santa catalina island

local coastal plan

PART OF THE LOS ANGELES COUNTY LOCAL COASTAL PROGRAM

Santa Catalina Island

LOCAL COASTAL PLAN (LCP)

NOVEMBER, 1983

Part of the Los Angeles County
Local Coastal Program

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LOS ANGELES COUNTY DEPARTMENT OF REGIONAL PLANNING
With the assistance of the Los Angeles County
Department of Parks and Recreation

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LOS ANGELES COUNTY

Santa Catalina Island

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Frequently Used Abbreviations

CICAC	Catalina Island Citizens Advisory Committee
CCC	California Coastal Commission
DRP	Los Angeles County Department of Regional Planning
GDPR	General Development Plan for Recreation
LCP	Local Coastal Plan
ORV	Off-Road Recreational Vehicle
PAOT	Persons at One Time
P&R	Los Angeles County Department of Parks and Recreation
RMP	Resource Management Plan
SCI Company	Santa Catalina Island Company
SCI Conservancy	Santa Catalina Island Conservancy
USC/MSC	University of Southern California, Marine Science Center

Santa Catalina Island

LOCAL COASTAL PLAN

SUMMARY

SANTA CATALINA ISLAND LOCAL COASTAL PLAN SUMMARY

Santa Catalina Island, a unique resource on the North American coastline is many things to many people -- a major destination for recreational boaters and camping organizations, a real life laboratory for students and scientists and a special kind of outdoor experience for hikers, nature lovers and backpackers who enjoy its wildlife, flowers, mountains and canyons.

In 1974, a 50-year Open Space Easement Agreement was signed between the County of Los Angeles and the Santa Catalina Island Company which calls for preservation of the natural character of the Island and improvement of the Island's access and recreational opportunities. Shortly thereafter, the Santa Catalina Island Conservancy was established to manage, in perpetuity, the Island's biotic resources.

One of the requirements of the California Coastal Act of 1976, which sets forth policies to guide new development and to improve public access to coastal areas, is the submission and approval of a Local Coastal Plan (LCP) for coastal areas such as Catalina. This LCP recognizes and responds to the goals and requirements of the Open Space Easement Agreement, the Santa Catalina Island Conservancy and the California Coastal Act. It ensures that the vast majority of the Island will remain in its present natural state for future generations to enjoy.

The following policies of the LCP will guide future development and preserve the Island's resources:

Shoreline Access and Recreation

- Provide access to the interior of the Island from the shore and from the interior of the Island to coves and beaches.

- Provide improved access for boaters to coves and anchorages.

- Increase the range of recreational activities for persons of all ages and socio-economic backgrounds with continued monitoring to prevent overuse and damage.

- Expand the visitor season, especially for land based activities, but guard against over use.

Resource Protection

- Preserve the designated conservation/primitive recreation area in a substantially undisturbed natural condition.

- Minimize impacts or alterations to the topography, vegetation, natural resources, historical and cultural sites, and natural character of the Island.

- Educate the visiting public about the natural history of the Island through informational and interpretive programs and materials.

- Improve habitat areas, protect viewsheds, and focus new development in non sensitive areas.

- Protect sensitive environments and provide a 100 meter buffer around Catalina Harbor.

New Development

- Limit new development in scope and carefully design it to be compatible with the unique character of the Island.

- Expand residential and service facilities in Avalon Canyon near Avalon providing for approximately 200 units of new residential use in this area.

- Provide for a new residential/resort community at Two Harbors including necessary support facilities carefully designed to relate to the unique character of the area. The Plan includes a view corridor across the Isthmus, and provision for approximately 2650 units of new residential use.

- Provide for a corporate yard/industrial use at Well's Beach to provide needed service areas, including a helicopter pad, and an area for expansion of the oil spill containment facilities.

- At Empire Landing provide a possible new visitor gateway to the interior to relieve congestion at Avalon.

- Expand and landscape the USC/Marine Science Center research facilities.

- Limit recreational improvements to campfire pits, restrooms, limited lodge/hostel facilities and similar uses in rural areas but prohibit development in designated primitive areas.

- Relate new development to the natural character of the Island by limiting building heights (except for selected architectural accents approved through design review), specifying types of building materials and sensitively reviewing designs and landscaping materials.

- Mitigate environmental impacts by channeling development into already developed and/or publicly used areas; minimizing grading (cut and fill) operations; avoiding steep slopes, tsunami run-up areas, archaeological sites, landslide areas and view corridors; and by ensuring the provision of sufficient water resources and solid and liquid waste facilities prior to development approvals.

Catalina Island Proposed Land Use

The Santa Catalina Island Plan, prepared in accord with the preceding policies, is summarized on two plan maps entitled, respectively, "Land Use and Facilities Improvement" and "Two Harbors Proposed Land Use". These plan maps are included on the following pages.

Review of the land use map shows that almost all of the Island (96 percent) is designated to remain in open space or conservation primitive use. The following table provides a tabulation of the land uses incorporated in the plan.

Open Space/Directed Recreation	25,900 acres
Conservation/Primitive Recreation	20,600 acres
Extractive Use (existing quarries)	640 acres
Industrial/Transportation	185 acres
Residential	153 acres
View Corridor/Public Use (Two Harbors)	109 acres
Education/Scientific (USC Marine Science Center)	45 acres
Lodge/Inn	13 acres
Utilities/Services	11 acres
Marine Commercial	6 acres
Retail - Commercial	3 acres
Recreational Boating	3 acres
City of Avalon (Not part of LCP)	801 acres
TOTAL Santa Catalina Island	48,469 acres

The LCP, through its proposed facilities and programs, and its designation of the vast majority of the Island as open space and conservation areas has provided a balanced and sensitive plan for the future of Santa Catalina Island--a future that will allow coastal visitors to enjoy a unique resource for many generations.

