range beyond the 6 nmi boundary. The current level of development in the area is minimal.

Consideration of the larger sanctuary boundary where current and potential development is much greater than within the 6 nmi of the Islands raises issues of the practicality of management of the area and the reasonable form of possible sanctuary regulation.

NOAA has concluded, during its evaluation of the potential sanctuary, that the nearshore Island waters comprise an identifiable unit, which also could benefit from the long term planning, research, monitoring, education, and management which a marine sanctuary can provide. While the expanded area described in alternative 4 also is a valuable marine area rich in ecological and recreational resources, the intensity of certain resources varies considerably.

While this larger sanctuary might also benefit from management activities, the impact of the program would be diminished. Limited program resources for research, monitoring, surveillance and enforcement would be spread over a much greater area. The benefit to the expanded sanctuary would be less than that for a smaller management unit.

With respect to regulatory alternatives, since the expanded boundary includes an area of variable resource concentration and an area which is presently heavily developed and proposed for expanding development, overall prohibitions of activities beyond those proposed for the 6 nmi area were rejected. That is, even should a large sanctuary be designated, NOAA concluded that only the nearshore island waters, where development is minimal and resources concentrated, should reasonably be subject to prohibitory regulations. In the nearshore zone, prohibitions such as those restricting discharges, activities on new hydrocarbon leases, and certain vessel operations and overflights can add to the protection available for the resources without imposing unacceptable costs. The level and diversity of economic development, in combination with the dispersed resources, renders prohibitions inappropriate in the larger area.

The alternative regulatory approach in the expanded sanctuary would be case-by-case review by the sanctuary of each decision to discharge, perform hydrocarbon operations, or locate a structure in a VTSS. Almost all these decisions are now subject to at least two levels of case-by-case review--once by a Federal agency and once by the California Coastal Commission. Given the existence of this case-by-case review, where environmental concerns are taken into account, institution of another level of review for each situation appeared inappropriate.

For instance, NOAA considered the possibility of restricting hydrocarbon activities on any new lease within the alternative 4 boundaries, either indefinitely or for a specified period, such as a five year moratorium. Even though a majority of the tracts in the Channel, including those near the mainland, have already been leased and other tracts near Santa Barbara have been designated informally as a non-leasing area by DOI and the State of California, such a provision would still affect over 50 tracts. The likelihood of substantial recoverable petroleum resources underlying the tracts still unleased on the mainland side of the Channel, in combination with the concern of industry and other regulating agencies to allow orderly development of resource basins, weighed heavily against a flat prohibition. Furthermore, the resources of particular concern in relation to hydrocarbon operations occur in dispersed areas of concentration and this scattering militates against a prohibitory regulation for the entire expanded area. This conclusion is reinforced by the fact that two levels of agency review of all hydrocarbon operations on new leases already occur. The Federal agencies take environmental considerations into account in lease sale, exploration, and development decisions, and the California Coastal Commission has long exercised its consistency review with a special concern for the preservation of the Islands' nearshore ecosystems.

In summary, the potential economic costs and the differences of the resources indicated prohibitory regulation was inappropriate. Since the current system provides at least two levels of case-by-case review, a third level of sanctuary review was rejected. NOAA reached similar conclusions concerning other possible regulations in the expanded sanctuary after an evaluation of the economic costs of prohibition in the sanctuary, the diffuse nature of the resources, and the existing levels of case-by-case review.

Finally, NOAA also considered whether the expanded boundary and regulation of activities there were required to preserve the nearshore island resources. The nature of the marine environment is such that restricting activity a considerable distance from the concentration of the resources might be required in order to minimize or eliminate the risk of any harm. This seems particularly true of the risks involved in hydrocarbon exploration, development and transport. NOAA concluded that, while certain activities outside the 6 nmi zone would continue to pose a threat of some harm to the nearshore island resources, there was no meaningful way to reduce the level of risk without completely banning the activity. Eliminating all drilling and tanker traffic would add to the protection of the proposed sanctuary, but the margin of safety would be purchased at an enormous cost. The objective of the sanctuary program to preserve certain valuable

marine sites cannot in every situation be equated with the elimination of all risk of harm at the cost of all other socially and economically valuable activities. Therefore, prohibitory regulations on hydrocarbon production and transport were rejected. Case-by-case review was similarly rejected for the reasons outlined above and because it seemed unlikely to add significantly to the protection of the nearshore island resources.

In summary, because of the diffuse resource characteristics, the level of economic development, and the present regulatory structure which assures case-by-case review by Federal and State agencies, both overall prohibitory regulation of the activities at issue and case-by-case sanctuary review were rejected as regulatory approaches in any expanded sanctuary. In addition, the greater area and dispersed resources would dilute the impact of sanctuary research, monitoring, and education programs. The resources of the preferred alternative comprise an identifiable unit capable of sanctuary management and likely to benefit from certain regulatory sanctuary measures. On balance, the smaller sanctuary is more appropriate given present program goals and resources.

GENERIC COMMENT B

The status quo, with 11 Federal, 7 State, and various local authorities, already provides enough protection for the natural resources described in the DEIS. A marine sanctuary would only add an unnecessary and expensive layer of Federal bureaucracy.

GENERIC RESPONSE B

The many Federal and State agencies which exercise authority in the proposed sanctuary provide a considerable degree of regulatory protection to the resources of the area. However, an area as biologically rich and important as this deserves the particular attention to the entire range of issues involved in long term preservation. Marine sanctuary designation will provide this management framework which does not presently exist.

The marine sanctuary program, unlike other regulatory programs which have jurisdiction in the area of the proposed sanctuary, offers a mechanism to focus on this particular geographically defined marine area and to provide comprehensive planning to preserve the resources of the site. Other statutes either focus on management of much smaller areas, single resources, or have resource protection only as an ancillary goal. Marine sanctuary planning and management also includes provision for research and monitoring of the condition of the resources to assure long-term protection and maximum safe use and enjoyment; other statutes do not provide in most cases the same geographically focused, comprehensive research and monitoring effort. An educational element of the program heightens public awareness of the value of the resources and thereby reduces the potential for harm; again, this aspect of the marine sanctuary program is unavailable under the present system.

The marine sanctuary proposal can fill an important regulatory role. Presently 11 Federal, 7 State, and a multitude of regional and local government agencies are vested with some regulatory authority over certain activities within the area. These authorities provide a considerable degree of protection for marine resources in general; the Channel Islands National Park and the Ecological Reserves around San Miguel, Santa Barbara, and Anacapa Islands protect the resources within those areas in particular. No entity looks to the welfare of all the living resources or the ecosystem of the marine area defined by the sanctuary proposal. Cumulative impacts on the resources, arising from various activities subject to the jurisdiction of separate agencies, may escape the attention of any agency.

The extraordinary diversity of natural resources concentrated in the waters around the northern Channel Islands and Santa Barbara Island deserves additional attention beyond that provided by the present institutional structure. For instance, the resource protection afforded by the Channel Islands National Park is aimed primarily at the land based resources of the northern Channel Islands and Santa Barbara Island, and the ecological reserves discussed above include only the extreme nearshore zone, providing no buffer against outside activities.

Although certain uses of the area do not now seriously threaten resource quality here, they could have more significant impact if and when activity intensities grow. The current multitude of regulatory authorities, many of which have different objectives and jurisdictions, may not be able to respond on the basis of ecosystem issues to future activities. Furthermore, some agencies suffer from limited enforcement resources. Because these waters contain so many valuable resources which in turn support so many beneficial uses, the special planning and study possible in a marine sanctuary is necessary to ensure that they are used and preserved in the future as effectively as possible.

GENERIC COMMENT C

The regulation on vessel traffic is worded in a confusing manner and could be interpreted as prohibiting recreational and research vessels within 1 nmi of the Islands. Even if it is not NOAA's intent to impose such a restriction, enforcement agents and future managers may not be aware of NOAA's intent. A prohibition on recreational boating would have a significant negative impact on thousands of recreational boaters in southern California. Unless the language is clarified so that recreational boating is clearly allowed, the sanctuary should not be designated.

GENERIC RESPONSE C

The proposed regulation on vessel traffic was worded in a somewhat confusing manner. NOAA never intended to prohibit recreational vessel traffic near the northern Channel Islands and Santa Barbara Island. The prohibition on certain commercial vessel traffic within one nautical mile of the Islands was aimed at tankers, freighters, barges, and OCS

supply vessels. The regulation on vessel traffic has been rewritten to clarify this intent (see Section F.2.c.4 and Appendix 1).

GENERIC COMMENT D

The marine sanctuary should institute a moratorium on leasing for oil and gas development throughout the area covered by alternative 4. An oil spill anywhere in the Channel would be likely to affect the resources near the Channel Islands and the other resources of value located throughout the Channel. Most of the tracts with high resource potential have already been leased, as is indicated by the fact that many tracts offered for lease in the Channel in OCS Sale #48 received no bids. Finally, the number of rigs and platforms already located in the Channel or planned for existing leases already pose a dangerously high threat to vessel traffic and other activities in the Channel.

GENERIC RESPONSE D

While it is true that a major oil spill anywhere in the Channel could harm the natural resources of the area, including those around the Islands, the risk of damage from such a spill must be weighed against the costs of the exclusion of oil and gas operations. The economic consequences of prohibiting future oil and gas development are substantial. The Santa Barbara Channel is an area of proven offshore oil reserves; the oil and gas industry ranks it as the third highest offshore area for oil and gas exploration. While no economically recoverable reserves have been discovered within 6 nmi of the Islands to date, oil production in other portions of the Channel has been occurring since 1896. Although not all the tracts offered for lease in OCS Sale #48 received bids, 54 tracts were leased, most of which were in the Channel. Depending on the success of exploratory drilling on those and other tracts in the Channel, the remaining tracts may be leased in future lease sales, including Sale #68, scheduled for June 1982. The oil spill contingency requirements, operating orders, and lease stipulation imposed by the Department of the Interior and the consistency requirements imposed by the California Coastal Commission provide some protection against oil pollution. While these precautions cannot completely forestall the possibility of an oil spill, the distance between most hydrocarbon activities in the Channel and the nearshore Island waters, which the proposed sanctuary buffer guarantees, will provide a minimum amount of time for cleanup activities before the oil can reach shore, and will also allow time for the spilled oil to weather and thus lose its most toxic parts before it reaches the nearshore Island waters. (See also Generic Response A.)

GENERIC COMMENT E

There is no proof that oil and gas development has harmed the natural resources of the Channel Islands, although offshore petroleum development has been occurring in the Santa Barbara Channel for years. Even the

1969 oil spill from Platform A had no long term effects on the biota of the Channel. Furthermore, natural oil seeps add far more oil to the Channel than offshore oil and gas operations. In fact, platforms provide an artificial reef environment on and around which many species of fish and shellfish thrive. Therefore, NOAA should not prohibit new oil and gas development.

GENERIC RESPONSE E

There remains considerable controversy surrounding the probable long term effect of oil and gas production activities in these Island waters, or any other OCS region. Current data is limited for a number of reasons. While offshore operations have been conducted in the Southern California area for many years, most of the activity has been outside the boundaries of the proposed sanctuary and in many cases at a significant distance from the Islands. The question whether petroleum development will eventually cause degradation of the unique natural resources of the Channel Islands is difficult to address because it must therefore be based on data from rather dissimilar areas. Certain comparisons and extrapolations are possible. In the case of the 1969 Santa Barbara spill, which had primarily nearshore mainland impacts, the long term effects, or their absence, cannot be definitively ascertained because of the lack of detailed pre-spill environmental information. However, the most apparent effect of this blowout was the extensive bird mortality it caused and this impact would only be even more devastating on the seabird nesting and feeding areas found within the proposed sanctuary. For instance, the entire breeding population of Xantus' murrelet would be vulnerable to a major spill affecting the waters near Santa Barbara Island. Various effects on the endemic species, invertebrates, tidal organisms, and marine mammals that have been identified as a result of biological surveys conducted after 1969 could also be particularly heavy in the Island nearshore zones. (See Section F.2.c.1. for greater detail.)

Oil and gas development has other inherent impacts besides the release of toxic materials into the environment. Disturbances caused by machinery, noise, and increased supply boat and helicopter traffic can force pinnipeds and seabirds to abandon rookeries, nesting areas and haulout grounds. Man's activities have already accomplished this on the southern California mainland. The six nautical mile proposed sanctuary boundary and regulations provide a necessary buffer to mitigate this impact. In addition, the proposed boundary allows for additional response time in case of a spill.

The amount of oil introduced by natural seeps into the vicinity of the proposed sanctuary has not been documented. The entire Santa Barbara Channel region is characterized by a large number of natural oil seepage zones that are estimated to introduce a total of from 40 to as much as 670 barrels of oil per day into the marine environment. The majority of the seeps are found in the northernmost part of the Santa Barbara Channel nearer the mainland. While the total amount of oil entering the marine waters is considerable, the number of seeps is also large and their distribution widespread. It is therefore difficult to liken the effects of oil seeps to those of a spill. A spill may involve much

larger amounts of oil, perhaps with much greater concentration on or near the water's surface, in closer proximity to the valuable Island resources. In addition, the full impact of these chronic low level concentrations has not been evaluated and further threats posed by the additional oil influx resulting from a spill are unknown.

The benefits derived from the artificial reef environmental created by the presence of a drilling or production platform are relatively short-lived. The fishery habitat exists only over the life of the field and disappears once the platform is removed. This limited enhancement of the fin and shellfish habitat must be balanced against threats posed by oil and gas production.

GENERIC COMMENT F

The FEIS should present and discuss a management plan before the designation occurs. The discussion should take enforcement mechanisms and costs into account.

GENERIC RESPONSE F

The discussion of the management plan for the proposed Channel Islands marine sanctuary has been revised and expanded to include a more exact formulation of management objectives and some additional information on enforcement mechanisms and costs (see Section F.2.b.) The Department of Fish and Game is working under a cooperative agreement with NOAA to prepare recommendations for a specific sanctuary management plan which will address in further detail the issues of coordination, public participation, research, monitoring, assessment, public education, and enforcement. Preliminary forms of these recommendations will be available at the time of final statutorily required consultation with the Federal agencies and the State and will be subjected to a public participation process involving consultation, review and comment before adoption.

Furthermore, the details of a management program will only evolve with actual experience. Cooperative agreements with other agencies are impractical before designation and the promulgations of final regulations. Elements of the management plan itself will depend on the final form of these documents. The details of some management issues will probably first be identified after the administration of the sanctuary begins. It is not at all unusual for a management plan to be developed after the formal protection of an area. For example, in the bill creating the Channel Islands National Park, Congress asked the Department of the Interior to develop a management plan within three years after statutory creation of the Park.

GENERIC COMMENT G

The marine sanctuary should require vessels transitting the Santa Barbara Channel to adhere to the Vessel Traffic Separation Scheme (VTSS) established by the U.S. Coast Guard.

GENERIC RESPONSE G

Most commercial vessel traffic already adheres to the Coast Guard's designated VTSS in the Channel. In addition, the Coast Guard is conducting a Port Access Route (PAR) study for the California coast and the Santa Barbara Channel is under careful consideration as part of that study. Under the 1978 amendments to the Ports and Waterways Safety Act, the Coast Guard has the authority to make shipping lanes mandatory and will exercise that power for the entire Santa Barbara Channel if the PAR study indicates that that is the best course of action. NOAA has commented on the Coast Guard's PAR study, and the Coast Guard will take the Channel Islands marine sanctuary proposal into consideration in its decision, as well as the other complicated issues of use, location, and safety of navigation. Since the study is incomplete, it is premature and inadvisable for NOAA to take any action concerning the VTSS.

GENERIC COMMENT H

The marine sanctuary should prohibit the placement of structures, including platforms for oil and gas production, in or near the Vessel Traffic Separation Scheme.

GENERIC RESPONSE H

The California Coastal Commission presently considers the placement of structures in or within 500 m of a VTSS to be inconsistent with the California Coastal Zone Management Program. In addition, the Coast Guard has in the past recommended that permits for the location of structures or anchoring of drillships granted by the Army Corps of Engineers be subject to a special condition that prohibits the activity inside the sea lanes or within a quarter mile of the sea lane boundaries. Furthermore, under the 1978 amendments to the Ports and Waterways Safety Act, the Coast Guard can prohibit the placement of structures in a Port Access Route (PAR) and can otherwise restrict such placement. As part of its current southern California PAR study, the Coast Guard is considering various ways of managing vessel traffic in the Channel and coordinating it with potentially conflicting uses, such as energy exploration and development.

Given the current review of location of structures in the VTSS through the Federal consistency requirements imposed by the California Coastal Commission, the Coast Guard review of permits, and the prospect of permanent Federal control through the designation of a PAR or modified fairway in the Channel, NOAA has determined not to propose sanctuary regulations at this time.

GENERIC COMMENT I

The recreational boating community in Los Angeles and Long Beach, California, was not informed of this proposal and therefore did not have an opportunity to comment adequately. Additional hearings should be held in Los Angeles and Long Beach so that the affected parties can comment on the proposal.

GENERIC RESPONSE I

NOAA regrets that segments of the boating community in the Los Angeles area were not aware of the proposal earlier. However, this proposal has been under discussion since spring 1978, and both NOAA and the California Coastal Commission have held several public meetings and public hearings in Southern California on a possible Channel Islands marine sanctuary, which were publicized through NOAA's and the Coastal Commission's mailing list, the Federal Register, and announcements and stories in Santa Barbara and Ventura newspapers. The comment period on the DEIS was 60 days (15 days longer than required by the National Environmental Policy Act) and was extended to March 7 to accommodate late comments. Direct telephone contact was initiated with the recreational boating groups to assure they were aware of the time for comments. Numerous written comments were received from recreational boating groups and oral testimony was submitted at the hearings in Ventura and Santa Barbara. NOAA's responses to the particular comments are set out in the FEIS.

GENERIC COMMENT J

The FEIS should discuss and propose protection for the benthic, intertidal, and other invertebrate resources as well as the marine mammals and birds.

GENERIC RESPONSE J

Invertebrate resources, particularly those unique to the Santa Barbara Channel transition zone, are important elements of the ecosystem and thus worthy of marine sanctuary protection. The regulations proposed in the FEIS for the marine sanctuary are also intended to preserve sensitive invertebrate resources. The discussion in the EIS centers on marine mammal and bird populations as top predators in the food chain and therefore easily visible indicators of the balance and health of the other elements of the ecosystem whose state is less easy to measure.

Sections E.2.c and E.2.d provide some discussion of invertebrate and plant life in the Channel, and Section F.2.c. has been expanded to include some additional discussion on the impacts of sanctuary designation on invertebrate fauna and flora.

GENERIC COMMENT K

The prohibition of oil and gas development pursuant to future leases in the sanctuary will have a major economic impact. This economic impact must be more fully addressed.

GENERIC RESPONSE K

NOAA has provided a more extensive economic analysis in Appendix 6 of the FEIS to supplement the discussion of the socioeconomic consequences provided in Section F.2.

U.S. AIR FORCE, Colonel Robert L. Klingensmith - 2/8/80

COMMENT: The Air Force has no objections to the proposed sanctuary and agrees with Alternative 2.

RESPONSE: No response necessary

U.S. NAVY, Captain Richard Scruggs - 3/4/80

COMMENT: The Navy objected to the last line in Article 5, Section 2 of the draft designation, stating that it appeared to be an invitation to sue for those objecting to their operations in the area. NOAA and the Navy agreed that the substance of the section was not altered by the sentence, that operations not essential to the national defense would remain subject to regulation.

RESPONSE: In view of the Navy's concern, NOAA agreed to delete the sentence.

L.A. DISTRICT - CORPS OF ENGINEERS, Norman Arno, Chief, Engineering Division - 1/3/80

COMMENT: Reference to Corps of Engineers jurisdiction under Section 10 10 of the River and Harbor Act of 1899, (33 USC 403), over any structures or work in or over navigable waters of the United States (including the territorial seas) has been omitted from the DEIS. The permit program of the Corps of Engineers would cover oil "exploration and development," "platform placement, " and "pipelines." Figure F-1 on page F-4 should be amended accordingly.

RESPONSE: Figure F-1 has been modified to include the River and Harbor Act and the Corps responsibilities in this area. It was combined with the Clean Water Act (CWA). Thank you for that correction.

COMMENT: Section 404 of the Clean Water Act which is noted in the DEIS on page F-36 would also cover oil "pipelines" if they include trenching and backfilling: Figure F-1 should be amended accordingly in conjunction with our previous comment.

RESPONSE: See previous response.

COMMENT: "Page F-36" Discussion of the Corps of Engineer permit program should be amended to note that "filling" actions require a permit in addition to dredging actions.

RESPONSE: Comment accepted.

COMMENT: Page F-42: The discussion of the Corps of Engineers permit system for the Outer Continental Shelf (OCS) should, in accordance with Title 33, Code of Federal Regulations, Navigation and Navigable Waters, Chapter II, Regulatory Programs of the Corps Engineers, Parts 320-325, be amended to note that the Corps of Engineers "issues permits based on an evaluation of the impact of the proposed work on navigation and national security" in cases involving construction of fixed structures or artificial islands on Outer Continental Shelf lands.

RESPONSE: Comment accepted.

DEPARTMENT OF ENERGY, R. Dobie Langenkamp, DAS, Resource Development Operations - 2/15/80

COMMENT: DOE feels the proposed sanctuary designation runs counter to Section 102(2) of the OCS Lands Act Amendments of 1978, which calls for expedited exploration and development of OCS energy sources. If indications appear of likely substantial reserves within sanctuary boundaries, exploration should be allowed under revised sanctuary regulations.

RESPONSE: The OCS Lands Act (OCSLA) as amended in 1978 is intended to expedite OCS oil and gas development while protecting the marine environment. Title III of the Marine Protection, Research, and Sanctuaries Act, on the other hand, directs the preservation and restorration of particular marine areas for their conservation, recreational, ecological, or esthetic values. Thus, there will be differences, in emphasis, objectives, and priorities between proposals under Title III and implementation of the OCSLA. These differences, judicially recognized, may well affect administrative decisions.

The proposed marine sanctuary protects one of the most significant habitat areas off the California coast. If the technology for the offshore exploration and production of hydrocarbon improves to eliminate risk of pollution and disturbance, NOAA has the option to propose modifications to the regulations dealing with oil and gas activities in the sanctuary.

COMMENT: Increased oil production in the Channel Islands area would tend to make pipeline systems more feasible relative to tankers. Pipeline systems are generally acknowledged as having lower potential environmental impacts than tanker operations. Thus, new leases needed to achieve maximum economic recovery of oil and gas resources, even within the sanctuary boundary, may not increase environmental risks.

RESPONSE: Depending on the amount of oil to be transported and the geological structure of the area, pipeline transport of petroleum may

be environmentally safer than tanker transport or barging. The proposed regulations specifically permit the laying of pipelines in the sanctuary. However, the Department of the Interior calculates a direct correlation between the amount of oil produced and the amount spilled. Furthermore, the closer to the Islands a spill occurs, the less time and space the oil has to weather and disperse. Thus new leasing within the proposed sanctuary boundary in all likelihood will increase the risk of environmental damage to the resources of the nearshore island waters. In addition, pipelines cannot eliminate the disturbance to marine mammals and seabirds caused by oil and gas operations. See Section F.2.c.1 for a more detailed discussion of the relationship between offshore oil and gas development and the living marine resources of the proposed sanctuary.

COMMENT: The DEIS does not acknowledge the extensive history of oil and gas operations in the area (900 wells drilled, 14 platforms, 436 million barrels produced with minimal environmental impact).

RESPONSE: In Sections E.3.b and F.2.b.1. the DEIS described in detail the history of oil and gas development in the proposed sanctuary. As noted in those sections, extensive oil and gas development has occurred in the Santa Barbara Channel near the mainland, as mentioned in this comment. The 1969 oil spill, numerous small spills and leaks, the increased numbers of rigs and associated level of supply activity have had an impact on the environment. The DEIS does acknowledge that the safety record of the industry as to large spills is quite good.

COMMENT: The DEIS requirement for oil spill contingency equipment is redundant, since the California Coastal Commission already requires onsite spill containment equipment. Oil spill containment requirements on oil and gas lease tracts are also imposed by BLM, USGS, and EPA.

RESPONSE: NOAA's proposed oil spill contingency equipment requirements exceed those imposed by BLM, USGS, and EPA. The California Coastal Commission requires onsite oil spill containment equipment on a case by case basis. The proposed regulation reflects the decision that all tracts within 6 nmi of the Islands warrant additional onsite equipment.

U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT, Trudy P. McFall Acting Director, Office of Planning and Program Coordination - 1/8/80

COMMENT: There is no conflict with HUD programs, policies or interests.

RESPONSE: No response necessary.

COMMENT: They have no comments to offer on the DEIS and do not wish to receive copies of the FEIS.

RESPONSE: No response necessary.

U.S. DEPARTMENT OF THE INTERIOR: R. L. Herbst, Assistant Secretary for Fish and Wildlife and Parks, 2/22/80

COMMENT: The analyses displayed in the DEIS are very superficial and highly conclusory, without much factual support for the conclusions. They are unquantified and lack significance about the impacts under discussion.

We feel the DEIS should clearly state the value of the marine mammal and bird resources, analyze all of the real and potential activities that not only conflict with, but also support, the preservation of these resources, and then compare the various alternatives for management that offer the preservation ideal.

RESPONSE: NOAA has provided more factual support and quantification in the FEIS. However, neither the value of the natural resources of the proposed sanctuary nor the threats to those resources lend themselves to particularly accurate quantification.

COMMENT: The impact topics, themselves, should be structured around effects and not causes. It is useless "do it yourself" information to advise a reader that vessel and overflights will do one thing, present authorities will do another, petroleum development will cause a third thing to happen, and management another. The important knowledge required by a decision-maker selecting alternatives is what happens to the whales, the pinnipeds, the birds, the recreationists, etc., due to the proposal (and each alternative). In other words, the structure of these analyses should be based upon the analytical assembly of total cumulative consequences in one presentation for each single topic affected.

We do not object to the purpose and need for the sanctuary. It generally seems a desirable idea intuitively, but the DES does not establish that purpose and need very convincingly for the sanctuary configuration presented.

RESPONSE: NOAA feels that its proposal is more easily understood if it is presented as a whole and then compared to various alternative courses of action than if each component of the proposal is analyzed seperately in comparison to all the alternatives.

However, Section F.1.c (Environmental consequences of the status quo) has been rewritten to more closely parallel the discussion of resources and activities in Section E and the various alternatives presented in Section F. This should assist the reader in followng the analysis.

COMMENT: An area to be managed usually requires a positive prime objective to guide management. The DES states only constraints as the prime objective of this sanctuary (p. D-5). We question that the prime purpose of the sanctuary would be for either recreation or research.

RESPONSE: Research and education, along with resource preservation, are primary objectives of the proposed sanctuary. NOAA has rewritten its statement of purpose in a positive vein, as suggested.

COMMENT: When citing the Bureau of Land Management (BLM) (1979) more care should be given to the definition of Channel Islands. The term when used in the BLM paper refers to all eight islands within the Southern California Bight. NOAA uses it to refer to the four northern Channel Islands.

RESPONSE: NOAA has attempted to refer to the northern Channel Islands and Santa Barbara Island either in full, or merely as "the Islands," which is defined in the regulations and the text. In general, NOAA has avoided using the name "Channel Islands," except in the name of the sanctuary in order to avoid confusion. In general, unless specified otherwise, Channel Islands refer to all eight islands as in BLM"s text and this use should help eliminate confusion.

COMMENT: Page C-6 of the DEIS states: "Article 5 of the draft Designation specifically exempts fishing activities from sanctuary regulations." Fish, as well as other harvestable marine resources, are among the most important resources in the proposed sanctuary, from both a biological and commercial sense.

In the case of harvestable marine resources, we feel that NOAA should reserve the option of future management in cooperation with the California Department of Fish and Game. The issue of whether to regulate commercial and sport fishing and kelp harvesting in the proposed sanctuary is dismissed rather abruptly, the decision not to regulate these activities apparently being based on little more than recommendation from the California Department of Fish and Game.

RESPONSE: The decision not to reserve marine sanctuary regulatory authority was endorsed by the California Coastal Commission, the California Department of Recreation, the County of Santa Barbara, commercial and sport fishermen's associations, and a variety of environmental groups, as well as the California Department of Fish and Game. The decision was based on the comprehensive management authority of DFG and PFMC in the regulation of fishing, the fact that the long term interests of these agencies parallel those of the sanctuary, and the existing close cooperation with DFG on management issues.

COMMENT: It seems particularly inconsistent to allow commercial petroleum transport vessels, a principal source of marine oil spills, to navigate as close as 1 nmi from the Channel Islands when oil and gas pipelines may not be placed closer than 2 nmi from any island,

and other related activities (i.e., exploration and production on leases executed after the effective date of sanctuary regulations) would not be permitted at all.

RESPONSE: NOAA's proposed regulations permit the laying of pipelines within 2 nmi of the Islands. While it might be environmentally preferable to keep petroleum transport vessels outside the marine sanctuary, this would make use of the VTSS established by the Coast Guard impossible. The safety added by the use of a VTSS outweighs the disadvantage of having such vessels in the sanctuary. Moreover, east of Anacapa Island, the Channel is too narrow to permit safe tanker transit in both directions more than 6 nmi from the island. See also generic response G.

COMMENT: On p. D-2, the DEIS implies that "Special Status" is required to assure protection of sensitive areas of future lease sales. The DEIS does not demonstrate the inadequacy of the present DOI regulatory system. The withdrawal of 24 tracts from Lease Sale 48 demonstrates the Secretary of the Interior's responsibility and authority to protect biologically sensitive areas of the OCS from unreasonable risks.

RESPONSE: The fact that tracts within 6 nmi of the Islands were leased in 1968 and in OCS Sale #35 despite comments from the National Park Service and the U.S. Fish and Wildlife Service recommending that that area not be leased, coupled with the fact that the Department of the Interior is reviewing tracts within 6 nmi of the Islands for OCS Sale #68 demonstrates that the current system does not offer long term protected status to the proposed sanctuary despite the Secretary of Interior's previous withdrawal of the 24 tracts.

COMMENT: The DEIS assumes, on p. D-3, that geographical isolation is the principal means for protecting the Islands from the adverse impacts of hydrocarbon development. The document should discuss oil spill response provided by Clean Seas, Inc. and Southern California Pollution Contingency Organization Teams.

The DEIS should place greater emphasis on the safety and pollution prevention assurances that modern blowout preventors, casing programs, train ing programs, and the numerous strict operating regulations and OCS Orders provide.

RESPONSE: NOAA acknowledges in the FEIS the protection afforded by modern drilling technology, cleanup and containment equipment, and the controls imposed by existing authorities, particularly BLM and USGS, (See Section F.1.B. and the expanded discussion of Clean Seas, Inc and SCPCO in Section F.2.c.1). However, NOAA finds that the resources of this area still warrant special management, planning and protection. See Section F.2.c.1 for a discussion of the impact of NOAA's proposed regulations on hydrocarbon development.

COMMENT: On p. C-10 paragraph 2 of the DEIS, the statement, "USGS later drastically reduced its estimate for the sale area . . . " is incorrect. The previously mentioned 5.7 million barrels of oil and 8.9 billion cubic feet of gas are the revised estimates.

RESPONSE: Comment accepted.

COMMENT: Section F. Alternatives. Maps specific to each alternative should be provided. Tabular presentation of the specific control actions intended as compared to the proposal would greatly facilitate explicit understanding of the precise diffferences between alternative plans.

RESPONSE: The boundary descriptions are clear. Table F-1 shows the regulations proposed for each designation alternative.

COMMENT: P.-F-28 - Federal Authorities. This section of the DEIS should include a discussion of the provisions of the National Environmental Policy Act.

RESPONSE: The National Environmental Policy Act cannot protect resources directly; rather, it creates a procedure which enables other authorities to determine the environmentally preferable course of action.

COMMENT: What requirements will be placed on tracts that fall both in and out of the sanctuary? Would the regulations cover that portion of tract outside the sanctuary?

RESPONSE: The discussion and regulations clearly state that the provisions of the marine sanctuary only apply within its boundaries.

OTHER COMMENTS: Other specific editorial and technical comments by the Department of the Interior have been addressed in the FEIS.

U.S. DEPARTMENT OF THE INTERIOR - NATIONAL PARK SERVICE - CHANNEL ISLANDS NATIONAL MONUMENT, William E. Ehorn - 1/10/80

COMMENT: Legislation is pending to establish the Channel Islands National Park to 1 nautical mile from the Islands. This boundary does not affect California's jurisdiction but allows NPS to deputize California Fish and Game rangers to enforce regulations.

RESPONSE: NOAA will coordinate management and enforcement with the Channel Islands National Park.

COMMENT: The NPS fully supports the sanctuary with a six mile boundary around the Islands.

RESPONSE: No response necessary.

DEPARTMENT OF STATE, OFFICE OF OCEANS AND POLAR AFFAIRS, R.Tucker Scully, Acting Director - 2//3/79

COMMENT: In Section 2 of Article 4 the reference to "listed in Section 4 of this Article should instead read "listed in Section 1 of this Article".

RESPONSE: Comment accepted. Section 2 of Article 4 has been changed as suggested.

COMMENT: Foreign governments must not view the marine sanctuary program as a departure from the customary U.S. view on law of the sea issues. There is no question that under U.S. domestic law there would be no authority under this proposal for any assertion of jurisdiction contrary to international law. The proposed regulations do not include a reference to international law. The following sentence should be added at the end of Section 935.5:

> "All prohibitions must be applied consistently with recognized principles of international law..."

RESPONSE: Comment accepted. The concept is already contained in Article 4, Section 2 of the Designation, which controls the scope of the regulations. However, NOAA has added the suggested sentence to the regulations as well to ensure that there is no misunderstanding on this point.

DEPARTMENT OF TRANSPORTATION, FAA: Leonard A. Ceruzzi - 10/15/79

COMMENT: The FAA favors protection for the sanctuary area. However, we firmly insist that regulations of the navigable airspace is expressly granted to the FAA by Section 307 of the Federal Aviation Act of 1958, as amended. NOAA does not have the authority to control the altitude of aircraft flying over marine sanctuaries. The statutory authority of the FAA Act of 1958 supercedes agency regulations.

RESPONSE: NOAA acknowledges the mandate of the FAA to control aircraft altitude to ensure safety and for other purposes. NOAA is not trying to control altitude but rather prevent disturbance in sensitive habitat areas within the sanctuary consistently with the NMFS position on harassment.

DEPARTMENT OF TRANSPORTATION, Federal Highway Administration - Region Nine: Neil Dillabough, Director - Office of Environment and Design - 1/18/80

COMMENT: The proposed sanctuary will not affect the Federal-aid highway program.

RESPONSE: No response necessary.

DEPARTMENT OF TRANSPORTATION, 11th Coast Guard District: H. W. Parker, Commander, Eleventh Coast Guard District - 1/11/80

COMMENT: The proposed sanctuary regulations present a potential for conflict with the Coast Guard's existing Traffic Separation Scheme and changes in that scheme designated by the Port Access Route Study, the TSS, or under Rule 10 of the International Rules for Preventing Collisions at Sea, and the Port and Tanker Safety Act of 1978 takes precedence over any agency regulations. We suggest that the proposed sanctuary boundaries be redrawn so that they do not overlap the TSS or the 500 meter buffer zone to either side of it. This would avoid duplication or conflict between NOAA and Coast Guard regulations. The proposal should recognize that the TSS may be modified upon conclusion of the PAR study.

RESPONSE: NOAA has rewritten the documents concerning the proposed sanctuary to eliminate any conflict with any VTSS or PAR designated by the Coast Guard, as long as the VTSS or PAR lies beyond one nmi from the Islands. Although the boundaries of the sanctuary have not been redrawn, the designation document now specifically exempts navigation within a designated VTSS or PAR from any sanctuary regulation (see Article 4, Section 1, Appendix 1). Other regulations of vessel operations, such as those controlling discharges, will continue to apply.

COMMENT: The Coast Guard is of the opinion that Marine Sanctuary regulations would apply only to citizens of the United States. Most of the vessels passing through the Santa Barbara Channel are under foreign flags, and the Sanctuary regulations would not apply to them outside of the territorial sea.

RESPONSE: Under the Marine Protection, Research, and Sanctuaries Act, the regulations apply to foreign citizens only in accordance with recognized principles of international law. NOAA will not apply regulations in a manner not authorized by statute.

COMMENT: The mechanics and cost of enforcing Sanctuary regulations must be determined before and during the rulemaking process, not after, as the DEIS implies. The Coast Guard presently has neither the funds or staff to make more than a token effort to enforce new marine sanctuary regulations.

RESPONSE: NOAA will provide funds for onsite management and enforcement

of a marine sanctuary, as described in Section F.2.b and generic response F. The California Department of Fish and Game is gathering more information concerning methods and costs of enforcing sanctuary regulations as part of its management study. NOAA is aware that the Coast Guard is under severe personnel and resource restraints.

COMMENT: Vessel control within one mile of the Islands seems unnecessary, since commercial vessels do not normally pass within one mile of the Islands. Unless existing regulations are inadequate, additional regulation of vessel traffic seems pointless.

RESPONSE: No existing regulation prohibits tankers , freighters, or other large commercial vessels from entering nearshore waters. While it does appear that most vessels of this description remain outside this area, there have been reported incidents to the contrary. NOAA's proposed regulation will ensure that commercial vessel traffic will not disturb sensitive marine mammal and bird populations in resting and breeding areas and will reduce the potential for potentially damaging polluting incidents in this sensitive area. As use of the Channel increases and oil and gas exploration and production activities move further offshore, commercial vessel traffic near the Islands may increase in the absence of marine sanctuary regulation.

U.S. ENVIRONMENTAL PROTECTION AGENCY: Carl C. Kohnert, Jr., Director, Surveillance and Analysis Division - 1/3/80

COMMENT: The EPA's comments on the DEIS have been categorized as LO-1. Lack of objections - adequate.

RESPONSE: No response necessary.

U.S. ENVIRONMENTAL PROTECTION AGENCY: William N. Hedeman, Jr., Director, Office of Environmental Review - 1/23/80

COMMENT: EPA endorses the proposal. The protective measures envisioned for the sanctuary appear sufficiently comprehensive to protect the valuable resources of the area.

RESPONSE: No response necessary.

COMMENT: On page C-8, the description of the prohibition of dredging, drilling, constructing on or altering the seabed should stipulate the exclusion of hydrocarbon extraction activities from the prohibition, as has been done elsewhere in the statement.

RESPONSE: The discussion of the prohibition on dredging, drilling, construction on, or alteration of the seabed in the summary (Section C) has been changed to show that the laying of pipelines is excluded from the prohibition. Since there are currently no leased tracts in the area affected by this regulation, and since the marine sanctuary regulations prohibit oil and gas development pursuant to future leases in this area, no other hydrocarbon activities would occur. References to this regulation elsewhere in the FEIS have been amended accordingly.

COMMENT: On page F-34, the description of the Clean Water Act should be clarified in the following way. EPA's NPDES permitting is based upon technology-based effluent guidelines as well as site-specific water quality concerns. Water quality issues are addressed by means of Section 403(c) of the Clean Water Act which requires that all permits for discharges into ocean waters be in accord with ocean discharge criteria (now being developed by the Agency). These criteria allow case-by-case consideration of special sensitive ecological areas that may require more than conventional protection measures, as in the case of Tanner Banks where concern for unique coral populations caused the addition of special protective conditions to discharge permits. In this connection, EPA requests removal of the statement that for Tanner Banks, special permit conditions were added to the NPDES permit in order to conform to BLM stipulations.

RESPONSE: Comment accepted.

COMMENT: On page F-35, the table showing the effluent guidelines for the far offshore oil and gas extraction category should be corrected to indicate that the standard for oil and grease in deck drainage is "no discharge of free oil" listed instead of "72 mg/l" and "48 mg/l."

RESPONSE: Comment accepted.

COMMENT: On page F-43 it should be mentioned that there is a pending designation of EPA's San Nicholas Basin (32°55'N - 119°17'W) ocean dumping site for the disposal of drill cuttings and drilling muds.

RESPONSE: Comment accepted.

COMMENT: On page F-60, this section and others in the EIS that describe the requirement for onsite oil spill containment equipment, should further describe the performance requirements of operators to respond to a spill rather than specifying particular kinds of equipment. As presently stipulated, inappropriate equipment and procedures could be used to fulfill this requirement.

RESPONSE: The performance of oil spill containment operations depends heavily on weather and sea states as well as the equipment and procedures used. Thus, performance requirements beyond those already imposed on a case-by-case basis by the California Coastal Commission are impractical

for NOAA to establish. The equipment required conforms with California Coastal Commission requirements imposed for similar leases.

COMMENT: A map should be included in the text depicting the zone affected by each of the five regulated activities in the sanctuary.

RESPONSE: Section E.3 contains figures showing the areas affected by the various activities. Beyond that, the written description clearly states the affected area for each regulation.

MARINE MAMMAL COMMISSION: John Twiss - 2/6/80

COMMENT: The Commission supports prohibition of oil and gas development in the proposed sanctuary, at least until information is available which shows that such development will not adversely impact living marine resources. OCZM should be ready to reassess oil and gas development prohibition if such information appears.

RESPONSE: NOAA's proposal is consistent with this concept.

COMMENT: Fishing activity is excluded from the proposed sanctuary regulation. We believe that potential regulatory authority for fisheries activity, especially nearshore fishing, should not be precluded as a sanctuary management option.

RESPONSE: See Response to the fifth comment by the Department of the Interior.

COMMENT: On pages D-1 and F-68, statements indicating that the Gaudelupe fur seal has been proposed for listing as an endangered species should be revised. The species has not yet been proposed for listing under the Endangered Species Act.

RESPONSE: The National Marine Fisheries Service is considering the possibility of proposing the Gaudelupe fur seal for listing as an endangered species. NOAA has changed the two statements cited above to reflect this status.

COMMENT: The Commission recommends that the proposed regulations be changed to provide protection for all shoreline areas, including both the smaller offshore islands and rocks, as well as the main islands.

To implement this protection and resolve uncertainties, the Commission recommends the addition of a definition for the term "Island" in section 935.4 of the proposed regulations which would indicate that use of this term in the regulations refers to all permanently exposed rocks and islands within the proposed sanctuary boundaries. Clarification of this point should also be made in the discussions in the DEIS of

seabed construction (pages F-102 and F-103) and of vessel and aircraft operation (pages F-103 to F-108) and on Figure F-14 (page F-106).

RESPONSE: NOAA has defined "Island" to include Richardson Rock and Castle Rock as well as the four northern Channel Islands and Santa Barbara Island (see Section C, Section F.2.a, and Appendix 1).

COMMENT: We recommend that the third paragraph of the Marine Mammal Protection Act discussion (last paragraph on page F-31) be deleted and the following two paragraphs be inserted:

> The MMPS defines "take" quite broadly to include "harass", hunt, capture, or kill any marine mammal or to attempt to engage in such conduct (16 U.S.C. Sec 1362(13), emphasis added). The term has been interpreted to encompass both intentional and negligent acts, including the operation of motor boats, which result in the disturbing or molesting of marine mammals (50 CFR 18.4; 50 CFR 216.3).
>
> The MMPA provides for limited exceptions to the moratorium. Pursuant to these exemptions, marine mammals in the Channel Islands area may be taken for scientific research, for public display, and incidental to commercial fishing operations, under specifically authorized permits. Similarly, stranded or debilitated marine mammals may be taken for the protection and welfare of the marine mammal or for the protection of the public health and welfare.

RESPONSE: The suggested change has been made.

COMMENT: In the last paragraph on page F-32, we recommend that OCZM simply list those species in the study area which are treated as "depleted" under the MMPA. There would seem to be no reason to distinguish among depleted species which have been "sighted in the study area" and those which are "possible transients" since at least one of the latter group (the sea otter) has also been sighted around the northern Channel Islands (see page E-24 of the DEIS).