DESCRIPTION OF BOUNDARIES OF LAND USE CATEGORIES ON THE LAND USE AND FACILITIES IMPROVEMENT MAP

Open Space/Structured Recreation

Western segment begins on the shoreline just west of Parsons Landing and continues southeasterly to Cherry Cove and includes Lots 98, 99 and 100 as shown on page 39 of Map Book 7480 of the Los Angeles County Assessor.

Middle segment begins at the Two Harbors Hub on the northeasterly shore of the Island and runs southeasterly to the city boundary of the City of Avalon, thence southwesterly along the boundary of the City of Avalon to the Old Stage Road, thence northwesterly along the Old Stage Road, thence northwesterly along the Old Stage Road to its intersection with the Middle Ranch Road; thence westerly along the Middle Ranch Road to the shoreline; thence northerly along the southwesterly shore of the island to the Two Harbors Hub, excepting the Extractive Use at Empire Landing and the Industrial/Transportation/Utilities category at the Airport in the Sky described below; and

Eastern segment lies immediately southerly of the City of Avalon and consists generally of Lots 2, 7, and 8 as shown on page 45 of Map Book 7480 of the Los Angeles County Assessor excepting the development proposed for Avalon Canyon described below.

Conservation/Primitive Recreation

Western segment includes all of the Island lying westerly of the Two Harbors Hub excluding the western segment of the Open Space/ Structured Recreation category described above.

Eastern segment includes that portion of the Island lying southerly of Middle Stage and Old Stage Roads excluding the City of Avalon, the eastern segment of the Open Space/Structured Recreation area described above, Avalon Canyon, and Pebbly Beach described below.

Extractive Use

Empire Landing Extractive Use is located at the westerly end of the Empire Landing area occupying portions of Lot 83 and 85 as shown on page 40 of Map Book 7480 of the Los Angeles County Assessor.

Pebbly Beach Extractive Use consists of Lot 3 as shown on page 45 of Map book 7480 of the Los Angeles County Assessor excepting that portion shown as Industrial/Transportation/Utilities described below.

Industrial/Transportation/Utilities

Airport Hub consists of the existing graded area of about 40 acres containing the existing Airport-In-The-Sky.

Pebbly Beach Industrial/Transportation/Utilities category consists of the easterly portion of Lot 1 and the northerly approximately 1,000 feet of Lot 3 as shown on page 45 of Map Book 7480 of the Los Angeles Assessor.

Residential

Residential housing will be located on the hillside areas of Avalon Canyon southerly of the City of Avalon as shown on Map 15, page II-125.

City of Avalon

The incorporated City of Avalon lies in the southeast corner of the Island and is 8901 acres in size.

Access Corridors

For reference in locating the various access corridors, the names of the Island roads and trails have been added to the "Land Use and Facilities Improvement Map."

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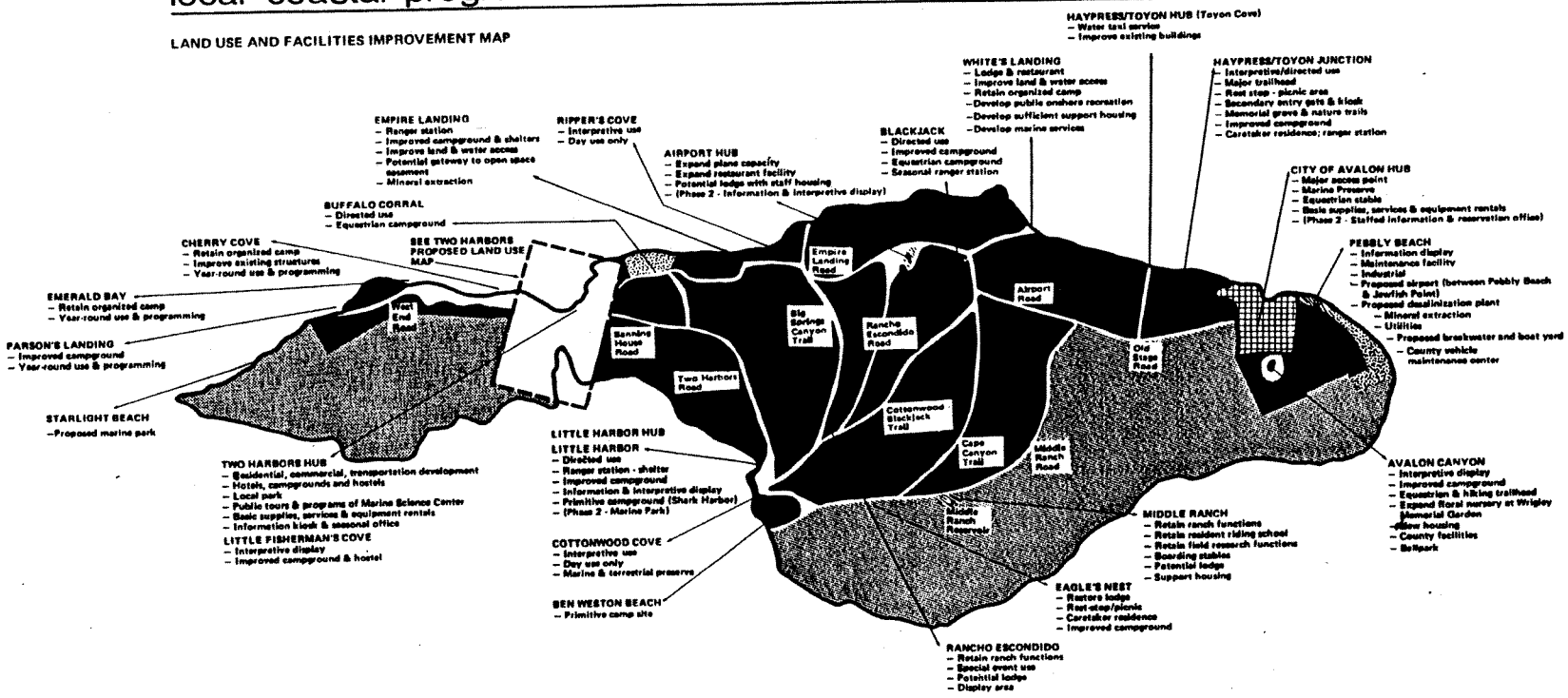
LAND USE AND FACILITIES IMPROVEMENT MAP



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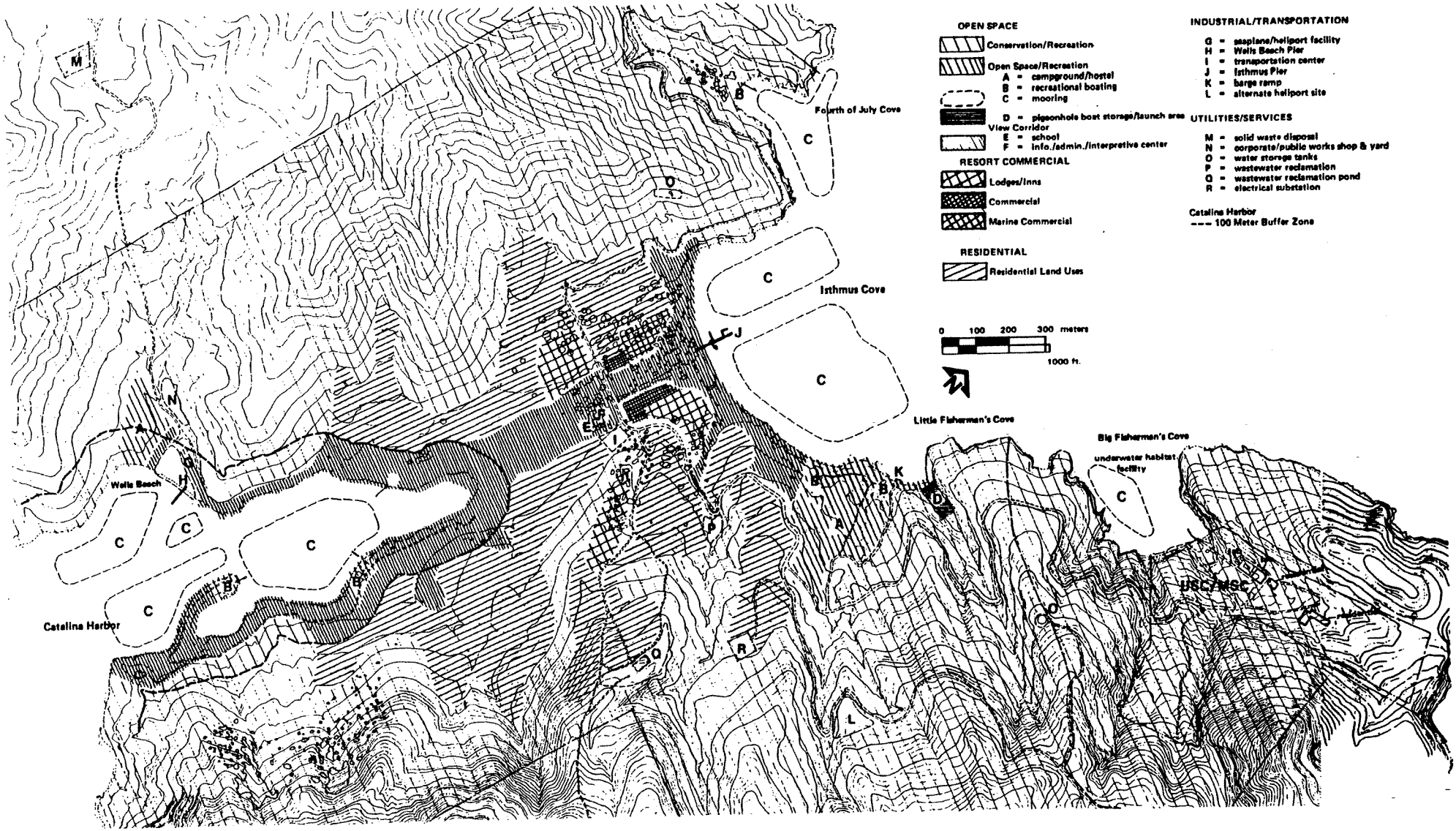