RESPONSE: Comment accepted.

COMMENT: Further, the Commission recommends that the fifth paragraph of this discussion (the second to the last paragraph on page F-32) be deleted and the following inserted:

> The Act calls for effort to restore and maintain marine mammal populations at "optimum sustainable population" levels (16 USC Sec. 1361(b)). Optimum sustainable population (OSP) is defined to mean "...the number of animals which will result in the maximum productivity of the population of species keeping in mind the carrying capacity of the habitat and health of the ecosystem of which they form a constituent element" (16 USC 1362 (9)). OSP has been further defined by regulation as "...a population level

of a given species or stock which is the largest supportable within the ecosystem to the population level that results in maximum net productivity. Maximum net productivity is the greatest net annual increment in population numbers or biomass resulting from additions to the population due to reproduction and/or growth less losses due to natural mortality" (50 CFR 216.3).

RESPONSE: NOAA finds that the original paragraph conveys the same information in fewer words, and therefore has retained the original wording.

COMMENT: The Commission recommends that the DEIS be expanded to indicate the approximate level of personnel and funding commitment which it expects to direct towards efforts to establish a Sanctuary Information Center, promote public awareness, monitor sanctuary resources, partially fund research projects within the sanctuary, inventory historical resources, enforce regulations, and consult with other marine management authorities.

RESPONSE: See generic response F.

U.S. REPRESENTATIVE ANTHONY C. BEILENSON (California) - undated

COMMENT: It is appropriate that vessels adhere to Coast Guard-designated traffic lanes while in the sanctuary boundaries; that all hydrocarbon exploration (with the exceptions which they have noted) on current leases within six miles of the islands be undertaken using a slant drilling technique from outside the six-mile limit; that oil spill contingency equipment requirements be in accordance with the Commission's requirements; and that a Channel-wide designation be pursued in recognition of the need for integrated management in the area.

RESPONSE: See generic responses A and G and Section F.3.

COMMENT: A Channel-wide marine sanctuary coupled with the ban on leasing for oil and gas development within six miles of the islands discussed in the Draft Environmental Impact Statement preferred alternative and the California Coastal Commission position is recommended. Such Channel-wide designation need not conflict with the accelerated exploration and exploitation of the channel's oil and gas resources. It might aid that development by mitigating many of the conflicts that will otherwise inevitably ensue.

RESPONSE: See generic response A.

STATE OF CALIFORNIA COASTAL COMMISSION: Michael L. Fischer, Executive Director - 2/1/80

COMMENT: The Commission supports the proposed sanctuary. The Commission recommends that the boundary be extended to include 12 nmi around the Islands and rocks as well as the entire Channel and that the Designation and regulations be rephrased accordingly. The entire area is a total ecosystem and integrated management is essential.

RESPONSE: See generic response A.

COMMENT: Sanctuary regulation of oil and gas operations should encompass only those areas within six nmi of the Islands and rocks.

RESPONSE: This is consistent with NOAA's preferred alternative.

COMMENT: The Commission recommends the following ground rules for activities on the 15 existing leases which lie partially or wholly within the 6 nmi area. No oil or gas exploration activities shall be permitted within six nmi of the islands unless the tract operator has first explored the adjacent

leased area outside the six nmi. Exploration would be permitted within six nmi only if the prior exploration has indicated the likelihood of an oil or gas field extending within the six nmi. The sanctuary manager may, however, permit exploratory drilling first within six nmi only when the operator demonstrates with geophysical data that the most favorable potential hydrocarbon bearing structure in the area can only be explored from within six nmi. The purpose of explorations within such area would be to determine the extent of the field and to determine how much of the petroleum resources could feasibly be produced from a platform outside the six nmi buffer area. No oil and gas development and production activities shall be permitted within the six nmi area, including those tracts which lie entirely within the area. Production of petroleum resources within the six nmi area could take place only from production facilities located outside the boundary which employ slant drilling. The only possible exception to the above requirement would be subsea completions linked to production facilities outside the six nmi area. If any petroleum resource discovered during exploration cannot be produced from outside the boundary under the guidelines proposed above, NOAA and the Department of the Interior should develop a compensation scheme for the lessee for the unproducible petroleum (e.g., credit and/or preference for new leases).

RESPONSE: Marine sanctuary prohibition of any exploration, development and production activities on existing leases within the proposed sanctuary does not appear appropriate at this time. There are only 16 existing leases fully or partly in the proposed sanctuary. In some situations, depending on geologic and other factors which vary in each case, the slant drilling which might be required to explore and extract resources may pose a range of technical problems for operators, including increased time and cost on site, and increased risk of adverse geological conditions. These questions, as well as the extent to which the requirement may diminish the extent of recoverable resources, appear to be appropriate for case by case consideration, evaluating all information available.

NOAA has rejected the possibility of sanctuary review and certification of each application for activities on existing leases within the six nmi boundary in large part because such review is now exercised by both the United States Geological Survey and the California Coastal Commission. The Commission in particular gives primary consideration to environmental factors in its consistency review. (See the comparison with the preferred alternative in Section F.3 for a more detailed discussion of this proposed regulation.)

COMMENT: The Commission will use its consistency review to prevent placement of structures in the vessel traffic lanes. The Commission recommends that NOAA include this prohibition, as stated in alternative 4, in the sanctuary regulations for those portions of the Vessel Traffic Separation Scheme within six nmi of the Islands.

RESPONSE: See Generic Response H.

COMMENT: Article 4, Section 1, should be revised to indicate that activities may be regulated only within 6 nmi of the Islands and rocks.

RESPONSE: Article 4, Section 1, states that listed activities may be regulated in the Sanctuary. NOAA's proposed sanctuary includes only the waters within six nmi of the Islands.

COMMENT: The Coastal Commission objects to the discussion in the preamble to the Regulations on the bottom of Page 69971 which would allow OCS exploration and development including platforms under existing leases within the six nmi area in spite of the extensive documentation in the DEIS on the nature of the marine life around the Channel Islands and the effect of oil and gas operations thereon. The discussion in the preamble, should reference the Coastal Commission's consistency review authority over OCS exploration, development and production plans pursuant to the Coastal Zone Management Act.

RESPONSE: The preamble to Section 935.6 has been changed to reference the Coastal Commission.

COMMENT:

(6) In the event NOAA does not incorporate the proposed revision to the regulations on oil and gas activities on existing leases into the final marine sanctuary regulations, the Coastal Commission recommends that §935.6(a) be revised to read as follows:

> (a) Hydrocarbon exploration, development and production pursuant to any lease executed prior to the effective date of these regulations and the laying of any pipeline is allowed subject to paragraph 935.6(b), and all prohibitions, restrictions, and conditions imposed by applicable regulations, permits licenses, or other authorizations and consistency reviews including those issued by the Department of the Interior, the Coast Guard, the Corps of Engineers, the Environmental Protection Agency, and the California Coastal Commission pursuant to the Coastal Zone Management Act and its implementing regulations.

RESPONSE: Section 935.6(a) has been revised in accordance with this comment.

CALIFORNIA COASTAL COMMISSION, REGIONAL OFFICE: Steve Stanley - 1/11/80

COMMENT: The Commission supports the purposes of the proposed sanctuary, and the thrust to prevent new offshore oil leasing within six miles of the Islands and coordinate enforcement of wildlife regulations.

RESPONSE: No response necessary.

COMMENT: The DEIS is a thorough identification and analysis of marine resources around the Islands and the proposed regulations provide major additional protection for these resources at a time when activities threaten their continued existence.

RESPONSE: No response necessary.

THE RESOURCES AGENCY OF CALIFORNIA: James W. Burns, Assistant Secretary 2/4/80

COMMENT: The Department of Fish and Game (DFG) believes that Federal involvement in the management of the Channel Islands is likely in the future. If this occurs, alternative 2 would be an acceptable plan.

RESPONSE: No response necessary.

COMMENT: DFG participation is essential for the development and enforcement of a complete and effective management plan, and alternative 2 appears to allow for such participation. DFG is pleased to note that the Draft EIS also discusses the advisability of continued fisheries management by DFG and the Pacific Fisheries Management Council, and clearly states that sanctuary status will not subject either sport or commercial fishing or kelp harvesting to additional regulations.

RESPONSE: See generic response F and Section F.2.b for a discussion of DFG's current and potential role in managing the proposed sanctuary.

COMMENT: The Department of Parks and Recreation (DPR) agrees with the intent of the proposed sanctuary.

RESPONSE: No response necessary.

COMMENT: DPR believes that regulation of navigation and operation of all vessels other than those used for fishing may unduly restrict such activities as kelp harvesting, recreation, military, law enforcement, research, education, and commercial (party) fishing or diving. The Department, therefore, believes that Article 4 of the Draft EIS should state more clearly that the above pursuits like sport and commercial fishing will not be subject to additional regulations while the intent to allow such activities is expressed elsewhere in the report, it should also be clearly stated in Article 4, Section 1, Item D.

RESPONSE: Both Article 4, Section 1, Item D and Article 5 in the draft Designation clearly exempt fishing and kelp harvesting from regulation. The regulations have been rewritten to state more clearly that recreational and research boating, as well as the other types of vessel traffic listed in this comment will be allowed throughout the sanctuary.

COMMENT: On page D-5 (Item 1), the sanctuary's purpose would be better reflected if the wording "... not a) degrade intertidal habitats of ..." were changed to "... not a) degrade intertidal and subtidal habitats and their associated communities or ...".

RESPONSE: Comment accepted.

COMMENT: The island shelf is listed as 5 to 10 nautical miles wide on page E-9 and 3 to 6 nautical miles wide on page E-34.

RESPONSE: The former reference has been changed to "3 to 6".

COMMENT: The statement regarding kelp on page E-46 applies only to the southern California area; the range and maximum abundance figures are not correct for northern California.

RESPONSE: Comment accepted.

COMMENT: The number and size of boats to be subject to enforcement is not clear from the discussions on pages F-47 and F-51.

RESPONSE: The National Park Service has one 55-foot patrol boat, one 40-foot patrol boat, and one 20-foot skiff for marine enforcement at the Channel Islands National Park (see page F-48).

COMMENT: Although most of the fish and invertebrates discussed on page E-46 (paragraph 2) and in Appendix 2 are edible, the report should indicate that these species and others also have recreational, non-consumptive uses (photography, sightseeing, etc.).

RESPONSE: The discussion states that these species have both recreational and commercial value.

COMMENT: The report correctly states that the State of California has established an Oil and Gas Sanctuary around four of the five Channel Islands. This constitutes a finding by the California Legislature that the natural resource values of these islands are higher than the value of the potential oil and gas that could be extracted from these locations, so extraction of oil and gas is conditionally prohibited.

RESPONSE: No response necessary.

COMMENT: The FEIS should make it clear that the creation of the proposed Channel Islands Marine Sanctuary does not constitute any transfer of State title for any of the State-owned lands or resources within the sanctuary.

The FEIS should discuss the effects the proposed Marine Sanctuary would have on the rights and jurisdiction of the State of California over the State's tide and submerged lands, gas and oil resources, and waters within the sanctuary. The alternative of land exchange or other compensation should be discussed, especially with regard to Santa Barbara Island which is proposed for inclusion in the marine sanctuary, but was not included in the State legislation which created the other four Oil and Gas Sanctuaries.

RESPONSE: In response to the State of California's concerns, NOAA has proposed an addition to the proposed regulations, Section 936.12, Amendments, which addresses these issues. The proposed addition to the regulations provides that any significant change in the extent to which various activities are prohibited within the sanctuary automatically will be considered to have a direct effect on the coastal zone and will require that the National Oceanic and Atmospheric Administration (NOAA) provide the State with a consistency determination under the California Coastal Zone Management Act.

In addition, the revised regulation provides that, should California determine that certain activities no longer need to be prohibited (for example, that technology has progressed to the point where hydrocarbon production no longer poses unacceptable risks even in nearshore areas) and propose to relax the restrictions on activities within State waters imposed by State law, NOAA will propose similar changes to the sanctuary regulations unless it determines such changes would be clearly inconsistent with the sanctuary. While there would be no guarantee that such a change would be adopted as proposed after the rulemaking procedures were completed, this provision would provide California with a considerable measure of assurance that the sanctuary will continue to respond to its coastal issues and needs. In addition, California can always impose stricter requirements on activities in State waters than provided by the sanctuary. NOAA does not consider a discussion of land exchange or compensation necessary in light of this proposed regulation.

COMMENT: The Resources Agency greatly appreciates having been given an opportunity to review this report, and looks forward to working with the project sponsor in developing, implementing, and enforcing a plan that would effectively protect these resources.

RESPONSE: NOAA intends to continue close cooperation with the Resources Agency.

CALIFORNIA DEPARTMENT OF FISH AND GAME: Leonard Fisk - 1/10/80

COMMENT: The DEIS is well done and it presents a good case for the sanctuary.

RESPONSE: No response necessary.

COMMENT: Good coordination has taken place with California State agencies.

RESPONSE: No response necessary.

COMMENT: Fish and game resources are adequately regulated at this time and need no additional regulations.

RESPONSE: This is consistent with NOAA's proposal which leaves regulation of fishing and plant harvesting to DFG and the Pacific Fishery Management Council.

COMMENT: The California Department of Fish and Game is willing to cooperate in the enforcement of the sanctuary.

RESPONSE: See Section F.2.b and generic response F.

CITY OF DEL MAR, CALIFORNIA: Robert A. Nelson, City Manager - 12/6/79

COMMENT: Acknowledged receipt of the DEIS and had no comments.

RESPONSE: No response necessary.

THE CITY OF SANTA BARBARA, CALIFORNIA: Hal Conklin - 1/13/80

COMMENT: While concurring with the basic findings of the DEIS, the Environmental Resources Management Committee and the City Council of Santa Barbara, unanimously endorse alternative 4. Alternative 4 offers the best protection.

RESPONSE: See generic response A.

COMMENT: There should be no new restrictions on commercial fishing activities.

RESPONSE: NOAA is in agreement with this comment; the marine sanctuary will not regulate fishing, but will rely on the comprehensive systems in place and on future coordination with DFG and the PFMC.

SANTA BARBARA COUNTY BOARD OF SUPERVISORS: Dev Vrat - 1/11/80

COMMENT: The findings of the DEIS on identification of marine resources and nearshore regulations are appropriate.

RESPONSE: No response necessary.

COMMENT: The proposed boundaries are unjustifiably limited. Increased areas of coverage would expand the level of environmental protection while only slightly increasing the costs and inconvenience to sanctuary users. The county supports alternative 4.

RESPONSE: See generic response A.

COMMENT: The County endorses the lack of new regulations over commercial and sport fishing.

RESPONSE: No response necessary.

COMMENT: The monitoring and coordination provisions would provide opportunity to develop a broad regional perspective of ocean users.

RESPONSE: No response necessary

COMMENT: The DOI Lease Sale #68 could trigger a sale of State leases to prevent drainage of reserves, and increased risks to marine resources. Only alternative 4 would allow management and balancing of conflicting Channel uses.

RESPONSE: See generic response A.

BOARD OF SUPERVISORS OF SANTA BARBARA COUNTY: Robert Hedlund, Chairman - 1/7/80

COMMENT: The boundaries of Alternative 2 are unjustifiably limited to the area adjacent to the islands, failing to recognize the integrity of the complete Santa Barbara Channel ecosystem. The County supports the selection of alternative 4 as the preferred sanctuary.

RESPONSE: See generic response A.

COMMENT: The County concurs with the level of regulations within the sanctuary.

RESPONSE: No response necessary.

COMMENT: The DEIS acknowledges the existence of the unique benthic and pelagic links in the Santa Barbara Channel ecosystem. On page F. 135 the entire Channel is cited as "an interrelated ecosystem". The DEIS notes that the entire Channel includes most of the waters and airspace utilized by resident and transient marine mammals, seabirds, and fishes for primary habitat, foraging, or migrations (F-130): "...the increased areas of coverage would expand the level of environmental protection while only slightly increasing the costs and inconvenience to sanctuary

users..." (F-131); "...monitoring and coordination provisions would afford sanctuary managers an opportunity to develop a broad regional perspective of ocean users...with a broad overview of interactions between significant uses, resources, and interests, the risks of hidden cumulative impacts could be highlighted, brought to the attention of appropriate authorities and addressed." (F-135).

After identifying the significance of the entire Channel as a unified marine ecosystem the DEIS proceeds to excuse these findings with the simple but erroneous conclusion that because marine resources are physically concentrated around the Islands, the previously identified significant and interrelated ecosystem elements, the pelagic and deepwater benthic communities, situated beyond the islands, need not be protected. The proposed boundaries of preferred alternative No. 2 do not reflect the findings of the DEIS. The document is internally inconsistent.

The alternative No. 4 is preferred for several reasons: Its boundaries correspond to the integral ecosystem the sanctuary is intended to protect; it provides more complete long-term management capability and monitoring of cumulative resource impacts; and it would mandate use of the shipping lanes, thereby reducing oil spill threats to Channel resources.

RESPONSE: See generic response A.

COMMENT: It is important to ensure use of TSS lanes by oceangoing vessels.

RESPONSE: See generic response G.

HERMOSA BEACH PLANNING COMMISSION: Edward S. Loosli - 1/18/80

COMMENT: This area is historically significant and extremely valuable biologically.

RESPONSE: No response necessary.

COMMENT: Oil and gas operations, discharging or depositing any substance alteration of or construction on the seabed, navigation and operation of oil tankers within the sanctuary boundary should be prohibited.

RESPONSE: NOAA's proposal prohibits discharging or depositing most substances in the marine sanctuary. Oil and gas operations pursuant to future leases in the sanctuary are also prohibited. Operations pursuant to existing leases are allowed if additional onsite oilspill containment equipment is provided. Alteration of or construction on the seabed is prohibited within two nmi of the Islands. The nearshore area has a very high concentration of benthic resources. Beyond two nmi from shore, particularly important bottom habitat can be protected by the permits required from the California Coastal Commission and the

Corps of Engineers. NOAA proposes to prohibit operations by tankers and other vessels engaged in the trade of carrying cargo or supplying offshore installations within one nmi of the Islands and rocks. See generic response G and the discussion of the preferred alternative in the FEIS for the basis of the proposed regulations.

COMMENT: San Nicholas Island should be included in the proposed sanctuary. The waters around San Nicholas are vital to the survival of hundreds of species of marine mammals and birds.

RESPONSE: San Nicolas Island is on the List of Recommended Areas for marine sanctuary status and may be considered as an active candidate in the future. NOAA welcomes any information concerning the suitability of the waters around San Nicolas as a possible marine sanctuary.

COUNTY OF VENTURA-FISH AND GAME COMMISSION: Austin R. Cline - 1/17/80

COMMENT: The DEIS failed to address the status of the marine fishery in the study area. The Commission feels that this fishery is continuing to decline and that it must be properly managed.

RESPONSE: In Sections E.2.c and E.3.c, the FEIS addresses fishing in the study area. NOAA's information does not indicate that the fishery in the proposed sanctuary is declining. Fishing is currently managed by the California Department of Fish and Game and the Pacific Fishery Management Council and NOAA will cooperate with those agencies in their future activities affecting the fishery.

COMMENTS: The Commission failed to develop a position with regard to the recommended or other alternatives presented in the DEIS.

RESPONSE: No response necessary.

CALIFORNIA LEGISLATURE: Omer L. Rains, Senator - 1/15/80

COMMENT: The more extensive marine sanctuary should be designated. The 3,000 square mile biogeographic unit from Point Arguello-Point Conception to Point Mugu should be included in the sanctuary boundaries.

RESPONSE: See generic response A.

ASSEMBLY-CALIFORNIA LEGISLATURE: Gary K. Hart, Assemblyman, 35th District - 1/21/80

COMMENT: Sanctuary designation would present a unique opportunity for comprehensive management of the Channel's resources while allowing for multiple uses in a manner mindful of economic needs and environmental consequences.

RESPONSE: No response necessary.

COMMENT: The DEIS is an exceptionally comprehensive document which reflects local concerns and suggested alternatives.

RESPONSE: No response necessary.

THE AMERICAN CETACEAN SOCIETY: Martin Byhower - Undated

COMMENT: Mr. Byhower supports the proposed sanctuary and offers his assistance in promoting the preservation of the beauty and wealth of life in the Channel Islands.

RESPONSE: No response necessary.

AMERICAN PETROLEUM INSTITUTE: J.R. Jackson, Jr., Chairman, National CZM Steering Committee - 1/18/80

COMMENT: The offshore petroleum industry and the environment are compatible, if not complimentary.

RESPONSE: While in some circumstances, offshore petroleum operations under DOI and other agency regulation can be conducted without readily apparent environmental damage, there remains potential for not fully understood long term adverse effects from chronic disturbance and chronic routine discharges of oil and drilling muds and cuttings. In addition, depending on the time of year and wind and weather conditions, a blowout or other catastrophic discharge of oil could cause significant environmental damage. See Section F-2.c.1 for further discussion of the relationship between petroleum development and the living resources of the proposed marine sanctuary.

COMMENT: Protecting the environment must be done with full consideration of energy, economics and government bureaucracy. The sanctuary documents totally ignore these three factors. The cost of excluding future petroleum operations in the proposed sanctuary comes very high with no commensurate savings or return. The high costs come from the alternative of either turning to imports or going without energy. There is little, if any, return in increased natural resources values.

The sanctuary documents do not make a convincing case that a marine sanctuary is necessary.

RESPONSE: Section F.2.c.1, Socioeconomic Consequences addresses the issues identified in this comment. See also Generic Response K.

COMMENT: The sanctuary would allow petroleum operations on existing leases, but would prohibit operations on future leases. This distinction does not make sense.

RESPONSE: The proposed regulations on hydrocarbon exploration and exploration strike a balance between imposing economic costs and achieving environmental protection. The proposed regulations protect the sanctuary resources from possible major expansion of oil and gas development, but permit the development of those tracts in which the oil and gas industry has already invested. Given the fact that there are only 16 such tracts, all but two of which fall only partly in the proposed sanctuary, and given the careful consistency review by the California Coastal Commission, the environmental risk seems acceptably low.

ASSOCIATION OF SANTA BARBARA CHANNEL YACHT CLUBS: Frank Klatt, telephone conversation - 1/4/80

COMMENT: Will the proposed rules exclude recreational vessels near the Islands?

RESPONSE: See generic response C.

ATLANTIC RICHFIELD COMPANY: F.W. Chapman - 1/10/80

COMMENT: NOAA should consider and attempt to quantify the ecological impacts, not only of the oil and gas industry, but all other activities, both commercial and recreational, within the proposed sanctuary.

RESPONSE: The FEIS does attempt to identify the impacts of all activities within the proposed sanctuary. Thus the potential impacts of dredging, dumping waste, overflights are discussed. Quantification was undertaken whenever possible.

COMMENT: NOAA should attempt to quantify the added benefits to be derived from establishing a Federal sanctuary over and above the smaller State sanctuaries already present in the area.

RESPONSE: Sections F.1.c and F.2 discuss the expected benefits of a marine sanctuary designation. Many of these benefits do not lend themselves to accurate or useful quantification.

CALIFORNIA MARINE PARKS AND HARBORS ASSOCIATION: WILLIAM BERSSEN - 1/10/80

COMMENT: The Association needs additional time to review the DEIS and additional hearings should be held in Los Angeles and Long Beach.

RESPONSE: See generic response I.

CALIFORNIA MARINE PARKS AND HARBORS ASSOCIATION, Inc.: Susan H. Anderson, Executive Vice President, Southern Division - Undated

COMMENT: The proposal to establish a Channel Islands Marine Sanctuary does not provide sufficient assurances that the traditional use of the Islands by recreational boaters and commercial recreational craft both as destination sites and harbors of refuge will be allowed to continue. Generally, while an attempt has been made to exclude recreational boating from the proposed regulations, the wording is sufficiently ambiguous that a very different interpretation could be made of the intent of the proposal.

RESPONSE: See generic response C.

COMMENT: Article 4, Section 1, item d, should exempt recreational as well as fishing boats from marine sanctuary regulation.

RESPONSE: NOAA has rewritten the regulation on vessel traffic to clearly show that recreational boating will be allowed in the marine sanctuary. It is not desirable to preclude all possibility of controlling recreational boating in the future by exempting it in the designation document. Although recreational boating does not now threaten the resources of the proposed sanctuary, it is conceivable that in the future some problems may arise if use patterns should change greatly. Any changes in NOAA°s initial regulations would be subject to the Administrative Procedures Act and full public participation, including a 60 day comment period. In addition, any proposed regulation must meet the statutory standards of reasonableness and necessity.

COMMENT: Scattered negative comments about boating activities provide fuel for those wishing to use the sanctuary to restrict use of the Islands.

For example, on page F-101, the text reads "Under current human activity levels casual littering, most notably by recreational boaters..." This is a widely assumed premise without supporting facts. Even developed harbors are plagued by refuse...much of which in fact comes from land---side users, beach users and is wind blown debris or storm drain runoff debris not contributed by the boater.

RESPONSE: NOAA has attempted to eliminate such comments from the FEIS. However, it should be noted that since the Channel Islands are not developed and are only accessible by boat or airplane, any litter in the waters around these Islands, unlike that near the mainland coast, is likely to come primarily from vessels.

COMMENT: The fact that a "detailed management plan for the sanctuary will not be prepared until after the sanctuary is officially designated" provides an invitation for regulation and management that is inconsistent with an interpretation in which the Office of Coastal Zone Management and our organization and other boating interests may concur.

RESPONSE: Any management plan developed for the marine sanctuary will be consistent with the regulations. As discussed above, the regulations have been rewritten to show more clearly that recreational boating will be allowed in the marine sanctuary. The California Department of Fish and Game, which is developing a management plan for the marine sanctuary under contract with NOAA, is working closely with the Sanctuary Programs staff to ensure that the marine sanctuary objectives are interpreted properly. The management plan for the sanctuary will be developed in consultation with interested user groups and will be available for public comment and review.

COMMENT: The EIS gives some recognition to recreational boating concerns. There is no review of the importance economically, psychologically, or socially. It does not point out the importance of the Channel Islands in the pursuit of recreational boating. It should include an understanding of the role and impact of the recreational boating industry in California to put in perspective the impact which decreased or increased recreational boating opportunities might have on our State.

RESPONSE: Section E-3.g. discusses recreational boating around the northern Channel Islands and Santa Barbara Island. Since the marine sanctuary will not decrease or increase recreational boating, it is not necessary to discuss the impact such a change might have on the State of California.

COMMENT: OCZM did not schedule a hearing in the greater Los Angeles area and did not reach boating interests in these areas at an early date. Thus we have not had the opportunity to be in on the several discussions that have led to this proposal and have had to comment in a hurried manner.

RESPONSE: See generic response I.

CALIFORNIA SEAFOOD INSTITUTE: John P. Gilchrist - 12/5/80

COMMENT: The fear of pollution by oil (either drilled or spilled) constitutes the reasoning of the Department of Commerce for intervening in State Affairs. The State of California has an oil and gas sanctuary surrounding 4 of the 5 islands in the proposed sanctuary. The present system for regulating oil and gas activities makes provision for oil spill prevention, protection of sensitive areas, and preservation of air and water quality. The present level of oil and gas activity within or adjacent to the 6 nmi proposed sanctuary is minimal.

RESPONSE: The threat of oil pollution is in fact a major reason for the proposal to designate a marine sanctuary around the northern Channel Islands and Santa Barbara Island, but several other reasons are discussed in Section F-2., in including the contribution a sanctuary might make to research and education. Although the current level of oil and gas development within the proposed sanctuary is minimal, there is no guarantee that it will remain so in the future. DOI has three lease sales scheduled for California in the next five years, one of which, OCS Sale #68, definitely encompasses the proposed marine sanctuary. California's oil and gas sanctuaries only include State waters (3 nmi) and would be threatened by oil development on tracts just outside the territorial sea. Section F-2.c.1. provides a more detailed discussion of the rationale for a prohibition on hydrocarbon activities in the proposed sanctuary pursuant to future leases.

COMMENT: Twenty-one Federal and State authorities and eighteen State and Federal agencies now contribute to management of the Ch.. .el Islands. Will NOAA act as "referee" when the eighteen agencies start quarrelling?

RESPONSE: One of NOAA's sanctuary management objectives is interagency coordination. See also generic response B.

COMMENT: The entire area is now susceptible to a simple "limited entry" system which is in itself a "tool" of management.

RESPONSE: NOAA is not aware of any such "limited entry" system.

CARPINTERIA VALLEY ASSOCIATION: Mrs. George M. Sidenberg, Jr., President - 1/19/80

COMMENT: The Association supports alternative #4 with restrictions on expanded oil and gas development.

RESPONSE: See generic responses A and D.

CENTER FOR LAW AND SOCIAL POLICY: Clifton Curtis - 3/4/80

COMMENT: Under the Department of the Interior's proposed 5-year lease plan, Lease Sale #68 is scheduled for 1982 off Santa Barbara. Within the proposed alternative 4 sanctuary boundaries, that proposed sale would include tracts which were rejected by industry in lease sale #48, tracts for which leases have expired, and tracts which were omitted from lease sale #48 due to their proximity to the Islands. For the reasons that have been presented by the Coalition (pp 5-6), by Get Oil Out (January 23, 1980, submission, pp 13-15) and by NRDC (February 1, 1980, submission, pp 6-7), no new leases should be permitted anywhere within the proposed sanctuary.

RESPONSE: See generic response D.

CHANNEL ISLANDS YACHT CLUB: Jim Donlon - 1/10/80

COMMENT: Sanctuary designation is important.

RESPONSE: No response necessary.

COMMENT: Fisheries resources have been ignored in the proposal. Fishery resources are depleted and some are near extinction. Protection of the fish life should be part of the marine sanctuary. The Department of Fish and Game should enforce sanctuary regulations.

RESPONSE: NOAA does not propose to regulate fishing, as it is already regulated by the Department of Fish and Game and the Pacific Fishery Management Council. The health of the fishery in the proposed sanctuary appears to be good. See generic response F and Section F.2.b.

CHEVRON U.S.A., INC.: D.T. Magee - 1/21/80,1/24/80

COMMENT: Chevron U.S.A. strongly endorses the comment submitted by the Western Oil and Gas Association at the public hearing in Ventura, January 10, 1980. For the sake of brevity we will refer to the WOGA document in our comments below.

RESPONSE: See responses to the Western Oil and Gas Associations comments.

COMMENT:

The DEIS is not, as presented, a fair and impartial assessment of the proposal, or the ecologic conditions in the area of the proposed sanctuary. Specifically:

a. It fails to effectively and equitably compare the status quo protection for the environment with the "preferred alternative";

b. It omits many important references to a large body of scientific research showing that oil and gas development has not had, and will not have, any significant or lasting harmful effect on the environment of the Channel despite the long history of production in these waters;

c. It fails to mention the proliferation of marine life around existing production platforms in the Channel, or the fact that they do not disturb or interfere with marine life near or around them.

d. It cites biomagnification as a deleterious effect of the presence of oil in the ocean but omits reference to the numerous studies disproving this hypothesis (see Attachment B to WOGA's comment). More particularly, it omits mention of the fact that, despite some 20-25,000 bbls. of oil naturally seeping into the Channel annually, research has shown that there has been no bioaccumulation by the marine organisms of the area.

e. It proposes to prohibit petroleum development on new leases within the proposed sanctuary while permitting it on existing leases, without offering any reasonable explanation for this inconsistency.

f. It fails to cite the true magnitude of the proposed sanctuary (1130 square nautical miles or 959,000 acres), thus shielding the reader from an awareness of the gross dimensions of the proposal.

g. It denigrates existing authorities charged with protecting the Channel environment by asserting that a new regulatory heirarchy is needed, but does not cite a single instance where these agencies are not adequately protecting the environment.

RESPONSES:

a. Sections F.2.b. and F.2.c. are in effect a comparison of the preferred alternative with the status quo.

b. See generic response E.

c. The FEIS has been expanded to include a discussion of platforms as artificial reefs. See also generic response E.

d. The FEIS has been expanded to include a discussion of oil seeps in the Channel. See also generic response E.

e. See response to API's third comment.

f. Section C of the FEIS states that the area of the proposed sanctuary is 1252.5 square nautical miles.

g. See generic response B.

COMMENT: We do not believe the DEIS is an adequate decisionmaking document, and consequently fails to fulfill the requirements of NEPA and the Council on Environmental Quality. We therefore urge that further consideration of this sanctuary proposal be postponed until a thorough, impartial, and correct assessment of the Channel environment has been made, and presented in a second DEIS which could then be reviewed by the public and concerned parties.

RESPONSE: See EPA's comment dated 1/3/80. The DEIS adequately addresses the impacts of the proposed action and fulfills the requirements of NEPA.

COMMENT: The DEIS fails to establish the need for prohibition of petroleum operations on leases executed on or after the effective date of the regulations. Accordingly, Section 935.6(c) of the regulations should be deleted and 935.6(a) should be either modified to include new leases or, preferably, deleted since its only purpose would be to refer to applicable regulations which would not be necessary to establish their validity.

RESPONSE: See Section F.2.c.1 of the FEIS and generic response E, both of which discuss the basis for a prohibition on oil and gas development in the sanctuary pursuant to future leases.

COMMENT: It is arbitrary and premature to solicit comments on proposed regulations before designation of the sanctuary. The Marine Sanctuaries Act provides that after the sanctuary has been designated the Secretary shall issue necessary and reasonable regulations to control any activities permitted within the designated sanctuary.

RESPONSE: NOAA has no intention of issuing the regulations for the sanctuary until after designation in accord with section 302 (8) of the Marine Protection, Research and Sanctuaries Act. However, waiting to propose regulations until after designation as the commenter suggests would result in a highly inefficient procedure. The impact of any proposed sanctuary simply cannot be assessed without knowing the proposed regulations. This commenter would have NOAA circulate a DEIS covering only the designation, unable to describe the practical effect of the designation. Then NOAA would begin rulemaking, presumably circulating a second DEIS describing the real impacts of the sanctuary.

COMMENT: We recommend that Section 935.6(b) be changed to read:

> "No person may engage in any hydrocarbon operation unless the following oil spill contingency equipment is available at the site of such operation, or can be shown to be readily accessible to the site: (1) 1,500 feet of open ocean containment boom on a boat capable of deploying the boom; (2) one oil skimming device capable of open ocean use; and (3) sorbent material at hand capable of picking up at least 15 bbls. of oil." (Changes underlined.)

RESPONSE: NOAA has retained the original form of the language of this regulation, but will consult further with the California Coastal Commission to assure that the regulation is not at variance with Commission requirements.

COMMENT: Section 935.8 serves no purpose except to refer to the Marine Sanctuaries Act and existing regulations. It therefore is unnecessary and could be deleted.

RESPONSE: This section sets forth the possible penalties for violating marine sanctuary regulations. Even though it refers to the Marine Protection, Research and Sanctuaries Act, this information is an important part of the regulations.

COMMENT: Legislation is pending before Congress to establish the Channel Islands National Park, which would include the northern Channel islands and the submerged land and waters within one nautical mile of such islands. The areas of the proposed park and the proposed sanctuary therefore overlap, which will require modification of the sanctuary regulations if the park legislation is enacted before designation of the sanctuary. This is another reason for deferring consideration of proposed regulations until after designation of the sanctuary.

RESPONSE: The Channel Islands Park bill has been signed into law. The administrative boundary of the Park extending one nautical mile seaward does not confer regulatory authority on the National Park Service (NPS) in this area. Therefore, overlap with the park boundary will not create conflict between proposed marine sanctuaries regulations and Park management, (see Sections F.1.b and F.2.b). NOAA, DF&G, and NPS have cooperated in discussions of possible management arrangements in the area. (See also comments by the National Park Service.)

COAST ALLIANCE: William Painter - 1/22/80

COMMENT: The proposed sanctuary would provide the Channel with needed protection.

RESPONSE: No response necessary.

COMMENT: The 12-mile radius proposed in alternative 4 not only affords the most protection to the Channel, but is also supported by the Santa Barbara County Board of Supervisors and the California Coastal Commission.

RESPONSE: See generic response A.

COMMENT: We urge that sealanes be made mandatory and that seabed alteration policy apply to sensitive areas outside a 2 mile zone around the Islands, as recommended in the testimony of the Scenic Shoreline Preservation Conference.

RESPONSE: See generic response G.

CONCERNED CITIZENS OF SILVER STRAND: Mr. & Mrs. Phillip G. Bardos - 1/18/80

COMMENT: The sanctuary proposal should emphasize alternative 4 since the key issue is the protection and preservation of an entire interrelated environment.

RESPONSE: See generic response A.

CORINTHIAN YACHT CLUB: Floyd Woodcock - 1/10/80

COMMENT: The regulations of small vessels (935.7) are too ambiguous and could lead to the expansion of prohibited boating activities.

RESPONSE: See generic response C.

COMMENT: Permit procedures (935.9 and .10) are too ambiguous as they relate to boating.

RESPONSE: No permit is necessary for boating in the proposed sanctuary.

COMMENT: A major part of the Islands is privately owned--the sanctuary proposal should not interfere with the Nature Conservancy or other private operations on the Islands.

RESPONSE: The marine sanctuary has no jurisdiction on land, and does not conflict with current or projected operations on the Islands.

CROWLEY MARITIME CORPORATION-STEAMSHIP ASSOCIATION OF LOS ANGELES HARBOR: Charles P. Sloecombe - 1/10/80

COMMENT: The location of the public hearings was not convenient or well publicized.

RESPONSE: See generic response I.

COMMENT: Severe negative impacts would result if Channel Islands waters are closed to fishing, shipping and recreation.

RESPONSE: The proposed sanctuary will not restrict commercial shipping within one nmi of the Islands (see Section F.2.c.4). It will not regulate fishing or recreation.

COMMENT: The Vessel Traffic Separation Scheme must be preserved. Regulations should be left to the Coast Guard.

RESPONSE: See generic response G.

DEFENDERS OF WILDLIFE: John L. Mohr - 1/11/80

COMMENT:

The southern California Continental Borderland is biologically rich, with an abundance of diverse species and a number of rare species, such as monoplacophorans, vestimentiferans, and pogophorans. To protect the area, a full channel sanctuary, DEIS Alternative 4, should be chosen.

In addition, the sanctuary should be extended southward to include a significant portion of the Cortes-Santa Rosa Ridge. The sanctuary border to the north and west of San Miguel Island should extend at least to the 400 meter isobath.

RESPONSE: See generic response A.

COMMENT: The DEIS paid insufficient attention to fish species in the proposed sanctuary area, and negligible attention to invertebrate species.

RESPONSE: See generic response J.

COMMENT: It is biologically inappropriate to "grandfather in" the kelp industry, without an objective analysis of the biological events involved.

RESPONSE: The harvesting of kelp is regulated carefully by the California Department of Fish and Game, which has not found indications of harm to kelp or kelp bed communities from harvesting.

COMMENT: The DEIS lacks information on subsurface current regimens and upwelling systems. These are of immense importance and should be taken into account.

RESPONSE: Section E.1. discusses the currents and upwelling in the study area.

DESOMOUNT CLUB: Evelyn Gayman, Conservation Chairman - 1/22/80

COMMENT: The sanctuary should be designated encompassing the waters of the total Santa Barbara Channel from Point Conception to the Mexican Border and 12 miles around the Islands.

RESPONSE: See generic response A.

COMMENT: It is vital that the CHANNEL ISLANDS MARINE SANCTUARY be established as:

--Biologically the richest and most diverse maring habitat in the U.S. and as
--needing the protection from oil drilling induced by thepanic pressures for more fossil fuels, and as
--no longer protected by the "geographic remoteness" and as
--giving recognition to the outstanding value and vulnerability of the islands and surrounding waters, and as
--establishing a single agency responsible for monitoring the entire system.

RESPONSE: No response necessary.

COMMENT: Tanker traffic in the area would be disrupting and/or damaging to many forms of life.

RESPONSE: NOAA's regulation prohibiting vessels engaged in the trade of carrying cargo or of servicing offshore installations within 1 nmi of the Islands (see discussion in Section F.2.c.4) addresses this problem.

COMMENT: No activities involving the recovery of oil from the Santa Barbara Channel can compensate for the tremendous ecological damage that can be incurred.

RESPONSE: See generic response E.

ECOLOGY CENTER OF SOUTHERN CALIFORNIA: Nancy Pearlman, Executive Director - 1/20/80

COMMENT: The excellent Marine Sanctuary Program will protect a valuable wildlife habitat. The proposed sanctuary should be permanently protected and activities within 6 nmi of the Islands should be regulated.

RESPONSE: No response necessary.

ENVIRONMENTAL DEFENSE CENTER: Mark Eskenazi - 1/11/80

COMMENT: Alternative 4 would enable needed comprehensive planning and coordination for permitted uses within the entire Channel area. Alternative 2 would foster a piecemeal and fragmented approach.

RESPONSE: See generic response A.

ENVIRONMENTAL DEFENSE CENTER: J. Marc McGinnes, Executive Director, 1/10/80

COMMENT: Alternative 4 will best enable and facilitate critically needed comprehensive planning and coordination of the permitted multiple uses within the entire channel area, which is "an interrelated ecosystem."

RESPONSE: See generic response A.

COMMENT: The Environmental Defense Center endorses the comments of Santa Barbara County and the Scenic Shoreline Preservation Conference.

RESPONSE: See the responses to the comments of Santa Barbara County and the Scenic Shoreline Preservation Conference.

ENVIRONMENTAL DEFENSE NETWORK: Corey Dublin - 1/11/80

COMMENT: It is imperative that the whole Channel be included within the Sanctuary boundaries for a broad based monitoring system.

RESPONSE: See generic response A.

COMMENT: Alternative 4 does not adequately address existing OCS leases.

RESPONSE: Alternative 4 requires that additional onsite oil spill containment equipment be required for all offshore platforms in the sanctuary (see Sections F.3 and F.4).

COMMENT: The Platform Hondo experience indicates that the oil companies have not shown good faith -- moving their platforms outside State waters to avoid regulations.

RESPONSE: OCS development beyond the territorial sea is regulated by the U.S. Department of Interior and numerous other Federal agencies. Furthermore, the California Coastal Commission can require that OCS development, which is subject to Federal controls, be consistent with California's coastal zone management plan (see Section F.1.).

EXXON COMPANY U.S.A.: J. R. Jackson, Jr. - 1/18/80

COMMENT: The Marine Protection, Research and Sanctuaries Act directs the Secretary of Commerce to promulgate reasonable and necessary regulations. In Exxon's opinion, these proposed regulations are neither reasonable nor necessary. The Designation Document should describe those "impacts" which do affect proposed sanctuary values rather than list "activities" which may affect them. Further, this list should include only those impacts which will require regulation rather than all those which may require regulation. This same philosophy applies to the implementation of the proposed sanctuary restrictions or prohibitions.

RESPONSE: The Designation document is not an environmental impact analysis, but a charter which sets out a framework for marine sanctuary regulations. Thus it is not appropriate for the Designation to describe impacts; that is done in the EIS. Since the Designation document describes the limits of activities NOAA may regulate in a marine sanctuary, it should list all the activities which may foreseeably require regulation as well as those which currently do.

COMMENT: The effects of oil spills: The casual reader of the DEIS would get the erroneous impression that crude oil introduced into the Channel would be a foreign substance that would cause untold harm over both considerable time

and distance. In only one reference (page F-75), is it even hinted that natural seepage may possibly occur near the proposed sanctuary. The DEIS is incomplete without discussing the locations, volumes and impacts of the thoroughly studied natural seeps in the Channel and the researched results of those studies. An excellent list of references on the impacts of oil seeps and spills, compiled by Ed Mertens of Chevron, is being submitted to NOAA by WOGA.

RESPONSE: The discussion of oil seeps has been expanded in the FEIS (see Section F.2.c.1). See also generic response E.

COMMENT: The extrapolation of data on hypothetical oil spills (page F-81) to justify restraint of oil and gas activity in the Channel goes far beyond any reasonable limits. The text states that "Probabilities range as high as 68 percent that spills occurring on a proposed lease site (P9) and 70 percent from existing leases (see E5 on figure F-11) will reach seabird breeding and nesting areas." A footnote then disclaims this by stating that the probabilities are not specific to haulout and nesting areas on the Islands alone but to the entire Bight. A more accurate probability table is found on Table F-7. It should be noted that for each of the 5 major islands, the probability of landfall of a major spill from all the original tracts included in proposed Sale #48 was equal to or less than that from existing leases. It should also be emphasized that a spill contacting an island is not tantamount to contacting either a haulout or nesting area. Exxon knows of no bird that nests below high tide where most spills come ashore.

RESPONSE: The sum of the probabilities of an oil spill from OCS Sale #48 and from all the pre-existing leases is greater than the probability of an oil spill from the pre-existing leases alone. If an oil spill reaches one of the Islands, it will affect the birds and mammals that use that area. Marine mammals frequently haul out below high tide line, and birds and mammals swim, feed, dive, and raft in the nearshore waters. Intertidal organisms would also suffer greatly if an oil spill reaches Island shores.

COMMENT: The California Coastal Commission is requiring (through CZMA consistency provisions) exactly the same oil containment equipment NOAA is proposing (in both the DEIS and Marine Sanctuary regulations) for Exxon's exploration activities in the Santa Barbara Channel. NOAA's implication that the State will not impose the same requirements in all tracts near the Islands is unfounded. We are of the opinion that the Coastal Commission will not lose sight of the sensitive nature of the area.

RESPONSE: NOAA's proposal to require additional onsite oil spill containment equipment is endorsed by the California Coastal Commission. Since all the tracts in the proposed sanctuary merit the additional oil spill containment equipment required by NOAA, a general marine sanctuary regulation will be more appropriate than case by case imposition of the requirement through consistency review.

COMMENT: The FEIS for Sale #48 discusses in some depth the number of vessels berthed and launched at Ventura Marina, Channel Islands Harbor Oxnard, Port Huenene Harbor, Santa Barbara and Los Angeles. It also discusses the probable distinations for most of these recreational craft and their purposes. The interpretation and extrapolations of the Sale #48 FEIS data should have been included in the Channel Islands DEIS, because it makes it apparent that the DEIS concern expressed over 50 Channel and Traffic Separation Scheme crossings per day by commercial and petroleum craft compared to crossing by other vessels is without basis.

RESPONSE: Since commercial and petroleum craft are generally larger and less maneuverable than recreational and fishing vessels, and since the environmental consequences of an accident are likely to be much more severe for a freight or petroleum carrying ship than for smaller vessels not carrying hazardous crago, the distinction has a basis. The proposed regulation prohibiting vessels engaged in the trade of carrying cargo or servicing offshore installations from entering the waters within one nmi of the Islands will not adversely affect commercial shipping, since unlike fishing and recreational boats, the affected vessels have no reason to enter nearshore waters.

COMMENT: We strongly urge the shortening of the Appeals procedure of 935.11. As now written, there are 5 periods of 30 days each, plus one that is indefinite in length during which "sufficient information" is to be gathered. Each of these time limits may be extended another 30 days. To alleviate the problem, we propose modification to the first sentence of Subpart (c) as follows:

> "If a hearing is requested or if the Administrator determines that one is appropriate, the Administrator may grant an informal hearing before a Hearing Officer designated for that purpose within 30 days of the Administrator's decision as outlined in Section 935.11, Subpart. (b)" (emphasis added to denote modification), after first giving notice of the time, place and subject matter of the hearing in the Federal Register."

Subsequent to the modification proposed above, the last sentence in Subpart (b) should be modified as follows:

> "The Administrator will notify all interested persons of the decision and the reason(s) therefore, in writing, within 30 days of the receipt of sufficient information."

RESPONSE: The statement that there are "5 periods of 30 days each" is incorrect. If no hearing is needed, there are two periods of 30 days, one a filing period for the appeal and the second to decide the appeal. Neither seems unreasonable. If a hearing is needed it adds two more periods, one to notify interested persons of the hearing and one for the hearing officer to render his decision. It is difficult to see how to shorten these limits, except the first, which the regulations provide can be shortened when appropriate. In any event , the

commenter's proposed amendment does not seem to help. It places the hearing after the Administrator's decision.

COMMENT: Neither Draft Designation Document, nor the general DEIS text describe the onsite administrator of the sanctuary in any detail. We believe that this important detail should be carefully spelled out. As now portrayed, most of the authority appears to be with the very authorities described in the Status Quo Alternative as inadequate. Later, they are described as having the experience and knowledge necessary to manage the sanctuary. The real authority must be delineated.

RESPONSE: See generic responses F and B and Section F.2.b.

COMMENT: The DEIS discussions on rare, endangered and threatened species within the proposed sanctuary are unclear. The question of the impact of OCS petroleum activity or oil spills on cetaceans has not been fully researched. However, existing data and information on past spills or seeps shows it to be minimal. The existing data certainly does not conclude there will be "significant" behavioral changes.

RESPONSE: Section F.2.c.1 discusses the possible effects of OCS development on marine mammals.

COMMENT: The DEIS treatment of seabird endangered species as it appears on page E-34 is also confusing. The only true seabird normally found in the proposed marine sanctuary area is the California Brown Pelican. The others listed are terrestrial and unlikely to be affected by either spills or seeps. The pelican is a normal and frequent visitor to existing platforms in the Channel.

RESPONSE: Nine of the 12 seabird species found in the Southern California Bight breed on the Islands and offshore rocks of the proposed sanctuary. Spills which reach the Islands, originating in the marine areas might affect terrestrial endangered species and certainly could affect the brown pelican. See Section E.2.b.

COMMENT: The DEIS on pages F-49 and F-50 makes the point that the present multitude of regulatory authorities with different objectives and jurisdictions bring about policy conflicts and lowered management effectiveness. Exxon's concurs with this NOAA position. Article 5, Section 3, of the Draft Designation Document, however, appears to add at least one more layer of policy conflict and lower management effectiveness appreciably.

RESPONSE: See generic responses B and F.

COMMENT: On August 21, 1979, the Ninth Circuit Court ruled that jurisdiction for air emissions on the Outer Continental Shelf lies with the DOI,

not the EPA. Consequently, the California ARB emissions standards are not applicable to OCS operations and lines 3 through 10 on page F-26 should be deleted.

RESPONSE: Comment accepted.

COMMENT: Discharges are specifically described in the proposed regulations 935.7(a)(1). While firmly believing in protecting the environment from harmful discharges Exxon does not believe that the proposed regulations (parts (B) and (C) as now written) are either necesary, reasonable or enforceable.

RESPONSE: This comment is unclear. Parts (B) and (C) of Article 935.7 (a)(1) of the proposed regulations state that marine sanitary device effluents and non-polluted cooling water discharges will be allowed in the sanctuary. See Section F.2.c.2 for a detailed basis for the proposed regulation of discharges.

COMMENT: Anchoring should be proposed as a regulated activity in order to protect corals. The single paragraph in the DEIS on page E-51 on Allopora is incomplete compared to other NOAA efforts to protect corals. Allopora, the primary reason behind the Tanner-Cortez sanctuary recommendation, lives around the Channel Islands in exactly the places where anchoring is most likely to occur.

RESPONSE: Unlike at other marine sanctuaries, existing and proposed, which are intended to protect corals, the coral which occurs at the proposed Channel Islands marine sanctuary (Allopora californica) grows in scattered formations, not in reefs. Consequently it is much less likely that an anchor will damage the coral than at a reef such as Key Largo or the Flower Garden Banks. Any danger to Allopora would come principally from collecting, and would best be countered by effective enforcement. However, if NOAA's monitoring program shows that the coral is sufficiently concentrated for anchoring to pose a threat, NOAA could propose further regulations to deal with that issue.

COMMENT: Exxon does not understand the statement found on page F-50 claiming the present regulatory system does not provide for the preservation and protection of special marine habitats except for critical habitats of endangered species. The Fish and Wildlife Coordination Act, 16 USC. 661-667e (FWCA) authorizes the "development, protection, rearing and stocking of all species of wildlife, resources thereof, and their habitat, in controlling losses of the same from disease or other causes,..." The question arises as why the Fish and Wildlife Coordination Act was listed as an existing Federal Authority in an earlier draft of the DEIS but was omitted in the current document.

Contrary to the statement found on page F-50 that the Marine Mammal Protection Act was "not designed to protect their habitats from potentialy adverse

uses", Section 1361(2) of the Act says, "In particular, efforts should be made to protect the rookeries, mating grounds, and areas of similar significance for each species of marine mammal from the adverse effect of man's actions."

Contrary to the conclusion on page F-50 that the Migratory Bird Treaty Act does not protect the habitats from potentially adverse impacts, it is Exxon's contention that it does.

As an alternative to marine sanctuary designation, under the terms of 16 U.S.C. 668dd-668jj, the Secretary of Interior's powers related to all lands, waters and interests therein related to the conservation of fish and wildfish can be culminated into a Natinal Wildlife Refuge.

Still another alternative to sanctuary designation not discussed in the DEIS is the National Natural Landmarks Program. The purpose of this program is to identify and designate nationally significant examples of aquatic communities and habitats of native plant and animal species that constitute the nation's natural heritage.

RESPONSE: A description of the FWCA has been included in the FEIS. It was omitted in the interest of brevity, as were other authorities which are considered somewhat more indirect in their application. The FWCA authorizes the Secretary of the Interior to "provide assistance to, and cooperate with" other agencies in accopmlishing the objectives described by the commenter. It is primarily a comment statute. The MMPA does not provide specific procedures or authority to accomplish protection of habitat such as that in the Endangered Species Act. However, even the latter Act only addresses Federal actions, not State or private actions. NOAA disagrees with the contention concerning the Migratory Bird Treaty Act.

The Natural Landmarks Program has limited regulatory effect although Federal action must not adversely affect such sites. It provides no protection from State or private activities. While it is true that a National Wildlife Refuge could conceivably provide some protection to the area under consideration, the purposes and activities of the refuge system are more focused and less compatible with multiple uses than the marine sanctuary program.

COMMENT: The authors of the DEIS do not appear to fully appreciate nor understand the impact of a Class I Clean Air Act designation for the Islands. This designation would impose a 50 km. buffer zone in which no significant deterioration would be allowed. As defined on page F-39, this includes any stationary source with the potential of emittting 100 tons per year. This would apply not only to platforms in the Channel but to developments on the mainland. The fact that most emissions from either offshore platforms or mainland facilities would not ordinarily come in contact with the Islands (according to the FEIS for Sale #48, Table II. B-1), is apparently ignored. That fact that the emissions from the numerous boats nearer the Islands will be exempt is questionable.

RESPONSE: NOAA did not propose Class I Clean Air designation for the Islands or make any statements about mainland or vessel discharges in that context. The DEIS merely noted that the Channel Islands National Monument had been proposed for Class I designation, and that OCS development near the Islands would increase the liklihood that Class I air standards on the Islands would be exceeded.

COMMENT: Exxon does not believe that the foregone social value of the proposed marine sanctuary is limited to $1 million as described on page F-98. If the oil equivalent of oil and gas reserves of the 24 deleted tracts is 7.3 million barrels, then the dollar value foregone is closer to $124 million when the price of imported oil price is $30/Bbl and domestic new oil is $13/Bbl. The cost of imported spot oil would be even greater. This value may be low when compared to the social costs of going without.

RESPONSE: See generic response K.

COMMENT: In summary, Exxon does not believe that NOAA has made either a clear convincing case that a Channel Islands Marine Sanctuary is a necessary or justifiable major Federal action. Further, the proposed Channel Island sanctuary regulations do not meet NOAA's own final criteria for sanctuary regulations as published.

Exxon believes that NOAA should decide once and for all whether the primary purpose of the sanctuary is either (1) protection and preservation of the Channel Islands ecosystem or (2) enhancement and encouragement of recreational and research efforts. The DEIS makes a fine case that recreation and ecosystem protection are mutually independent and perhaps exclusive. The proposed regulations encourage intensified use of all activities except petroleum.

RESPONSE: The proposed regulations do not encourage any intensified use, although some activities, such as fishing and recreational boating, are deemed compatible and not regulated by the proposed sanctuary. Although in some cases, resource preservation may conflict with recreation and research activities, at the current level of use around the Islands, both activities are still compatible with ecosystem protection. The primary purpose of the sanctuary is clearly stated in Section D to be resource preservation.

NOAA is not aware of any conflict between the proposed sanctuary and the marine sanctuary program's general regulations.

COMMENT: NOAA does not have the authority to restrict removal of cultural or historical resources on the OCS under existing law. A Florida lawsuit filed on December 4, 1979, may soon establish that the law of finds is paramount to laws of historic preservation in territorial waters as well as on the OCS. If protective restrictions similar to those placed on the U.S.S. MONITOR in the Monitor Marine Sanctuary are imposed on historical or cultural resources found in the Channel Island Marine Sanctuary, the environmental and economic consequences will definitely not be minimal as stated on page C-12.

RESPONSE: NOAA disagrees that it lacks the authority to protect cultural or historical resources. Its position is widely supported with respect to the U.S.S. MONITOR. Commenter's contention that restrictions similar to those protecting the MONITOR will have more significant consequences than described is inconsistent with the contention that NOAA lacks authority. However, no such additional consequences have been brought to NOAA's attention.

COMMENT: On page F-61, the DEIS gives, as one reason for creating the sanctuary, the supposition that offshore oil activities would disturb the breeding populations of the 5 species of pinnipeds found on San Miguel Island. However, it is noted on pages F-47 and F-48, the U.S. Navy has established a Naval Danger Zone that extends 3 miles seaward of the eastern half of San Miguel Islands where bombing practice takes place approximately 200 times a year. Since such military activity evidently does not affect the prolific marine mammal life on San Miguel Island, it seems highly questionable that activity by the offshore industry would impair this natural resource in any way.

RESPONSE: The fact that pinniped communities survive in the area despite considerable military activity does not necessarily mean that the pinnipeds are not adversely affected by military activities, nor does it mean that additional activities, such as oil and gas development, will have no additional effect, particularly if they affect areas away from military activities.

COMMENT: The first sentence in Subpart (c) of 935.9 provides the Assistant Administrator open-ended power to set conditions on all permits. This discretionary power is not in the spirit of NOAA's proposal to allow activities under Section 935.5 "subject to all prohibitions, restrictions and conditions imposed by any other authority." (emphasis added) Existing authorities have the power and expertise to protect the resources of the Channel Islands, and therefore should set any necessary restrictions on activities allowed in the sanctuary, rather than NOAA.

RESPONSE: The Administrator's power to set conditions under Section 935.9 only exists when NOAA issues a permit and this will occur, of course, only if an activity is prohibited by NOAA (section 935.7). Section 935.5 refers to activities not prohibited by NOAA and merely states that these are still subject to requirements established by other authorities. It is totally consistent not to subject to additional permitting requirements those activities otherwise adequately controlled while ensuring broad discretion to condition the remaining activities to protect the Sanctuary

COMMENT: A definition of "hearing Officer" as referenced in Section 935.11 would be appropriate. The question arises as to whether that officer comes from NOAA or an outside agency.

RESPONSE: NOAA is in the process of reviewing options for providing hearing officers for a wide variety of programs. When it is possible to be more specific, these regulations or a NOAA-wide regulation may be appropriate.

FISHERMEN AND ALLIED WORKERS' UNION: John J. Royal, Executive Secretary - 1/8/80

COMMENT: A public hearing should be scheduled and held in the Los Angeles/ Long Beach area so that local interest parties can conveniently testify.

RESPONSE: See generic response I.

COMMENT: The Union supports the comments submitted by the Pacific Merchant Shipping Association.

RESPONSE: See responses to the Pacific Merchant Shipping Association's comments.

FRIENDS OF THE EARTH AND COAST WATCH: Robert Wilkinson - 1/11/80

COMMENT: A revised version of alternative 4, from Point Arguello, to fifteen miles around the Islands to Point Mugu should be designated. The DEIS makes a good case for alternative 4. Inclusion of the entire Channel is crucial to preservation and restoration of the entire Channel ecosystem.

RESPONSE: See generic response A.

COMMENT: There should be no oil development within six miles around the Islands.

RESPONSE: NOAA proposes to prohibit oil and gas development pursuant to future leases in the sanctuary. See also Section F.3.

COMMENT: Dispersants are an insufficient solution to the problem of oil spills.

RESPONSE: See Section F.2.c.1. for a discussion on dispersants. NOAA's proposed regulations prohibit oil and gas development pursuant to future leases in part in order to minimize the occurrance of oil spills.

COMMENT: Tanker traffic should be required to use traffic safety lanes and radar monitoring and control of vessels should be instituted in the Channel similar to that in the English Channel.

RESPONSE: See generic responses G and H.

COMMENT: There has been inconsistent testimony that the State can handle everything, yet the State's policy on sea otters had grave negative consequences. The fishermen are only concerned that the Federal government will add more controls -- too nearsightedly.

RESPONSE: The State's jurisdiction does not extend beyond 3 nmi from shore (see also generic response B). The proposed designation document guarantees that the marine sanctuary will not regulate fishing.

FRIENDS OF THE RIVER: Roberta Jortner - 1/11/80

COMMENT: The proposed sanctuary boundary that is not large enough will be adversely affected by destructive processes outside its boundaries.

RESPONSE: See generic response A.

COMMENT: Comprehensive overall management will improve efficiency and effectiveness within existing agencies.

RESPONSE: No response necessary

COMMENT: There should be a five-year moratorium on all new lease sales.

RESPONSE: NOAA considered but rejected a possible moratorium on all oil and gas activities pursuant to future leases. See Section F.4 and generic response D.

FRIENDS OF THE SANTA MONICA MAINTAINS, PARKS AND SEASHORE: Susan Nelson - 1/10/80

COMMENT: Alternative 4 should be approved. The sanctuary should be extended down to the Point Mugu and Malibu Beach areas.

RESPONSE: See generic response A.

COMMENT: A merging of interests between oil development and environmental protection has been recognized in the DEIS and in the regulations.

RESPONSE: No response necessary.

FRIENDS OF THE SEA OTTER: Betty Davis - 1/20/80

COMMENT: Regulations of petroleum development within the proposed sanctuary should be more stringent. No production should be permitted within the boundary, and no exploration permitted in any of the 15 tracts inside the boundary until that part of the tract lying outside the boundary has first been explored.

RESPONSE: See Section F.3. of the FEIS.

COMMENT: The Sanctuary plan should retain the option to more strictly regulate the direct and indirect habitat destruction caused by kelp harvesting. Kelp harvesting should not be allowed within sanctuary boundaries. If it must be, regulations on kelp cutting should be made an integral part of the proposed regulations.

RESPONSE: Kelp harvesting is regulated by the California Department of Fish and Game, which found no evidence that kelp or kelp bed communities are endangered by the current level of kelp harvesting around the Islands.

COMMENT: Regulations should prohibit the placement of structures in the VTSS.

RESPONSE: See generic response H.

NOAA considered the technical comments provided by Friends of the Sea Otter and inserted them into the FEIS where possible.

GET OIL OUT: W. K. Rogers - 1/10/80

COMMENT: Get Oil Out supports comments submitted by the County of Santa Barbara.

RESPONSE: See responses to the comments by Santa Barbara County.

COMMENT: There should be no additional restrictions on commercial and sport fishing.

RESPONSE: NOAA exempts fishing from marine sanctuary regulation.

COMMENT: Since most of the land is owned by the Federal government, they should regulate it - rather than the oil industry by default.

RESPONSE: No response necessary.

COMMENT: The Channel is an interrelated, singular but complex ecosystem where artificial boundaries would be ineffective in controlling pollution or oil industry accidents. Therefore, alternative 4 should be selected. However, if there is no other choice, alternative 2 should be chosen.

RESPONSE: See generic response A.

COMMENT: There are onshore proven and potential sources of oil that should be developed first - we will need oil in ten to fifteen years when the oil industry will have learned how to exploit supplies safely and how to control inevitable accidents. Numerous accidents and seepage continue to occur in the offshore development. The risk for irreversible impacts from oil development is not offset by the incremental availability of oil for the U.S.

RESPONSE: The proposed regulations prohibit oil and gas development pursuant to future leases within 6 nmi of the Islands. See also generic response D.

GET OIL OUT: Edward H. Comer, Bruce J. Terris, Law Offices - 1/23/80

COMMENT: GOO firmly supports the creation of a Marine Sanctuary in the Santa Barbara Channel. We agree with the information included in the DEIS description of the environment, and support most of the management controls recommended in the DEIS.

RESPONSE: No response necessary

COMMENT: The proposed sanctuary area is too small. It should include the entire Santa Barbara Channel, and regulations prohibiting oil and gas activities on unleased lands should be applied throughout the Channel. We submit that the entire Channel must be included in the sanctuary to protect the resources surrounding the Channel Islands from serious and

irreparable damage from oil exploration, development or transportation elsewhere in the Channel.

RESPONSE: See generic responses A and D.

COMMENT: We believe that the DEIS fails to identify properly all the important resources located throughout the Channel. Large portions of the DEIS address only animal and plant habitats located near the Channel Islands and ignore similarly important biological and natural features of other portions of the Channel. For example, as we have mentioned above, kelp beds are an important biological and commercial resource. The DES identifies only those beds near the Channel Islands and makes no mention of the beds extending for many miles along the mainland coast of the Channel. DEIS, P. E-49. The inclusion of information regarding the location of these kelp beds is necessary to identify fully the resources of the Santa Barbara Channel. In the absence of such data, the public and the decisionmaker might well assume that all kelp beds are located around the Channel Islands and that none exist elsewhere in the Santa Barbara Channel. This might unfairly lead a decisionmaker to favor a sanctuary restricted to areas around the Channel Islands and prejudices the adoption of the alternatives including the entire Channel as a sanctuary.

RESPONSE: NOAA has attempted to discuss more fully the resources of Santa Barbara Channel in the FEIS.

COMMENT: The DEIS states that the 6-mile sanctuary limit is at best a buffer zone which is intended to provide adequate time and space to clean up an oil spill before it reached shore. Judging by past experience, especially the 1969 oil spill at Santa Barbara, the 1978 spill near Gaviota, and the 1979 spill at Ixtoc I, a 6-mile limit is not large enough to provide effective protection.

RESPONSE: See the boundary discussion in Sections F.2. and F.4. See also generic responses D and A.

COMMENT: The larger sanctuary we proposed would not prohibit recovery of the "substantial economically recoverable petroleum reserves" mentioned in the DES at p. F-133. Most of the tracts in the Channel are currently leased.

Our sanctuary proposal does not prohibit oil and gas development on these leases. Additional leases near Santa Barbara have already been informally designated as a non-leasing area by the Department of the Interior and State policy. Moreover, Figure E-17 (DEIS, p. E-63) demonstrates that many of the unleased tracts in the Channel were recently offered in Lease Sale #48 in 1979, but were not leased by industry. Either the industry believes the tracts contain insufficient resources to warrant leasing or the industry lacks sufficient technology to develop the tracts safely. In either case, prohibiting their development will have little adverse impact upon the recovery of oil and gas resources in those areas at the present time.

RESPONSE: The fact that many tracts offered in Lease Sale 48 were not leased does not necessarily mean that those tracts cannot be developed or do not contain exploitable reserves. Industry interest in those tracts may depend at least in part on results from exploration on existing leases. In addition, if current technology is inadequate to safely develop some of the unleased tracts in the Channel, the technology may improve. Finally, if oil prices continue to rise, petroleum reserves that are may not now be profitable to develop may become economically recoverable.

COMMENT: In order to prevent the possibility of a catastrophic accident in the Channel which could spill into the marine sanctuary, we propose a requirement that all vessels carrying petroleum products which do not call upon a port within the Channel be prohibited from entering the Channel and be routed outside the Channel Islands.

In addition, we propose that all oil and gas drilling activities be prohibited from occurring within a quarter mile of the shipping lanes or in the separation zone between lanes.

RESPONSE: See generic responses G and H.

COMMENT: The DEIS makes no mention of the consultation process required by the Endangered Species Act and therefore it is not clear whether you intend to initiate such consultation. Although implementation of a marine sanctuary proposal will be beneficial to these endangered species, nevertheless, prior to carrying out the proposal, NOAA is still required to comply with the procedures established by Section 7 of the Endangered Species Act, 16 U.S.C. 1536.

We urge that consultation be begun as soon as possible in order to avoid subsequent delays in the decisionmaking process.

RESPONSE: NOAA has consulted with the Office of Endangered Species in the Department of Interior and with the National Marine Fisheries Service in the Department of Commerce concerning the proposed action. Both authorities responded in favor of marine sanctuary designation.

GREENPEACE (A Non-Profit Environmental Foundation): Beth Bosworth, Director - 1/5/80

COMMENT: The description and impacts reflect positively on the varied and unique marine ecology of the area. The proposed sanctuary meets the criteria under the Marine Protection, Research and Sanctuaries Act. It would unify protection of marine resources by having primary authority over the myriad of agencies now governing the area. It would identify and educate the public on the diversity of life in the Channel Islands, and it could lessen the chance of a major oil spill by prohibiting further lease sales.

RESPONSE: No response necessary.

COMMENT: Greenpeace is especially concerned for the health and safety of dolphins, sea otters, lions and seals as well as the general well-being of the entire marine ecosystem. Considering our uncertain economic situation in regards to energy, and our reliance on oil, it would seem premonitory to envision development of those leases within the very near future. In light of this, alternative #3 would impose the most stringent protective measures.

RESPONSE: Although the sanctuary regulations proposed under alternative 3 are more restrictive for operations on leases predating the promulgation of regulations than those of the preferred alternative, NOAA has determined that an overall sanctuary prohibition of exploration and development activities on such leases is inappropriate at this time. See Section F.3 for a detailed comparison of alternative 2 and alternative 3.

COMMENT: It does not seem logical or prudent to proceed with any hydrocarbon development considering the absence of any 100% effective means of controlling an oil spill.

RESPONSE: See Sections F.3 and F.4, specifically the discussion of alternatives 3 and 4, for a discussion of the basis for NOAA's decision not to prohibit oil and gas operations.

COMMENT: Dredging activities in the development of pipelines could very well disrupt the fragile marine environment.

RESPONSE: The environmental costs of pipeline construction must be weighed against the risk of disturbance and oil pollution associated with the continued barging of oil and gas ashore from offshore platforms. In many cases, if sufficient quantities of petroleum are produced, the laying of pipelines is environmentally preferable to barging. Several Federal and State authorities must issue permits for or otherwise review, the construction of pipelines, including the U.S. Geological Survey, the Army Corps of Engineers, and the California Coastal Commission. Thus any pipelines are reviewed carefully for geological safety and environmental impacts.

HANNA-BARBERA'S MARINELAND - Brad Andrews, Curator of Mammals - 2/5/80

COMMENT: From time to time, Hanna-Barbera's Marineland obtains permits from NOAA pursuant to the Marine Mammal Protection Act to collect live marine mammals for display. In order to obtain such a permit, we submit an application which contains very detailed information concerning our need for the mammals, our facilities for collecting, transporting and

housing the mammals, our proposed manner of selecting a mammal so as not to weaken the group he is a part of, the area in which we propose to collect, the timetable for collection, etc. In short, we believe that in this permit application we furnish to you includes the types of information which will be required under 935.9 of the proposed rules.

RESPONSE: No response necessary.

COMMENT: The proposed rules, as presently written, could be interpreted to prohibit collecting live marine mammals within the proposed Marine Sanctuary without obtaining an additional approval by NOAA of the permit. Indeed, the proposed rule could also be read to prohibit entering the Marine Sanctuary for collection despite having obtained a permit from NOAA which allows the collection. Marineland believes that such a result was not intended by the drafters of the proposed rule. Neither of these interpretations is necessary for, or helpful, to achieve the purposes of the proposed rule. NOAA will already have had an opportunity to scrutinize and to reject a proposed activity, based upon the same considerations which will apply to permit applicants under the proposed rule.

Therefore, we respectfully suggest that the proposed rule be amended by adding two additional clarifying sentences at the end of 935.10 as follows:

> All permits, licenses and other authorizations issued by NOAA pursuant to the Marine Mammal Protection Act are hereby certified and shall remain valid. Any person in possession of permits, licenses or other authorizations issued by NOAA pursuant to the Marine Mammal Protection Act may conduct any activity in the Sanctuary including any activity specifically prohibited under 935.7 if such activity is related to the conduct permitted in such permits, licenses or other authorizations.

RESPONSE: The only regulation which might prohibit the commenters' collection activities as described above would be the prohibition on disturbing marine birds and mammals by overflights of less than 1000 feet. This could occur if collection is done by helicopter. In such an event, the marine sanctuary authorities will coordinate closely with the National Marine Fisheries Service to avoid permitting delays or complications.

LEAGUE OF WOMEN VOTERS OF SANTA BARBARA: Mary Lou Casson - 1/11/80

COMMENT: Alternative 4 should be adopted.

RESPONSE: See generic response A.

COMMENT: The League supports the findings of Al Reynolds of the County of Santa Barbara.

RESPONSE: See the response to the comments made by Santa Barbara County.

LEAGUE OF WOMEN VOTERS OF VENTURA COUNTY: Joan Harris - 1/10/80

COMMENT: The cooperative management of the sanctuary is provided by the proposal, as is needed.

RESPONSE: No response necessary.

COMMENT: Restrictions on oil and gas activities are necessary.

RESPONSE: NOAA's proposal provides such restrictions.

COMMENT: The description of alternatives is unbalanced in favor of alternative 2. The description of alternative 4 should be expanded. alternative 4 should be chosen.

RESPONSE: See generic response A.

MERCK & CO., INC: Richard Trabert - 1/30/80

COMMENT: Although the discussion in the DEIS indicated that the proposed marine sanctuary would not regulate kelp harvesting, the draft designation document and proposed regulations failed to exempt kelp harvesting.

RESPONSE: NOAA has made the recommended changes in the proposed final regulations and draft Designation, with one exception. Although the regulations permit overflights to survey kelp beds, the Designation does not rule out the possibility of regulating such overflights in the future, should they pose a threat to the marine sanctuary resources. Overflights, although the customary and probably most economical method of surveying kelp beds, are not absolutely necessary to the harvesting of kelp, and could cause considerable disturbance in sensitive wildlife habitat. Any change in the initial regulations of overflights would be subject to the Administrative Procedures Act and a 60 day comment period.

MORE MESA LAND TRUST: Dr. Larry Rickford 1/11/80

COMMENT: Alternative 4 will protect the larger ecosystem of the Islands and the Channel.

RESPONSE: See generic response A.

NATIONAL ASSOCIATION OF UNDERWATER INSTRUCTORS: John Wenzel, Secretary - 1/19/80

COMMENT: OCZM should clarify what is meant by historical resources.

RESPONSE: The Department of Fish and Game is conducting a management study for NOAA. This issue will be addressed in that study.

COMMENT: OCZM should develop a graduated scale of penalties for violating regulations.

RESPONSE: See previous response.

NATIONAL COALITION FOR MARINE CONSERVATION PACIFIC REGION: Herbert R. Kameon, President - 12/12/79

COMMENT: There is no provision for the damage that may be done by fishing gear such as bottom draggers to the nearshore bottom environment. The damage that may be done by fishing gear perpetually being dragged over the bottom can be very serious. Perhaps some mechanism can be built into the program that sets up a cooperative consultive effort in conjunction with the work of the development of fishery plans for harvesting in this area.

RESPONSE: NOAA, DFG and PFMC will cooperate and consult to assure that the programs regulating fishing and the sanctuary objectives remain compatible.

COMMENT: It is recommended that San Nicolas Island, Santa, Barbara Island, San Clemente Island and the Tanner and Cortes Banks be considered for marine sanctuary status.

RESPONSE: The waters around Santa Barbara Island are included in this sanctuary proposal. Tanner and Cortes Banks and the waters around San Nicolas Island are on NOAA's List of Recommended Areas for marine sanctuary status. NOAA received a recommendation for the designation of the waters around San Clemente Island as a marine sanctuary, but does not have sufficient information to determine whether the area meets NOAA's marine sanctuary criteria. NOAA welcomes additional information on the appropriateness of these areas as marine sanctuary candidates.

NATIONAL PARKS AND CONSERVATION ASSOCIATION: William C. Lienesch, Administrative Assistant - 1/28/80

COMMENT: The Channel Islands and the waters surrounding them are a magnificent national resource. The preferred alternative is definitely a step in the right direction. However, it does not provide sufficient protection in terms of the geographic area covered by the designation or the control of the activities permitted within the proposed marine sanctuary. Alternative 4, with some modification will provide additional necessary protection without imposing unreasonable regulations on the various activities occurring in the area. The larger boundary will protect a larger area. Alternative 4 would make sea lanes mandatory, reducing chances of accidents.

RESPONSE: See generic responses A and G.

COMMENT: Alternative four is deficient in that it does not provide enough protection over seabed alterations. Seabed alterations should be prohibited where such alterations will cause degradation. There are important and sensitive areas outside the two mile zone around the islands which should be protected.

RESPONSE: See the comparison with the preferred alternative in Section F.3.

NETWORK: Phylis Mottda 1/11/80

COMMENT: NETWORK supports the statement by the Scenic Shoreline Preservation Conference, and Alternative 4, with a twelve to fifteen mile radius around the Islands.

RESPONSE: See generic responses A and the response to Scenic Shoreline Preservation Conference's comments.

COMMENT: There should be a five-year moratorium on oil lease sales in the Channel to catch up on leases currently being processed.

RESPONSE: See generic response D.

NORCAL GRAPHICS: Marke E. Gibson - 12/19/79

COMMENT: On page F-82, reference to Figure 17 should be changed to Figure 13.

RESPONSE: Comment accepted.

COMMENT: The commenter does not know of any verified instances where the sea otter has been sighted below Pt. Conception.

RESPONSE: Table E-3 cites NOAA's sources for its information on marine mammals.

NATURAL RESOURCES DEFENSE COUNCIL: Trent W. Orr - 2/1/80

COMMENT: Overall, NRDC supports the designation of the Channel Islands marine sanctuary.

RESPONSE: No response necessary.

COMMENT: Alternative 4 should be designated because the island resources cannot be isolated from the integrated ecosystem that the Santa Barbara Channel constitutes.
RESPONSE: See generic response A.

COMMENT: NRDC supports the prohibition of oil and gas development pursuant to future leases in the sanctuary. Ideally, no oil and gas activity should be permitted in the sanctuary on existing leases either. NOAA could condemn and repurchase existing leases, or impose the restrictions suggested in alternative 3, or combine those two approaches.

RESPONSE: See the comparison with the preferred alternative in Section F.3.

COMMENT: Oil and gas development pursuant to future leases should be prohibited throughout the Channel. Conservation and improvements in the efficiency of energy use would be a saner approach to the energy shortage than the inexorable exploitation of every possible oil resource.

RESPONSE: See generic response D.

COMMENT: No oil and gas activities should be allowed in the VTSS.

RESPONSE: See generic response H.

COMMENT: Adherence to the VTSS should be mandatory.

RESPONSE: See generic response G.

COMMENT: The EIS should discuss the drawbacks and advantages of pipelines as compared to banges and tankers.

RESPONSE: See Section F.2.c.1. NOAA feels that the case by case review of pipeline permits by the California Coastal Commission and other authorities provides currently sufficient consideration of the costs and benefits of pipelines as compared to other methods of transporting oil and gas. NOAA's proposed regulations would not restrict dredging or other construction for laying pipelines beyond those restrictions imposed by other agencies.

COMMENT: The DEIS should discuss the impact of the military's activities in the area. Relocating certain practice exercises may not jeopardize national defense.

RESPONSE: NOAA's proposed research and monitoring program (see Section F.2.b) may be able to provide further information on the impacts of military activities. once the sanctuary is designated this informationwill be discussed with the authorities responsible for the exercises and any necessary mitigation will be considered. Because the Southern California Bight is a very heavily used area, movement of established military exercises will require extensive consideration of impacts on these other uses.

COMMENT: NRDC agrees with the decision not to regulate commercial fishing or kelp harvesting, but hopes the sanctuary manager will communicate with the agencies regulating fishing if concerns arise.

RESPONSE: This is consistent with NOAA's proposal. The close cooperation with the California Department of Fish and Game will facilitate such communication.

COMMENT: NRDC supports the proposed prohibition on construction and alteration of the seabed within 2 nmi of the Islands. However, the impact of construction and seabed alteration beyond 2 nmi should be considered, and the blanket exemption for seabed alteration related to hydrocarbon activities should be narrowed.

RSPONSE: The case by case review of seabed alteration and construction activities provided by the California Coastal Commission's and the Corps of Engineers review currently provides a sufficient level of protection for the concentration of benthic resources beyond 2 nmi. NOAA removed the exemption for hydrocarbon development related activities and now only excludes the laying of pipelines and navigation aids from the proposed regulation.

COMMENT: More information should be provided on the proposed management plan.

RESPONSE: See generic response F.

PACIFIC COAST FEDERATION OF FISHERMEN'S ASSOCIATION, INC.: Zeke Grader, General Manager - 1/22/80

COMMENT: The association is represented in the comments submitted by Mr. Smith on behalf of the Commercial Fishermen of Santa Barbara.

RESPONSE: See response to comments by the Santa Barbara Commercial Fishermen.

PACIFIC MERCHANT SHIPPING ASSOCIATION: Phillip Steinberg - 1/2/80

COMMENT: There is a need to preserve vessel traffic routes in order to avoid collision or groundings.

RESPONSE: NOAA's revised designation document precludes regulation by the sanctuary of vessel navigation within a designated VTSS or PAR. See also generic response G.

COMMENT: The added layer of government is inadvisable. Vessel operations and navigation should be left to the U. S. Coast Guard to avoid confusion to the maritime user and needless duplication of government resources.

RESPONSE: See generic responses B, G, and H.

RECREATIONAL BOATING COUNSEL: George L. Fisher, Executive Director - 1/8/80

COMMENT: The Counsel is alarmed by the third layer of bureaucratic controls on top of the State of California and county controls.

RESPONSE: See generic responses B and C.

RESOURCES PARTNERSHIP: Dr. Ruthann Corwin

COMMENT: The so-called "preferred alternative" represents protection for the resources that is only greater in degree rather than in kind from existing authorities.

RESPONSE: See Section F.2.b for a discussion of NOAA's management goals, which are not parallelled by any existing authority.

COMMENT: The EIS does not adequately address itself to the long-term cumulative impacts of human activities in the Santa Barbara Channel, and therefore fails to explain the selection of the "preferred alternative" over the other alternatives which provide much fuller protection for the resources.

RESPONSE: See generic response A.

COMMENT: The most comprehensive protection is provided by alternative 4. The reasons for its rejection do not square with the facts regarding the potential hazards to the resources.

RESPONSE: See generic response A.

COMMENT: The increase in tanker traffic and oil and gas recovery operation in the Santa Barbara Channel area increases the chance of oil spills. Oil spills do not respect sanctuary boundaries. The on-site oil spill containment equipment listed on page 90 will provide protection from only small spills in calm weather. The EIS is deficient in describing the actual effectiveness of this equipment.

RESPONSE: Section F.2.c.1. describes the effectiveness of oil spill containment equipment. See generic response D and Section F.3 for a discussion of why NOAA does not propose to prohibit oil and gas development on a Channel wide basis.

COMMENT: The concept of coordinated management has a hollow ring as applied to a six mile sanctuary area. If coordination is not provided for a larger area, the sanctuary manager could be left guarding a sanctuary whose resources have disappeared from causes external to NOAA's management.

RESPONSE: See generic response A.

SANTA BARBARA AUDUBON SOCIETY: Toni Sollen - 1/11/80

COMMENT: The sanctuary boundary should extend six miles around the Islands and there should be no mineral exploitation within this boundary.

RESPONSE: See Section F.3 of the FEIS for a discussion of why NOAA proposes to allow oil and gas activities on existing leases and seabed alteration beyond 2 nmi from the Islands.

COMMENT: Alternative 4 is reasonable.

RESPONSE: See generic response A.

SANTA BARBARA COMMERCIAL FISHERMEN: Thorn Smith - 1/18/80

COMMENT: Existing regulatory authority, divided among 11 Federal, 7 State, and many local agencies, is adequate to protect the area. The Secretary of the Interior has taken steps to avoid adverse impacts from oil development.

RESPONSE: See generic response B.

COMMENT: NOAA promises to exempt fishing activities from sanctuary regulations are not reliable, judging by experiences with other government agencies. The California DF&G allowed the sea otter to destroy the Central California abalone fishery, despite promises to the contrary. DOI promises, that establishment of the National Monument on Santa Barbara and Ancapa Islands would not interfere with commercial fishing, have been broken. Judging by these cases, we lack faith in NOAA assurances.

RESPONSE: NOAA's designation document excludes fishing from sanctuary regulations and ensures that the marine sanctuary cannot exclude fishing from sanctuary regulation and regulate fishing. In order to change this exemption of fishing the designation process must be repeated, including the distribution of EIS's, public hearings, Presidential approval and gubernatorial concurrence as to regulations in State waters.

COMMENT: We do not understand what the term "monitoring" means, as used on page F 112 of the DEIS. Language in the DEIS about monitoring, research and enforcement can lead to indirect management of living marine resources.

RESPONSE: Monitoring means observing over time. Thus, one of the reponsibilities of the sanctuary manager will be to assemble information on the heath and status of sanctuary resources over time. Data gathered from monitoring will be available to DFG to utilize in its decision-making on fishery issues.

COMMENT: The DEIS proposal to encourage and support "research" and "enforcement" might lead to further time and area closures, which fishermen cannot afford.

RESPONSE: The marine sanctuary has exempted fishing from potential sanctuary regulation and thus closures could not be legally instituted. If existing authorities, including the Department of Fish and Game and the Pacific Fishery Management Council, decide to close an area to fishing because of information obtained by sanctuary-sponsored research it will be in order to preserve the fishery in the long run, in accordance with DFG's and PFMC's mandate. Likewise, if sanctuary funds augment enforcement of regulations imposed by the existing authorities on fishing, the improvement will be in the immediate interest of law-abiding fishermen and in the long term interest of all who depend on the fishery.

COMMENT: A representative of commercial fishing interests should be appointed to any board, commission or other authority given the responsibility for administration of NOAA funds.

RESPONSE: See Section F.2.b. of the FEIS.

SANTA BARBARA MUSEUM OF NATURAL HISTORY: F. G. Hochberg, Curator and Head, Department of Invertebrate Zoology - 1/11/80

COMMENT: The Transition Zone increases the number of species and uniqueness of the species in the area. There is a new species of finned Octopod which is known to occur along the slopes of the basin in the center of the Santa Barbara Channel. The new species of colonial soft coral occurs only in the intertidal at Point Conception.

REPONSE: No response necessary.

COMMENT: The distribution of endemic plants and animals does not stop at a distance of 6 miles from the Islands. In order to provide maximum protection for these species, it seems only logical to set boundaries which will encompass the entire range of these species. The sanctuary should represent a natural biogeographic unit.

RESPONSE: See generic response A.

SANTA BARBARA MUSEUM OF NATURAL HISTORY: Charles D. Woodhouse, Jr. Phd, Assistant Director and Curator, Vertebrate Zoology - 1/10/80

COMMENT: The region is unique in a biological context and exhibits characteristics which are not found elsewhere in the coastal waters of of the United States.

RESPONSE: No response necessary.

COMMENT: The six mile perimeter around the Islands is not representative of a natural biogeographic unit that would be consistent with the concept of conserving the region's marine life.

RESPONSE: See generic response A.