I. INTRODUCTION

A. Description of Santa Catalina Island

B. Background For Local Coastal Planning

A. DESCRIPTION OF SANTA CATALINA ISLAND

Physical Setting

Santa Catalina Island is the only significantly inhabited island near the California coast. Located approximately 22 miles south of the Palos Verdes Peninsula and 27 miles southwest of the Orange County shoreline, the Island is approximately twenty-one miles long and eight miles wide. It has a land area of approximately seventy-four square miles, about the size of Washington D.C. In 1980 the island had a total resident population of 2400 people; 2029 living within the corporate boundaries of the City of Avalon (not included in this LCP) and 371 in the unincorporated area, primarily in the Two Harbors area. During popular visitor periods, the daily and overnight visitors add 10,000 to 12,000 to the population in the Avalon area and an additional 3,000 to 6,000 throughout the unincorporated area. The majority of visitor activity in the unincorporated area occurs in the Two Harbors area. This includes camping, boating visitors and one day excursion visitors.

Santa Catalina Island is characterized by rugged topography and a cliffed shoreline. Level terrain is limited to the floors of a few large coastal canyons such as Avalon, Pebbly Beach, White's Landing, Middle Ranch, Two Harbors and Emerald Bay. Mt. Orizaba, located in the central portion of the Island, is the highest peak at 2,069 feet elevation.

The climate of Santa Catalina Island, like that of most of coastal Southern California, is Mediterranean characterized by wet, mild winters, and an extended dry period lasting from late spring through late autumn. The average annual rainfall for Avalon is 12.3 inches, while the rainfall for the Two Harbors area is only about 9 inches. On the average about eighty-five percent of this rainfall evaporates back to the atmosphere. The remaining fifteen percent either runs off into the stream channels or percolates down into the groundwater. This shall amount of recoverable water severely limits the water yield capacity of the Island. The temperature at Avalon averages 60.6 degrees F. ranging from 67 degrees F. in the summer to 56 degrees F. in the winter.

Over 80% of Santa Catalina Island has been set aside in a special Catalina Conservancy, dedicated to programs of conservation, recreation, education and research.

Avalon and Two Harbors are the major ports of entry and primary population and service communities on Santa Catalina Island. The Two Harbors comunity is located thirteen miles westerly of Avalon. Although this is a minimal distance by "mainland" standards, the actual roadway distance is twenty-six miles through rugged terrain, with an average driving time of one hour and fifteen

minutes. Boat transport from Avalon harbor to Two Harbors provides a shorter travel time and takes fifty to sixty minutes. However, frequent westerly winds resulting in rough water can slow this trip to seventy-five or eighty minutes. Two Harbors, due to its relative remoteness from the service community of Avalon, should be provisioned and equipped to supply basic emergency and support services to residents of the Two Harbors Community, Big Fisherman's Cove (Marine Science Center), Cove and Camp Agency facilities in the vicinity, as well as to the thousands of visitors frequenting the area each year. Two Harbors, (Isthmus Cove and Catalina Harbor) is a major boating destination point and has historically been recognized as a general service center for all boating, camping and other visitor activities in the westerly portion of Santa Catalina Island. Catalina Harbor is the only all-weather, small craft harbor off the mainland coast and, on many occasions throughout the year, offers storm refuge to commercial fishing vessels and a variety of other craft.

Bird Rock, located in Isthmus Cove, is a large flat rock privately owned. About the size of a football field, it lies low in the water, and has a foot deep covering of guano; hence, its popular name: White Rock.

Cultural Setting

Santa Catalina Island has been occupied by man for approximately 5,000 years. The lifestyles and adjustments of the early residents to population pressures and variable resource availability is preserved in the archaeological record of the Island. The aboriginal quarrying of soapstone and production of a great variety of vessels and other useful objects has been of special interest to scholars of Southern California archaeology.

Prior to Spanish contact, coastal Southern California peoples lived at a hunting and gathering level of existence. As populations grew, the variety and intensity of food resource exploitation increased. From 500 A.D. until the late 1700's an elaborate hunting and gathering culture developed in which major changes took place in the intensity of resource exploitation. Of particular interest was the development of an elaborate exchange network.

The earliest evidence of man on Catalina Island is in coastal villages near Avalon, Two Harbors and Little Harbor. As noted, radio-carbon dating methods indicate that man first occupied the Island some 5,000 years ago. This is substantiated by other evidence that establishes a rapid population increase on the mainland in the same era.

Santa Catalina Island was discovered by the Spaniards in 1542 by General Rodriguez Cabrillo, however it was not explored at that time. Sixty years later General Sebastian Viscaino cast anchor

off of the Island and named it Santa Catalina. Over the years, the Island's coves and deep canyons provided shelter for pirates, smugglers and bootleggers.

The Island has had numerous owners from the King of Spain to the present day Santa Catalina Island Company and Santa Catalina Island Conservancy. In 1894, the Banning Brothers formed the Santa Catalina Island Company which had as its main purpose the development of a resort on the Island. In 1919 William Wrigley, Jr. acquired majority interest in the Company.