COMMENT: The DEIS implies that the faunal assemblage is one of the major reasons for establishing a sanctuary. The Island shorelines serve as important habitat for resting or breeding marine birds and pinnipeds, and any sanctuary should incorporate these area. However, cetaceans, pinnipeds, and marine birds use the entire channel as well as the offshore banks and rocks to the north and south of the northern Channel Islands as feeding and nursery grounds. Gray whales, cows and calves, as well as female sea lions and their pups frequent the area and do not appear to confine their activity to waters within six miles of the islands. The sanctuary should include not only the islands but also the upwelling area west of Point Conception and or the Santa Rose-Cortes Ridge - Santa Cruz basin - Santa Cruz Ridge System to the south.

RESPONSE: See generic response A.

SCENIC SHORELINE PRESERVATION CONFERENCE: Fred Eissler - 1/11/80

COMMENT: The National Chapters of the Sierra Club, Friends of the Earth, the National Wildlife Federation, the American Littoral Society, Funds for Animals, Defenders of Wildlife, the Environmental Defense Fund, Monitor International, Friends of Wildlife and the Society for Animal Protection Legislation all endorse this comment.

RESPONSE: No response necessary.

COMMENT: The two theories in the DEIS are in conflict, i.e., that resources are concentrated on the Islands and the Channel is an interrelated ecosystem. Most data applies with greater cogency to the Channel as a whole. The DEIS supports alternative 4.

RESPONSE: See generic response A.

COMMENT: A formal EIS should be completed on alternative 4 within sixty days and a greater consideration be given to this alternative, which does not delay the proposed action.

RESPONSE: Writing another DEIS would delay the proposed action by four months at the very least. This EIS adequately addresses alternative 4.

COMMENT: Senator Rains substantially supports the Santa Barbara County position.

RESPONSE: No response necessary.

SEA LAND SPORT FISHING AND SPORT FISHING ASSOCIATION OF CALIFORNIA: Fred Benko 1/11/80

COMMENT: Designation of the sanctuary will put another unnecesary layer of management on ocean resources.

RESPONSE: See generic response B.

COMMENT: If there is going to be a sanctuary, alternative 4 should be chosen.

RESPONSE: See generic response A.

COMMENT: The oil platforms are valuable to the Channel fisheries and beneficial. There is little evidence of oil damage, but a great danger from oil tanker traffic. Tanker lanes should be moved outside of Channel.

RESPONSE: See generic response G. NOAA finds that within 6 nmi of this sensitive wildlife habitat, the risk of pollution and disturbance posed by OCS development outweighs the the benefits of artificial reefs provided by the platforms.

SEAWORLD: Barbara Hefferman - 1/9/80

COMMENT: The regulation of vessel traffic in the Channel Islands marine sanctuary boundaries must be clarified.

RESPONSE: See generic response C.

SIERRA CLUB: Ted Salzberg - 1/10/80

COMMENT: Alternative 4 should be chosen. A small sanctuary is insufficient, considering the potential for damage from activities around the Islands.

RESPONSE: See generic response A.

SIERRA CLUB - SANTA MONICA MOUNTAINS TASK FORCE: Jo Kitz - 1/10/80

COMMENT: Alternative 4 should be approved with a slight alteration--more of the tidelands on the mainland side should be included in the Sanctuary.

RESPONSE: See generic response A.

COMMENT: The real impacts of human uses need to be assessed. If a moratorium on certain uses is necessary until more information is available, this should be done through the sanctuary, due to the significance of the resources.

RESPONSE: The EIS assessed the impacts of human activities and proposes regulations to protect the resources.

SOUTHERN CALIFORNIA CRUISER ASSOCIATION: Thomas W. Collins - 1/4/80

COMMENT: The association will be adversely affected by any proposed restrictions to navigation in waters surrounding the Channel Islands.

RESPONSE: See generic response C.

COMMENT: The hearings are too far distant from areas where the operators base their craft. Hearings should be held in Los Angeles and Long Beach.

RESPONSE: See generic response I.

SOUTHERN CALIFORNIA CRUISER ASSOCIATION: Jack West - 1/21/80

COMMENT: Article 4 (Scope of Regulations) Section 1, sub-point d, published in Vol. 44, No. 235 of the Federal Register, specifically states that navigation and operation of vessels (other than fishing vessels) are subject to regulation. We strenously object to this because it is an encroachment on the responsibilities of the U.S. Coast Guard which takes precedence over any other Federal agency with respect to vessel navigation and operation.

RESPONSE: After consultation with the Coast Guard, NOAA has rewritten the designation document to exempt navigation in, or within a 500 m buffer on either side of, any Vessel Traffic Separation Scheme or Port Access Route designated by the Coast Guard from any potential marine sanctuary regulation, unless the VTSS or PAR or buffer zone is within 1 nmi of the islands. NOAA regulations in the marine sanctuary therefore can not conflict with these Coast Guard initiated controls on navigation.

Although the navigation and operation of vessels other than fishing vessels would be subject to regulation, NOAA proposes only to regulate the approach of vessels engaged in the trade of carrying cargo or servicing offshore installations within one nautical mile of the Islands.

COMMENT: Article 6, point 2 (same issue of Federal register) states "unnecessary operation of vessels or aircraft in the vicinity of important habitats within 1 nmi of the Islands". We object to this on the grounds that NOAA has no capability of deciding what is or is not necessary. Only the master of a vessel has that right.

RESPONSE: In the Federal Register notice, the discussion of the proposed regulations did refer to "unnecessary operation of vessels..." NOAA has changed this language so that it is now clear that only vessels engaged in the trade of carrying cargo or servicing offshore installations would be prohibited from the waters within 1 nmi of the Islands. Furthermore, Section 935.7 of the regulations states that activities necessary to respond to an emergency threatening life, property, or the environment are exempt from regulation. In such an emergency, the master of any affected vessel would thus have the right and responsibility to decide what actions would be necessary unrestricted by sanctuary regulations.

COMMENT: Section 935.7, Point 3 (unnecessary operation of vessels and aircraft) published in the Register is ambiguous and contradictory. We interpret it to say that only vessels engaged in transporting persons or supplies to an Island can come within the 1 mile zone surrounding an Island. We object to this prohibition because it is often necessary to anchor close in-shore during storm conditions.

RESPONSE: See previous response.

COMMENT: Page C-8 of the Draft Environmental Impact Statement, discussing vessel traffic, contradicts the statement in the Federal Register and leaves unclear the right of certain vessels to come within (closer than) 1 mile of an Island, for the same reason as stated in point #3 above.

RESPONSE: See previous response

COMMENT: Page F-59 of the Impact Statement, last paragraph, names five activities that NOAA proposes to regulate. We object to NOAA having anything to do with such activities because county, State and Federal agencies now have regulations concerning them. There is no need whatsoever for another layer of government to create regulations on these activities.

RESPONSE: See generic response B.

COMMENT: Page F-103, point 4, of the Impact Statement regarding operations of vessels is ambiguous with respect to operation of vessels within 1 mile of an Island. Unless it is rewritten in clear understandable

English that says what classes of vessels can navigate within the 1 mile boundary, we object to the entire concept of the Sanctuary.

RESPONSE: The regulation has been rewritten. See generic response C.

COMMENT: Page F-112, sub-point d (Management), would result in an entirely new layer of personnel to police and enforce the proposed regulations. We object to the added cost to the public for a group of people empowered to enforce the regulations because there already exists county, State or Federal agencies capable of performing the same duties.

RESPONSE: See generic response B.

COMMENT: Inadequate notice of the public hearings was given to affected vessel operators, we demand that additional hearings be held in the Los Angeles/Long Beach area.

RESPONSE: See generic response I.

SOUTHERN CALIFORNIA GAS: Spurgeon - 1/23/80

COMMENT: The DEIS does not justify the need for a sanctuary. Existing regulation provides adequate protection for the area.

RESPONSE: See generic response B.

COMMENT: Better coordination among regulatory agencies is possible without sanctuary establishment. The DEIS does not indicate how sanctuary establishment would enhance enforcement.

RESPONSE: See generic responses B and F.

COMMENT: Any decision concerning the sanctuary should await the vote on the pending Channel Islands National Park legislation.

RESPONSE: The marine sanctuary will complement the Channel Islands National Park, which was signed into law in April 1980.

SOUTHERN CALIFORNIA PETROLEUM CONTINGENCY ORGANIZATION
ATLANTIC RICHFIELD COMPANY: Jack Hundley - 1/10/80

COMMENT: Sanctuary proposals must meet the criteria in the Act - they should be established where the need exists, based on firm scientific evidence.

RESPONSE: This proposal meets the criteria in the Act and in the marine sanctuary program's general regulations.

COMMENT: The proposal would withdraw 800,000 acres within an "oil province" where hydrocarbons are known to exist. It is irresponsible to withdraw this much area from oil and gas exploration and development. The DEIS reference to oil spill clean up fails to discuss recommendations for use of dispersents and protective measures, now accepted by agencies.

RESPONSE: The discussion of dispersants has been expanded in the FEIS (Section F.2.c.1). See generic response K.

SPORTSMEN'S COUNCIL OF CENTRAL CALIFORNIA: Stanley R. Radom - 12/4/79

COMMENT: The wording on page F-59 will have to be strengthened. The words "NOAA proposes to subject only...," should be changed to "NOAA will subject only..."

RESPONSE: The wording used reflects the fact that until such time as designation occurs, the regulations analyzed in the EIS are proposed rather than final.

COMMENT: Explain why the Central California Coastline was not considered with equal weight with the Channel Islands. There are many who feel the sanctuary designation is needed much more along the coastline than the Channel Islands.

RESPONSE: Monterey Bay, which is also an active candidate for marine sanctuary designation, is the only site on the Central California coastline recommended to NOAA for marine sanctuary status. NOAA will review any additional site recommendations submitted.

COMMENT: The environmental consequences portion of the DEIS is weak and sketchy. It should show the significant adverse environmental impacts that would result if the sanctuary is not designated.

RESPONSE: This section (Section F.1.c) has been rewritten to show more clearly the environmental consequences of the current regulatory system.

COMMENT: There should be an explicit statement that persons and organizations that are best qualified on scientific and management bases will be used to optimize long term benefits to the marine resources and the public. Public input insofar as management of public submerged lands is also an essential part.

RESPONSE: See generic response F and Section F.2.b.

COMMENT: Research zones or complete closures without scientific reasons justifying such action would be adamantly opposed by sports fishermen and commercial fishermen.

RESPONSE: NOAA's preferred alternative does not include the designation of research zones or fishing closures.

SPORTSMEN'S COUNCIL OF CENTRAL CALIFORNIA AND CALIFORNIA WILDLIFE FEDERATION: Stanley R. Radom, Director of Public Lands Committee, and Delegate on Statewide Fisheries - 1/11/80

COMMENT: The Channel Islands marine resources are not in jeopardy and there is no justification for a new layer of Federal government. The DEIS makes a good case for the status quo.

RESPONSE: See generic response B.

COMMENT: The DEIS downgrades the State's Department of Fish and Game and the National Park Service because of limited patrol boats. If this is a serious deficiency, Federal funds should be provided for boats and personnel rather than creating a 1200 square mile sanctuary.

RESPONSE: NOAA will provide funds for enforcement in the proposed marine sanctuary. However, the sanctuary will provide a variety of benefits in addition to improved enforcement (see generic response B and Section F.2).

COMMENT: DEIS (p.F.111) language should be strengthened and clarified to state: "Management of living marine resources will remain under the jurisdiction of the California legislature and the California Fish and Game Commission, with implementation and enforcement by the California Department of Fish and Game. Regulations will be those adopted by the California Fish and Game Commission under authority of the California Fish and Game Code, Title 14 of the California Administrative Code, and California Penal Code."

RESPONSE: NOAA clearly and repeatedly states that the marine sanctuary will not regulate fishing. It does not seem appropriate for NOAA to dictate which exact State authorities will regulate fishing, since the State may modify its system in the future.

STAUFFER CHEMICAL COMPANY: Bela Szelenyi - 1/31/80

COMMENT: Kelp harvesting should be specifically mentioned in the DEIS and the regulations as an allowed activity, and the Draft Designation Document and proposed regulations should be changed accordingly.

RESPONSE: NOAA has rewritten the draft Designation and final proposed regulations to allow kelp harvesting activities.

TEXACO, INC: William K. Tell, Jr. - 1/21/80

COMMENT: The Secretary of Commerce's determination to designate a marine sanctuary must, by 16 U.S.C. 1432, be a decision of necessity - nothing less. Designation proposals must show clearly that the recited values are not and cannot otherwise be protected, and in that event, the sites must be limited and specific. The Channel Islands DEIS does neither.

RESPONSE: Title III of the Marine Protection, Research and Sanctuaries Act states that the Secretary may designate as marine sanctuaries those areas which he determines necessary to preserve or restore their ecological conservation, recreational, or esthetic values. The Act does not demand that he prove the sites could not conceivably be protected otherwise. Research, monitoring, assessment, education, and long term planning are necessary to preserve the extraordinary ecological and other values of this area (See Section F.1.c). Marine sanctuary designation will provide these.

COMMENT: The proposed sanctuary and its regulations are primarily designed to restrain oil and gas operations. However, the California Legislature has already established oil and gas sanctuaries out to 3 nmi of the northern Channel Islands, and operations continue to be excluded there. Data from the EIS for OCS Sale No. 48, prepared a year or so ago by the Department of the Interior, indicates that practically all of the marine birds, mammals and endangered species sought to be protected by NOAA are in fact within the 3 nmi State protective limits.

RESPONSE: There is no oil and gas sanctuary around Santa Barbara Island. Furthermore, the State oil and gas sanctuaries may be subject to leasing if petroleum extraction from leases on the Federal OCS threatens to drain State resources. Thus, it is important that no hydrocarbon development occurs immediately outside State waters in order to maintain the integrity of the State's oil and gas sanctuaries.

The main breeding and nesting habitat of the marine birds and mammals in the area is within 3 nmi of the Islands and on the Islands themselves. However, key foraging areas extend at least to 6 nmi and, in addition, a buffer zone is needed between potentially threatening activities and the sensitive nearshore habitat zones.

COMMENT: The DEIS and the proposed regulations will cause an undetermined quantity of oil and gas reserves to be sacrificed.

There is no merit whatsoever in NOAA's contention that the sanctuary reserves will be "preserved for future use." Such a statement runs counter to the statutory requirements for designating marine sanctuaries. If the Section 302(a) necessity can in fact be determined now, it cannot, under the Act, ever dissipate.

The issue is simple. Shall this extremely important oil and gas area be available for development or not? The DEIS and the proposed regulations would clearly result in an increase in U.S. imports of OPEC oil rather than allowing development to proceed in the Channel Islands area under the multitude of protective regulations already in place.

RESPONSE: The hydrocarbon resources in the proposed sanctuary will not be destroyed by the action under review, therefore, they could be available for extraction in the future if technology improves and needs increase. There is no statutory provision prohibiting modification of sanctuary regulations if conditions are significantly altered. In addition, there has been no showing that the resources within the proposed sanctuary are extremely important.

COMMENT: In all, there are eleven Federal, seven State and a multitude of regional and local government agencies vested with regulatory authority in the area. There are no serious gaps in the existing protective network, and there is no indication that any of the agencies are failing to meet their responsibilities. Another layer of regulatory authority, vesting powers in a superagency to override others, is not warranted. It is altogether improper to suggest that total withdrawal is needed because existing controls are not centrally coordinated. To do so is to suggest that all functional and jurisdictional rulemaking is useless in public administration.

RESPONSE: See generic response B.

UNIVERSITY OF CALIFORNIA - IRVINE: School of Biological Sciences - George L. Hunt, Jr. - 1/23/80

COMMENT: The Channel Islands are not only of great scenic and recreational value, but they also support a large and varied fauna and flora. A marine sanctuary for the northern Channel Islands and Santa Barbara Island would aid in the protection of marine mammals and birds.

RESPONSE: No response necessary.

UNIVERSITY OF CALIFORNIA - SANTA CRUZ: Burney J. LeBoeuf, Professor of Biology

COMMENT: The Channel Islands are a unique biological resource extending the sanctuary six nautical miles seaward from the mean high watermark of the Islands. Alternative 2 is recommended.

RESPONSE: No response necessary.

VENTURA COLLEGE: Bill Muller - 1/11/80

COMMENT: The implication that the State of California and its agencies cannot protect and manage these natural resources is objectionable.

RESPONSE: See generic response B.

COMMENT: The DEIS has not demonstrated the need for additional supervision in the Islands. There is already sufficient regulatory protection.

RESPONSE: See generic response B.

VENTURA COLLEGE: John Tallman - 1/11/80

COMMENT: An enormous amount of money has been wasted on the report which is grossly inadequate, full of errors and outdated.

RESPONSE: In the absence of more specific criticisms, NOAA cannot respond to this comment.

COMMENT: The DEIS is biased for the proposed alternative.

RESPONSE: Based on NOAA's analysis, the preferred alternative appears to be the best option.

COMMENT: There is nothing in the DEIS that justifies the need for a sanctuary.

RESPONSE: See generic response B.

COMMENT: The Coast Guard, the Rangers and the State Fisheries do an outstanding job of regulating this area. There is no need for further coordination.

RESPONSE: See generic response B.

COMMENT: The DEIS has too much emphasis on regulation of oil interests. It is an attempt to restrict oil development under the guise of a sanctuary. Oil development and fishery resources are compatible.

RESPONSE: See generic response E.

VENTURA COLLEGE WELL CONTROL SCHOOL AND THE INTERNATIONAL ASSOCIATION OF DRILLING CONTRACTORS: Peter R. Wygle - 1/11/80

COMMENT: Charges by GOO, the Sierra Club and Friends of the Santa Monica Mountains of "proven ecological damage" from oil activity are unsubstantiated. General studies have been made showing examples of positive or neutral effects of oil development on the marine environment.

RESPONSE: See generic response E.

COMMENT: Onshore oil resources are not sufficient. OCS resources must be developed. No company would undertake increased risks and costs offshore, if onshore resources were available.

RESPONSE: OCS resource development must be weighed against environmental values. In this case, NOAA proposes that currently the latter outweigh the former (see Section F.2.C.1).

COMMENT: Forcing directional drilling by denying access to a site courts ecological disaster. The danger of hole trouble increases with the distance from drilling site.

RESPONSE: Directional drilling is standard practice by industry although it does appear that at a certain distance technological problems and time onsite may increase. NOAA's regulations may increase the distance through which drilling is required, if any commercially exploitable resources are to be reached from outside the sanctuary. At this time, there appears to be very little industry interest in these unleased tracts within the proposed sanctuary and the likely increase in required slant drilling is minimal.

VENTURA YACHT CLUB: George Jarvis - 1/10/80

COMMENT: The implied restrictions to recreational boating in the sanctuary are not acceptable.

RESPONSE: See generic response C.

COMMENT: Is $50,000 adequate to enforce the sanctuary?

RESPONSE: See generic response F.

WESTERN OIL AND GAS ASSOCIATION: Ed Taaffe - 1/11/80

COMMENT: The DEIS does not quantify the size of the various alternatives. The preferred Alternative would enclose approximately 1,130 square nautical miles or 959,000 acres. It is not the intent of Congress to remove vast ocean areas from commerce.

RESPONSE: The preferred alternative encompasses 1252.5 square nautical miles. This area is not excessive to protect the sensitive marine resources of the nearshore waters around the northern Channel Islands and Santa Barbara Island. Neither Title III of the Marine Research, Protection and Sanctuaries Act nor its legislative history indicate this area is inappropriately large for sanctuary status. Finally, though certain uses of the proposed sanctuary are restricted, commercial fishing, recreation, and commercial shipping are allowed either throughout or in most of the proposed sanctuary.

COMMENT: There is no demonstrated need for the sanctuary, especially one as large as proposed. Congressman Breaux has indicated Congressional intent that sanctuaries should be in relatively small areas.

RESPONSE: See generic response B.

COMMENT: Proposed contingency measures for oil spills are unnecessary and redundant, since they are already enforced on drilling operations in the Channel.

RESPONSE: The onsite oilspill containment requirements exceed those imposed by the Department of the Interior. The California Coastal Commission has through its consistency certification required the same onsite equipment on several tracts. NOAA finds that given the sensitivity and importance of Island resources and the distance from the oil spill cooperatives (Clean Seas and SCPCO) on the mainland, all the tracts in the proposed sanctuary warrent that extra onsite contingency equipment.

COMMENT: DEIS fails to follow Title III of the Act, NEPA and CEQ guidelines. The format of the DEIS and published regulations suggest that NOAA has

already decided on the proposed action. Regulations should not be prepared prior to the completion of the NEPA process.

RESPONSE: See response to Chevron's fifth comment.

COMMENT: The proposal does not adequately consider the national interest as it applies to the development of energy supplies. The de facto withdrawal of lands from leasing by NOAA, contradicts the intent of the OCS Lands Act.

RESPONSE: See the response to the first comment by the Department of Energy.

COMMENT: Archaeological sites are already protected by the Department of the Interior requirements for drilling activities.

RESPONSE: DOI's lease stipulations only protect historical resources from OCS activities. NOAA's proposed regulation will provide protection from private collecting or damage.

COMMENT: The DEIS fails to incorporate WOGA's earlier suggestions of June 7 and June 8, 1979.

RESPONSE: NOAA took the comments received at the June 7 and June 8 public meetings into consideration in the preparation of the DEIS.

COMMENT: The rationale for allowing continuation of existing oil and gas operations, while prohibiting new operations or leases after the date of the sanctuary does not make sense. WOGA objects to these prohibitions.

RESPONSE: See the response to the third comment by the American Petroleum Institute.

COMMENT: The DEIS should quantify threats from increased pressure of human activities and recognize the decrease in tanker traffic incident to the proposed construction of the Northern Tier Pipeline and the study of the Santa Barbara pipeline.

RESPONSE: NOAA has attempted to quantify the threats from human activity wherever possible. The proposed construction of the Northern Tier pipeline is discussed in Section E.3.

COMMENT: With the exception of oil and gas operations, there is virtually no difference between the "preferred alternative" of the DEIS and the status quo. The existing authorities and agencies are fully sufficient

to protect the proposed sanctuary. Additional funding and personnel should be provided, if needed, without another costly regulatory regime.

RESPONSE: See generic response B.

COMMENT: WOGA is not opposed to sanctuaries, provided they meet the criteria of Title III, i.e., a definite need is established and they encompass only the areas necessary to satisfy the need. The Channel Islands proposal fails to meet these standards.

RESPONSE: This proposal fulfills the criteria both of Title III of the Marine Protection, Research, and Sanctuaries Act and of the general regulations of the marine sanctuaries program.

COMMENT: There is no demonstrated need for the sanctuary, especially one as large as proposed. Congressman Breaux has indicated Congressional intent that sanctuaries should be in relatively small areas.

RESPONSE: See generic response B. Congress has not established any size limits for marine sanctuaries. The sanctuary is as small as possible for providing protection to sanctuary resources. See also comment by Congressman Beilenson.

WESTERN OIL AND GAS ASSOCIATION: Mertens - 1/10/80, 1/11/80

COMMENT: The failure of the DEIS to discuss Santa Barbara Channel offshore platforms in any detail neglects the documented beneficial effects of these platforms. Further, the fact that platforms function as an artificial reef is not acknowledged and is therefore denied to decisionmakers concerned with this proposed marine sanctuary.

RESPONSE: The role of offshore platforms as artificial reef has been addressed in the FEIS. See also generic response E.

COMMENT: The DEIS study of oil spill trasectories (pp. F-77 to F-85) assumes that oil is a complete inert material and undergoes no change once it is spilled. This assumption does not take into account evaporation and weathering, nor the natural dispersion that occurs. Both of these are extremely important mitigating phenomena.

RESPONSE: The effect of evaporation, weathering, and natural dispersion on spilled oil was an important factor in NOAA's analysis and choice of the preferred alternative. See Section F.2.c.1.

COMMENT: Throughout section F of the DEIS, the author(s) assert that the presence of oil in ocean waters is deleterious to marine life. However, Straughan (7) who conducted an extensive three-year study of the sublethal effects on marine life of natural chronic exposure of oil in the Santa Barbara Channel, concluded that:

(1) There was no evidence that exposure to the natural oil seepage affects the growth rate of the marine organisma.

(2) No change in total biomass or in biomass of major groups could be related to the presence of hydrocarbons in sediments; and

(3) Given the environmental factors present in the area, all species that she expected to be in the area are indeed present.

Thus, the author(s) of the DEIS have failed to acknowledge the heavy influx of oil from seepage into the Santa Barbara Channel, some of which is even within the confines of the proposed sanctuary. Nor do they acknowledge that despite this heavy influx, the area is rich and varied in marine life. This evidence strongly suggests that offshore operations would have minimal, if any, adverse effect upon the local marine life.

RESPONSE: The discussion of oil seepage has been expanded in Section F.2.c.1 of the FEIS. See also generic response E.

WHALE CENTER: Maxine McCloskey, Executive Director - 2/1/80

COMMENT: This area is important to several populations of whales and dolphins. It is the home range for several local dolphin populations, the seasonal feeding grounds for pilot whales, and is also of great importance to several endangered whales. At various times of the year, the right whale, blue whale, fin whale, humpback whale and the California gray whale are found around the Channel Islands. The disruption of the ecology of this area will have detrimental effects throughout these whale populations and the Channel Islands in general. For these reasons, Alternative 4 would be the most effective and desirable. This would place a 12 nautical bile boundary around the sanctuary and add an extra safety zone to cusion the effects of oil mining, an oil spill, and other intrusions.

RESPONSE: See generic response A.

F.E. BERNSTEIN - 1/13/80

COMMENT: She supports the establishment of the marine sanctuary. The larger the sanctuary, the better protection it will provide.

RESPONSE: See generic response A.

ATLEE CLAPP - 1/11/80

COMMENT: Sanctuary status for the Channel will help coordinate the many activities taking place.

RESPONSE: No response necessary.

COMMENT: No oil activity should be permitted within six miles of the Islands.

RESPONSE: See Section F.3.

COMMENT: Alternative 4 should be considered.

RESPONSE: Alternative 4 was considered. See generic response A and Section F.4 for a discussion of the basis for choosing alternative 2 over alternative 4.

AL EBLING - 1/11/80

COMMENT: The Channel needs a sanctuary larger than the proposal, if it needs one at all. The health of the kelp bed community depends on the mid-Channel planktonic communities. They cannot be separated. The behavior of water flows and currents supports a Channel-wide sanctuary boundary. The Channel waters present an ideal area for research.

RESPONSE: See generic responses A and B.

TED FLESHER - 1/10/80

COMMENT: The sanctuary should not be designated because of the potential that boating regulations will be added in the future.

RESPONSE: See the response to the second comment by the California Marine Parks and Harbors Association.

CLARA ANN FOLK - 1/17/80

COMMENT: The proposed sanctuary area is where much of the world's marine mammal life lives, plays or passes through. We humans must be able to drill for oil, build factories, and discharge materials somewhere else than in this unique area.

RESPONSE: The proposed sanctuary prohibits oil and gas development pursuant to future leases, construction within 2 nmi of the Islands, and discharges.

PETER GROSS - 1/11/80

COMMENT: Energy conservation, solar heating, wind and biomass energy will supply more energy, faster, more economically and with less destruction than expanded production of fossil fuel.

RESPONSE: NOAA supports greater reliance on energy conservation and alternative energy sources than fossil fuels, but the marine sanctuary program cannot direct the nation's energy policy.

COMMENT: A marine sanctuary can be provided to protect the entire Channel without sacrificing other things.

RESPONSE: See generic response A.

COMMENT: Alternative 4 will provide minimal protection, an indefinite moratorium on lease sales for more drilling in the Channel, and a five-year moratorium on licensing a LNG terminal at Point Conception.

RESPONSE: NOAA considered a moratorium provision in its review of alternative 4 but did not include a leasing moratorium or a moratorium on the licensing of a LNG plant in this version of a sanctuary. See Section F.4 and generic response D.

RICK HAMNER AND ASSOCIATES: Rick Hamner - 1/23/80

COMMENT: The scope of the regulations appears to allow future control of small boat navigation, anchorage and Island access and other activities without any additional local input or involvement.

RESPONSE: See generic response C. Any change in marine sanctuary regulations must be proposed under the Administrative Procedure Act and subjected to public review and a 60 day comment period.

COMMENT: The added layers of remote Federal government regulations are objectionable; less government, more local in better touch with the community, is appropriate.

RESPONSE: See generic response B. The sanctuary manager will consult and coordinate closely with State and local agencies and members of the community. See Section F.2.b of the FEIS.

MR. & MRS. JOHN D. HARMS, Carmel, CA. - 1/14/80

COMMENT: They support idea of the proposed Channel Islands Marine Sanctuary which would extend six miles out. These important wildlife areas are seriously endangered by the prospect of offshore oil drilling and other human activities. If the waters surrounding these northern Channel Islands are designated as a marine sanctuary it would give national recognition to the natural values involved. The regulations that would follow would reduce adverse environmental impacts. These regulations must be stringent.

RESPONSE: The marine sanctuary boundaries and regulations proposed by NOAA are designed to protect the natural resources of this important area, taking into account the level of economic impact.

COMMENT: The California brown pelican, which nests on Anacapa, would benefit from sanctuary designation.

RESPONSE: No response necessary.

MYRNA LEFFERTS, Simi Valley, CA. - 1/20/80

COMMENT: The sanctuary, if established, will help reduce adverse environmental impacts, especially from gas and oil activities.

RESPONSE: No response necessary.

PHILIP R. LEVER - 1/13/80

COMMENT: He endorses the sanctuary. It should have extended boundaries and tougher regulations.

RESPONSE: See generic responses A and E and Section F.3.

HELEN MATELSON - 1/14/80

COMMENT: The waters of the Santa Barbara Channel Islands must be saved from offshore drilling.

RESPONSE: See generic response D.

ADAM C. McOUAT - 1/23/80

COMMENT: There are approximately ten thousand members of the boating public on the west coast, between Santa Barbara and San Diego who use the Channel Islands as their only source of cruising activities. This would leave the boating public with Catalina Island as the sole source of cruising. Please realize what you are doing to the largest recreational group on the Pacific coast.

RESPONSE: See generic response C.

JOHN MORGAN - 1/10/80

COMMENT: Oil companies have misrepresented the damage that has taken place due to oil development in the Channel, especially in Mussel Shoals. Mussels have been eliminated by oil activity. Much of the oil damage is due to pollution from water separated from oil and put back into the water.

RESPONSE: The proposed regulations would prohibit oil and gas development pursuant to future leases in the sanctuary. Section F.2.c.1 and generic response E discuss the possible effects of oil and gas development.

TIMOTHY M. MURPHY AND 30 FRIENDS - 1/28/80

COMMENT: Mr. Murphy and 30 friends signed a letter supporting the proposed sanctuary. They feel that only with national status will this vital marine environment be protected.

RESPONSE: No response necessary.

COMMENT: The following activities within the sanctuary should be closely monitored: oil and gas operations, dumping, alteration of or construction on the seabed, navigation and overflights less than 1,000 feet.

RESPONSE: All the above listed activities would be subject to the proposed marine sanctuary regulations.

SCOTT T. OLSON - 12/18/79

COMMENT: He wholeheartedly supports the proposed sanctuary. Regulations regarding any commercial exploration of resources should be very stringent. Preservation and protection of the unique and fragile biota of the Channel Islands area is important.

RESPONSE: No response necessary.

CHRISTOPHER P. ONUF - 1/11/80

COMMENT: DEIS makes a compelling case for sanctuary status, but alternative 2 does not provide the scope needed for management. The mainland side is also rich in kelp bed and wildlife resources and, therefore, should be included. The proposal should include important coastal wetlands on the mainland side, i.e., Mugu Lagoon, Carpenteria Marsh and Goleta Slough and smaller areas. Alternative 4 boundaries more accurately define the area where resources apply. This alternative should be approved.

RESPONSE: See generic response A.

COMMENT: Regulations of discharges into Channel and of oil and gas activities are in the best interest of the commercial fishing industry. Figure E.20 (p. E.71) shows that the most heavily fished areas are close to the mainland shore rather than near the Islands. Protection of commercial fisheries is a legitimate objective of a sanctuary program, but alternative 2 would not apply to the most heavily fished areas.

RESPONSE: See generic response A.

WILLIAM RUBIN - 1/11/80

COMMENT: The entire Channel needs the protection the sanctuary provides. The sanctuary would not interfere with the management responsibilities of other agencies but is complementary and supportive of single purpose agencies.

RESPONSE: See generic response A.

COMMENT: Oil development is only the beginning of mining, mariculture and other ocean developments. The sanctuary brings balance between resource development and marine habitat protection.

RESPONSE: No response necessary.

RICHARD SPOTTS - 1/21/80

COMMENT: The Channel Islands and surrounding waters possess significant and unique values. It is clear that these values are threatened by the cumulative increase of human developmental activities in these areas. Strict regulations and generous sanctuary boundaries are necessary.

RESPONSE: No response necessary.

MRS. J.R. STALLINGS, Cheyenne, WY - 1/17/80

COMMENT: The waters surrounding the Channel Islands possess significant wildlife values which are jeopardized by the cumulative increase of human development activities. The sanctuary will protect this area.

RESPONSE: No response necessary.

DYANNE TABIN AND FAMILY - 1/11/80

COMMENT: The waters surrounding the Channel Islands have important and vital wildlife values that are clearly jeopardized by the cumulative increase of human developmental activities in the area (such as offshore drilling).

RESPONSE: No response necessary.

COMMENT: We need stronger regulations and extended boundaries.

RESPONSE: See generic responses A and E and Section F.3.

GARY VESPERMAN, San Mateo, CA - 1/18/80

COMMENT: The benefits of preserving important resources should far outweigh any other costs. Alternative 2 is acceptable. The loss of the hydrocarbon resources to future generations looks like a very acceptable cost to our generation.

RESPONSE: No response necessary.

EDWARD AND SARAH ZAWASKI - 1/17/80

COMMENT: The proposed Channel Islands marine sanctuary should be designated.

RESPONSE: No response necessary.

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Section I. List of Preparers

Many persons participated in the preparation of the DEIS on which this document was based. A major portion of the environmental analysis was performed under contract with the Center for Natural Areas, 1525 New Hampshire Avenue, N.W., Washington, D.C. 20036. The following persons have made major contributions to the effort.

Center for Natural Areas

John T. Epting, Resource Planner
Thomas E. Bigford, Office Director and Marine Affairs Specialists
David W. Laist, Coastal Ecologist
Kermit Rader, Environmental Attorney
Joel E. Blumstein, Environmental Attorney
Brian J. O'Sullivan, Environmental Planning Analyst
George Robertson, Resource Management Specialist

The following persons made major contributions to both the DEIS and to this document.

Office of Coastal Zone Management Sanctuary Programs Office

JoAnn Chandler, Director
Dr. Nancy Foster, Deputy Director
Diane Mayerfeld, Program Analyst
John Milholland, Attorney

J. APPENDICES

APPENDIX 1

Proposed Final Designation Document and Proposed Regulations

Proposed Final Designation Document

Designation Of The Channel Islands Marine Sanctuary

Preamble

Under the authority of the Marine Protection, Research and Sanctuaries Act of 1972, P.L. 92-532, (the Act) the waters surrounding the northern Channel Islands and Santa Barbara Island are hereby designated a Marine Sanctuary for the purposes of preserving and protecting this unique and fragile ecological community.

Article 1. Effect of Designation

Within the area designated as The Channel Islands Marine Sanctuary (the Sanctuary), described in Article 2, the Act authorizes the promulgation of such regulations as are reasonable and necessary to protect the values of the Sanctuary. Article 4 of the Designation lists those activities which may require regulation but the listing of any activity does not by itself prohibit or restrict it. Restrictions or prohibitions may be accomplished only through regulation, and additional activities may be regulated only by amending Article 4.

Article 2. Description of the Area

The Sanctuary consists of an area of the waters off the coast of California, of approximately 1252.5 square nautical miles (nmi^2) adjacent to the northern Channel Islands and Santa Barbara Island seaward to a distance of 6 nmi. The precise boundaries are defined by regulation.

Article 3. Characteristics of the Area That Give it Particular Value

The Sanctuary is located in an area of upwelling and in a transition zone between the cold waters of the California Current and the warmer Southern California Countercurrent. Consequently, the Sanctuary contains an exceptionally rich and diverse biota, including 30 species of marine mammals and several endangered species of marine mammals and sea birds. The Sanctuary will provide recreational experiences and scientific research opportunities and generally will have special value as an ecological, recreational, and esthetic resource.

Article 4. Scope of Regulation

Section 1. Activities Subject to Regulation. In order to protect the distinctive values of the Sanctuary, the following activities may be regulated within the Sanctuary to the extent necessary to ensure the protection and preservation of its marine features and the ecological, recreational, and esthetic value of the area:

a. Hydrocarbon operations

b. Discharging or depositing any substance or object

c. Dredging or alteration of, or construction on, the seabed

d. Navigation of vessels except fishing vessels or vessels travelling within a vessel traffic separation scheme or port access route designated by the Coast Guard outside of 1 nmi from any island

e. Disturbing marine mammals or birds by overflights below 1000 feet

f. Removing or otherwise deliberately harming cultural or historical resources

Section 2. Consistency with International Law. The regulations governing the activities listed in Section 1 of this article will apply to foreign flag vessels and persons not citizens of the United States only to the extent consistent with recognized principles of international law including treaties and international agreements to which the United States is signatory.

Section 3. Emergency Regulations. Where essential to prevent immediate, serious and irreversible damage to the ecosystem of the area, activities other than those listed in Section 1 may be regulated within the limits of the Act on an emergency basis for an interim period not to exceed 120 days, during which an appropriate amendment of this article would be proposed in accordance with the procedures specified in Article 6.

Article 5. Relation to Other Regulatory Programs

Section 1. Fishing. The regulation of fishing is not authorized under Article 4. However, fishing vessels may be regulated with respect to discharges in accordance with Article 4, Section 1, paragraph (b) and aircraft conducting kelp bed surveys below 1000 feet can be regulated in accordance with Article 4, Section 1, paragraph (e). All regulatory programs pertaining to fishing, including particularly regulations promulgated under the California Fish and Game Code and Fishery Management Plans promulgated under the Fishery Conservation and Management Act of 1976, 16 U.S.C. 1801 et seq., shall remain in

effect. All permits, licenses and other authorizations issued pursuant thereto shall be valid within the Sanctuary unless inconsistent with any regulation implementing Article 4. Fishing as used in this article and in Article 4 includes kelp harvesting.

Section 2. Defense Activities. The regulation of those activities listed in Article 4 shall not prohibit any activity conducted by the Department of Defense that is essential for national defense or because of emergency.

Section 3. Other Programs. All applicable regulatory programs shall remain in effect and all permits, licenses and other authorizations issued pursuant thereto shall be valid within the Sanctuary unless authorizing any activity prohibited by any regulation implementing Article 4. The Sanctuary regulations shall set forth any necessary certification procedures.

Article 6. Alterations to this Designation

This Designation can be altered only in accordance with the same procedures by which it has been made, including public hearings, consultation with interested Federal and State agencies and the Pacific Regional Fishery Management Council, and approval by the President of the United States.

Proposed Final Regulations

PART 935 - THE CHANNEL ISLANDS MARINE SANCTUARY REGULATIONS

935.1. Authority.

935.2. Purpose.

935.3. Boundaries.

935.4. Definitions.

935.5. Allowed Activities.

935.6. Hydrocarbon Operations.

935.7. Prohibited Activities.

935.8. Penalties for Commission of Prohibited Acts.

935.9. Permit Procedures and Criteria.

935.10. Certification of Other Permits.

935.11. Appeals of Administrative Action.

935.12. Amendments.

935.1. Authority.

The Sanctuary has been designated by the Secretary of Commerce pursuant to the authority of Section 302(a) of Title III of the Marine Protection, Research and Sanctuaries Act of 1972, 16 U.S.C. 1431-1434 (the Act). The following regulations are issued pursuant to the authorities of Sections 302(f), 302(g) and 303 of the Act.

935.2. Purpose.

The purpose of designating the Sanctuary is to protect and preserve the extraordinary ecosystem including marine birds and mammals and other natural resources of the waters surrounding the northern Channel Islands and Santa Barbara Island and ensure the

continued availability of the area as a research and recreational resource. This area supports a particularly rich and diverse marine biota, partially because it is located in a transition zone between northern and southern waters and partially because it is one of very few areas off the Southern California coast that has been relatively unaltered by human use.

935.3. Boundaries.

The Sanctuary consists of an area of the waters off the coast of California of approximately 1252.5 square nautical miles (nmi^2) adjacent to the following islands and offshore rocks: San Miguel Island, Santa Cruz Island, Santa Rosa Island, Anacapa Island, Santa Barbara Island, Richardson Rock, and Castle Rock extending seaward to a distance of 6 nautical miles (nmi). The coordinates are shown in Appendix 1A.

935.4. Definitions.

(a) "Administrator" means the Administrator of the National Oceanic and Atmospheric Administration.

(b) "Assistant Administrator" means the Assistant Administrator for Coastal Zone Management, National Oceanic and Atmospheric Administration.

(c) "Person" means any private individual, partnership, corporation, or other entity; or any officer, employee, agent, department, agency or instrumentality of the Federal government, or any state or local unit of government.

(d) "Islands" means San Miguel Island, Santa Cruz Island, Santa Rosa Island, Anacapa Island, Santa Barbara Island, Richardson Rock, and Castle Rock.

935.5. Allowed Activities:

All activities except those specifically prohibited by Sections 935.6 and 935.7 may be carried on in the Sanctuary subject to all prohibitions, restrictions and conditions imposed by any other authority. Recreational use of the area is encouraged.

935.6. Hydrocarbon Operations.

(a) Hydrocarbon exploration, development and production pursuant to any lease executed prior to the effective date of these regulations and the laying of any pipeline is allowed subject to paragraph 935.6(b) and all prohibitions, restrictions and conditions imposed by applicable regulations, permits, licenses or other authorizations and consistency reviews including those issued by the Department of the Interior, the Coast Guard, the Corps of Engineers, the Environmental Protection Agency and the California Coastal Management Program and its implementing regulations.

(b) No person may engage in any hydrocarbon operation unless the following oil spill contingency equipment is available at the site of such operation:

(1) 1500 feet of open ocean containment boom on a boat capable of deploying the boom;

(2) one oil skimming device capable of open ocean use; and

(3) fifteen bales of oil sorbent material.

(c) Hydrocarbon exploration, development and production activities pursuant to leases executed on or after the effective date of these regulations are prohibited.

935.7. Prohibited Activities.

(a) Except as may be necessary for the national defense, in accordance with Article 5, Section 2 of the Designation, or as may be necessary to respond to an emergency threatening life, property, or the environment, the following activities are prohibited within the Sanctuary unless permitted by the Assistant Administrator in accordance with Sections 935.9 or 935.10. All prohibitions shall be applied consistently with international law.

(1) Discharge of substances.

No person shall deposit or discharge any materials or substances of any kind except:

(A) indigenous fish or parts and chumming materials (bait)

(B) effluents from marine sanitation devices

(C) non-polluted cooling waters from vessels

(D) effluents incidental to hydrocarbon exploration and exploitation activities as allowed by Section 935.6.

(2) Alteration of, or construction on, the seabed.

Except in connection with the laying of any pipeline as allowed by Section 935.6, within 2 nautical miles of any Island, no person shall:

(A) construct any structure other than a navigation aid, or

(B) drill through the seabed, or

(C) dredge or otherwise alter the seabed in any way.

(3) Commercial vessels operations.

Except to transport persons or supplies to or from an Island, no

person shall operate within one nautical mile of an Island any vessel engaged in the trade of carrying cargo, including but not limited to tankers and other bulk carriers and barges, or any vessel engaged in the trade of servicing offshore installations. In no event shall this section be construed to limit access for fishing (including kelp harvesting), recreational, or research vessels.

(4) Disturbing marine mammals and birds.

No person shall disturb seabirds or marine mammals by flying motorized aircraft at less than 1000 feet over the waters within one nautical mile of any Island except:

(A) for enforcement purposes;

(B) to engage in kelp bed surveys; or

(C) to transport persons or supplies to or from an Island.

(5) Removing or damaging historical or cultural resources.

No person shall remove or damage any historical or cultural resource.

(b) All activities currently carried out by the Department of Defense within the Sanctuary are essential for the national defense and, therefore, not subject to these prohibitions. The exemption of additional activities having significant impacts shall be determined in consultation between the Assistant Administrator and the Department of Defense.

(c) The prohibitions in this section are not based on any claim of territoriality and will be applied to foreign persons and vessels

only in accordance with recognized principles of international law, including treaties, conventions and other international agreements to which the United States is signatory.

935.8. Penalties for Commission of Prohibited Acts.

(a) Section 303 of the Act authorizes the assessment of a civil penalty of not more than $50,000 against any person subject to the jurisdiction of the United States for each violation of any regulation issued pursuant to the Act, and further authorizes a proceeding in rem against any vessel used in violation of any such regulation. Procedures are set out in Subpart D of Part 922 (15 CFR Part 922) of this chapter. Subpart D is applicable to any instance of a violation of these regulations.

935.9 Permit Procedures and Criteria.

(a) Any person in possession of a valid permit issued by the Assistant Administrator in accordance with this section may conduct any activity in the Sanctuary including any activity specifically prohibited under Section 935.7 if such activity is either (1) research related to the resources of the Sanctuary, (2) to further the educational value of the Sanctuary, or (3) for salvage or recovery operations.

(b) Permit applications shall be addressed to the Assistant Administrator for Coastal Zone Management, Attn: Office of Sanctuary Programs, Division of Operations and Enforcement, National Oceanic and Atmospheric Administration, 3300 Whitehaven Street, N.W., Washington, D.C. 20235. An application shall provide sufficient information to enable the Assistant Administrator to make the determination called for in paragraph (c) below and shall include a description of all

activities proposed, the equipment, methods, and personnel (particularly describing relevant experience) involved, and a timetable for completion of the proposed activity. Copies of all other required licenses or permits shall be attached.

(c) In considering whether to grant a permit the Assistant Administrator shall evaluate such matters as (1) the general professional and financial responsibility of the applicant; (2) the appropriateness of the methods envisioned to the purpose(s) of the activity; (3) the extent to which the conduct of any permitted activity may diminish or enhance the value of the Sanctuary as a source of recreation, or as a source of educational or scientific information; (4) the end value of the activity and (5) such other matters as may be deemed appropriate.

(d) In considering any application submitted pursuant to this section, the Assistant Administrator may seek and consider the views of any person or entity, within or outside of the Federal Government, and may hold a public hearing, as deemed appropriate.

(e) The Assistant Administrator may, at his or her discretion, grant a permit which has been applied for pursuant to this section, in whole or in part, and subject to such condition(s) as deemed appropriate. The Assistant Administrator or a designated representative may observe any permitted activity and/or require the submission of one or more reports of the status or progress of such activity. Any information obtained shall be available to the public.

(f) The permit granted under paragraph (e) may not be transferred.

(g) The Assistant Administrator may amend, suspend or revoke a permit granted pursuant to this section, in whole or in part, temporarily

or indefinitely, if the permit holder (the Holder) has acted in violation of the terms of the permit or of the applicable regulations. Any such action shall be set forth in writing to the Holder, and shall set forth the reason(s) for the action taken. The Holder may appeal the action as provided for in Section 935.11.

935.10. Certification of Other Permits.

a) All permits, licenses and other authorizations issued pursuant to any other authority are hereby certified and shall remain valid if they do not authorize any activity prohibited by Sections 935.6 or 935.7. Any interested person may request that the Assistant Administrator offer an opinion on whether an activity is prohibited by these regulations.

935.11. Appeals of Administrative Action.

(a) Any interested person (the Appellant) may appeal the granting, denial, or conditioning of any permit under Section 935.9, to the Administrator of NOAA. In order to be considered by the Administrator, such appeal shall be in writing, shall state the action(s) appealed and the reason(s) therefor, and shall be submitted within 30 days of the action(s) by the Assistant Administrator. The Appellant may request an informal hearing on the appeal.

(b) Upon receipt of an appeal authorized by this section, the Administrator will notify the permit applicant, if other than the Appellant, and will request such additional information and in such form as will allow action upon the appeal. Upon receipt of sufficient information, the Administrator will decide the appeal in accordance with the criteria set out in Section 935.9(c) as appropriate, based upon information relative to the application on file at OCZM and any additional

information, the summary record kept of any hearing and the Hearing Officer's recommended decision, if any, as provided in paragraph (c), and such other considerations as deemed appropriate. The Administrator will notify all interested persons of the decision, and the reason(s) therefor, in writing, normally within 30 days of the receipt of sufficient information, unless additional time is needed for a hearing.

(c) If a hearing is requested or if the Administrator determines that one is appropriate, the Administrator may grant an informal hearing before a Hearing Officer designated for that purpose after first giving notice of the time, place, and subject matter of the hearing in the Federal Register. Such hearing shall normally be held no later than 30 days following publication of the notice in the Federal Register unless the Hearing Officer extends the time for reasons deemed equitable. The Appellant, the Applicant (if different) and, at the discretion of the Hearing Officer, other interested persons, may appear personally or by counsel at the hearing and submit such material and present such arguments as determined appropriate by the Hearing Officer. Within 30 days of the last day of the hearing, the Hearing Officer shall recommend in writing a decision to the Administrator.

(d) The Administrator may adopt the Hearing Officer's recommended decision, in whole or in part, or may reject or modify it. In any event, the Administrator will notify interested persons of the decision, and the reason(s) therefor in writing within 30 days of receipt of the recommended decision of the Hearing Officer. The Administrator's action shall constitute final action for the Agency for the purposes of the Administrative Procedures Act.

(e) Any time limit prescribed in this section may be extended

for a period not to exceed 30 days by the Administrator for good cause, either upon his or her own motion or upon written request from the Appellant or Applicant stating the reason(s) therefor.

935.12 Amendments.

(a) Any amendment to these regulations which significantly alters the extent of the prohibitions described in Sections 935.6 and 935.7 will directly affect California's coastal zone and shall be consistent with the California Coastal Management Program to the maximum extent practicable.

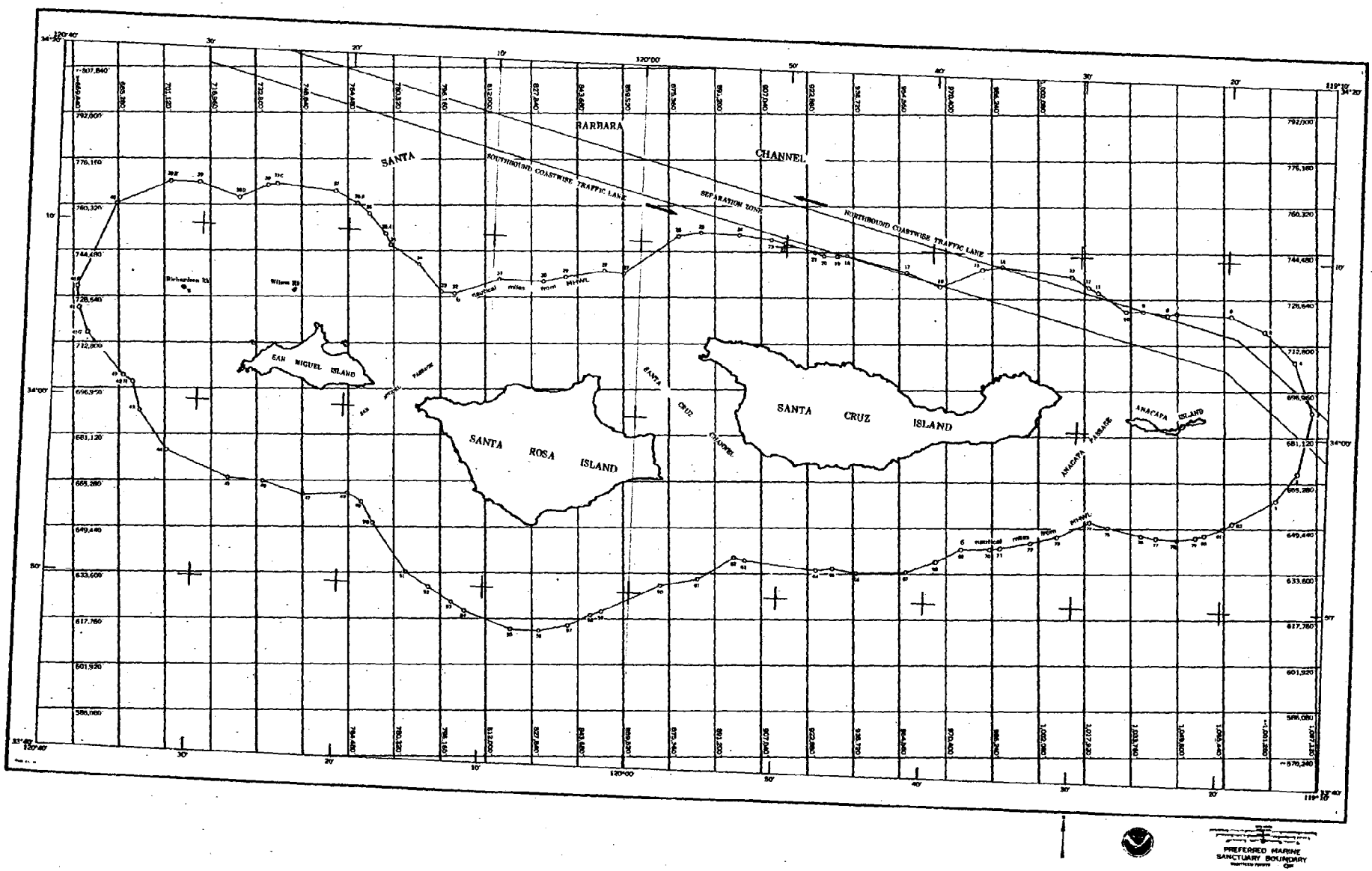
(b) If the California Coastal Management Program is amended to authorize in State waters an activity prohibited by Section 935.6 or 935.7, upon the requst of the Governor of California the Assistant Administrator shall propose a conforming amendment to these regulations, unless he/she determines in writing that the activity would be clearly inconsistent with the purposes of the Sanctuary or otherwise would be prohibited by law.

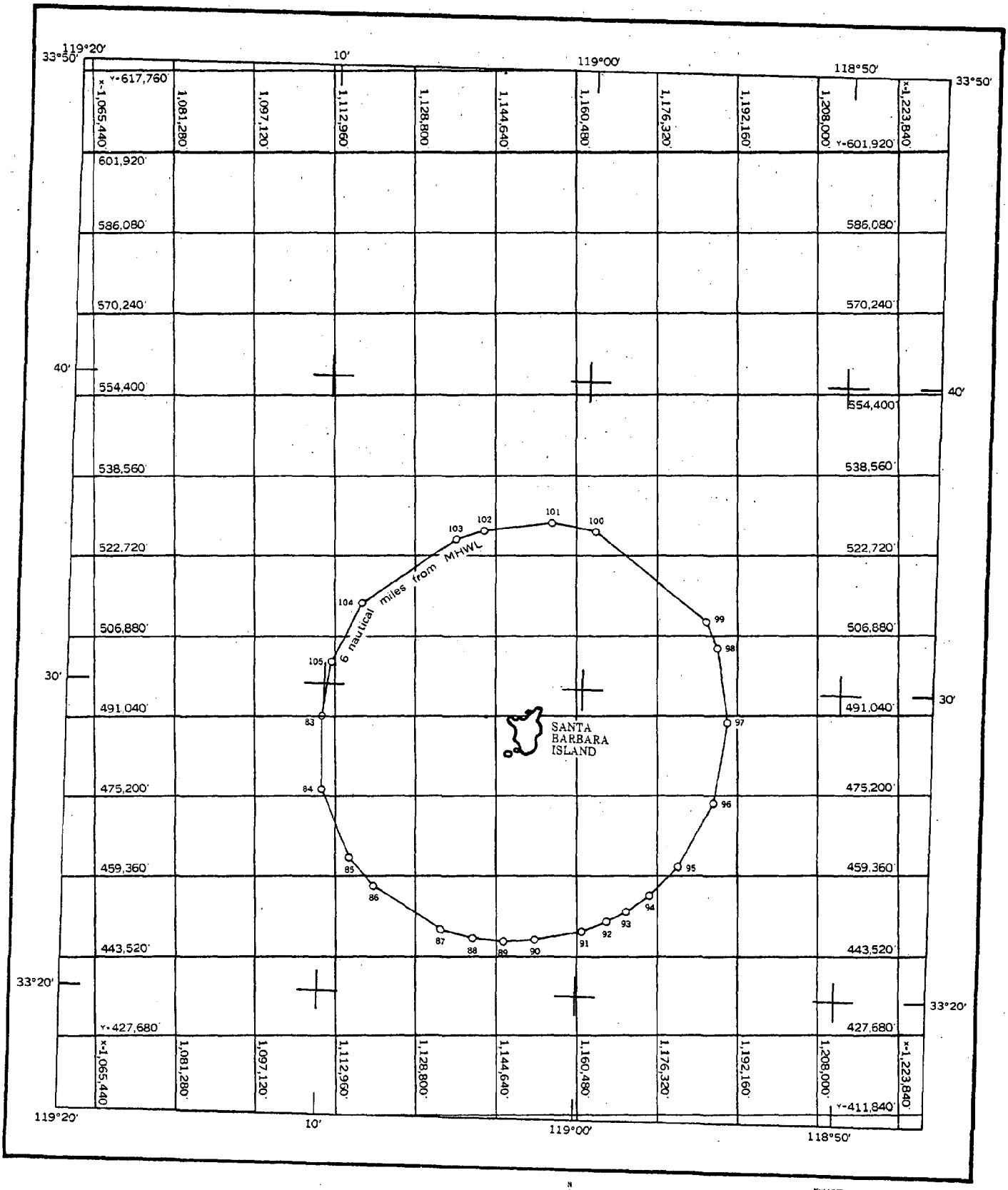
APPENDIX 1.A: Coordinates of the Channel Islands Marine Sanctuary

	LATITUDE N 0 / //	LONGITUDE W 0 / //
01	33°56'28.959"	119°16'23.800"
02	33°58'03.919"	119°14'56.964"
03	34°01'33.846"	119°14'07.740"
04	34°04'24.203"	119°15'21.308"
05	34°06'06.653"	119°17'27.002"
06	34°06'54.809"	119°19'46.046"
07	34°06'57.988"	119°23'24.905"
08	34°06'51.627"	119°24'04.198"
09	34°07'01.640"	119°25'40.819"
10	34°06'59.904"	119°26'50.959"
11	34°08'02.002"	119°28'47.501"
12	34°08'17.693"	119°29'27.698"
13	34°08'52.234"	119°30'39.562"
14	34°09'16.780"	119°35'22.667"
15	34°09'05.106"	119°36'41.694"
16	34°08'02.782"	119°39'33.421"
17	34°08'46.870"	119°41'48.621"
18	34°09'35.563"	119°45'57.284"
19	34°09'32.627"	119°46'37.335"
20	34°09'33.396"	119°47'32.285"
21	34°09'43.668"	119°48'09.018"
22	34°10'10.616"	119°50'07.659"
23	34°10'21.586"	119°51'05.146"
24	34°10'33.161"	119°53'17.044"
25	34°10'36.545"	119°55'57.373"
26	34°10'21.283"	119°57'26.403"
27	34°08'07.255"	120°01'07.233"
28	34°08'13.144"	120°02'27.930"
29	34°07'47.772"	120°05'05.449"
30	34°07'29.314"	120°06'36.262"
31	34°07'30.691"	120°09'35.238"
32	34°06'36.285"	120°12'39.335"
33	34°06'40.634"	120°13'33.940"
34	34°08'10.759"	120°15'07.017"
35	34°09'12.290"	120°17'07.046"
35A	34°09'50.706	120°17'31.649"
36	34°10'56.346"	120°18'40.520"
36B	34°11'28.249"	120°19'29.213"
37	34°12'08.078"	120°21'00.835"
37C	34°12'25.468"	120°25'01.261"
38	34°12'18.754"	120°25'39.373"
38D	34°11'33.184	120°27'33.921"
39	34°12'19.470"	120°30'22.620"
39E	34°12'17.540"	120°32'19.959"
40	34°10'54.592"	120°35'57.887"
40F	34°06'07.491"	120°38'27.883"
41	34°04'53.454"	120°38'16.602"

	LATITUDE N O / //	LONGITUDE W O / //
41G	34°03'30.539"	120°37'39.442"
42	34°01'09.860"	120°35'04.808"
42H	34°00'48.573"	120°34'25.106"
43	33°59'13.122"	120°33'53.385"
44	33°57'01.427"	120°31'54.590"
45	33°55'36.973"	120°27'37.188"
46	33°55'30.037"	120°25'14.587"
47	33°54'50.522"	120°22'29.536"
48	33°55'01.640"	120°19'26.722"
49	33°54'34.409"	120°18'27.344"
50	33°53'23.129"	120°17'39.927"
51	33°50'39.990"	120°15'13.874"
52	33°49'53.260"	120°13'41.904"
53	33°49'03.437"	120°12'06.750"
54	33°48'36.087"	120°11'10.821"
55	33°47'39.280"	120°07'59.707"
56	33°47'37.617"	120°06'04.002"
57	33°47'59.351"	120°04'08.370"
58	33°48'38.700"	120°02'33.188"
59	33°48'52.167"	120°01'50.244"
60	33°50'28.486"	119°57'50.820"
61	33°50'55.128"	119°55'19.934"
62	33°52'13.338"	119°52'53.439"
63	33°52'04.900"	119°52'10.719"
64	33°51'39.919"	119°47'21.152"
65	33°51'48.592"	119°46'13.213"
66	33°51'35.798"	119°44'34.589"
67	33°51'44.374"	119°41'12.738"
68	33°52'23.857"	119°39'14.708"
69	33°53'09.365"	119°37'30.784"
70	33°53'12.754"	119°35'35.793"
71	33°53'17.114"	119°34'54.567"
72	33°53'38.865"	119°32'51.578"
73	33°54'02.277"	119°31'06.274"
74	33°54'56.444"	119°28'54.052"
75	33°54'39.349"	119°27'37.512"
76	33°54'15.236"	119°25'23.779"
77	33°54'07.847"	119°24'22.849"
78	33°54'04.682"	119°22'58.006"
79	33°54'14.311"	119°21'44.573"
80	33°54'22.824"	119°21'09.003"
81	33°54'46.904"	119°19'54.677"

	LATITUDE N 0 / //	LONGITUDE W 0 / //
82	33°55'05.834"	119°19'16.027"
83	33°28'56.904"	119°10'04.092"
84	33°26'32.364"	119°10'01.328"
85	33°24'19.904"	119°08'52.236"
86	33°23'26.019"	119°07'54.826"
87	33°22'04.836"	119°05'16.716"
88	33°21'49.387"	119°04'01.551"
89	33°21'44.594"	119°02'49.887"
90	33°21'49.556"	119°01'37.839"
91	33°22'07.538"	118°59'49.357"
92	33°22'27.774"	118°58'51.623"
93	33°22'47.957"	118°58'07.633"
94	33°23'20.805"	118°57'14.375"
95	33°24'18.458"	118°56'08.450"
96	33°26'24.130"	118°54'51.352"
97	33°29'02.820"	118°54'22.276"
98	33°31'27.917"	118°54'50.367"
99	33°32'17.935"	118°55'18.396"
100	33°35'10.090"	118°59'40.0910"
101	33°35'24.575"	119°01'22.1081"
102	33°35'06.497"	119°03'59.4632"
103	33°34'48.322"	119°05'03.3743"


SANTA BARBARA CHANNEL
SOUTHBOUND COASTWISE TRAFFIC LANE
SEPARATION ZONE
NORTHBOUND COASTWISE TRAFFIC LANE
SAN MIGUEL ISLAND
SAN MIGUEL PASSAGE
SANTA ROSA ISLAND
SANTA CRUZ CHANNEL
SANTA CRUZ ISLAND
ANACAPA PASSAGE
ANACAPA ISLAND
6 nautical miles from MHWL
PREFERRED MARINE SANCTUARY BOUNDARY


119°20'
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33°20'
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Y=617,760'
Y=601,920'
Y=427,680'
Y=411,840'
X=1,065,440'
1,081,280'
1,097,120'
1,112,960'
1,128,800'
1,144,640'
1,160,480'
1,176,320'
1,192,160'
1,208,000'
X=1,223,840'
601,920'
586,080'
570,240'
554,400'
538,560'
522,720'
506,880'
491,040'
475,200'
459,360'
443,520'
427,680'
6 nautical miles from MHWL
SANTA
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NOAA
PREFERRED MARINE
SANCTUARY BOUNDARY
DIGITIZED POINTS—On

APPENDIX 2. Fish and shellfish species of commercial and recreational interest in the waters around the northern Channel Islands and Santa Barbara Island (California Department of Fish and Game, in process).

Fishery Resources Listed on Atlas by Island

SAN MIGUEL

1. Mollusks in Rocky Areas:

Red Abalone	Black Abalone	White Abalone	Rock Scallop

2. Kelp Bed & Rocky Bottom Fish:

Cabezon	Monkeyface Eel	Kelp Greenling	Lingood
Black Rockfish	Black & Yellow Rockfish	Blue Rockfish	Copper Rockfish
Kelp Rockfish	Gopher Rockfish	Grass Rockfish	Olive Rockfish
Vermillion Rockfish	Yellowtail Rockfish	Blue Shark	Leopard Shark
Barred Surfperch	Black Surfperch	Pile Surfperch	Pile Surfperch
Rubberlip Surfperch	Striped Surfperch	Tomsmelt Surfperch	

3. Fish Over Shallow Sand Bottom; 0-18m (0-60 ft.):

N. Anchovy	Pacific Butterfish	Jacksmelt	Queenfish
White Seabass	Barred Surfperch	Pile Surfperch	Spinner Surfperch
Spotfish Surfperch	Rainbow Surfperch	Walley Surf-perch	White Surfperch
Tomsmelt	C-O Turbot	Horny Head Surfperch	

4. Fish Over Moderate Deep Sand Bottom; 18-46m (60-150 ft.):

Spiny Dogfish	Pacific Sanddab	Calico Rockfish	Halfbanded Rockfi:
Stripetail Rockfish	English Sole	Sand Sole	Pink Surfperch
Shiner	Curlfin Turbot	Hornyhead Turbot	

5. Pelagic Fish Off This Coast:

Albacore	Northern Anchovy	Pacific Bonito	Pacific Hake
Jack Mackerel	King Salmon	Pacific Sardine	Pacific Saury
Blue Shark	Mako Shark	Thresher Shark	White Shark
Swordfish			

SANTA ROSA ISLAND

1. Mollusks in Rocky Areas:

Red Abalone	White Abalone	California Sea-mussel	Black Abalone

Rock Scallop	Piddocks		

2. Kelp Bed & Rocky Bottom Fish:

Cabezon	Monkeyface Eel	Lingood	Black Rockfish
Black & Yellow Rockfish	Blue Rockfish	Copper Rockfish	China Rockfish
Gopher Rockfish	Kelp Rockfish	Olive Rockfish	Yellowtail Rockfi:
Blue Shark	Leopard Shark	California Sheephead	Black Surfperch
Pile Surfperch	Rubberlip Surfperch	Striped Surf-perch	Tomsmelt

3. Fish Over Shallow Sand Bottom; 0-18m (0-60 ft.):

Anchovy	Leopard Shark	Rainbow Surf-perch	C-O Turbot
Pacific Butterfish	White Seabass	Walleye Surf-perch	Hornyhead Turbot

ANACAPA ISLAND

1. Mollusks in Rocky Areas:

Black Abalone	Pink Abalone	Rock Scallop	Red Abalone
White Abalone	California Mussel		

2. Kelp Bed & Rocky Bottom Fish:

Kelp Bass	Black Rockfish	Yellowtail Rockfish	Giant Sea Bass
Black & Yellow Rockfish	Blue Shark	Blacksmith	Brown Rockfish
Leopard Shark	Monkeyfaced Eel	Blue Rockfish	California Sheep-head
Garibaldi	Copper Rockfish	Black Surfperch	Halfmoon
Gopher Rockfish	Pile Surfperch	Opaleye	Olive Rockfish
Rubberlip Surfperch	Kelp Rockfish	Striped Surf-perch	Tree Rockfish
Tomsmelt			

3. Fish Over Shallow Sand Bottom; 0-18m (0-60 ft.):

Northern Anchovy	Pile Surfperch	White Surf-perch	Pacific Butterfis
Rainbow Surfperch	Tomsmelt	Jacksmelt	Shiner Surfperch
C-O Turbot	Queenfish	Spotfin Surf-perch	White Seabass
Walleye Surfperch			

4. Fish Over Moderate Deep Sand Bottom; 18-46m (60-150 ft.):

Spiny Dogfish	Stripetail Rockfish	Shiner Surf-perch	Pacific Sanddab
English Sole	Curlfin Turbot	Calico Rockfish	Sand Sole
Hornyhead Turbot	Halfbanded Rockfish	Pink Surfperch	

5. Pelagic Fish Off This Coast:

Albacore	Pacific Bonito	Pacific Saury	Mako Shark
Northern Anchovy	Jack Mackerel	Blue Saury	Thresher Shark
Pacific Hake	Pacific Sardine	Blue Shark	White Shark
Swordfish			

SANTA BARBARA ISLAND

1. Mollusks in Rocky Areas:

Black Abalone	White Abalone	Mussels	Red Abalone
Rock Scallop	Piddocks		

2. Kelp Bed & Rocky Bottom Fish:

Cabezon	Gopher Rockfish	Black Surfperch	Bat Rays
Monkeyfaced Eel	Calico Rockfish	Olive Rockfish	Pile Surfperch
White Seabass	Kelp Greenling	Squarespot Rockfish	Yellowtail Rockfi
Rubberlip Surfperch	Giant Sea Bass	Lingood	Blue Shark
Striped Surfperch	Ocean Whitefish	Black Rockfish	Horn Shark
Sculpin	Black & Yellow Rockfish	Swell Rockfish	Tomsmelt
Blue Rockfish	Leopard Shark	Halfmoon	Copper Rockfish
California Sheephead	Opaleye		

3. Fish Over Shallow Sand Bottom; 0-18m (0-60 ft.):

Northern Anchovy	Barred Surfperch	Spotfin Surf-perch	Topsmelt
Pacific Butterfish	Pile Surfperch	Walleye Surf-perch	Jacksmelt
Rainbow Surfperch	White Surfperch	C-O Turbot	Queenfish
Shiner Surfperch	White Seabass		

4. Fish Over Moderate Deep Sand Bottom; 18-46m (60-150 ft.):

Spiny Dogfish	Halfbanded Rockfish	Sand Sole	Curlfin Turbot
Pacific Sanddab	Stripetail Rockfish	Pink Surfperch	Hornyhead Turbot
Calico Rockfish	English Sole	Shiner Surf-perch	

5. Pelagic Fish Off This Coast:

Albacore	Jack Mackerel	Mako Shark	Yellowtail

Northern Anchovy	Pacific Sardine	Thresher Shark	Dogfish
Pacific Bonito	Pacific Saury	White Shark	Soupfin Shark
Pacific Hake	Blue Shark	Swordfish	
Jacksmelt	Pile Surfperch	White Surfperch	Queenfish
Shiner Surfperch	Tomsmelt	Speckled Sand-dab	White Croaker
Island Surfperch			

4. Fish Over Moderate Deep Sandy Bottom; 18-46m (60-150 ft.):

Spiny Dogfish	Halfbanded Rockfish	Sand Sole	Curlfin Turbot
Pacific Sanddab	Stripetail Rockfish	Pink Surfperch	Hornyhead Turbot
Calico Rockfish	English Sole	Shiner Surf-perch	Soupfin Shark
California Halibut			

5. Pelagic Fish Off This Island:

Albacore	Pacific Kake	Blue Shark	Swordfish
Northern Anchovy	Pacific Mackerel	Mako Shark	Mola
Pacific Bonito	Pacific Sardine	Thresher Shark	Jack Mackerel
Pacific Saury	White Shark		

(Commercial fishing close in for Abalone, Lobster, Squid)

SANTA CRUZ ISLAND

1. Mollusks in Rocky Areas:

Red Abalone	White Abalone	Rock Scallop	Black Abalone
Bay Mussel	California Sea Mussel		

2. Kelp Bed & Rocky Bottom Fish:

Cabezon	Copper Rockfish	California Sheephead	Monkeyfaced Eel
China Rockfish	Black Surfperch	Blacksmith	Kelp Rockfish
Kelp Rockfish	Kelp Greenling	Olive Rockfish	Pile Surfperch
Lingood	Gopher Rockfish	Rubberlip Surf-perch	Black Rockfish
Yellowtail Rockfish	Striped Surfperch	Black & Yellow Rockfish	Blue Shark
Tomsmelt	Blue Rockfish	Leopard Shark	Garibaldi
Grass Rockfish	Opaleye	Kelp Bass	

3. Fish Over Shallow Sand Bottom; 0-18m (0-60 ft.):

Northern Anchovy	Barred Surfperch	Rainbow Surf-perch	Pacific Butterfis
Calico Surfperch	Walleye Surfperch	Jacksmelt	Pile Surfperch

White Surfperch	Queenfish	Shiner Surf-perch	Tomsmelt
White Seabass	Island Surfperch	C-O Turbot	Grunion
Spotfin Surfperch	Hornyhead Surfperch	Speckled Sanddab	

4. Fish Over Moderate Deep Sandy Bottom; 18-46m (60-150 ft.):

Spiny Dogfish	Stripetail Rockfish	Shiner Surf-perch	Pacific Sanddab
English Sole	Curlfin Turbot	Calico Rockfish	Sand Sole
Hornyhead Turbot	Halfbanded Rockfish	Pink Surfperch	

5. Pelagic Fish Off This Island:

Albacore	Pacific Mackerel	Thresher Shark	Northern Anchovy
Pacific Sardine	White Shark	Pacific Bonito	Pacific Saury
Swordfish	Pacific Hake	Blue Shark	Mola
Jack Mackerel	Mako Shark	Opah	

APPENDIX 3: Brief Review of the Outer Continental Shelf (OCS) Oil and Gas Development Process

In virtually all instances, the pattern of OCS oil and gas development follows the same basic steps: 1) pre-exploration, 2) leasing, 3) exploratory drilling, 4) development drilling, 5) production, and 6) completion. During pre-exploration activity, oil companies send research vessels to conduct seismic surveys of an area to determine the geologic structure and location of potential petroleum bearing strata. Since OCS lands are federally owned, oil companies must first secure the right to drill and exploit the natural resources before any drillings can be conducted. Drilling rights on the OCS are obtained by leasing areas (called blocks or tracts) from the responsible federal agent -- the Bureau of Land Mangement (BLM). The oil companies nominate for lease sale those tracts which they view as promising and bid on those tracts in a competitive bid lease sale. BLM reviews the highest bids and may accept or reject them. If the high bids are deemed commensurate with the resource potential, the company is granted a lease to drill and develop the block.

Upon award of a lease, exploratory drilling from a drilling "rig" may be conducted to determine the precise location, extent, and quantity of oil and gas resources. This involves drilling an average of about four exploratory wells per tract from a movable, temporary rig. If an exploratory well indicates the presence of petroleum hydrocarbons, additional wells are drilled to determine the areal extent of the reservoir(s) and to aid in locating the optimal site for production platforms. After exploration is complete, but before commercial production can begin, a development plan must be prepared by the developer and submitted for approval to the U. S. Geological Survey (USGS). The USGS reviews this plan to insure that safety and environmental standards are met.

After approval of the development plan, production "platforms" are installed on the tract and development wells are drilled. A tract with a high resource potential might include two platforms and approximately 40 wells. Production "platforms" are more permanent structures than drilling "rigs" since they must serve throughout the production life of the field (which may be 15 to 40 years) and withstand the rigors of even the most severe ocean storms. In addition to platforms, production facilities normally include transportation systems to shore and onshore processing and storage plants.

After all recoverable oil and gas resources have been exploited, the well is closed below the sea floor and the platform and pipelines are removed.

APPENDIX 4: BLM Special Stipulations for OCS Sale #48 (U. S. Bureau of Land Management, 1979).

Stipulation No. 1. Department of Defense restriction

Requires lessee and/or operator to coordinate boat and aircraft traffic with appropriate military commander; provides for temporary suspensions of OCS operations, and requires control of electromagnetic emissions.

Stipulation No. 2. Department of Defense restriction

Indemnifies and saves harmless the United States against claim for injury or damage from space and missile testing.

Stipulation No. 3. Cultural Resources

Requires surveys to identify resources of historical or archaeological significance, and subsequent protection.

Stipulation No. 4. Trawl grounds

Requires that protrusions above the sea floor, and irregular pipe surfaces, be protected by shrouds which will prevent damage to the structures, or fishing gear.

Stipulation No. 5. Areas of special biological interest

Requires prevention, to the maximum extent possible, of detrimental impact upon areas of special biological interest.

Stipulation No. 6. Transport of oil and gas

This stipulation establishes regional and state working groups, consisting of federal, state, and local government, and industry representation, to formulate regional transportation management plan recommendations.

Stipulation No. 7. Tanner-Cortes Banks

To mitigate the impacts of physical disruption and sedimentation on significant biological communities of Tanner-Cortes Banks.

APPENDIX 5: Summary of USGS Pacific OCS Orders and Notices to Lessees (U.S. Bureau of Land Management, 1979).

Pacific Area OCS Order No. 1

This Order requires all platforms, drilling rigs, drilling ships, and wells to have standard signs identifying the operator, the specific lease block of operation, and well number.

Pacific Area OCS Order No. 2

Order No. 2 concerns procedures for drilling of wells. It requires the operators to file an application for drilling which includes information on the drilling platforms or vessel, casing program, blowout prevention equipment, well control training and safety training of operators' personnel, and a list or description of critical drilling operations.

Pacific Area OCS Order No.3.

This Order is established to provide regulation of plugging and abandonment of wells which have been drilled for oil and gas. For permanent abandonment of wells, cement plugs must be placed so as to extend 30m (100 feet) above the top and 30m (100 feet) below the bottom of fresh water, oil, and gas zones to prevent those fluids from escaping into other strata. Portions of a well in which abnormal pressures are encountered are also required to be isolated with cement plugs. Plugs are required at the bottom of the deepest casing below which an open hole exists. Plugs or cement retainers are required to be placed 30m (100 feet) above the top and 30m (100 feet) below any perforation interval of the well hole used for production of oil and gas.

Pacific Area OCS Order No. 4.

An OCS lease provides for its extension beyond its primary term for as long as oil or gas may be produced in paying quantities provided the operator has met the requirements for diligent development. If these circumstances should occur, the lease can be extended beyond its initial term, pursuant to Section 8(b)(2) of the OCS Lands Act and Title 30 CFR 250.11 and 250.12(d)(1). In addition, an OCS lease may be maintained beyond the primary term, in the absence of actual production, when a suspension of production has been approved by the Supervisor. Order No. 4 defines the conditions and requirements for such suspensions.

Pacific Area OCS Order No. 5.

This Order sets regulations for the installation, design, testing, operation, and removal of subsurface safety devices.

Pacific Area OCS Order No. 6.

This Order pertains to procedures for completion of oil and gas wells. Wellhead equipment such as casing-heads, wellhead fittings, valves, and connections are specified and rating requirements are noted here. Testing procedures for wells and subsurface safety devices are also specified in the Order along with methods for multiple or tubingless completions.

Pacific Area OCS Order No. 7.

Order No. 7 concerns the control or pollution to the marine environment and provides regulations for the disposal of waste materials generated as a result of offshore operations.

Pacific Area OCS Order No. 8.

This Order requires that platforms, fixed structures, and artificial islands be designed with consideration for geological, geographical, environmental and operational conditions. Prior to structural approval by the Supervisor, detailed design and stress load data must be submitted to the USGS. Certification of structural adequacy by a registered professional engineer is required by the Order.

Pacific Area OCS Order No. 9.

OCS Order No. 9 provides approval procedures for oil and gas pipelines on the OCS. All pipelines and related equipment must be designed and maintained with high-low pressure sensors, automatic shut-in valves, checkflow valves (to control backflow), and metering systems to detect input/output variances (leakage). The Order also requires adequate provisions for cathodic corrosion protection, trawling compatibility, hydrostatic testing, storm scour and other environmental stress in OCS pipelines. Procedures and schedules for regular inspection of pipelines along with recording of such inspections are stipulated.

Pacific Area OCS Order No. 10.

OCS Order No. 10 provides for drilling twin core holes located adjacent to core holes drilled on the OCS under earlier California State authorization. Such holes were drilled prior to the establishment of Federal authority beyond the 3-mile limit.

Pacific Area OCS Order No. 11.

This Order provides for prevention of waste, conservation of oil and gas resources, and protection of correlative rights by defining and setting standards for rates of production, production testing procedures, and joint production requirements.

Pacific Area OCS Order No. 12.

The purpose of this Order is to make the records of the Department of the Interior available to the public to the greatest extent possible.

Notice to Lessees No. 77-1. "Applications for exploratory operations"

This NTL summarizes the requirements and instructions relative to the approval of applications for a permit to drill exploratory wells.

Notice to Lessees No. 77-2. "Minimum requirements for shallow drilling hazard surveys"

Minimum requirements of geologic hazard surveys, which must be conducted pursuant to 30 CFR 250.34(a), are described.

Notice to Lessees No. 77-3. "Minimum cultural survey requirements"

Describes necessary measures to be taken to identify and preserve all Federally-owned sites, structures, and objects of historic, architectural, or archeological significance as directed by Executive Order No. 11593.

Notice to Lessees No. 77-4. "Minimum requirements for biological surveys"

Requires a plan of survey to identify significant biological communities.

APPENDIX 6.

ANALYSIS OF THE ECONOMIC IMPACTS OF THE PROPOSED CHANNEL ISLANDS SANCTUARY REGULATIONS

Prepared for

Sanctuary Programs Office
National Oceanic and Atmospheric Administration
U.S. Department of Commerce

Prepared by

Sterling Hobe Corporation
Suite 350
1747 Pennsylvania Avenue, N.W.
Washington, D.C. 20006

April 1980

TABLE OF CONTENTS

Executive Summary..... ES-1

Introduction..... 1

Background..... 5

Expected Hydrocarbon Reserves..... 9

Socioeconomic Impact of Proposed Sanctuary Resulting from Curtailment of Hydrocarbon Exploration and Production 27

Value of Hydrocarbon Resources..... 28

Production Rates Over Time..... 29

Initial Production Years..... 34

Substitute Opportunities..... 35

Types of Socioeconomic Imapcts..... 36

Socioeconomic Impacts of Proposed Sanctuary Assuming Worst Case Direct Impact..... 39

Impact on the Economy and Consumers..... 39

Impact on Oil and Gas Industry..... 39

Impact on Region..... 43

Commercial and Recreational Fishing and Tourism Activities Within or In the Vicinity of Proposed Sanctuary..... 48

Impacts on Prices and Costs of Goods and Services..... 49

Impacts on Productivity and Employment..... 19

Impact on Consumers..... 50

Indirect Impacts..... 51

Total (Direct and Indirect) Costs Assuming Worst Case.... 62

Socioeconomic Impact of the Proposed Sanctuary Assuming Normative Case Total Impacts..... 62

Appendix A: Individuals Interviewed in the Course of the Study

Appendix B: Indirect Impact Calculations

LIST OF TABLES

Table No.		Page
1	Milestones in Santa Barbara Channel and the Channel Islands Area Oil and Gas Development	10
2	Cognizant Information on Lease Sales	12
3	Number of Wells Drilled on Existing Leases, All or Partially within 6 nmi (11.1km) of the Northern Channel Islands and Santa Barbara Island (also see Figure E-22). (Adams, 1979, personal communication; U.S. Bureau of Land Management, 1979 (Visual No. 1); U.S. Bureau of Land Management, 1978a)	23
4	Platforms in the Santa Barbara Channel Area (U.S. Bureau of Land Management, 1979 (Visual No. 1); U.S. Geological Survey, 1975 (Map I-974); Resources 1978; Adams, 1979, personnal communication; and California Office of Planning and Research, 1977)	25
5	Assumed Crude Oil Prices, 1982-2000	30
6	Assumed Natural Gas Prices, 1982-2000	31
7	Most Probable Values for Oil and Gas Production and Producing Wells	32
8	Annual Rates of Oil and Gas Production for Lease Sale #48	33
9	Direct Loss to Economy from Foregone Hydrocarbon Production for 24 Tracts Withdrawn from Proposed Sanctuary Assuming Worse Case, 1982-2000	40
10	Direct Loss to Economy from Foregone Hydrocarbon Production for Remaining Tracts Within Boundaries of Proposed Sanctuary Assuming Worst Case, 1988-2006	41
11	Total Impact on the Economy Resulting from Hydrocarbon Production in the 24 Tracts Withdrawn from Lease Sale #48 and from Hydrocarbon Production in the Remaining Tracts of the Proposed Sanctuary, 1982-2006	42
12	Profit as Percent of Sales for the Oil and Gas Industry, 1975-1978	44
13	Foregone Net Income as the Result of Prohibition of Hydrocarbon Exploitation in the Proposed Sanctuary Boundaries, 1982-2006	45
14	Sectors of Economy and Associated Total Coefficients With Total (Direct and Indirect) Requirements at Lease of $0.01 Per $1.00 Output in Crude Petroleum and Natural Gas Production	54
15	Producers Wholesale Price Deflators for Crude Oil and Gas, 1972 and 1980	56
16	Value of Potential Annual Loss of Crude Oil and Natural Gas in Constant 1972 Dollars, Resulting from Prohibition of Hydrocarbon Exploitation in the 24 Tracts Withdrawn from Proposed Sanctuary, 1982-2000	57

Table No.		Page
17	Value of Potential Annual Loss of Crude Oil and Natural Gas in Constant 1972 Dollars, Resulting From Prohibition of Hydrocarbon Exploitation in the 24 Tracts withdrawn from Proposed Sanctuary, 1988-2006.....	58
18	Component of Implicit GNP Price Deflectors Used and and Other Deflectors Used.....	59
19	Indirect Annual Costs Resulting from Prohibition of Hydrocarbon Exploration and Exploitation in the 24 Tracts Withheld from Lease Sale #48, 1982-2000..	60
20	Indirect Annual Costs Resulting from Prohibition of Hydrocarbon Exploration and Exploitation in the Remaining Tracts of Proposed Sanctuary, 1988-2006..	61
21	Direct and Indirect Annual Costs Resulting from Prohibition of Hydrocarbon Exploration and Exploitation in the Proposed Sancutary, 1982-2006..	63
22	Direct and Indirect Annual Costs Resulting from Prohibition of Hydrocarbon Exploration and Exploitation in the Proposed Sanctuary, Assuming Normative Case.....	66

LIST OF FIGURES

Figure No.		Page
1	Location of the Southern California Bight.....	6
2	Boundaries of Proposed Sanctuary (Northern Channel Islands).....	7
3	Boundaries of Proposed Sanctuary (Santa Barbara Island).....	8
4	Location of Carpiteria Field, Santa Barbara Channel and Lease Sales #35 and #48. (Expired Tracts Not Included.).....	13
5	Tract Location, Proposed Sale #48.....	14
6	Tracts Leased in Lease Sale #48 in the Vicinity of Proposed Sanctuary.....	15
7	Tracts Leased in Lease Sale #48 in the Vicinity of Proposed Sanctuary.....	16
8	Tracts Deleted from Lease Sale #48.....	18
9	Tracts Deleted from Lease Sale #48.....	19
10	Industry Interest in Lease Sale #68.....	20
11	Indication of Industry Interest in Tracts Included in Call for Nominations for Lease Sale #68.....	21

EXECUTIVE SUMMARY

The Office of Coastal Zone Management (OCZM), which is responsible for the marine sanctuary program within the National Oceanic and Atmospheric Administration (NOAA), proposes the designation as a marine sanctuary of the waters surrounding the northern Channel Islands and Santa Barbara Island, extending from the mean high tide water line on the four northern Channel Islands (San Miguel Island and adjacent rocks, Santa Cruz Island, Santa Rosa Island, and Anacapa Island) and Santa Barbara Island seaward 6 nautical miles (nmi) (11.1 km) pursuant to Title III the Marine Protection, Research, and Sanctuaries Act of 1972.