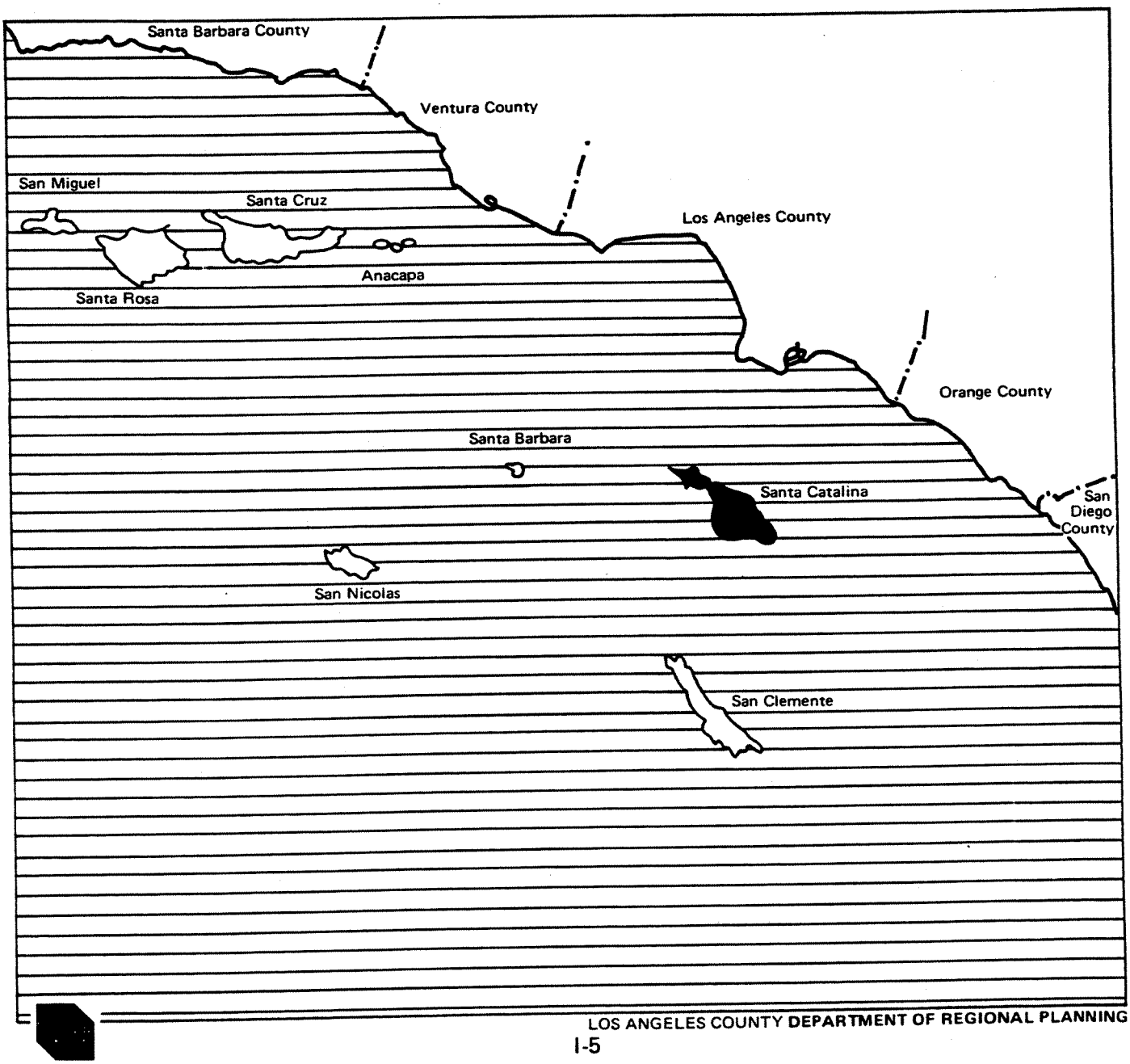
An Open Space Easement Agreement initiated by the Santa Catalina Island Company in 1974 allows the County to share the use of most of the Island for an initial period of 50 years (until 2024).

In 1975, the Santa Catalina Island Conservancy received from the Wrigley family, through the Santa Catalina Island Company, a gift of 42,135 acres of Catalina then valued at $16 million.

These two mechanisms, the Open Space Easement and Conservancy provide for management of the Island's recreational and biotic resources. The Open Space Easement includes most of the Conservancy lands except for small areas around Avalon, White's Landing and Parsons Landing. Still owned by the Santa Catalina Island Company are areas around Avalon, at the Isthmus, Empire Landing and Emerald Bay. Rancho Escondido, also owned by the Santa Catalina Island Company, is part of the Open Space Easement. (See Map 2)

map 1

CHANNEL ISLANDS



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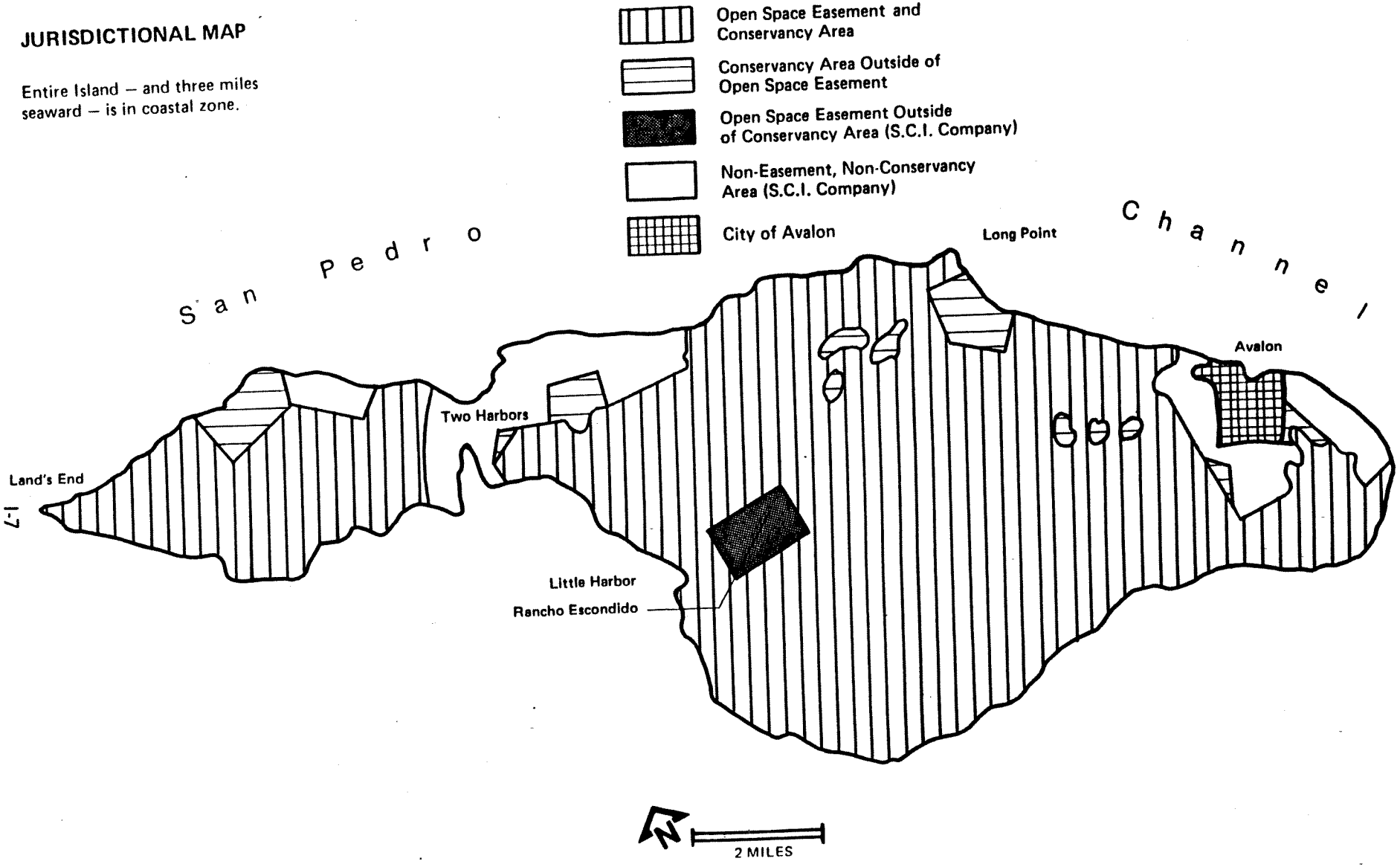
map 2

JURISDICTIONAL MAP

Entire Island – and three miles seaward – is in coastal zone.



LOS ANGELES COUNTY DEPARTMENT OF REGIONAL PLANNING

B. BACKGROUND FOR LOCAL COASTAL PLANNING

The Coastal Act

In 1972, California voters approved the California Coastal Initiative (Proposition 20), establishing a system of one state and six regional commissions charged with the protection and enchancement of California's coastal resources.

Four years later, in 1976, the State Legislature passed the California Coastal Act setting forth a program whereby each local governmental jurisdiction along the California coastline would be required to prepare a Local Coastal Program to promote conformance with the provisions of the Act in controlling development within its portion of the coastal zone.

Each Local Coastal Program must consist of the following:

- a Land Use Phase detailing permitted land and water uses and intensities and,

- an Implementation Phase utilizing zoning and other measures to enforce the provisions of the land use plan.

In the case of this report, the term "LCP" refers to Local Coastal Plan (Land Use Phase) rather than Local Coastal Program. Implementing ordinances will be considered in the next phase.

Local Coastal Plan (LCP) Process

The Catalina Island LCP work program, prepared by the Los Angeles County Department of Regional Planning (DRP) in conjunction with staff of the California Coastal Commission (CCC), cited the pertinent planning issues to be addressed in the LCP. The work program mapped out a research program for collection and analysis of data leading to policies for each of the chapters* of the Catalina Island LCP (Shoreline Access; Recreation and Visitor-Serving Facilities; Recreational Boating; Marine Resources; Commercial Fishing; Environmentally Sensitive Habitat Areas; Cultural Heritage Resources; Coastal Visual Resources and Special Communities; Hazard Areas; Design Principles for New Development; Circulation; Public Works and Facilities; Diking, Dredging, Filling, and Shoreline Structures; and Industrial Development and Energy Facilities).

Since most of the Island has been set aside as Open space (through its Open Space Easement and Conservancy status) the Los Angeles County Department of Parks and Recreation was

*Each chapter of this LCP covers Coastal Act Policies, Issues Identified, Research Analysis, Findings, and Plan Policies and Recommended Actions.

charged with the preparation of the General Development Plan For Recreation. This recreation plan is complementary to the LCP and has been incorporated into the LCP as part of the chapter on "Recreation and Visitor Serving Facilities":

- Goals and objectives of the General Development Plan for Recreation are included at the beginning of that section.

- The potential location of recreational facilities and activities is included as part of the "Land Use and Facilities Improvement Plan" map located following the Santa Catalina Island Local Coastal Plan Summary.