If the sanctuary is designated, activities within the sanctuary will be subject to necessary and reasonable regulations. OCZM has proposed regulations for public review and comment which would become effective if a sanctuary is designated. The regulations would restrict, as necessary to protect the sanctuary resources, oil and gas operations, discharges, alteration and construction on the seabed, certain vessel operations and overflights, and activities harming cultural and historical resources.[1/] This report undertakes an analysis of the economic impacts of the proposed Channel Islands Marine Sanctuaries regulations.

1/ U.S. Department of Commerce National Oceanic and Atmospheric Administration, Office of Coastal Zone Management, Draft Environmental Impact Statement On the Proposed Channel Islands Marine Sanctuary, 1979, Summary, pp. C-6 - C-9.

The National Oceanic and Atmospheric Administration Directives Manual[1] requires that a formal regulatory analysis of proposed regulations be undertaken if the proposed regulations have certain negative or positive economic effects on the economy industry, the public, employment, a region, etc.

> b. A regulatory analysis shall be prepared for any other significant regulation if that regulation, or in the case of an amendment to an existing non-significant regulation, if the change resulting from that amendment--
>
> (1) During any one year of its existence, can be expected to result in an effect (direct or indirect) on the economy exceeding $50 million;
>
> (2) During any one year of its existence, can be expected to result in an effect (direct or indirect) on either consumers, industries, levels of government, or a geographic region exceeding $25 million;
>
> (3) During any one year of its existence, can be expected to result in an increase in costs or prices of 5% or more in the economic activities or sector(s) affected by the proposed regulation;
>
> (4) Can be expected to reduce labor productivity by 1 percent or more in the economic activities or sector(s) affected by the proposed regulation;[2]
>
> (5) Can be expected to reduce employment by 5% or more in the economic activities or sector(s) affected by the proposed rule or regulation;
>
> (6) For the particular market(s) affected, can be expected to result directly or indirectly in a 1% or more decline in supply of materials, products or services, or a 1% or more increase in consumption of those materials, products or services; or
>
> (7) For the particular market(s) affected, can be expected to result in a distinct decline in competition as a result of the proposed rule or regulation. Factors to be considered include limitation of market entry, restraint of market information, or other restrictive factors that impede the functioning of the market system.

1/ National Oceanic and Atmospheric Administration, Procedures for Development of Regulations 21-24, June 1, 1979, p. 5-6.

2/ Since changes in the resource base have very limited impact on labor productivity this issue is not discussed in this report.

This study evaluates the magnitude of the impacts resulting from the proposed marine sanctuary regulations within the context of the criteria for a Regulatory Analysis. The study will increase the understanding of the economic impact of the regulations and may also be useful in determining whether a full formal Regulatory Analysis is required.

The only proposed regulations which can be expected to have any significant economic impact are those affecting exploration, development and production of hydrocarbon resources within the proposed Sanctuary. The other proposed regulations deal with activities which currently are minimal within the area of the proposed Sanctuary (construction or alteration of the seabed) or apply in the limited nearshore zones (operations of commercial vessels and overflights) in a manner which will have no more than negligible economic effects. Therefore, this study is limited to reviewing the impacts of the proposed regulations restricting activities for exploration, development and production of hydrocarbons.

OCZM proposes to prohibit any activity for the exploration or exploitation of hydrocarbons anywhere in the Sanctuary pursuant to leases executed on or after the effective date of the regulations. This regulation may restrict access to certain hydrocarbon reserves underlying the proposed Sanctuary. The impact of thus restricting production is the focus of this study.[1/]

1/ The proposed regulations have no impact on pre-existing leases except to require on-site location of certain oil spill equipment. U.S. Department of Commerce National Ocenic and Atmospheric Administration, Office of Coastal Zone Management, Draft Environmental Impact Statement on the Proposed Channel Islands Marine Sanctuary, 1979, p. C-7.

Methodology

Two scenarios have been developed to estimate socioeconomic impact:

(1) The "normative case" which assumes that certain portions of the hydrocarbon resources (approximately 40 percent) associated with the proposed Sanctuary can be exploited by directional drilling from tracts immediately outside the proposed Sanctuary boundary; and

(2) The "worst case" which assumes that none of the hydrocarbon resources associated with the proposed Sanctuary can be exploited.

The normative case represents the most likley circumstance. Directional drilling technology is currently well developed and commonly utilized. Should any economically recoverable reserves exist within the proposed Sanctuary, a substantial portion could be recovered from activities outside the boundary. The worst case analysis is presented to review the economic impacts of the regulations under unrealistically restricted access. There is no implication that the impact of the regulations is expected to be any greater than that discussed in the normative case.

A resource reserve estimate of hydrocarbons underlying the proposed Sanctuary was established by doubling existing official United States Geological Survey estimates for 24 tracts within the Sanctuary. The estimates of hydrocarbon reserves on the 24 tracts are 5.7 million barrels of oil and 8.9 billion cubic of gas. With the exception of the estimate for the 24 tracts

discussed above, there are no official United States Geological Survey estimates of hydrocarbon resources in the area of the proposed Sanctuary for the currently unleased tracts which would be affected by the proposed regulation. Limited exploratory activity by the oil and gas companies has taken place within the boundaries of the proposed Sanctuary. No useful data concerning resource estimates is available from these operations. Thus, empirical nonproprietary information regarding oil and gas resources for unleased tracts in the proposed Sanctuary area is virtually non-existent.

Based on the only reserve estimate available and the combination of the other factors listed above, economically recoverable hydrocarbon reserves within the proposed Sanctuary are extremely doubtful beyond 5.7 million barrels of oil and 8.9 billion cubic feet of gas. The expected economic impact of the proposed regulations might arguably be limited to impacts based on this only available official estimate. However, in order to be extremely conservative in estimating the economic impact of the proposed regulations we determined to double the level of hypothetical reserves within the proposed Sanctuary, i.e., 11.4 million barrels of oil and 17.8 billion cubic feet of gas, and to complete the economic analysis on this inflated resource base.

The study relies in large part on the detailed data presented by the Department of the Interior (DOI) in its Final Environmental Impact Statement and Secretarial Issue Document on Lease Sale #48 and extrapolates, draws inferences and performs analyses based on this information. For instance, expected regional impact was established by computing the proportion that estimated reserves within the proposed Sanctuary bear to the

estimated reserves for Lease Sale #48 and taking a like proportion of DOI's regional impact figure.

Similarly, production curves for Lease Sale #48 are utilized to establish the likely production schedule of estimated reserves within the proposed Sanctuary. The difficulties in such an approach are related to the fact that this methodology essentially assumes exploration and distribution activities of hydrocarbon resources within the proposed Sanctuary to be identical to those in the entire Lease Sale #48. There is no compelling evidence that this indeed is the case.

Conversely, the absence of specific information pertaining to the hydrocarbon resources within the Sanctuary requires significant reliance on the data available for Lease Sale #48.

Direct impact on the economy was established by estimating foregone market value of hydrocarbon products that could be produced within boundaries of the proposed Sanctuary over time, as well as by estimating the loss of net income to the oil and gas industry, reduced employment and related factors all resulting from not exploiting estimated hydrocarbon resources within the proposed Sanctuary.

Indirect impact on the economy was established by estimating the foregone value over time of goods and services supplied by other sectors of economy required by the oil and gas industry if exploitation of hydrocarbon resources within the boundaries of the proposed Sanctuary would take place. The methodology used was that of inter-industry model.

Conclusions

The results of the study concerning the normative case are summarized here according to the criteria established in the NOAA Directive.

(1) During any one year of its existence, can the regulation be expected to result in an effect (direct or indirect) on the economy exceeding $50 million?

The total resulting from the annual direct loss of oil and gas to the economy under normative case assumptions in the first year of production is only 1.2 million. This loss increases as the cumulative number of oil and gas wells are increased and in the peak production year of 1992 the total loss is almost $30 million. From thereon the annual losses decline as the oil and as reserves are gradually depleted. (Table ES-1.)

(2) During any one year of its existence, can the regulation be expected to result in an effect (direct or indirect) on either consumers, industries, levels of government[1/], or a geographic region exceeding $25 million?

United States Department of Interior originally estimated that the entire Lease Sale #48 would add to the Gross Regional Product of Southern California $519 million during the peak year of hydrocarbon exploitation, i.e., 1986.[2/]

1/ Impacts on the Federal Government cannot be estimated at this time. Impacts on State and local governments are subsumed in regional impacts.

2/ United States Department of Interior, Final Environmental Statement OCS Sale #48, Washington, D.C., 1972, Vol. 2, p. 1307

TABLE ES-1

DIRECT AND INDIRECT ANNUAL COSTS RESULTING FROM PROHIBITION OF HYDROCARBON EXPLORATION AND EXPLOITATION IN THE PROPOSED SANCTUARY, ASSUMING NORMATIVE CASE

(in millions of dollars)

Year	Total Costs
1982	1.17
1983	5.49
1984	11.00
1985	17.41
1986	20.40
1987	17.63
1988	18.11
1989	19.18
1990	24.51
1991	29.16
1992	29.96
1993	26.22
1994	25.21
1995	23.92
1996	20.25
1997	16.63
1998	14.08
1999	12.69
2000	10.82
2001	6.79
2002	6.14
2003	5.71
2004	5.26
2005	5.00
2006	4.58

This impact was based on hydrocarbon resource estimates for Lease Sale #48 of 715 million barrels of oil and 860 billion cubic feet of gas. Subsequently, United States Geological Survey drastically reduced these resource estimates to only 104 million barrels of oil (a reduction of 86 percent) and 498 billion cubic feet of gas (a reduction of 42 percent). Assuming proportional reduction in the increment to the Gross Regional Product during the peak year of production this is estimated to be only about $72 million.

Under normative case assumptions, hydrocarbon resources located within the boundaries of the proposed Sanctuary that will not be exploited by the oil and gas industry are comprised of 6.8 million barrels of oil and 10.7 billion cubic feet of gas (60 percent of 11.4 million barrels of oil and 17.8 billion cubic feet of gas).

Thus, unexploitable oil resources in the proposed Sanctuary represent only 6.5 percent of total revised oil resources in the entire Lease Sale #48; in the case of gas resources, those located within the boundaries of the proposed Sanctuary comprise only 2.1 percent of total gas resource estimates in Lease Sale #48.

Assuming that the magnitude of regional impact is in direct proportion to the resource estimates, such impact resulting from foregoing exploitation of hydrocarbon resources within proposed Sanctuary under normative case assumptions during the peak year of production should not exceed $4.7 million.

With regard to the socioeconomic impact on the consumers the market for the oil and gas produced from the Lease Sale

#48 and therefore from tracts within the proposed Sanctuary is that of entire United States.[1/] The foregone quantity of oil and gas from the proposed Sanctuary is infinitesimal when compared to the magnitude of annual (1978) demand for oil and gas products estimated to be over 7000 million barrels and therefore would have no effect on supply or cost to consumers, either yearly or over the life of the field.

With regard to the impact on the oil and gas industry, the recent data indicate industry net income to average about 5 percent of total revenues. For the peak year of production, i.e., 1992, since the foregone total oil production revenues are estimated to be almost $30 million[2/] the impact of the proposed regulations on the industry is therefore $1.5 million.

(3) During any one year of its existence, can the regulation be expected to result in an increase in costs or prices of 5 percent or more in the economic activities or sector(s) affected by the proposed regulation?

As already indicated the magnitude of total foregone oil and gas production within the boundaries of the proposed Sanctuary over the entire life of these resources of 6.8 million barrels of oil and 10.7 billion cubic feet of gas is miniscule when compared to the annual (1978) domestic hydrocarbon production of about 3200 million barrels of oil.

Thus, the impact of foregone oil and gas production within the boundaries of the prposed Sanctuary on the costs or prices in the economic activities related to oil and gas industry is nil.

1/ United States Department of Interior, Final Environmental Statement OCS Sale #48, Washington, D.C., 1972, Vol. 2, p. 1293.

2/ Note that the foregone total revenues of $30 million represents loss to the economy and not to the oil and gas industry.

(4) Can the regulation be expected to reduce employment by 5 percent or more in the economic activities or sector(s) affected by the proposed rule or regulation?

Department of Interior estimated additional employment resulting from entire Lease Sale #48 during the peak year of production at 14,629 persons.[1/] This estimate was based on unrevised hydrocarbon resource estimate for Lease Sale #48. The revised employment estimate based on the more recent hydrocarbon resource estimates for the peak year of production would place additional employment needs generated by activities associated with Lease Sale #48 at about only 2000 persons.

The foregone oil and gas resources resulting from the proposed Sanctuary regulations represent 6.5 percent of the total oil resources in Lease Sale #48 and only 2.1 percent of gas resources in Lease Sale #48 and only 2.1 percent of gas resources under the normative case assumptions. Some employment decrease resulting from these foregone hydrocarbon resources can be expected, however, because of the insensitivity of labor demand to marginal changes in output this decrease will be small, and will certainly not reduce total affected employment by 5 percent.

(5) For the particular market(s) affected, can the regulation be expected to result directly or indirectly in a one percent or more decline in supply of materials, products or services, or a 1 percent or more increase in consumption of those materials, products or services?

1/ United States Department of Interior, Final Environmental Statement OCS Sale #48, Washington, D.C., 1972, Vol. 2, p. 1293.

The magnitude of the foregone value oil and gas resources within the proposed Sanctuary is too small in the relationship to the domestic oil and gas industry to have any impacts.

(6) For the particular market(s) affected, can the regulation be expected to result in a distinct decline in competition as a result of the proposed rule or regulation. Factors to be considered include limitation of market entry, restraint of market information, or other restrictive factors that impede the functioning of the market system.

As in the previous case, because of the very small magnitude and value of the foregone hydrocarbon resources within the boundaries of the proposed Sanctuary these will have no impact on competition in the oil and gas industry.

In summary, under the normative case assumptions the socio-economic impacts both direct and indirect, on the economy, consumers, industry and employment, resulting from foregone exploitation of certain proportion of estimated hydrocarbon resources within the proposed Sanctuary, are essentially insignificant.

Further, the proposed regulations have no impact on costs, prices or supply of materials, products and services.

As already indicated, the worst case scenario assumes unrealistically restricted access to the hydrocarbon resources within the proposed Sanctuary and stipulates that none of the estimated 11.4 million barrels of oil and 17.8 billion cubic feet of gas resources within the boundaries of the proposed Sanctuary can be recovered.

As in the normative case the results concerning the worst case are summarized here according to the criteria established in the NOAA Directive.

(1) During any one year of its existence, can the regulation be expected to result in an effect (direct or indirect) on the economy exceeding $50 million?

Tables ES-2 presents annual summation from 1982 to the year 2006 period of direct and indirect costs resulting if it is assumed that the regulations would completely prohibit exploitation of the estimated hydrocarbon resources within the boundaries of the proposed Sancutary.

As the data show, in the initial production year the total costs of not exploiting these resources is less than $2 million. These costs are estimated to be $49.94 million at the peak year in 1992 only to decrease to $43.70 million in the following year 1993 and continue to decrease as the hydrocarbon resources are depleted.

(2) During any one year of its existence, can the regulation be expected to result in an effect (direct or indirect) on either consumers, industries, levels of government, or a geographic region exceeding $25 million:

The revised increment to Gross Regional Product for Southern California resulting from Lease Sale #48 during the peak year of production is estimated to be about $72 million.

Under worst case assumptions, hydrocarbon resources located within the boundaries of the proposed Sanctuary that will not be exploited by the oil and gas industry are comprised of 11.4 million barrels of oil and 17.8 billion cubic feet of gas.

TABLE ES-2

DIRECT AND INDIRECT ANNUAL COSTS RESULTING FROM PROHIBITION OF HYDROCARBON EXPLORATION AND EXPLOITATION IN THE PROPOSED SANCTUARY, 1982-2006

(in millions of dollars)

	Direct Costs			Indirect Costs			
Year	24 Tracts	Remaining Sanctuary	Total	24 tracts	Remaining Sanctuary	Total	Total Costs
1982	1.85	-	1.85	0.1	-	0.1	1.95
1983	8.46	-	8.46	0.6	-	0.6	9.06
1984	17.18	-	17.18	1.1	-	1.1	18.28
1985	27.22	-	27.22	1.8	-	1.8	29.02
1986	31.72	-	31.72	2.2	-	2.2	33.92
1987	27.48	-	27.48	1.9	-	1.9	29.38
1988	26.43	1.85	28.28	1.8	0.1	1.9	30.18
1989	21.40	8.46	29.86	1.5	0.6	2.1	31.96
1990	19.48	18.87	38.35	1.2	1.3	2.5	40.85
1991	15.10	29.90	45.60	1.0	2.0	3.0	48.60
1992	12.20	34.84	47.04	0.7	2.2	2.9	49.94
1993	10.75	30.25	41.00	0.7	2.0	2.7	43.70
1994	9.58	29.83	39.41	0.6	2.0	2.6	42.01
1995	10.10	27.27	37.37	0.7	1.8	2.5	39.87
1996	9.09	22.56	31.65	0.6	1.5	2.1	33.75
1997	8.41	17.51	25.92	0.6	1.2	1.8	27.72
1998	7.47	14.13	21.87	0.5	1.0	1.6	23.47
1999	7.40	12.45	19.85	0.5	0.8	1.3	21.15
2000	6.73	10.10	16.83	0.5	0.7	1.2	18.03
2001	-	10.71	10.71	-	0.6	0.6	11.31
2002	-	9.63	9.63	-	0.6	0.6	10.23
2003	-	8.93	8.93	-	0.6	0.6	9.53
2004	-	8.21	3.21	-	0.5	0.5	8.71
2005	-	7.85	7.85	-	0.5	0.5	8.35
2006	-	7.14	7.14	-	0.5	0.5	7.64

Estimated oil resources in the proposed Sanctuary represent only 11.0 percent of total revised oil resources in the entire Lease Sale #48 and only 3.6 percent of total gas resource estimates in the Lease Sale #48.

Assuming that the magnitude of regional impact is in direct proportion to the resource estimates, such impact resulting from foregoing exploitation of hydrocarbon resources within proposed Sanctuary under worst case assumptions during the peak year of production should not exceed 7.9 million.

With regard to the socioeconomic impact on the consumers the market for the oil and gas produced from tracts within the proposed Sanctuary is that of entire United States. The foregone quantity of oil and gas produced from the proposed Sanctuary is infinitesimal when compared to the magnitude of annual (1978) demand for oil and gas products estimated to be over 7000 million barrels, and therefore would have no effect on supply or cost to consumers, either yearly or over the life of the field.

The impact of the total loss from foregoing production of oil and gas resources within the boundaries of the proposed Sanctuary on the oil and gas industry can be readily estimated by calculating the lost net income to the industry resulting from not exploiting the hydrocarbon resources within the proposed Sanctuary boundaries.

Recent financial data on the oil and gas industry indicates net income as percent of total revenues for this industry averages about 5 percent. Applying this statistic to the value of lost production yields a measure of the impact of proposed Sanctuary regulations on the oil and gas industry (Table ES-3).

TABLE ES-3

FOREGONE NET INCOME TO THE OIL AND GAS INDUSTRY AS THE RESULT OF PROHIBITION OF HYDROCARBON EXPLOITATION IN THE PROPOSED SANCTUARY BOUNDARIES, 1982-2006

Year	Foregone Profits (in thousands of $)
1982	$92.5
1983	423.0
1984	859.0
1985	1,361.0
1986	1,586.0
1987	1,374.0
1988	1,414.0
1999	1,490.5
1990	1,917.5
1991	2,250.0
1992	2,352.0
1993	2,050.0
1994	1,970.5
1995	1,868.5
1996	1,582.5
1197	1,093.5
1998	992.5
1999	960.9
2000	841.5
2001	535.5
2002	481.5
2003	446.5
2004	410.5
2005	392.5
2006	257.0

As the data indicate, the loss of profits to the oil and gas industry is not significant. In the pak year of production, i.e., 1992, this loss is estimated to be only $2.3 million.

(3) During any one year of its existence, can the regulation be expected to result in an increase in costs or prices of 5 percent or more in the economic activities or sector(s) affected by the proposed regulation?

The magnitude of total foregone oil and gas production within the boundaries of the proposed Sanctuary assuming worst case scenario over the entire life of these resources of 11.4 million barrels of oil and 17.8 billion cubic feet of gas remains miniscule even in worst case scenario when compared to the annual (1978) domestic hydrocarbon production of about 3200 million barrels of oil.

Thus, the impact of foregone exploitation of all oil and gas resource estimates within the boundaries of the proposed Sanctuary on the costs or prices in the economic activities related to oil and gas industry is insignificant if any at all.

(4) Can the regulation be expected to reduce employment by 5 percent or more in the economic activities or sector(s) affected by the proposed rule or regulation?

The revised employment estimate based on the more recent hydrocarbon resource estimates for the peak year of production of Lease Sale #48 would place additional employment needs generated by activities associated with Lease Sale #48 at about 2000 persons.

The foregone oil and gas resources estimated within the boundaries of the proposed Sanctuary represent 11 percent

of total oil resources in Lease Sale #48 and only 3.6 percent of gas resources under the worst case assumptions. Some employment decrease resulting from these foregone hydrocarbon resources can be expected, however, this decrease will be marginal and will certainly not reduce total affected employment by 5 percent. The principal factor accounting for this negligible impact on employment is the fact that marginal changes in production (such as these resulting from prohibition of all hydrocarbon resource exploitation in the proposed Sanctuary) of offshore oil and gas have no direct impact on labor demand because of the insensitivity of labor demand to marginal changes in output.

(5) For the particular market(s) affected, can the regulation be expected to result directly or indirectly in a 1 percent or more decline in supply of materials, products or services, or a 1 percent or more increase in consumption of those materials, products or services?

The magnitude of the foregone value oil and gas resources within the proposed Sanctuary even under the worst case assmptions is too small in the relationship to the domestic oil and gas industry to have any impacts.

(6) For the particular market(s) affected, can the regulation be expected to result in a distinct decline in competition as a result of the proposed rule or regulation. Factors to be considered include limitation of market entry, restraint of market information, or other restrictive factors that impede the functioning of the market system?

The very small magnitude and value of the foregone hydrocarbon resources assuming worst case scenario will have no impact on competition or market system in the domestic oil and gas industry.

In summary, even under worst case assumtpions, the socio-economic impacts both direct and indirect, on the economy, consumers, industry and employment, resulting from foregone exploitation of all estimated hydrocarbon resources within the proposed Sanctuary, are not significant.

The proposed regulations have no impact on costs, prices or supply of materials, products and services.

Introduction

The Marine Protection, Research and Sanctuaries Act of 1972 (16 U.S.C. 1431-1434) authorizes the Secretary of Commerce, after consultation with appropriate Federal agencies, concurrence of the affected State, and Presidential approval, to designate ocean areas having distinctive conservation, recreational, ecological, or aesthetic values as marine sanctuaries. In 1977, the National Oceanic and Atmospheric Administration (NOAA) of the Department of Commerce sent a letter nationwide asking for recommendations for sites appropriate for consideration as marine sanctuaries. The response included several different recommendations for the waters around the northern Channel Islands and Santa Barbara Island.

The Office of Coastal Zone Management, which is responsible for the marine Sanctuary program within NOAA, proposes the designation as a marine sanctuary of the waters surrounding the northern Channel Islands and Santa Barbara Island, extending from the mean high tide water line on the four northern Channel Islands (San Miguel Island and adjacent rocks, Santa Cruz Island, Santa Rosa Island, and Anacapa Island) and Santa Barbara Island seaward 6 nautical miles (nmi) (11.1 km).

If the designation is adopted, certain activities will be subject to necessary and reasonable regulations. The most economically significant of these is hydrocarbon operations, i.e., exploration, development and production of oil and gas.

To be quite specific, the Office of Coastal Zone Management proposes the following regulations with respect to the hydrocarbon operations:

> "The proposed regulation prohibits any activity for the exploration or exploitation of hydrocarbons (oil and gas) anywhere in the sanctuary pursuant to leases executed on or after the effective date of these regulations. Exploration and development pursuant to leases predating the effective date of the regulations and the construction of pipelines are allowed subject to all proposed sanctuary regulations and all regulations and conditions imposed by the following entities: the Department of the Interior, the U.S. Coast Guard, the Corps of Engineers, the Environmental Protection Agency, the State of California under the Federal consistency provisions of the Coastal Zone Management Act, and any other State or Federal authority. This activity is permitted subject further to the requirement that certain oil spill contingency equipment is present for such operations (See Section F.2.b.1). This regulation is designed to reduce the risk of contamination of the nearshore resources by spilled oil, and to protect the island shores from visual and acoustic disturbances." 1/

Proposed designation of the Channel Islands as a marine sanctuary accompanied by these and other regulations may result in increased protection of the resources necessary to the continuing vitality of certain sectors of the economy, notably commercial fishing and tourism. The local economy may thus benefit from increased production, increased regional income, increased employment and increased wages and salaries.

Conversely, the proposed regulations may have certain negative economic impacts on the oil and gas industry operating in this area. The National Oceanic and Atmospheric Administration Directives Manual 2/ requires that a formal regulatory

1/ U.S. Department of Commerce National Oceanic and Atmospheric Administration, Office of Coastal Zone Management, Draft Environmental Impact Statement On the Proposed Channel Islands Marine Sanctuary, 1979, p. C-7.

2/ National Oceanic and Atmospheric Administration, Procedures for Development of Regulations 21-24, June 1, 1979, p. 5-6.

analysis of the proposed action be undertaken if the proposed action has certain negative or positive economic effects on an industry, the public, employment, a region, etc. To be specific the following are the criteria requiring regulatory analyses:

> b. A regulatory analysis shall be prepared for any other significant regulation if that regulation, or in the case of an amendment to an existing non-significant regulation, if the change resulting from that amendment--
>
> (1) During any one year of its existence, can be expected to result in an effect (direct or indirect) on the economy exceeding $50 million;
>
> (2) During any one year of its existence, can be expected to result in an effect (direct or indirect) on either consumers, industries, levels of government, or a geographic region exceeding $25 million;
>
> (3) During any one year of its existence, can be expected to result in an increase in costs or prices of 5% or more in the economic activities or sector(s) affected by the proposed regulation;
>
> (4) Can be expected to reduce labor productivity by 1 percent or more in the economic activities or sector(s) affected by the proposed regulation; 1/
>
> (5) Can be expected to reduce employment by 5% or more in the economic activities or sector(s) affected by the proposed rule or regulation;
>
> (6) For the particular market(s) affected, can be expected to result directly or indirectly in a 1% or more decline in supply of materials, products or services, or a 1% or more increase in consumption of those materials, products or services; or
>
> (7) For the particular market(s) affected, can be expected to result in a distinct decline in competition as a result of the proposed rule or regulation. Factors to be considered include limitation of market entry, restraint of market information, or other restrictive factors that impede the functioning of the market system.

1/ Since changes in the resource base has very limited impact on labor productivity this issue is not discussed in this report.

The objective of this study is to determine the magnitude of the impacts resulting from the proposed marine sanctuary regulations of hydrocarbon exploration and exploitation within the context of the seven point criteria for Regulatory Analysis.

The study will increase the understanding of the economic impact of the regulations and may also be useful in determining whether a full formal Regulatory Analysis is required.

The data sources used in this report are principally those of the Office of Coastal Zone Management, United States Geological Survey and other official Federal government offices. However, other data sources are used and identified.

This report was prepared by Sterling Hobe Corporation. Ivars Gutmanis and Lucinda B. Blakeslee were the principal authors.

Background

The proposed Channel Islands Marine Sanctuary lies within the northern portion of a regional coastal ocean area commonly referred to as the Southern California Bight (see Figure 1). The Office of the Coastal Zone Management proposes the creation of the Channel Islands Sanctuary in the waters around the northern Channel Islands and Santa Barbara Island extending 6 nmi (11.1km) seaward from the mean high tide line (Figures 2 and 3).

According to the Office of Coastal Zone Management:[1/]

> "This area was selected in large part because of the extraordinary concentration of the following resources: (1) marine mammals; (2) seabirds; (3) fish, shellfish, and kelp resources; (4) intertidal organisms; and, to a lesser extent, (5) archaeologic/historic resources."

However, the general area where the proposed Sanctuary is located is also a potential source of hydrocarbon resources and has experienced considerable oil and gas exploration and exploitation activities, although this activity has been minimal in the site actually proposed for Sanctuary designation.

Development of the Federal OCS lands in this area began in 1966 with a lease sale to allow development of a known field (Carpinteria) in Federal waters. In 1968, the first Federal lease sale was held in the Channel. Federal development in the Channel continued with OCS Lease Sale #35 in 1975 and Lease Sale #48 in June 1979. BLM plans to hold two additional sales

1/ U.S. Department of Commerce National Oceanic and Atmospheric Administration, Office of Coastal Zone Management, Draft Environmental Impact Statement on the Proposed Channel Islands Marine Sanctuary, 1979, p. C-1.

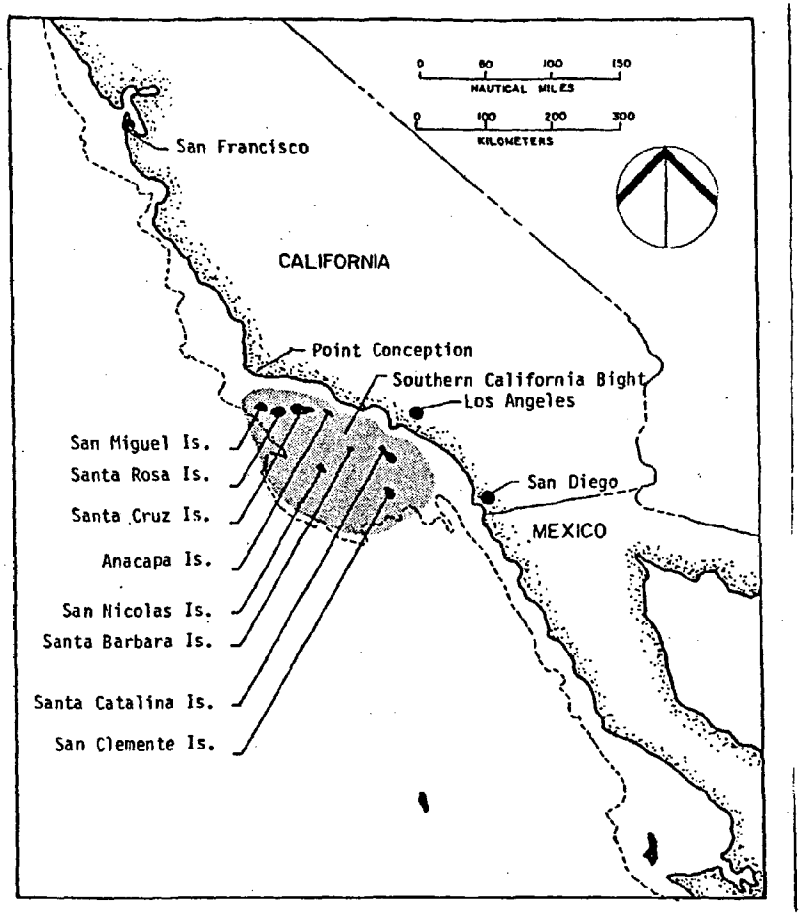


FIGURE 1

LOCATION OF THE SOUTHERN CALIFORNIA BIGHT

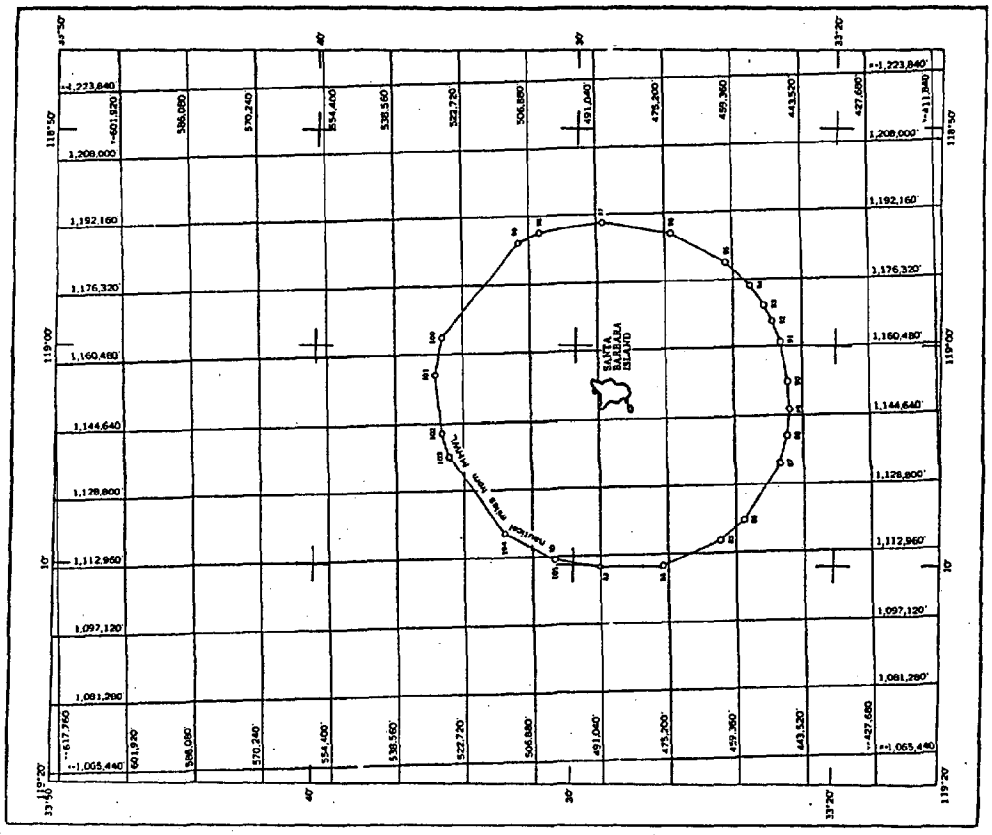


FIGURE 3.
BOUNDARIES OF PROPOSED SANCTUARY
(SANTA BARBARA ISLAND)

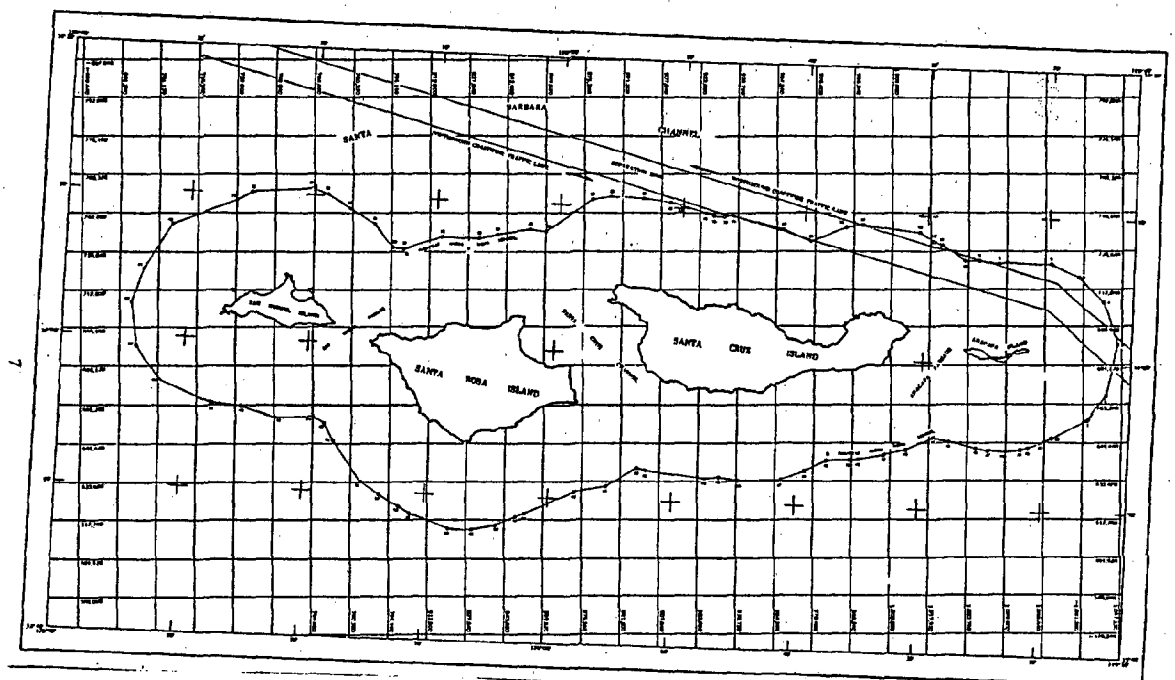


FIGURE 2

BOUNDARIES OF PROPOSED SANCTUARY
(NORTHERN CHANNEL ISLANDS)

in the Southern California Bight (which includes the Santa Barbara Channel) in the next three years: Sale #68 in 1982 and Sale #73 (which may be statewide) in 1983. Significant milestones in the history of oil and gas development in the Santa Barbara Channel and in the vicinity of the northern Channel Islands are summarized in Table 1.

Expected Hydrocarbon Reserves

There is, unfortunately, a paucity of information as to the oil and gas reserves in this area in general and within the proposed Sanctuary in particular. Establishing the level of expected reserves is a principle component in this economic analysis. The estimate of reserves will include only those tracts beyond the 3 nmi territorial sea. The State of California prohibits the leasing of its tidal and submerged lands around the Northern Channel Islands and Santa Barbara Islands through state legislation establishing oil and gas sanctuaries and through the implementation of its Coastal Act. The impact of the proposed Sanctuary regulations must therefore be gauged by the additional restrictions on hydrocarbon exploitation on the Outer Continental Shelf beyond state jurisdiction. All discussions of estimated reserves thus apply to the area from the territorial sea to the 6 nmi boundary. The only available information regarding oil and gas reserves was developed by the United States Geological Survey in connection with Federal lease sales for oil and gas exploration and exploitation.

Table 1. Milestones in Santa Barbara Channel and the Northern Channel Islands Area Oil and Gas Development.

Date	Event
1966	State lands in Carpinteria field (state portion) leased.
1966	First Federal lease in Carpinteria field (federal portion).
1968	Additional Federal leases in the Santa Barbara Channel.
1969	Santa Barbara Oil Spill at Union's Platform A in the Dos Cuadras Field.
1975	OCS Lease Sale #35.
1978-1979	DES and FES on proposed Lease Sale #48.
1979	Lease Sale #48 held June 29.
1982	Lease Sale #68 proposed for Southern California (including Santa Barbara Channel) in July, 1982
1983	Lease Sale #73 proposed for California.

TABLE 2. COGNIZANT INFORMATION ON LEASE SALES

Year	Lease Sale #	Tract #	Economically Recoverably Resources	
			Oil in Millions of Barrels	Gas in Billion Cubic Feet
1966	Carpinteria field	75	610	580
1968	Santa Barbara Channel	(63 in 1968)		
1975	#35	56	719	997
1979	#48	43	104	498

As the data in Table 2 indicate, the Geological Survey established oil and gas reserves for the first Federal Lease Sale in 1966 at 610 million barrels of oil and 580 billion cubic feet of gas; for Lease Sale #35 held in 1975 of 719 million barrels of oil and 997 billion cubic feet of gas; and for Lease Sale #48 held in 1979 of 104 million barrels of oil and 498 billion cubic feet of gas (see Figure 4 for location of those tracts leased in these Lease Sales. However, the area to which each estimate of reserves applied was much larger. For instance, the area to which the estimate of reserves in Lease Sale #48 applied is represented by Figure 5.)

Lease Sale #48 is of particular interest to us because the area borders the proposed Sanctuary (Figures 6 and 7) and because estimates of reserves developed by the United States Geological Survey, during the pre-Lease Sale evaluation, indicate that the reserves in the Southern California Bight, the Santa Barbara Channel, and the proposed Sanctuary are much more limited than had been projected by earlier estimates.

The United States Geological Survey's final estimate of the hydrocarbon reserves for the entire Lease Sale #48 was 104 million barrels of oil and 498 billion cubic feet of gas. In addition, an estimate of reserves within the proposed Sanctuary was developed due to the following circumstances. Based on environmental concerns, a total of 24 tracts within the proposed Sanctuary were removed from Lease Sale #48. The

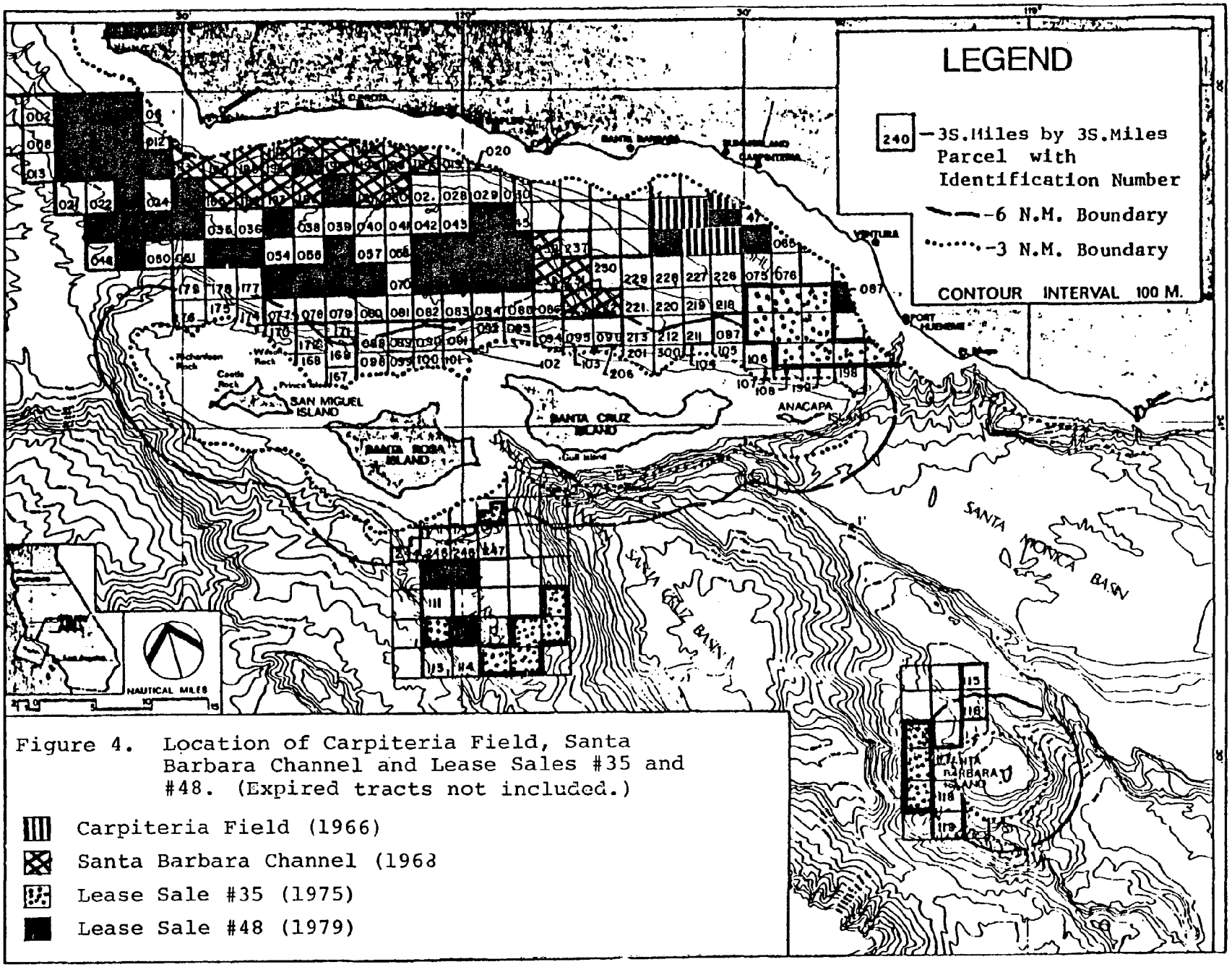


Figure 4. Location of Carpiteria Field, Santa Barbara Channel and Lease Sales #35 and #48. (Expired tracts not included.)

- Carpiteria Field (1966)
- Santa Barbara Channel (1968
- Lease Sale #35 (1975)
- Lease Sale #48 (1979)

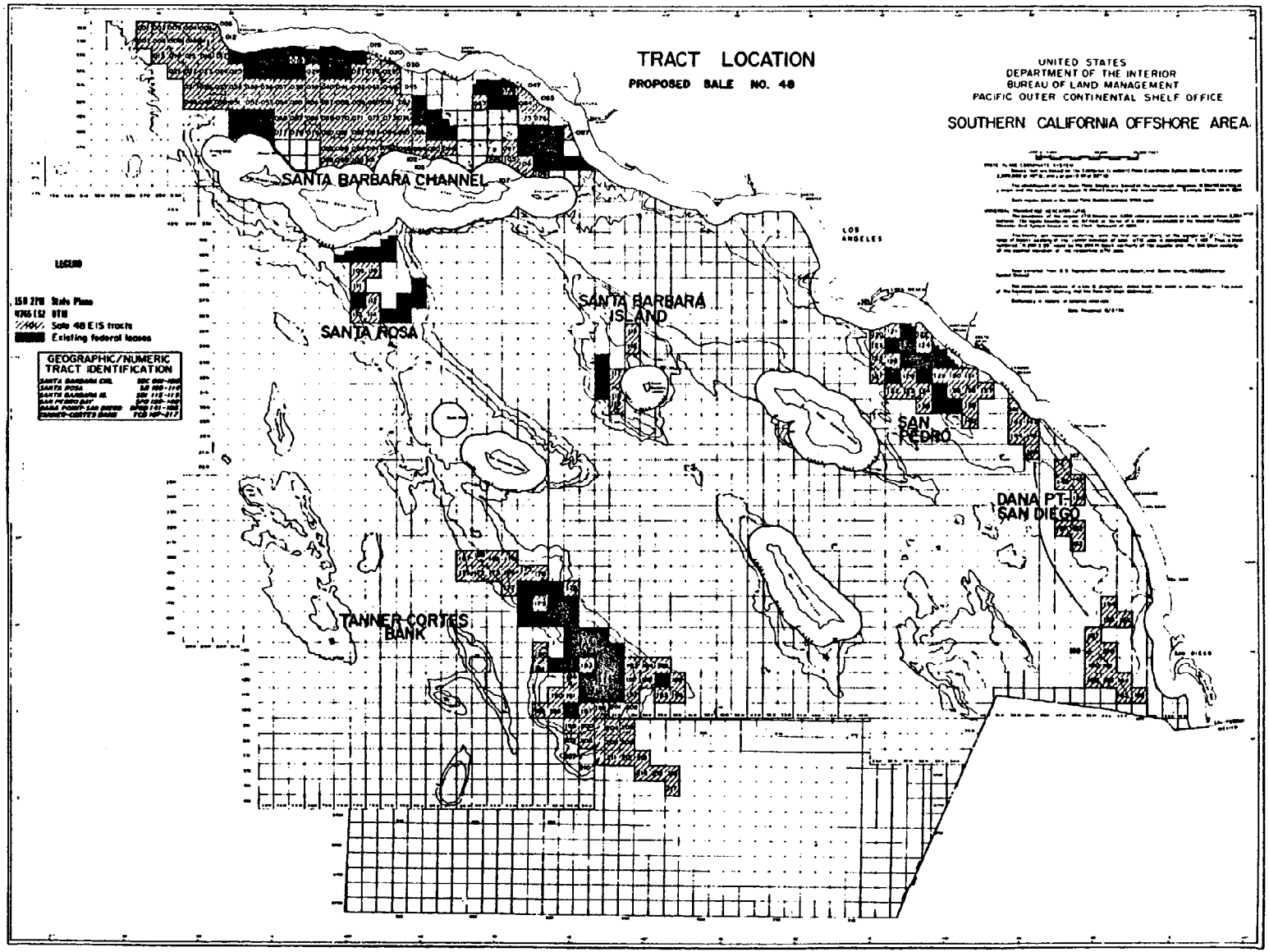


Figure 5. Tract Location Proposed Sale #48

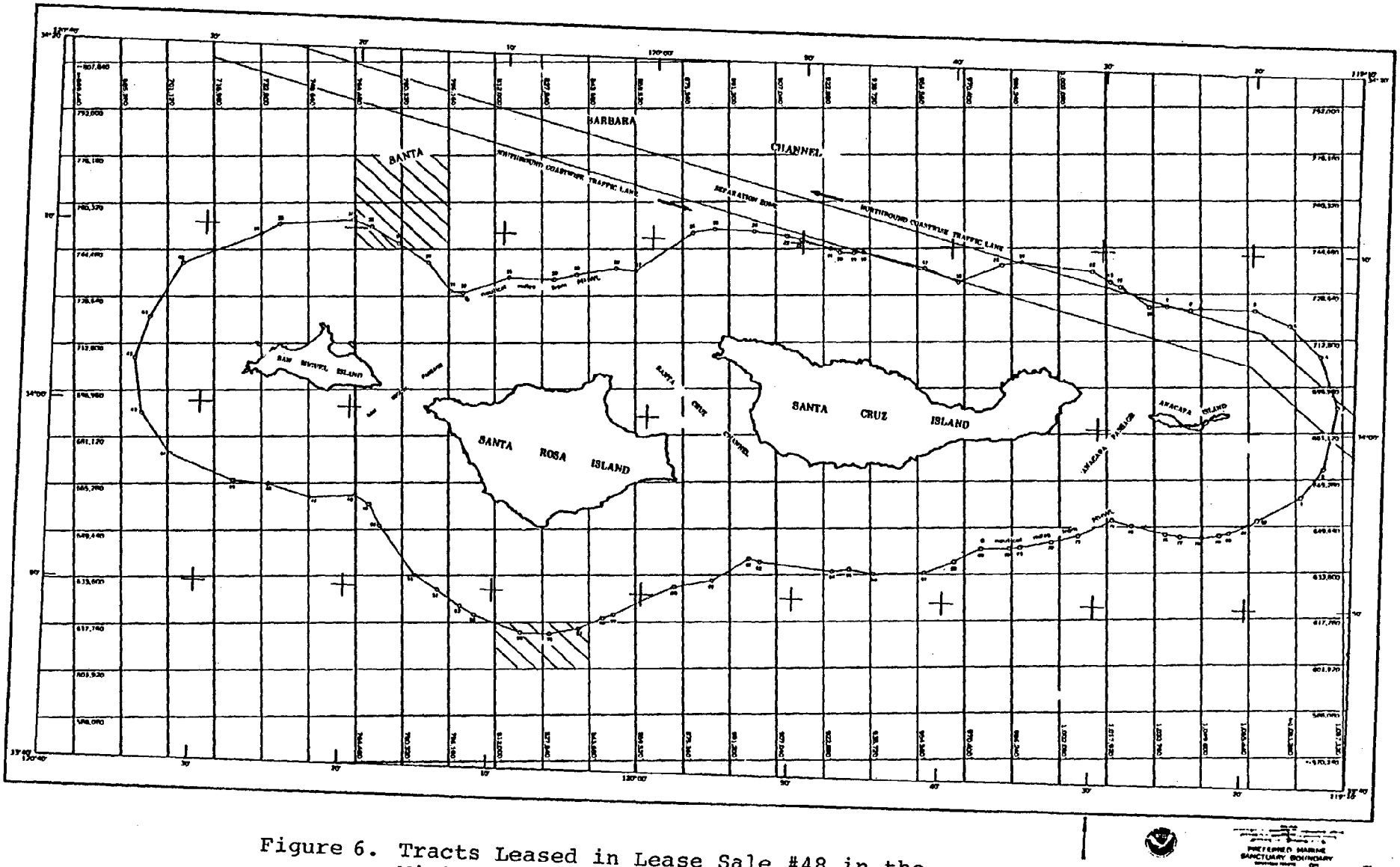


Figure 6. Tracts Leased in Lease Sale #48 in the Vicinity of Proposed Sanctuary

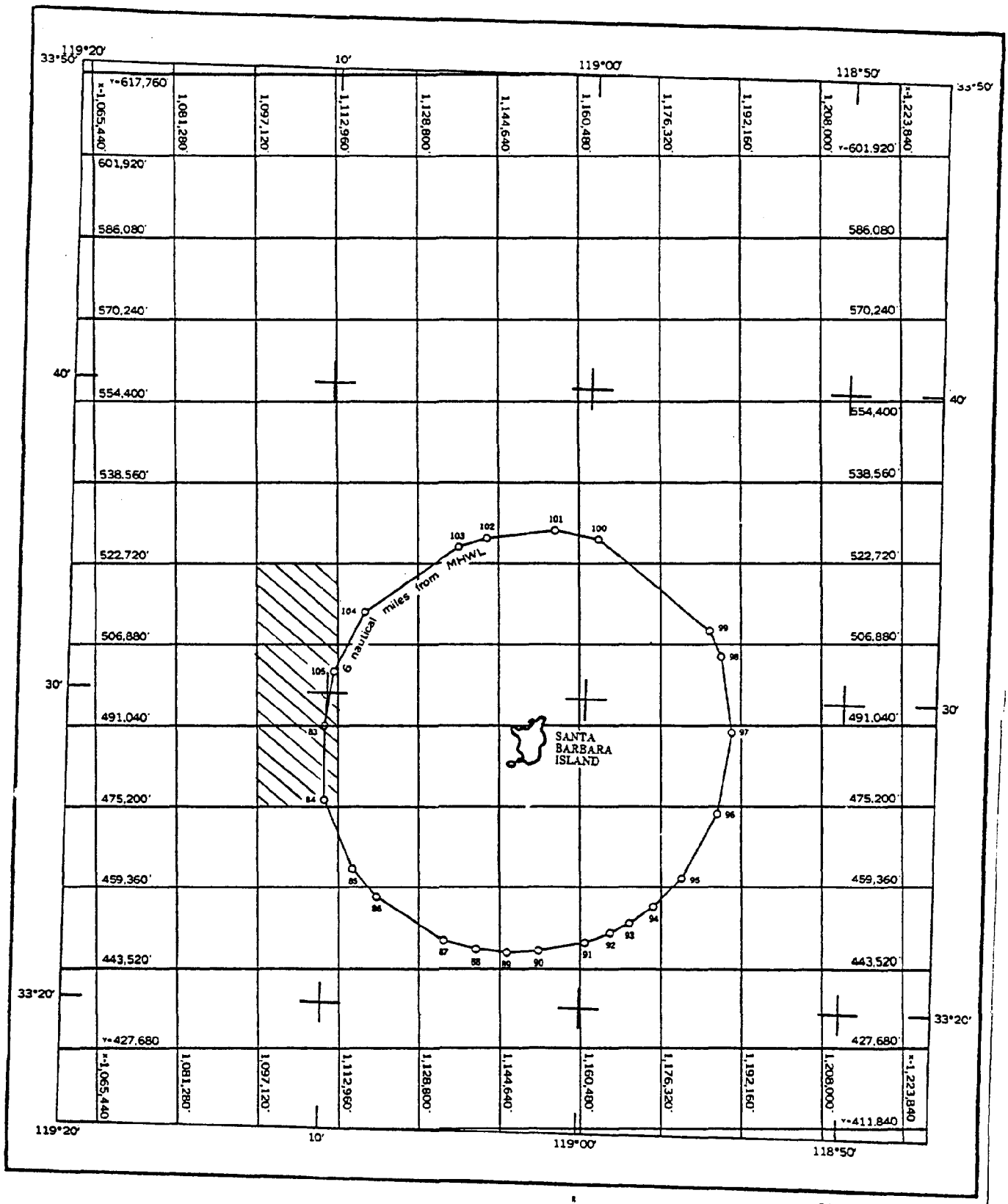


Figure 7. Tracts Leased in Lease Sale #48 in the Vicinity of Proposed Sanctuary

PREFERRED MARINE SANCTUARY BOUNDARY

DIGITIZED POINTS—On

Office of Coastal Zone Management had requested this deletion because these tracts were located within the boundaries of the proposed Sanctuary (Figures 8 and 9). Several other requests for the deletions were received from various sources. The United States Geological Survey estimates hydrocarbon reserves on these 24 tracts to be 5.7 million barrels of oil and 8.9 billion cubic feet of gas.[1/]

As stated previously, the proposed Sanctuary reglations prohibit future hydrocarbon exploration and exploitation activities in the proposed Sanctuary except on leases which exist prior to the effective date of the Sanctuary regulations. However, with the exception of the estimate for the 24 tracts discussed above, there are no official United States Geological Survey estimates of hydrocarbon resources in the area of the proposed Sanctuary for currently unleased tracts. Limited exploratory activity by the oil and gas companies has taken place within the boundaries of the proposed Sanctuary (Table 3). No useful data concerning resource estimates is available from these operations.[2/] Thus, empirical nonproprietary information regarding oil and gas resources for unleased tracts in the proposed Sanctuary area is virtually non-existent.

1/ Keith Meekins, Geologist, Lease Sales Activities Section, USGS, March 3, 1980.

2/ For instance, of the seven tracts within the proposed Sanctuary, upon which leases were terminated or expired and upon which exploratory drilling occurred, one well was tested and declared a discovery by USGS, others had no indications or slight indications. Tom Dunaway, Chief of Operation, Inspection and Lease Management, USGS, Pacific OCS Region (conversation, 4/30/80).

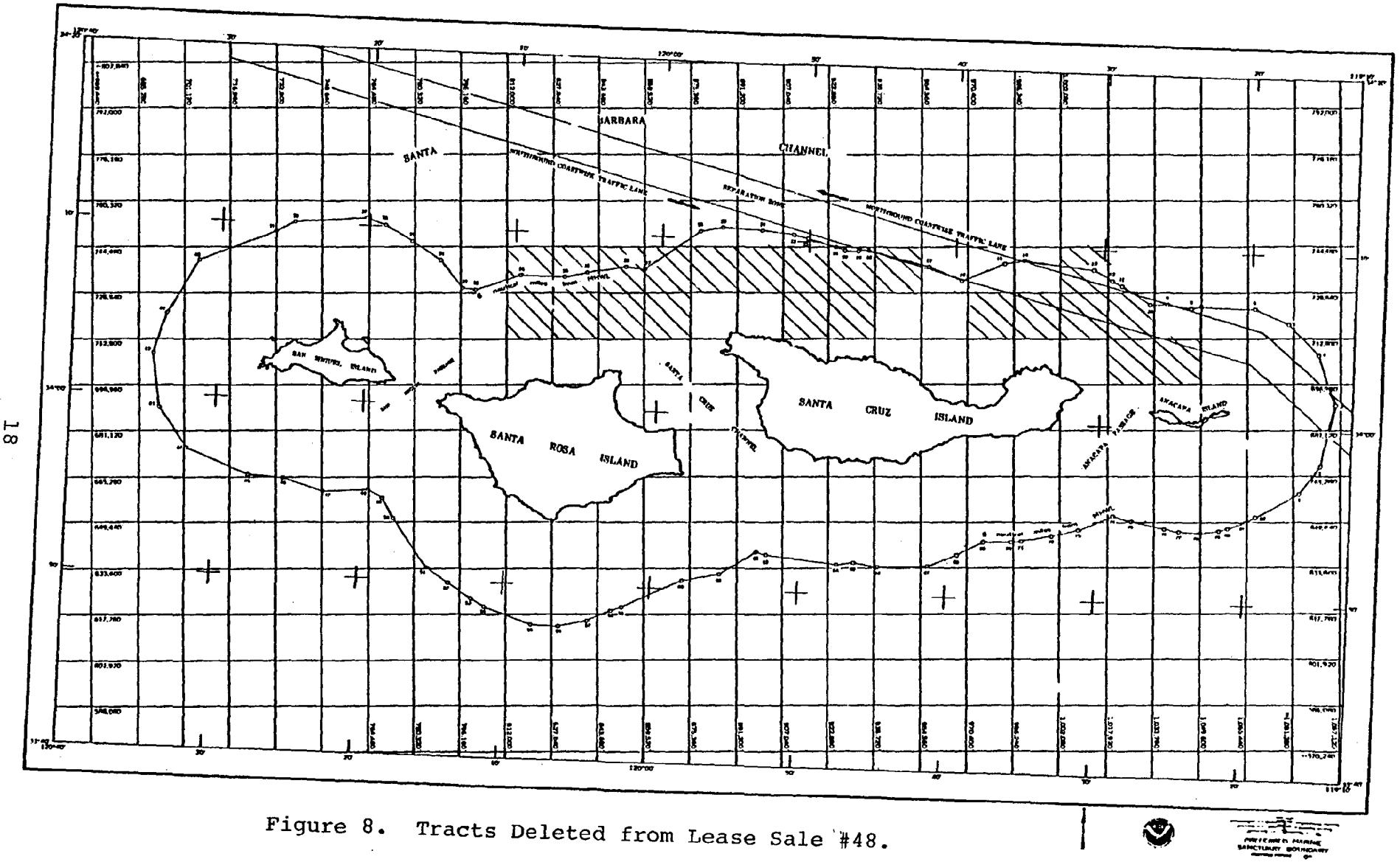


Figure 8. Tracts Deleted from Lease Sale #48.

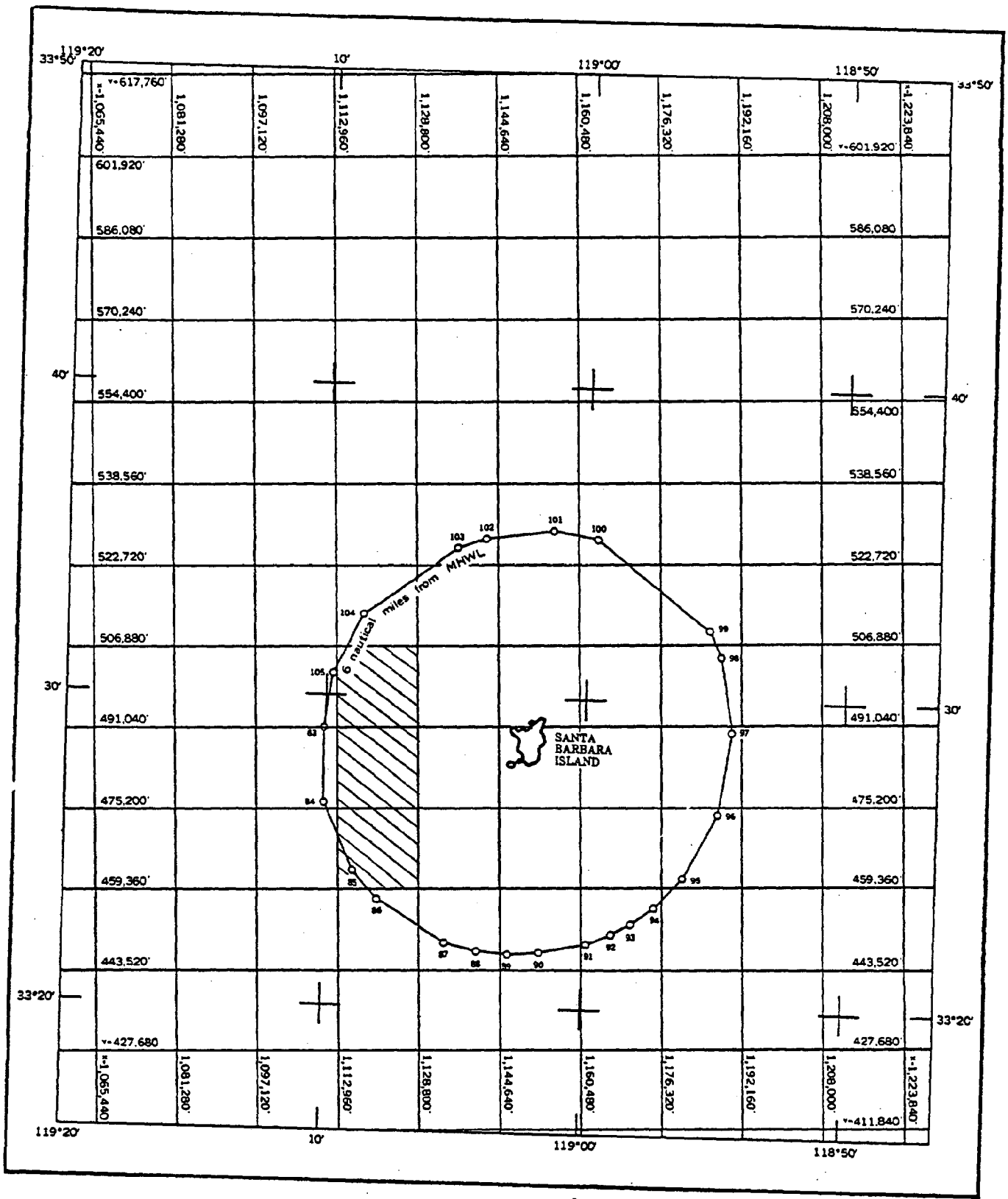
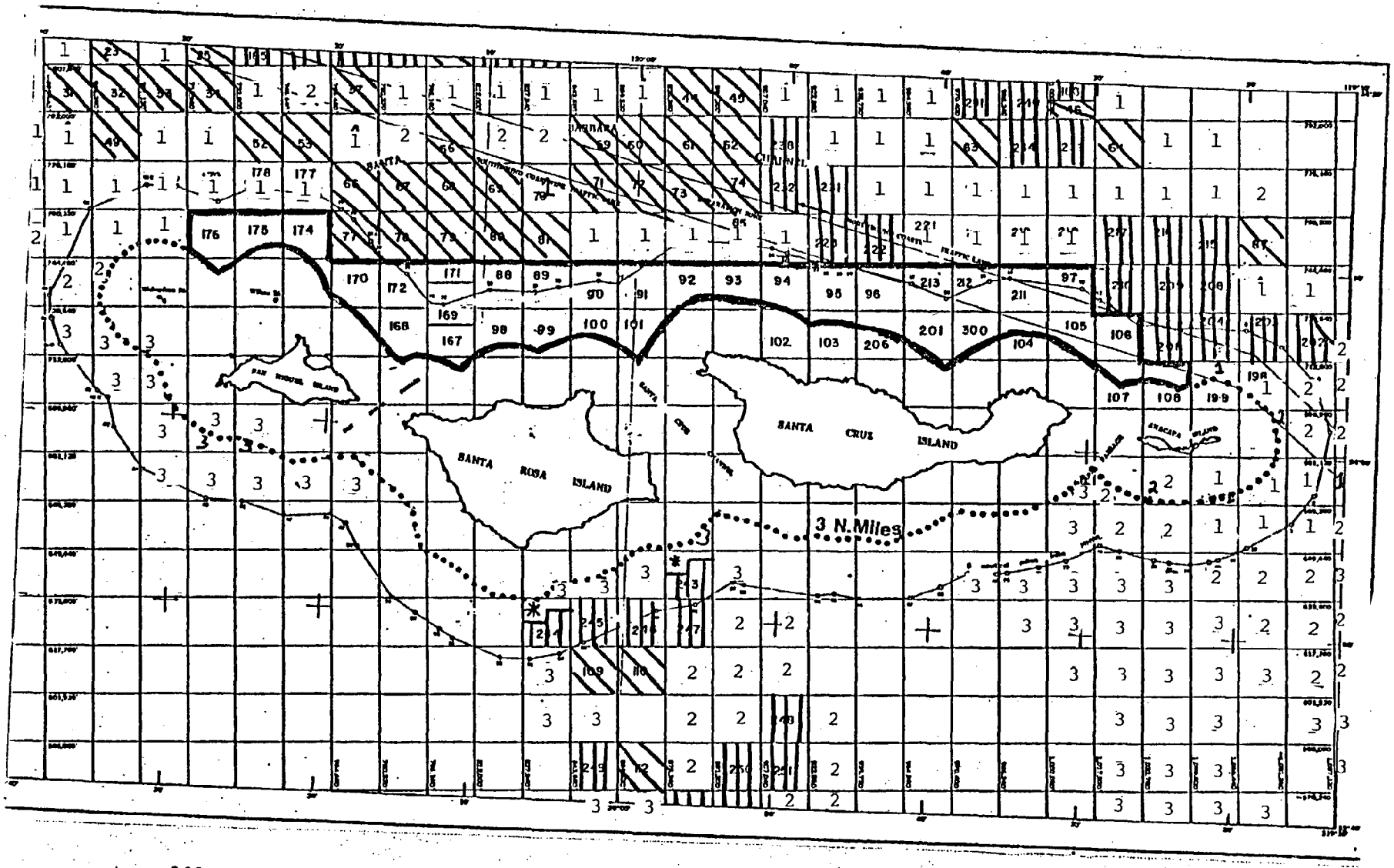


Figure 9. Tracts Deleted from Lease Sale #48



Tracts leased prior to Lease Sale #48

Tracts leased in Lease Sale # 48

Tracts deleted from Lease Sale # 68

1 High Industry Interest

2 Moderate Industry Interest

3 Low Industry Interest

FIGURE 10. Industry Interest in Lease Sale #68

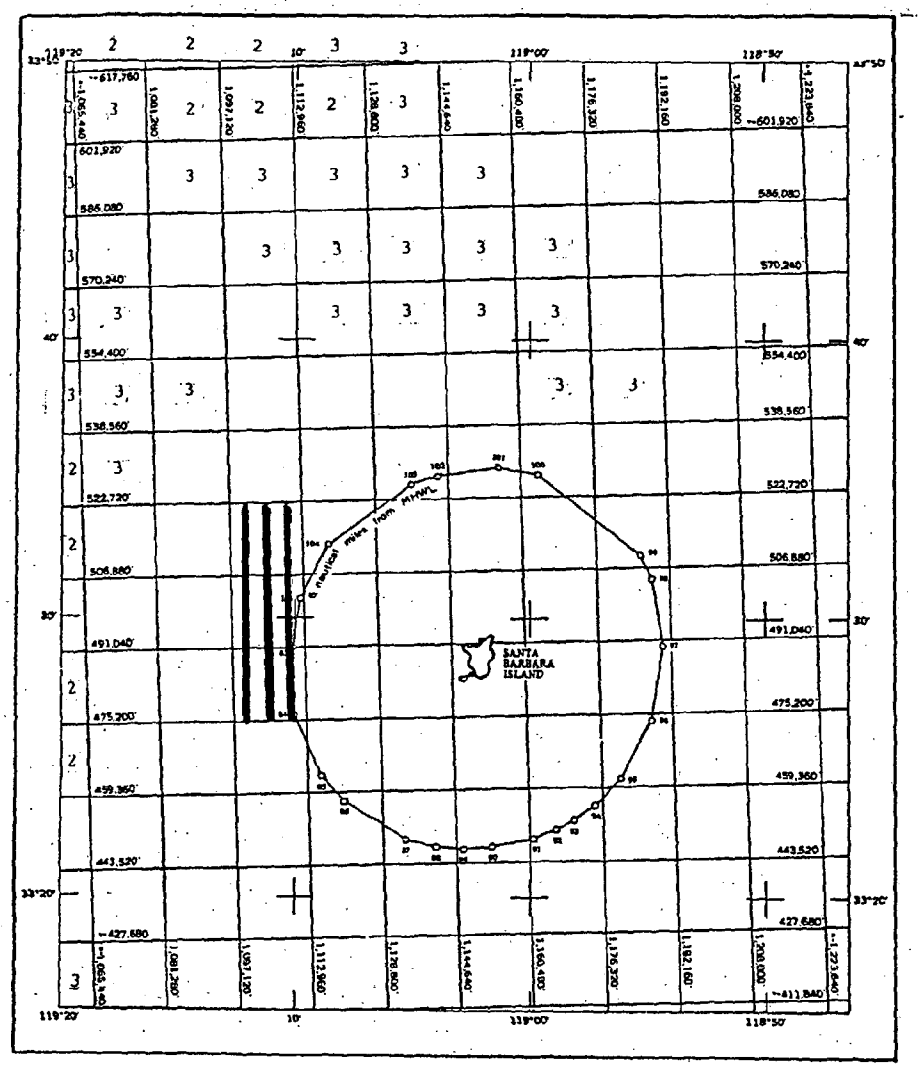


FIGURE 11. Indication of Industry Interest in Tracts Included in Call for Nominations for Lease Sale # 68

There are, however, several circumstantial indicators which suggest that oil and gas resources within the boundary of the proposed Sanctuary are limited.

The first of these pertain to the significant reduction in oil and gas resource estimates for the entire Lease Sale #48 by the United States Geological Survey. Originally, the United States Geological Survey estimated oil resources for Lease Sale #48 at a total of 715 million barrels of oil; the revised estimate is only 104 million barrels, a reduction of 86 percent. Similarly, whereas the original estimate for gas resources within Lease Sale #48 was 860 billion cubic feet, the revised estimate is 42 percent lower--only 498 billion cubic feet.

Further, the United States Geological Survey hydrocarbon resource estimates for the 24 tracts removed from the proposed Sanctuary boundaries are modest when compared to resource estimates for other tracts--only 5.7 million barrels of oil and 8.9 billion cubic feet of gas, indicating very limited hydrocarbon resources in this general area.

Additional support for this hypothesis is lent by the fact that a total of 19 tracts which were leased in earlier sales and which are located within the proposed Sanctuary have expired without any development or production activities by the oil and gas industry. Exploratory drilling had occurred on at least 7 of these tracts (Table 3).

Table 3. Number of wells drilled on existing leases, all or partially within 6 nmi (11.1km) of the northern Channel Islands and Santa Barbara Island (also see Figure E-22). (Adams, 1979, personal communication; U.S. Bureau of Land Management, 1979 (Visual No. 1); U.S. Bureau of Land Management, 1978a).

Tract	Closest Island	Number of Wells	Operator	Future Status
167	San Miguel	1	—	Expired or Terminated
168	San Miguel	0	—	Expired or Terminated
169	San Miguel	1	—	Expired or Terminated
170	San Miguel	1	—	Expired or Terminated
172	San Miguel	0	—	Expired or Terminated
174	San Miguel	0	—	Expired or Terminated
175	San Miguel	0	—	Expired or Terminated
176	San Miguel	2	—	Expired or Terminated
177	San Miguel	0	—	Expired or Terminated
178	San Miguel	0	—	Expired or Terminated
179	San Miguel	1	—	Expired or Terminated
243	Santa Rosa	0	Exxon	?
244	Santa Rosa	0	Chevron	?
245	Santa Rosa	0	Chevron	?
246	Santa Rosa	0	Chevron	?
247	Santa Rosa	0	Exxon	?
200	Santa Cruz	0	—	Expired or Terminated
201	Santa Cruz	0	—	Expired or Terminated
206	Santa Cruz	0	—	Expired or Terminated
210	Santa Cruz	0	Chevron	?
211	Santa Cruz	0	—	Expired or Terminated
212	Santa Cruz	1	—	Expired or Terminated
213	Santa Cruz	0	—	Expired or Terminated
198	Anacapa	0	—	Expired or Terminated
199	Anacapa	2	—	Expired or Terminated
202	Anacapa	4	Union	Development
203	Anacapa	4	Arco	Exploratory Drilling
204	Anacapa	1*	Chevron	Exploratory Drilling
205	Anacapa	2	Chevron	Exploratory Drilling
208	Anacapa	1*	Chevron	Exploratory Drilling
209	Anacapa	1*	Chevron	Exploratory Drilling
215	Anacapa	1*	Chevron	Exploratory Drilling
289	Santa Barbara	1	Mobil	?
290	Santa Barbara	0	Mobil	?
291	Santa Barbara	0	Mobil	?

* Chevron's exploration plan for exploratory wells P-0204-1, P-0208-2, P-0209-2 and P-0215-2 was recently approved by USGS. The plan was certified as consistent with California's coastal plan by the California Coastal Commission on December 12, 1978.

? As yet undetermined

Finally, the historical data on the location of production platforms (Table 4) shows a pattern of exploitation of hydrocarbon resources some distance from the boundaries of the proposed Sanctuary. While one could argue that the principal reason for this is the historical absence of lease sales in the vicinity of the proposed Sanctuary after Lease Sale #35, the distances between the sites of existing platforms and the boundaries of the proposed Sanctuary and the expiration of a number of leases sold prior to Lease Sale #48 on tracts within the proposed Sanctuary suggest that the oil and gas industry has, at least historically, preferred locations other than those in the vicinity and/or within the proposed Sanctuary, at least in part because of limited hydrocarbon resource availability within these boundaries.

Based on the only reserve estimate available and the combination of the other factors listed above, the economically recoverable hydrocarbon reserves within the proposed Sanctuary are extremely doubtful beyond 5.7 million barrels of oil and 8.9 billion cubic feet of gas. The expected impact of the proposed regulations might arguably be limited to impacts based on this only available official estimate. However, in order to be extremely conservative in estimating the economic impact of the proposed regulations, we determined to double the level of hypothetical reserves within the proposed Sanctuary and to complete the economic analysis on this inflated resource base.

Doubling the resource estimate is extremely generous. All indications discussed above suggest that the resources in this general area are extremely limited. The 24 tracts originally considered and later deleted from Lease Sale #48 encompass most of the unleased area in the proposed Sanctuary where the oil and gas industry has high interest. The subsequent Call for Nominations for Lease Sale #68 has evoked limited response. Industry indicated no interest in 54 tracts, or portions of tracts, within the proposed Sanctuary; low interest in 26 tracts or portions thereof; moderate interest in 10 tracts or portions; and high interest in 20 tracts or portions (Figures 10 and 11).[1/] Only the last two categories will be further evaluated for possible leasing in Sale #68. Since the number of tracts in which industry has indicated moderate or high interest roughly equals the number of tracts deleted from Lease Sale #48, we determined to double the resource estimates from the 24 tracts deleted from Lease Sale #48. This assumes the reserve estimate for the remaining unleased Federal portions of the Sanctuary equals that in the 24 tracts.

The Channel side of the Islands represented by the 24 deleted tracts has much higher industry interest and reserve potential than the rest of the proposed Sanctuary. (Figures 10 and 11). As noted above, industry expressed no or low interest in 73 percent of the tracts or portions thereof within the proposed Sanctuary included in the Call for Nominations for Lease Sale #68.

1/ Memorandum from Manager, BLM Pacific OCS Office and Acting Conservation Manager, USGS Pacific OCS Region to Assistant Director, BLM Mineral and Energy Resources and Chief, USGS Conservation Division; Subject: Tract Selection Recommendation for Sale 68, Southern California, April 7, 1980. There was no interest indicated in any tracts within the proposed Sanctuary boundary surrounding Santa Barbara Island.

Table 4: Platforms in the Santa Barbara Channel area (U. S. Bureau of Land Management, 1979 (Visual No. 1); U. S. Geological Survey, 1975 (Map I-974); Resources 1978; Adams, 1979, personal communication; and California Office of Planning and Research, 1977).

PLATFORM NAME	UNIT	TRACT	OPERATOR
State Waters			
Hope	Carpinteria	PRC-3150	Chevron
Hazel	Summerland	PRC-1824	Chevron
Heidi	Carpinteria	PRC-3150	Chevron
Hilda	Summerland	PRC-1824	Chevron
Holly	South Ellwood	PRC-3242	Arco
Helen	Cuarta	PRC-2206	Texaco
Herman	*Conception*	PRC-2725	Texaco
Rincon (Artificial Island)		PRC-1466	Arco
Federal Waters			
Union A	Dos Cuadras	P-0241	Union
Union B	Dos Cuadras	P-0241	Union
Union C	Dos Cuadras	P-0241	Union
Hillhouse	Dos Cuadras	P-0240	Sun
Henry (Planned)	Carpinteria	P-0204	Sun
Houchin	Carpinteria	P-0166	Phillips
Hogan	Carpinteria	P-0166	Phillips
Grace (Planned)	Santa Clara	P-0217	Chevron
Hondo	Santa Ynez	P-0188	Exxon
Gina (Planned)	Huenene	P-0202	Union

Therefore, doubling the United States Geological Survey hydrocarbon resource estimates for the 24 tracts withdrawn from Lease Sale #48 by the Secretary of the Department of Interior appears more than generous and results in a hypothetical resource reserve estimate of 11.4 million barrels of oil and 17.8 billion cubic feet of gas.

This estimating procedure establishes an outside parameter for possible reserves and will allow us to provide measures, admittedly approximate and inflated, of the socio-economic impacts which might result from curtailment of hydrocarbon exploration and exploitation within the boundaries of the proposed Sanctuary.

Socioeconomic Impact of Proposed Sanctuary Resulting from Curtailment of Hydrocarbon Exploration and Production

As we have already indicated, for purposes of this analysis, hydrocarbon reserves in the proposed Sanctuary area are estimated at about 11.4 million barrels of oil and 17.8 billion cubic feet of gas. While this estimate is highly putative and generous, there is no information, other than proprietory to which there is no access, which would reduce possible errors associated with these estimates.

Creation of the proposed Sanctuary would partially or completely preclude exploitation of these hydrocarbon resources, which in turn would result in certain socioeconomic impacts. This chapter analyzes the pertinent socioeconomic impacts by type of effected party. It is important to note that we present this impact analysis under two different assumptions:

(1) The "worst case" which assumes that none of the hydrocarbon resources associated with the proposed Sanctuary can be exploited; and

(2) The "normative case" which assumes that certain portions of the hydrocarbon resources associated with the proposed Sanctuary can be exploited by directional drilling from tracts immediately outside the proposed Sanctuary boundary.

The normative case represents the most likely circumstances. Directional drilling technology is currently well-developed and commonly utilized. Should economically recoverable reserves exist within the proposed Sanctuary, a substantial portion could be recovered from activities outside the boundary. The worst case reviews the economic impacts of the regulations under unrealistically restricted access. There is no implication that the impact of the regulation is expected to be any greater than that discussed in the normative case. A number of issues related to the socioeconomic impact analysis must be clarified before we undertake analyses of the two cases.

Value of Hydrocarbon Resources

The first of these issues is related to the valuation of oil and gas resources. In the case of oil, all of the oil reserves in the vicinity of the proposed Sanctuary represent "new oil" with the current (May 1980) price of $14.00/barrel. However, this price is being phased out at a rate of 3 percent per month and it is reasonable to assume that at the time production from these reserves could begin, i.e., 1982, the

complete decontrol of prices will have occurred and the price of domestic oil will be permitted to equal world prices. There are no valid projections of world oil prices and our discussion with several industry experts suggest that such projections should not be based on historical time series data. Several of these industry experts have suggested that the 1982 price of oil, $37 per barrel, is a reasonable estimate and that further increases to $40 per barrel by 1985 can be expected.

We propose to use these estimates and are assuming further price increases in crude oil to $45 per barrel by the year 1995 and to $47 per barrel after the year 2000. (See Table 5). Projections of future gas prices is an even more difficult undertaking. The available information on future gas contracts suggests that a price of $6 per 1,000 cubic feet of gas by 1982 is reasonable estimate. Table 6 provides information on our assumptions regarding gas prices in the 1982 to 2000 period.

Production Rates Over Time

We have estimated annual production rates for oil and gas located within the boundaries of the proposed Sanctuary from data presented in Table 7, which shows Bureau of Land Management annual projections of oil and gas production for the entire Lease Sale #48.[1/]

1/ Note that these production projections are based on the original unrevised oil and gas resource estimates for Lease Sale #48. However, since we require here the annual rate of production, i.e., percentage of oil and gas withdrawn annually from the estimated resources based on technological and related factors, changes in the absolute values of these resources is of marginal importance.

TABLE 5

ASSUMED CRUDE OIL PRICES 1982-2006
(per barrel of crude oil)

Year	Price
1982	$37
1983	37
1984	37
1985	37
1986	37
1987	37
1988	37
1989	37
1990	40
1991	40
1992	40
1993	40
1994	40
1995	45
1996	45
1997	45
1998	45
1999	45
2000	45
2001	47
2002	47
2003	47
2004	47
2005	47
2006	47

TABLE 6

ASSUMED NATURAL GAS PRICES, 1982-2006
(per 1000 cubic feet)

Year	Price
1982	$6
1983	6
1984	6
1985	6
1986	6
1987	6
1988	6
1989	5
1990	7
1991	7
1992	7
1993	7
1994	7
1995	9
1996	9
1997	9
1998	9
1999	9
2000	9
2001	10
2002	10
2003	10
2004	10
2005	10
2006	10

TABLE 7

MOST PROBABLE VALUES FOR OIL AND GAS PRODUCTION AND PRODUCING WELLS

YEAR	Annual Production Oil (MB)[a]	Annual Production Gas (MMCF)	Daily Production Oil (B)	Daily Production Gas (MCF)	Cumulative Number of Producing Wells
1979	0	0	0	0	0
1980	0	0	0	0	0
1981	0	0	0	0	0
1982	5,000	6,000	13,700	16,400	19
1983	21,100	25,400	57,700	69,600	84
1984	43,400	52,200	118,900	143,000	205
1985	68,500	82,400	187,700	225,800	367
1986	80,200	96,500	219,700	264,400	512
1987	78,800	94,800	216,000	259,700	617
1988	67,500	81,200	185,000	222,500	673
1989	53,700	64,600	147,000	177,000	695
1990	42,100	50,600	115,400	138,600	701
1991	33,700	40,500	92,400	111,000	701
1992	28,300	34,000	77,600	93,200	701
1993	24,700	29,700	67,800	81,400	701
1994	22,000	26,500	60,300	72,600	701
1995	19,800	23,800	54,300	65,200	701
1996	18,100	21,800	49,500	59,700	701
1997	16,600	20,000	45,500	54,800	701
1998	15,300	18,400	42,000	50,400	701
1999	14,300	17,200	39,300	47,100	701
2000	13,300	16,000	36,500	43,800	701
TOTAL	666,400[b]	801,600[b]			

Source: USDI, 1977.

[a]M equals 1000.

[b]This cumulative total is for 18 years of production only; production may continue for several years at a declining rate.

TABLE 8

ANNUAL RATES[1/] OF OIL AND GAS PRODUCTION FOR LEASE SALE #48

Year	Annual Rate
1979	--
1980	--
1981	--
1982	0.7
1983	3.2
1984	6.5
1985	10.3
1986	12.0
1987	11.8
1988	10.0
1989	8.1
1990	6.3
1991	5.2
1992	4.2
1993	3.7
1994	3.3
1995	3.0
1996	2.7
1997	2.5
1998	2.3
1999	2.2
2000	2.0

We show our projections of the rates of oil and gas annual production for the 1982 to 2000 period from the proposed Sanctuary, i.e., percentage of oil and gas withdrawn from the estimated resources in Table 8. This procedure, of course, results in the assumption that the exploitation rate of oil and gas within the boundaries of the proposed Sanctuary is identical to the entire Lease Sale #48.