Providing an additional resource for this Local Coastal Plan, the Center for Natural Areas (CNA) was contracted by the Los Angeles Department of Parks and Recreation to prepare the Resource Management Plan for the entire Island. This plan provides the basis for the "Environmentally Sensitive Habitat Areas" chapter of this LCP. Included from the Resource Management Plan are the following:

- The major goals relating to the environment and visual and cultural resources;

- The critical management measures;

- General recommendation for an annual resource status report;

- Two key resource maps (rare plants and marine resources); and,

- Descriptions of the resources (past, present and future).

Finally, EDAW, Inc. contracted with the Santa Catalina Island Company (landowners of all non-Easement lands on Catalina Island) to prepare a plan for the Two Harbors area and other non-Easement areas. In 1981, the Two Harbors Resort Recreation Community Concept Plan was prepared by The SWA Group for, and under the direction of, the SCI Company. Arvida Corporation, as a resort and community developer, advised the SCI Company in the plan process.

Concurrent with commencement of the planning process, the DRP and P&R jointly appointed the Catalina Island Citizens Advisory Committee (CICAC) to provide direction and review with respect to LCP policies. A Technical Advisory Committee (TAC), including representatives from the Southern California Edison Company, Fire Warden, County Engineer/Facilities, the Department of Beaches, and others was appointed to provide input of a specialized technical nature.

This Local Coastal Plan for Catalina Island was distributed in April 1982 for additional public review prior to public hearings before the County of Los Angeles Board of Supervisors. Public review, comments and suggestions for revision were most welcome at public hearings. The final stage in the process was the submittal of the plan to the California Coastal Commission with a request for approval.

Past Planning And Management Efforts

Except for the Union Army Civil War Barracks, built in 1864, and still standing in the Two Harbors area, historical development commenced on Santa Catalina Island in the late 1880's when Island owner George Shatto and his agent, C.A. Sumner, laid out the town of Avalon, sold lots, and built the Hotel Metropole. In purchasing the Island from the James Lick estate, Shatto mortgaged his acquisition heavily with the trustees of the Lick estate and soon found himself in financial difficulties in his efforts to develop Avalon. This resulted in repossession by the Lick trustees and in 1892 Catalina was resold to the three Banning Brothers: Judge Joseph Brent Banning, Captain William Banning, and Hancock Banning, all sons of General Phineas Banning.

In 1894, the Bannings formed the Santa Catalina Island Company (SCI Company) as a closed family corporation to implement the plans for resort development initiated by George Shatto. Their efforts included additional leasing of tent platform sites to summer visitors, expansion of commercial development along Crescent Avenue, and building of the 167 room St. Catherine Hotel in Descanso Canyon/Bay. In 1910 Judge Joseph Banning built his family residence at the Isthmus on a high knoll over looking Two Harbors where it still stands today.

Avalon incorporated as a City in 1913. Financial problems resulting from a 1915 fire in Avalon and heavy debt incurred in the construction of the St. Catherine Hotel forced the Banning Brothers to sell their stock in the Santa Catalina Island Company.

In February 1919, Mr. William Wrigley Jr. joined a small real estate syndicate in purchasing part of the stock of the SCI Company from the Banning family. Impressed by the unique beauty and sensitive environment of the Island, Mr. Wrigley proceeded in October 1919 to acquire the remaining stock and majority interest in the SCI Company. The purchase included approximately 75% of all land within the incorporated boundary of Avalon and all land outside the City (referred to as unincorporated area).

From the outset, conservation and controlled recreational access to the Island's rugged interior have been major objectives pursued by the SCI Company. They have promoted agency and public camping use of all major Island coves (primarily on a lease basis), encouraged educational programs on the Island, and sought to expand recreational boating opportunities.

One of the most crucial planning/management issues which has historically faced Catalina's landowners has been water allocation and conservation. Wells were drilled in the 1920's and 1930's, but have not proved adequate. Major conservation and reclaimed water use programs were instituted primarily in 1960 and have been actively pursued since that time.

For many years, as early as the 1870's, relics and artifacts were easily accessible to the many people who actively searched for them. After William Wrigley purchased the Island, it was decided that only qualified researchers should excavate and preserve the artifacts of the Catalina Indian cultures. The Santa Catalina Island Company requested that the University of California at Los Angeles (UCLA) serve as a clearinghouse for all Catalina archaeological research. This arrangement continues today (1981).

Preservation and propagation of endemic plant life also dates from 1932 when excavation for the Wrigley Memorial Botanical Garden (38 acres) began. Today the gardens are a showcase for Catalina native, Channel Island endemic, and California native plants.

When William Wrigley, Jr. died in 1932, his son Philip K. Wrigley succeeded him as head of the SCI Company and continued policies aimed at conservation and preservation. Furthermore, reforestation and conservation programs on the Island became increasingly scientific in 1954, all such activities became the responsibility of Mr. Douglas Propst. Through his work on Catalina as Range and Wildlife Manager for the SCI Company, Mr. Propst became a recognized expert in the field. A program of range and wildlife management was initiated which included projects such as reseeding, grazing control through fencing, and reforestation. Deer had been introduced in the 1930's and wild turkeys were introduced in 1968. Both species have done very well in adapting to Catalina conditions.

Through the efforts of the SCI Company and the Catalina Cove and Camp Agency, formed in 1957, the SCI Company's coves have been made available for recreational opportunities for all income groups. Cherry Cove has been leased to the San Gabriel Valley Council Boy Scouts since 1918.