Initial Production Years

We also need to establish hypothetical initial production years for both the 24 tracts withdrawn from Lease Sale #48 and for the remainder of the area within the proposed Sanctuary. In the case of the 24 tracts withdrawn from Lease Sale #48 the initial production year is 1982 the same as for the remainder of the Lease Sale #48.

In the case of the remainder of the area within the proposed Sanctuary, it is extremely difficult to predict initial years of production. For instance, the Call for Nominations for Lease Sale #68 included the entire area of the proposed Sanctuary except for an area north of the Islands. (Figures 10 and 11.) Within the area of the Call included in the proposed Sanctuary, industry interest was so limited that BLM/USGS recommended further evaluation of only 30 tracts for possible leasing.[1/] These 30 tracts may hereafter be included in the tentative tract selection, subjected to analysis in the DEIS on the

1/ Memorandum from Manager, BLM Pacific OCS Office and Acting Conservation Manager, USGS Pacific OCS Region to Assistant Director, BLM Mineral and Energy Resources and Chief, USGS Conservation Division; Subject: Tract Selection Recommendation for Sale 68, Southern California, April 7, 1980.

sale, and ultimately could be offered and leased. Although it is extremely unlikely that all these tracts would be offered and leased in 1982, we assume this scenario.

We assume that after this sale of leases, 6 years would be required by a successful bidder on these tracts within the boundaries of the proposed Sanctuary prior to any production of hydrocarbons. Our assumption is based on the fact that unlike the general area of Lease Sale #48, where some exploration for hydrocarbon resources has occurred in the past, in the proposed Sanctuary, particularly on the south side of the Islands, such activities have been extremely limited as we have already noted. Thus, the earliest year in which hydrocarbon production could begin on any tracts in Lease Sale #68 is assumed to be 1988.

For the sake of this analysis, it is assumed that all remaining tracts within the proposed Sanctuary on which any industry interest has been expressed would be leased in 1983 in Lease Sale #73. It appears unlikely that these tracts in which industry interest is extremely low will be leased at any time. The earliest year in which hydrocarbon production could begin on these remaining 26 tracts is assumed to be 1988, based on the same factors discussed above. Both these production schedules probably overestimate the speed with which production will proceed.

Substitute Opportunities

Prior to presenting the analyses of the socioeconomic impacts resulting from prohibition of hydrocarbon exploration and exploitation within the proposed Sanctuary it is cardinal to

emphasize that such impacts may not occur at all, may occur to much more limited extent, or may not occur in the 1982 to 2006 time frame covered in this report because of the substitutability of production opportunities. There are in the Southern California Bight numerous other tracts that may offer equal or better hydrocarbon exploration and exploitation opportunities than those located within boundaries of the proposed Sanctuary. Assuming that the oil and gas industry will not commence oil and gas exploration and production on all available tracts within the Southern California Bight at one time--surely a realistic assumption in light of limited capital, manpower, time and other requirements--the prohibition of such activities within the boundaries of the proposed Sanctuary will have the effect of redirecting such activities to other available tracts.

Thus, the regulations which prohibit hydrocarbon exploration and exploitation in the proposed Sanctuary may have no socioeconomic impacts on the economy or such impacts may be marginal. Clearly, the socioeconomic impacts estimated in this report represent the worst possible assumptions.

Types of Socioeconomic Impacts

There are two principal causes for socioeconomic impacts resulting from either complete or partial prohibition of oil and gas exploitation within boundaries of the proposed Sanctuary:

(1) loss of lease income to the United States because tracts within the proposed Sanctuary are not leased to oil and gas industry; and

(2) foregone value of oil and gas not produced by the oil and gas industry within the boundaries of the proposed Sanctuary.

With regard to the former case, i.e., socioeconomic impacts resulting from the loss of lease income, the required information for such an analysis is essentially not available. In this regard it is useful to quote the following from the Draft Environmental Impact Statement on the Proposed Channel Islands Marine Sanctuary:[1/]

> "The proposed prohibition could reduce U.S. income from offshore leasing. It is unlikely that the industry will bid on affected tracts located completely within the sanctuary if those tracts are offered in future lease sales. Tracts located partially within the sanctuary would also be less attractive to industry given a prohibition on drilling in the sanctuary and would draw lower bids or none. This change in bidding could represent a reduction of revenue to the U.S. Treasury if these leases might otherwise have been sold. The total amount of lost revenues cannot be estimated at this time. The prices of leases are based on data much of which is proprietary. Furthermore, the future prices of leases in the Channel will depend heavily on the results of exploratory activity from Sale 48. Prices for tracts leased in earlier sales do not follow any clear geographic pattern. The Department of the Interior estimated the social value of the 24 tracts deleted from Sale 48 to be $1 million (U.S. Department of the Interior, 1979c) The social value is the savings gained by producing oil domestically rather than importing it. The Federal government obtains most of these savings through leases, royalties, and taxes."

1/ U.S. Department of Commerce, NOAA, Office of Coastal Zone Management, Draft Environmental Impact Statement on the Proposed Channel Islands Marine Sanctuary, 1979, pp. F-98-99.

Thus, our analyses will emphasize socioeconomic impacts resulting from the latter cause. Two different kinds of socioeconomic impacts can be readily distinguished. The first of these is the direct impact on oil and gas industry's sales, income, profits and associated employment (as well as wages and salaries) resulting from complete or partial curtailment of oil and gas production within the boundaries of the proposed Sanctuary.

The second kind of impact is so called indirect which results from reduced demand for goods and services (because of curtailed oil and gas production) from other sectors of economy which supply the oil and gas industry.

Both direct and indirect socioeconomic impacts resulting from hydrocarbon exploration and exploitation regulations within the boundaries of the proposed Sanctuary will be analyzed.

Finally the socioeconomic impacts may be classified and appropriate analyses undertaken according to the recipient of the impact and/or affected sectors. We propose to distinguish the following specific recipients in our impact analyses:

(1) economy as a whole;

(2) consumers;

(3) oil and gas industry;

(4) region where the activities resulting in impacts take place;

(5) prices and costs of goods and services;

(6) employment.

We can now turn to the socioeconomic impact analyses as outlined above.

Socioeconomic Impacts of Proposed Sanctuary Assuming Worst Case Direct Impact

As already described, socioeconomic impacts under the worst case assumes no exploitation of an estimated 12 million barrels of oil and 18 billion cubic feet of gas reserves within the boundaries of the proposed Sanctuary.

Impact on the Economy

The direct loss to the economy is therefore foregone value from the production of the oil and gas located within the boundaries of the proposed Sanctuary. Tables 9 and 10 present the pertinent impact calculations. As the data in Table 11 indicate, the total resulting annual direct loss to the economy under worst case assumptions in the first year of production (1982) is only $1.85 million. This loss increases rapidly as the cumulative number of oil and gas wells are increased and in the peak production year of 1992 the total is $47.04 million. After 1992 the annual losses decline equally rapidly as the oil and gas reserves are gradually depleted.

Impact on Oil and Gas Industry

The impact of the total loss from foregoing production of oil and gas resources within the boundaries of the proposed Sanctuary can be readily estimated using several measures. One of these is to calculate the lost net income to the oil and

TABLE 9

DIRECT LOSS TO ECONOMY FROM FOREGONE HYDROCARBON PRODUCTION
FOR 24 TRACTS WITHDRAWN FROM PROPOSED SANCTUARY ASSUMING WORST CASE 1982-2000

Year	Foregone Annual Production of Oil (in thousands barrels)	Value Per Barrels	Potential Annual Loss in Millions of $	Foregone Annual Production of Gas (in thousands of cubic feet)	Value Per Cubic Ft.	Potential Annual Loss in Millions of $	Total Annual Loss (Oil and Gas) in Million $
1982	39.9	$37	$ 1.48	62,300	$6	$0.37	1.85
1983	182.4	37	6.75	284,800	6	1.71	8.46
1984	370.5	37	13.71	578,500	6	3.47	17.18
1985	587.1	37	21.72	916,700	6	5.50	27.22
1986	684.0	37	25.31	1,068,000	6	6.41	31.72
1987	572.5	37	21.18	1,050,200	6	6.30	27.48
1988	570.0	37	21.09	890,000	6	5.34	26.43
1989	461.7	37	17.08	720,900	6	4.32	21.40
1990	389.1	40	15.56	560,700	7	3.92	19.48
1991	296.4	40	11.86	462,800	7	3.24	15.10
1992	239.4	40	9.58	373,800	7	2.62	12.20
1993	210.9	40	8.44	329,300	7	2.31	10.75
1994	188.1	40	7.52	293,700	7	2.06	9.58
1995	171.0	45	7.70	267,000	9	2.40	10.10
1996	153.9	45	6.93	240,300	9	2.16	9.09
1997	142.5	45	6.41	222,500	9	2.00	8.41
1998	131.1	45	5.90	204,700	9	1.84	7.74
1999	125.4	45	5.64	195,800	9	1.76	7.40
2000	114.0	45	5.13	178,000	9	1.60	6.73

TABLE 11

TOTAL IMPACT ON THE ECONOMY RESULTING FROM HYDROCARBON PRODUCTION IN THE 24 TRACTS WITHDRAWN FROM LEASE SALE #48 AND FROM HYDROCARBON PRODUCTION IN THE REMAINING TRACTS OF THE PROPOSED SANCTUARY, 1982-2006

(in millions of dollars)

Year	Value of Hydrocarbon Production
1982	$ 1.85
1983	8.46
1984	17.18
1985	27.22
1986	31.72
1987	27.48
1988	28.28
1989	29.81
1990	38.35
1991	45.00
1992	47.04
1993	41.00
1994	39.41
1995	37.37
1996	31.65
1997	25.92
1998	21.87
1999	19.85
2000	16.83
2001	10.71
2002	9.63
2003	8.93
2004	8.21
2005	7.85
2006	7.14

TABLE 10

DIRECT LOSS TO ECONOMY FROM FOREGONE HYDROCARBON PRODUCTION FOR REMAINING TRACTS WITHIN BOUNDARIES OF PROPOSED SANCTUARY ASSUMING WORST CASE, 1988-2006

Year	Foregone Annual Production of Oil (in thousand barrels)	Value Per Barrels	Potential Annual Loss in Millions of $	Foregone Annual Production of Gas (in thousands of cubic feet)	Value Per Cubic Ft.	Potential Annual Loss in Millions of $	Total Annual Loss (Oil and Gas) in Million $
1988	39.9	$37	1.48	62,300	$6	$0.37	$ 1.85
1989	182.4	37	6.75	284,800	6	1.71	8.41
1990	370.5	40	14.82	578,500	7	4.05	18.87
1991	587.1	40	23.48	916,700	7	6.42	29.90
1992	684.0	40	27.36	1,068,000	7	7.48	34.84
1993	572.5	40	22.90	1,050,200	7	7.35	30.25
1994	570.0	40	22.80	890,000	7	6.23	29.83
1995	461.7	45	20.78	720,900	9	6.49	27.27
1996	389.1	45	17.51	560,700	9	5.05	22.56
1997	296.4	45	13.34	462,800	9	4.17	17.51
1998	239.4	45	10.77	373,800	9	3.36	14.13
1999	210.9	45	9.49	329,300	9	2.96	12.45
2000	188.1	45	8.46	293,700	9	2.64	10.10
2001	171.0	47	8.04	267,000	10	2.67	10.71
2002	153.9	47	7.23	240,300	10	2.40	9.63
2003	142.5	47	6.70	222,500	10	2.23	8.93
2004	131.1	47	6.16	204,700	10	2.05	8.21
2005	125.4	47	5.89	195,800	10	1.96	7.85
2006	114.0	47	5.36	178,000	10	1.78	7.14

gas industry resulting from not exploiting the hydrocarbon resources within the proposed Sanctuary boundaries.

Recent financial data on the oil and gas industry indicates net income as percent of total revenues for this industry to average about 5 percent (Table 12). Applying this statistic to the value of lost production presented in Table 12 yields a measure of the impact of proposed Sanctuary regulations on the oil and gas industry (Table 13).

As the data in Table 13 indicate the loss of profits to the oil and gas industry is not significant. In the peak year of production, i.e., 1992, this loss is estimated to be only $2.3 million.

Impact on Region

The direct and indirect impact of the regulations on the Southern California region can be estimated utilizing the projected impact of the activities expected to result from the entire Lease Sale #48 on the Gross Regional Product. Inferences from these estimates support the conclusion that prohibiting exploitation of hydrocarbon resources within the boundaries of the proposed Sanctuary will have a negligible impact.

The impact of the entire Lease Sale #48 on the region's economy is estimated to be less than 1 percent in the Final Environmental Impact Statement with regard to the Lease Sale #48.

> "The impact of proposed OCS Sale No. 48, direct and indirect activity, during the peak of 1986 on Southern California Gross Regional Product (GRP) is

TABLE 12

PROFIT AS PERCENT OF SALES FOR THE OIL AND GAS INDUSTRY, 1968-1978

(millions of dollars)

Year	Total Revenue	Net Income	Net Income as Percent of the Total Revenue
1968	$61,178	$5,805	9.5%
1969	67,479	5,636	8.4
1970	73,499	5,797	7.9
1971	81,297	5,847	7.2
1972	88,582	5,784	6.5
1973	110,348	9,468	8.6
1974	194,356	13,149	6.8
1975	202,115	9,901	4.9
1976	225,540	11,641	5.2
1977	250,402	12,090	4.8
1978	273,604	13,266	4.8

Source: API, Key Financial Date of Leeding U.S. Ore Companies, Discussion Paper #017, September 6, 1979.

TABLE 13

FOREGONE NET INCOME AS THE RESULT OF PROHIBITION OF HYDROCARBON EXPLOITATION IN THE PROPOSED SANCTUARY BOUNDARIES, 1982-2006

Year	Foregone Profits (in thousands of $)
1982	$92.5
1983	423.0
1984	859.0
1985	1,361.0
1986	1,586.0
1987	1,374.0
1988	1,414.0
1999	1,490.5
1990	1,917.5
1991	2,250.0
1992	2,352.0
1993	2,050.0
1994	1,970.5
1995	1,868.5
1996	1,582.5
1197	1,093.5
1998	992.5
1999	960.9
2000	841.5
2001	535.5
2002	481.5
2003	446.5
2004	410.5
2005	392.5
2006	257.0

projected at $519 million. That is less than a 1 percent increase over the projected GRP for the area in 1986. During none of the these years is the Southern California GRP increased by 1 percent. The impact of proposed Sale No. 48, direct and indirect activity, on the economy of Southern California is positive, but minor.1/

However, and most important, the above estimates of the socio-economic impacts resulting from the entire Lease Sale #48 are based on the original United States Geological Survey hydrocarbon resource estimates of 715 million barrels of oil and 860 billion cubic feet of gas.

The revised resource estimates are considerably smaller, only 104 million barrels of oil and 498 billion cubic feet of gas.

This very significant reduction in hydrocarbon resources for Lease Sale #48 will also result in proportional reduction in the increment resulting from Lease Sale #48 activities to the Gross Regional Product.

This revised increment to Gross Regional Product for Southern California resulting from Lease Sale #48 during the peak year of production is estimated to be about $72 million.

Under worst case assumptions hydrocarbon resources located within the boundaries of the proposed Sanctuary that will not be exploited by the oil and gas industry are comprised of 11.4 million barrels of oil and 17.8 billion cubic feet of gas.

1/ United States Department of Interior, Final Environmental Statement OCS Sael #48, Washington, D.C., 1972, Vol. 2, p. 1307.

Estimated oil resources in the proposed Sanctuary represent only 11.0 percent of total revised oil resources in the entire Lease Sale #48 and only 3.6 percent of total gas resource estimates in the Lease Sale #48.

Assuming that the magnitude of regional impact is in direct proportion to the resource estimates, such impact resulting from foregoing exploitation of hydrocarbon resources within proposed Sanctuary under worst case assumptions during the peak year of production should not exceed 7.9 million.

With regard to the personal income the Department of Interior[1/] reports:

> "Personal income changes due to proposed OCS Sale No. 48, direct and indirect activity, in Southern California is projected to increase by $241 million during the peak year of 1986. That is less than a 1 percent increase over the projected level of personal income for that year." 1/

Again, these personal income estimates are based on the original hydrocarbon resource estimates. Additional personal income resulting from Lease Sale #48 during the peak year based on the revised hydrocarbon estimates is only $39 million.

Assuming that personal income increases (or decreases) vary roughly proportionally to the hydrocarbon resources, the loss in personal income resulting from worst case assumptions during the peak year of production represents 11 percent of $39 million or only $4.3 million.

1/ United States Department of Interior, Final Environmental Statement OCS Sale #48, Washington, D.C., 1972, Vol. 2, p. 1307.

Commercial and Recreational Fishing and Tourism Activities Within or In the Vicinity of Proposed Sanctuary

The proposed Sanctuary may also add to the Region's income by preserving commercial fishing operations and tourism. Both of these activities represent major sources of income in this region and therefore require brief discussion.

The proposed Sanctuary would result in enhanced preservation of ecological, recreational and esthetic resources, particularly endangered species, marine mammals and birds, and the habitats of these populations. Fishing and recreation activities, two major sources of income for the region, also depend on the continued health of the marine resources of the area. In 1975 commercial fishermen landed 12,248,000 lbs of fish and shellfish from the waters around the northern Channel Islands and Santa Barbara Island.[1/] The California Department of Fish and Game reported that 187,500 angler days occurred in the Channel (from partyboats) in 1970 with a catch of 517,558 fish and estimated and related expenditures of $2,294,000. The natural resources of the island waters are also a factor in attracting tourists and recreational fishermen to the Santa Barbara area, but that factor cannot be easily quantified. The Santa Barbara Chamber of Commerce estimated the total tourist expenditures in the County at $60,534,520 in 1973. Most of these expenditures occur on the mainland, rather than island, coast and waters. The proposed Sanctuary in these waters would help assure

1/ U.S. Department of Commerce National Oceanic and Atmospheric Administration, Office of Coastal Zone Management, Draft Environmental Impact Statement On the Proposed Channel Islands Marine Sanctuary, 1979, pp. E-70, E-73 and E-74-76.

protection for the natural resources upon which these economic activities partially depend.

Impacts on Prices and Costs of Goods and Services

Since the total loss of oil and gas production of 11.4 million barrels and 17.8 billion cubic feet respectively, resulting from the proposed Sanctuary is relatively small when compared to the total projected production from the entire Lease Sale #48 (104 million barrels) or to the total annual domestic production of 3,200 million barrels per year in 1978, it is not likely that this loss will have any effect on prices of oil and gas or costs in the national market which exists for oil and gas.

Impacts on Productivity and Employment

Since changes in the resource base have very limited impact on labor productivity, the proposed regulation which affects only the resource base has negligible impact on labor productivity. With regard to the impact on employment, the proposed prohibition of hydrocarbon exploitation within the boundaries of the proposed Sanctuary may reduce somewhat the total construction and non-construction employment demand.

The revised employment estimate based on the more recent hydrocarbon resource estimates for the peak year of production of Lease Sale #48 would place additional employment needs generated by activities associated with Lease Sale #48 at about 2000 persons.

The foregone oil and gas resources resulting from the proposed Santuary estimated within the boundaries of the proposed

Sanctuary represent 11 percent of total oil resources in Lease Sale #48 and only 3.6 percent of gas resources under the worst case assumptions. Some employment decrease resulting from these foregone hydrocarbon resources can be expected, however, this decrease will be marginal and will certainly not reduce total affected employment by 5 percent. The principal factors accounting for this negligible impact on employment is the fact that marginal changes in production (such as these resulting from prohibition of all hydrocarbon resource exploitation in the proposed Sanctuary) of offshore oil and gas have no direct impact on labor demand because of the insensitivity of labor demand to marginal changes in output.[1/]

Impact on Consumers

With regard to the socioeconomic impact on the consumers, the market for the oil and gas produced from the Lease Sale #48 and therefore from tracts within the proposed Sanctuary is that of entire United States.[2/] The foregone production of oil and gas from the proposed Sanctuary during the peak year of production, i.e., 1991 of 296 thousand barrels is infinitesimal when compared to the magnitude of domestic annual (1978) production of oil estimated to be 3200 million barrels. In light of these differences between the foregone oil production

1/ Ivars Gutmanis and Everard Munsey, "Impacts of National Environment and Energy Jolicies on the Demand for Scientists and Engineers," Projection Highlights, Volume 3, Number 8, National Planning Association, Washington, D.C., August, 1974.

2/ United States Department of Interior, Fianl Environmental Statement OCS Sale #48, Washington, D.C., 1972, Volume 2, p. 1293.

from the proposed Sanctuary during the peak year and the annual demand for oil in the United States it is not likely that regulations which impact on oil and gas production in the proposed Sanctuary will have any effect on the supply or cost to consumers.

Indirect Impacts

Our discussion and our impact analysis has so far dealt with direct impacts resulting from regulations that would prohibit hydrocarbon exploration and exploitation within the boundaries of the proposed Sanctuary.

In this section we will discuss the indirect impacts of the regulations. Our principal emphasis will be on the indirect impacts resulting from loss of oil and gas production located within the proposed Sanctuary.

While there are other indirect impacts associated with such issues as reduction in oil and gas industry profits, reduced employment opportunities and others, these obviously are very insignificant in light of our findings presented in the previous section.

Additional proof for this contention can be found in the fact that the United States Department of Interior has estimated total social value of deleting the 24 tracts within the

boundaries of the proposed Sanctuary from the Lease Sale #48 at only $1.6 million.[1/]

The methodology we propose to utilize to estimate the indirect impact associated with prohibition of the hydrocarbon exploration and exploitation is that of inter-industry model.[2/]

The first step in determining the indirect impacts from total or partial prohibition of the hydrocarbon resource exploration and exploitation within the boundaries of the proposed Sanctuary is to select industry sectors which are impacted by this regulation.

Our criteria for this selection is as follows: if the indirect impact on sector of economy is at least $0.01 or more per $1.00 of oil and gas production this sector will be included in our analyses--all other sectors will be excluded.

Table 14 presents the results of this selection process as well as the associated total (direct and indirect impact) coefficients and modified[1/] total coefficients. Note that a total of eight sectors of economy meet the criteria established above.

The most important of these is Maintenance and Repair Construction Sector. Production of oil and gas valued at

1/ U.S. Department of Interior, Secretarial Issue Document Southern California OCS Sale #48, February 28, 1979, p. 46.

2/ See: "The Input-Output Structure of the U.S. Economy, 1972" Department of Commerce, Survey of Current Business, April, 1979, Vol. 59, No. 4.

$1.00 results in demand for goods and services from this sector valued at 5.5 cents and conversely curtailment of oil and gas production by $1.00 results in 5.5 cent loss of output in the Maintenance and Repair Construction Sector.

The second largest sector where the curtailment of gas and oil production will have relatively significant impacts is that of Business Services. In this sector curtailment of oil and gas production valued at $1.00 will result in reduced output of goods and services valued at 3.5 cents. The other sectors of economy where the total impact of reduction of oil and gas production will be relatively significantly noticed are "Primary Iron and Steel Manufacturing"; "Transportation and Warehousing"; "Wholesale and Retail Trade" and "Finance and Insurance."

Since the Department of Commerce input-output table used (and for that matter all other Federal government input-output tables) are presented in constant 1972 dollars, we need to deflate the projected value of potential oil and gas production from the 24 tracts deleted from the Lease Sale #48 and the estimated oil and gas production in the remaining area of the proposed Sanctuary to 1972 dollars.

1/ Modification is required because the total coefficients presented in the Department of Commerce's table are those for final demand. We require total coefficient at producers level, hence all final demand coefficients have been divided by 1.04132, i.e., total coefficient for "crude petroleum and natural gas" sector.

TABLE 14

SECTORS OF ECONOMY AND ASSOCIATED TOTAL COEFFICIENTS WITH TOTAL (DIRECT AND INDIRECT) REQUIREMENTS AT LEAST OF $.01 PER $1.00 OUTPUT IN CRUDE PETROLEUM AND NATURAL GAS PRODUCTION

Commodity Number	Sector Title	Total Requirements Coefficient	Total Requirements Coefficient Modified
12	Maintenance and Repair Construction	.05729	.05502
27	Chemicals and Selected Chemical Products	.01191	.01144
38	Primary Iron and Steel Manufacturing	.01716	.01648
65	Transportation and Warehousing	.01600	.01536
68	Electric, Gas, Water, and Sanctuary Services	.02451	.02354
69	Wholesale and Retail Trade	.01661	.01595
70	Finance and Insurance	.01623	.01559
73	Business Services	.03649	.03504

Source: "The Input-Output Structure of the U.S. Economy, 1972," Survey of Current Business, Department of Commerce, April 1979, Vol. 59, #4, Table 4, p. 62.

Table 15 presents the pertinent calculations for deriving the appropriate producers wholesale price deflators for oil and gas.

Table 16 and 17 presents the data on potential annual loss of crude oil and gas for the 1982 to 2000 period in constant 1972 dollars, resulting from deflation of the pertinent data.

The product of the "Total Requirements Coefficient Modified" (Table 14) and "Value of Potential Annual Loss in Constant 1972 Dollars" (Tables 16 and 17) will yield value of the indirect impacts to the eight selected sectors of economy in constant 1972 dollars.

In order to express these in 1980 dollars several components of Implicit Price Deflator for Gross National Product were used. These are shown in Table 18. Tables 19 and 20 present the indirect impact values resulting from prohibition of hydrocarbon exploration and exploitation for the 24 tracts withdrawn from Lease Sale #48 and for the remaining of the tracts within the proposed Sanctuary.1/

As the data show, the annual indirect costs resulting from regulations related to proposed Sanctuary are not significant. The largest annual indirect cost is about $2.3 million and for most years the indirect costs are below $1 million.

1/ Appendix B; Tables B-1 through B-39 present the data and calculations used in deriving indirect costs.

TABLE 15

PRODUCERS WHOLESALE PRICE DEFLATORS
FOR CRUDE OIL AND GAS, 1972 and 1980

	Crude Oil		Natural Gas	
Year	BLS Price Deflator	Modified Deflator Used	BLS Price Deflator	Modified Deflator Used
1972	113.2	100.0	117.6	100.0
1980	522.8	461.8	777.3	661.0

TABLE 16

VALUE OF POTENTIAL ANNUAL LOSS OF CRUDE OIL AND NATURAL GAS IN CONSTANT 1972 DOLLARS, RESULTING FROM PROHIBITION OF HYDROCARBON EXPLOITATION IN THE 24 TRACTS WITHDRAWN FROM PROPOSED SANCTUARY, 1982-2000

(in millions of 1972 dollars)

Year	Potential Annual Loss of Crude Oil	Potential Annual Loss of Gas	Total
1982	$0.32	$0.06	$0.38
1983	1.46	0.26	1.72
1984	2.96	0.53	3.49
1985	4.70	0.83	5.53
1986	5.48	0.97	6.45
1987	4.59	0.95	5.54
1988	4.57	0.81	5.38
1989	3.70	0.65	4.35
1990	3.37	0.59	3.96
1991	2.57	0.49	3.06
1992	2.07	0.40	2.47
1993	1.83	0.35	2.18
1994	1.63	0.31	1.94
1995	1.67	0.36	2.03
1996	1.50	0.33	1.83
1997	1.39	0.30	1.69
1998	1.28	0.27	1.55
1999	1.22	0.26	1.48
2000	1.11	0/24	1.35

TABLE 17

VALUE OF POTENTIAL ANNUAL LOSS OF CRUDE OIL AND NATURAL GAS IN CONSTANT 1972 DOLLARS, RESULTING FROM PROHIBITION OF HYDROCARBON EXPLOITATION IN THE 24 TRACTS WITHDRAWN FROM PROPOSED SANCTUARY, 1988-2006

(in millions of 1972 dollars)

Year	Potential Annual Loss of Crude Oil	Potential Annual Loss of Gas	Total
1988	$0.32	$0.06	$0.38
1989	1.46	0.26	1.72
1990	3.21	0.61	3.82
1991	5.08	0.97	6.05
1992	5.92	1.13	7.05
1993	4.96	1.11	6.07
1994	4.94	0.94	5.88
1995	4.50	0.98	5.48
1996	3.79	0.76	4.55
1997	2.99	0.63	3.62
1998	2.33	0.50	2.83
1999	2.06	0.44	2.50
2000	1.83	0.40	2.23
2001	1.74	0.40	2.14
2002	1.57	0.36	1.93
2003	1.45	0.34	1.78
2004	1.33	0.31	1.64
2005	1.28	0.30	1.58
2006	1.16	0.27	1.43

TABLE 18

COMPONENT OF IMPLICIT GNP PRICE DEFLECTORS USED AND OTHER DEFLECTORS USED

Sector	Component Used
Maintenance and Repair Construction	Producers Durable Equipment
Chemical and Selected Chemical Products	BLS Chemical Industry
Primary Iron and Steel Manufacturing	GNP
Transportation and Warehousing	GNP
Electicity, Gas, Water, and Sanitary Services	GNP
Wholesale and Retail Trade	GNP
Finance and Insurance	GNP
Business Services	GNP

TABLE 19

INDIRECT ANNUAL COSTS RESULTING FROM PROHIBITION OF HYDROCARBON EXPLORATION AND EXPLOITATION IN THE 24 TRACTS WITHHELD FROM LEASE SALE #48, 1982-2000

(in millions of dollars)

Year	Indirect Costs for 24 Tracts withheld from Lease Sale #48
1982	0.1
1983	0.6
1984	1.1
1985	1.8
1986	2.2
1987	1.9
1988	1.8
1989	1.5
1990	1.2
1991	1.0
1992	0.7
1993	0.7
1994	0.6
1995	0.7
1996	0.6
1997	0.6
1998	0.5
1999	0.5
2000	0.5

TABLE 20

INDIRECT ANNUAL COSTS RESULTING FROM PROHIBITION OF HYDROCARBON EXPLORATION AND EXPLOITATION IN THE REMAINING TRACTS OF PROPOSED SANCTUARY, 1988-2006

(in millions of dollars)

Year	Indirect Costs for Remaining Tracts
1988	0.1
1989	0.6
1990	1.3
1991	2.0
1992	2.2
1993	2.0
1994	2.0
1995	1.8
1996	1.5
1997	1.2
1998	1.0
1999	0.8
2000	0.7
2001	0.6
2002	0.6
2003	0.6
2004	0.5
2005	0.5
2006	0.5

Total (Direct and Indirect) Costs Assuming Worst Case

Table 21 presents annual summation for the 1982 to the year 2006 period of direct and indirect costs resulting from regulations which would completely prohibit exploitation of the estimated hydrocarbon resources within the boundaries of the proposed Sanctuary.

As the data show in the initial production year the total costs of not exploiting these resources is less than $2 million. These costs rapidly increase the peak year of 1992 when the total costs are estimated to be $49.94 million only to decrease to $43.70 million in the following year 1993 and continue to decrease as the hydrocarbon resources are depleted. This worst case scenario is highly unrealistic; first, as noted above, it is based on improbably high resource estimates and, second, it does not take into account the technological feasibility of exploiting at least some of the hydrocarbon resources within the boundaries of the proposed Sanctuary by directional drilling techniques from tracts just outside the proposed Sanctuary boundary. This more realistic scenario, even though still based on inflated resources estimates, referred to as "normative case" in this report, is discussed in the following section.

Socioeconomic Impact of the Proposed Sanctuary Assuming Normative Case Total Impacts

Under the worst case assumptions exploration and exploitation of the hydrocarbon resources within the boundaries of the proposed Sanctuary was outright prohibited--these reserves

TABLE 21

DIRECT AND INDIRECT ANNUAL COSTS RESULTING FROM PROHIBITION OF HYDROCARBON EXPLORATION AND EXPLOITATION IN THE PROPOSED SANCTUARY, 1982-2006

(in millions of dollars)

	Direct Costs			Indirect Costs			
Year	24 Tracts	Remaining Sanctuary	Total	24 tracts	Remaining Sanctuary	Total	Total Costs
1982	1.85	-	1.85	0.1	-	0.1	1.95
1983	8.46	-	8.46	0.6	-	0.6	9.06
1984	17.18	-	17.18	1.1	-	1.1	18.28
1985	27.22	-	27.22	1.8	-	1.8	29.02
1986	31.72	-	31.72	2.2	-	2.2	33.92
1987	27.48	-	27.48	1.9	-	1.9	29.38
1988	26.43	1.85	28.28	1.8	0.1	1.9	30.18
1989	21.40	8.46	29.86	1.5	0.6	2.1	31.96
1990	19.48	18.87	38.35	1.2	1.3	2.5	40.85
1991	15.10	29.90	45.60	1.0	2.0	3.0	48.60
1992	12.20	34.84	47.04	0.7	2.2	2.9	49.94
1993	10.75	30.25	41.00	0.7	2.0	2.7	43.70
1994	9.58	29.83	39.41	0.6	2.0	2.6	42.01
1995	10.10	27.27	37.37	0.7	1.8	2.5	39.87
1996	9.09	22.56	31.65	0.6	1.5	2.1	33.75
1997	8.41	17.51	25.92	0.6	1.2	1.8	27.72
1998	7.47	14.13	21.87	0.5	1.0	1.6	23.47
1999	7.40	12.45	19.85	0.5	0.8	1.3	21.15
2000	6.73	10.10	16.83	0.5	0.7	1.2	18.03
2001	-	10.71	10.71	-	0.6	0.6	11.31
2002	-	9.63	9.63	-	0.6	0.6	10.23
2003	-	8.93	8.93	-	0.6	0.6	9.53
2004	-	8.21	3.21	-	0.5	0.5	8.71
2005	-	7.85	7.85	-	0.5	0.5	8.35
2006	-	7.14	7.14	-	0.5	0.5	7.64

were lost to the industry. These assumptions are, however, far too stringent and do not represent the normative conditions in the industry because they preclude the possibility of directional drilling. Directional drilling is a well developed technology[1/] and is used with increasing frequency.[2/] It certainly can be readily applied in the case of the proposed Sanctuary. The critical issue is what proportion of the 12 million barrels of oil and 18 billion cubic feet of gas estimated resources within the proposed Sanctuary boundaries can be captured using the directional drilling technology. Definitive answers on this cannot be provided. However, on the basis of other projects we estimate that at least 40 percent of the oil and gas reserves within the boundaries of the proposed Sanctuary can be exploited

1/ According to the author of eight-part series on directional drilling... "most offshore development wells are directionally drilled." See: Keith Millheim "Operators have much to learn about directional drilling," The Oil and Gas Journal, November 20, 1978, p. 63. See also,

J. G. Jackson, "Planning a Multiple Well Direction Drilling Program for Offshore Locations," AIME Technical Publication No. 2325, Class 6, Petroleum Technology 3/19/48; and

W. B. Bradley, "Factors Affecting the Control of Borehole Angle in Straight and Directional Wells," SPE Preprint No. 5070, Presented October 6-9, 1974, Houston, Texas.

2/ See for example: F. A. Maretich and S. K. Wilkie, "Socony Reduces Drilling Time on Ghario by Directional Drilling", The Oil and Gas Journal, 12/22/52; or R. H. Gross, "Gulfs Directional Drilling Technique," World Oil, V. 157, No. 6, November 1963.

using directional drilling technology. The total loss to the economy is therefore foregone revenues from the sale of the resources that cannot be exploited.

Table 22 presents the pertinent calculations. As the data in Table 22 indicate, the total resulting from loss of oil and gas annual direct loss to the economy under normative case assumptions in the first year of production is only 1.2 million. This loss increases as the cumulative number of oil and gas well is increased and in the peak production year of 1992 the total loss is almost $30 million. From thereon the annual losses decline as the oil and gas reserves are gradually depleted.

All other impacts associated with the normative case prohibition of hydrocarbon exploitation within the boundaries of the proposed Sanctuary are on the order of about one-half of the impacts discussed under worst case assumptions. This can be readily seen from the impact estimates on the Gross Regional Product of Southern California.

United States Department of Interior originally estimated that the entire Lease Sale #48 would add to the Gross Regional Product of Southern California $519 million during the peak year of hydrocarbon exploitation, i.e., 1986.[1/]

1/ United States Department of Interior, Final Environmental Statement OCS Sale #48, Washington, D.C., 1972, Vol. 2, p. 1307

TABLE 22

DIRECT AND INDIRECT ANNUAL COSTS RESULTING FROM PROHIBITION OF HYDROCARBON EXPLORATION AND EXPLOITATION IN THE PROPOSED SANCTUARY, ASSUMING NORMATIVE CASE, 1982-2006

(in millions of dollars)

Year	Total Costs
1982	1.17
1983	5.49
1984	11.00
1985	17.41
1986	20.40
1987	17.63
1988	18.11
1989	19.18
1990	24.51
1991	29.16
1992	29.96
1993	26.22
1994	25.21
1995	23.92
1996	20.25
1997	16.63
1998	14.08
1999	12.69
2000	10.82
2001	6.79
2002	6.14
2003	5.71
2004	5.26
2005	5.00
2006	4.58

This impact was based on hydrocarbon resource estimates for Lease Sale #48 of 715 million barrels of oil and 860 billion cubic feet of gas. Subsequently, United States Geological Survey drastically reduced these resource estimates to only 104 million barrels of oil (a reduction of 86 percent) and 498 billion cubic feet of gas (a reduction of 42 percent). Assuming proportional reduction in the increment to the Gross Regional Product during the peak year of production this is estimated to be only about $72 million.

Under normative case assumptions hydrocarbon resources located within the boundaries of the proposed Sanctuary that will not be exploited by the oil and gas industry are comprised of 6.8 million barrels of oil and 10.7 billion cubic feet of gas (60 percent of 11.4 million barrels of oil and 17.8 billion cubic feet of gas).

These unexploitable oil resources in the proposed Sanctuary under normative case assumptions represent only 6.5 percent of total revised oil resources in the entire Lease Sale #48; in the case of gas resources, those located within the boundaries of the proposed Sanctuary comprise only 2.1 percent of total gas resource estimates in the Lease Sale #48.

Assuming that the magnitude of regional impact is in direct proportion to the resource estimates, such impact resulting from foregoing exploitation of hydrocarbon resources within proposed Sanctuary under normative case assumptions during the peak year of production should not exceed $4.7 million as compared to $7.9 million for worst case.

With regard to the impact on the oil and gas industry the recent data indicate industry net income to average about 5 percent of total revenues. For the peak year of production i.e., 1992, since the foregone total oil production revenues are estimated to be almost $30 million, the impact of the proposed regulations on the industry is therefore $1.5 million. For the worst case this estimate was $2.3 million.

The magnitude of total foregone oil and gas production within the boundaries of the proposed Sanctuary over the entire life of these resources under normative case scenario of 6.8 million barrels of oil and 10.7 billion cubic feet of gas is miniscule when compared to the annual (1978) domestic hydrocarbon production of about 3200 million barrels of oil.

Thus, the impact of foregone oil and gas production within the boundaries of the proposed Sanctuary on the costs or prices in the economic activities related to oil and gas industry is nil.

With regard to the employment impacts, in the normative case, the Department of Interior estimated additional employment resulting from entire Lease Sale #48 during the peak year of production at 14,629 persons.[1/] This estimate was based on unrevised hydrocarbon resource estimate for Lease Sale #48. The revised employment estimate based on the more recent hydrocarbon resource estimates for the peak year of production

1/ United States Department of Interior, Final Environmental Statement OCS Sale #48, Washington, D.C., 1972, Vol. 2, p. 1293.

would place additional employment needs generated by activities associated with Lease Sale #48 at about only 2000 persons.

The foregone oil and gas resources resulting from the proposed Sanctuary estimated within the boundaries of the proposed Sanctuary represent 6.5 percent of total oil resources in Lease Sale #48 and only 2.1 percent of gas resources under the normative case assumptions. Some employment decrease resulting from these foregone hydrocarbon resources can be expected, however, because of the insensitivity of labor demand to marginal changes in output this decrease will be small, and will certainly not reduce total affected employment by 5 percent.

Further, because of the very small magnitude and value of the foregone hydrocarbon resources within the boundaries of the proposed Sanctuary, these will have no impact on competition in the oil and gas industry.

In summary, under the normative case assumptions the socio-economic impacts both direct and indirect, on the economy, consumers, industry and employment, resulting from foregone exploitation of a certain proportion of estimated hydrocarbon resources within the proposed Sanctuary, are essentially insignificant.

Further, the proposed regulations have no impact on costs, prices or supply of materials, products and services.

APPENDIX 7. Distribution List for the Channel Islands FEIS

U.S. Air Force
L.A. District - Corps of Engineers
U.S. Department of Energy
U.S. Department of the Interior
U.S. Department of the Interior - National Park Service - Channel Islands National Monument
Department of State, Office of Oceans and Polar Affairs
Department of Transportation, FAA
Department of Transportation, Federal Highway Administration - Region Nine
Department of Transportation, 11th Coast Guard District
U.S. Environmental Protection Agency, Surveillance and Analysis Division
U.S. Environmental Protection, Office of Environmental Review
Marine Mammal Commission

U.S. Representative Anthony C. Beilenson (CA)
State of California Coastal Commission
California Coastal Commission, Regional Office
The Resources Agency of California
California Department of Fish and Game
City of Del Mar, California
The City of Santa Barbara, California
Santa Barbara County Board of Supervisors
Board of Supervisors of Santa Barbara County
Hermosa Beach Planning Commission
County of Ventura-Fish and Game Commission
State Senator Omer L. Rains
State Assemblyman Gary K. Hart

The American Cetacean Society
American Petroleum Institute
Association of Santa Barbara Channel Yacht Clubs
Atlantic Richfield Company
California Marine Parks and Harbors Association
California Seafood Institute
Carpinteria Valley Association
Center for Law and Social Policy
Channel Islands Yacht Club
CHEVRON U.S.A.
Coast Alliance
Concerned Citizens of Silver Strand
Corinthian Yacht Club
Crowley Maritime Corporation-Steamship Association of Los Angeles Harbor
Environmental Defense Network
Defenders of Wildlife
Environmental Defense Center
Environmental Defense Network
EXXON Company U.S.A.
Fishermen and Allied Workers' Union
Friends of the Earth and Coast Watch
Friends of the River

Friends of the Santa Monica Maintains, Parks and Seashore
Friends of the Sea Otter
Hanna-Barbara's Marineland
League of Women Voters of Santa Barbara
League of Women Voters of Ventura County
Merck & Co., Incl
More Mesa Land Trust
National Association of Underwater Instructors
National Coalition for Marine Conservation Pacific Region
National Parks and Conservation AssociationNorcal Graphics
Natural Resources Defense Council
Pacific Coast Federation of Fishermen's Association, Incl
Pacific Merchant Shipping Association
Recreational Boating Counsel
Resources Partnership
Santa Barbara Audubon Society
Santa Barbara Commercial Fishermen
Santa Barbara Museum of Natural History
Scenic Shoreline Preservation Conference
Sea Land Sport Fishing and Sport Fishing Association of California
Seaworld
Sierra Club
Sierra Club - Santa Monica Mountains Task Force
Southern California Cruiser Association
Sportsmen's Council of Central California
Southern California Gas
Southern California Petroleum Contingency Organization Atlantic Richfield Company
Sportsmen's Council of Central California and California Wildlife Federation
Stauffer Chemical Company
Texico, Incl
University of California - Irvine - School of Biological Sciences
University of California - Santa Cruz
Ventura College
Ventura College Well Control School and the International Association of Drilling Contractors
Ventura Yacht Club
Western Oil and Gas Association
Whale Center

F.E. Bernstein
Atlee Clapp
Al Ebling
Ted Flesher
Clara Ann Folk
Peter Gross
Rick Hamner and Associates
Mr. and Mrs. John D. Harms
Myrna Lefferts
Philip R. Lever
Helen Matelson
Adam C. McOuat

John Morgan
Timothy M. Murphy and 30 Friends
Scott T. Olson
Christopher P. Onuf
William Rubin
Richard Spotts
Mrs. J.R. Stallings
Dyanne Tabin and Family
Gary Vesperman
Edward and Sarah Zawaski

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