In 1960, a comprehensive Island planning effort was undertaken by William Pereira and Associates for the SCI Company. The resulting conservation/development Santa Catalina Island Master Plan (1962) set forth the following goals and policies:

- Preservation of 75% of the Island for conservation, recreation, and open space/educational use
- Expanded and improved recreational boating facilities
- A University of Southern California Marine Science Center at Fisherman's Cove
- A "coastal village" at Two Harbors
- Control of motor vehicles on the Island

While several of the plan's proposals were scaled down or modified, significant features of the plan have been implemented or reflected in Island management activities since 1962 (Wrigley Memorial Gardens, SCI Conservancy). The Two Harbors Specific Plan prepared by EDAW, Inc., was designed to carry out the "village concept" originally set forth in the Pereira Master Plan.

Other planning efforts on the Island have included the Fisherman's Cove Plan (Pereira and Associates, 1966), the Two Harbors Plan (Bechtel Corporation, 1969), and the Avalon Water and Sewage Plan (Engineering Services, Inc., 1970).

Of historic significance to planning and management on Catalina Island was the creation of the Open Space Easement in 1974. Acting under a California State Law (1969) permitting counties to accept open space easements on privately held land if the governing authority deemed the action desirable (allowing landholders to retain ownership for agreement to forego development for a specified period of time), the Los Angeles County Board of Supervisors accepted from the SCI Company approximately 41,000 of the Island's 48,469 acres in a 50-year Open Space Easement Agreement on February 28, 1974. In so doing, the Supervisors sought to establish Catalina Island as a major element of the County's open space planning program effort with particular concern for the young and disadvantaged. In turn, the SCI Company received a substantial reduction of property taxes on the Easement territory.

Subsequently, P.K. Wrigley irrevocably donated 42,000 acres of the Island (an area roughly coterminous with the Open Space Easement) to the Santa Catalina Island Conservancy (SCI Conservancy) effecting the transfer of ownership title for nearly all of the Easement territory from the SCI Company to the SCI Conservancy. The SCI Conservancy was set up as a non-profit operating foundation in 1972 with the aim of making most of the Island a permanent nature preserve for the benefit of future generations.

On January 7, 1975, the Board of Supervisors approved the Catalina Interim Development Plan, a short-term plan for the Easement area developed by the Los Angeles County Department of Parks and Recreation (P&R) and based upon five types of programmed activities: backpacking, hiking, camping, specialized programs, and revegetation of existing campgrounds.

Under the Open Space Easement Agreement, the County of Los Angeles and the SCI Conservancy share the rights to make recreational improvements in the Easement area with the understanding that neither party will exercise those rights without consulting the other party.

Early in 1975, the Center for Natural Areas (CNA), under contract to P&R and the SCI Conservancy, undertook a research study aimed at providing a basis for reconciling the dual planning objectives for the Island: (1) protection and enhancement of the Island's natural resources and (2) the provision of recreational opportunities on Catalina for the general public.

The research program was addressed in two phases. Phase one resulted in the collection and preliminary analysis of all relevant data regarding the Island's environmental/social/institutional

setting. Among the documents produced in this phase of the program were The Status of Ecological Knowledge of Santa Catalina Island Survey, An Analysis of Existing Island and Off-Island Support Facilities, and A Socio-Economic Analysis, all written in 1976.

Phase two was the basis for the General Development Plan for Recreation, and provided the background data for determining the best use of the Island during the term of the Open Space Easement Agreement.

This Santa Catalina Island LCP which addresses the Island's unincorporated territory recognizes these significant planning and conservation efforts and incorporates many of the goals, objectives, policies, and programs resultant from these efforts.

It should also be noted that the City of Avalon has prepared a Local Coastal Program for lands within its incorporated boundaries. Compatibility between the two planning efforts, sought by the County of Los Angeles and the City of Avalon, has resulted from close and cooperative consultation during formulation of the respective LCPs.

As an ongoing measure, the County of Los Angeles and City of Avalon are participating in an Avalon Facilities Planning Committee to develop a capital improvement plan for public facilities in Avalon and unincorporated Avalon Canyon.

Relationship To Other County Plans

This Santa Catalina Local Coastal Plan is part of the County of Los Angeles General Plan Coastal Element, along with LCPs for the other coastal plans of Los Angeles County (Malibu, Marina del Rey, and Los Alamitos). Together, the four land use plans and implementation programs will comprise the County's entire Local Coastal Program as well as the Coastal Element of the General Plan.

This Coastal Element has been formulated to adhere to the planning policies set forth in Chapter One of the Los Angeles County General Plan including the following general policies:

- Maintain the Channel Islands largely in open and rural uses (Page I-32; Policy #72).

- Allow specialized educational, research and recreational facilities with supportive residential development and community facilities to be situated in the Two Harbors (Isthmus) area of Catalina Island. A Precise Plan identifying specific uses and intensities for this area shall be included as part of the Local Coastal Program for Santa Catalina Island (Page I-32; Policy 74).

- Maintain the shoreline areas of Santa Catalina Island in predominately open space use (Page I-33; Policy #77).

- Promote improved access to the Open Space Easement and other natural and recreational areas on Catalina Island (Page I-33; Policy #78).

(See Appendix A for a complete list of applicable policies from other portions of the County of Los Angeles General Plan).

LCP Content And Format

This Catalina Island Local Coastal Plan is comprised of the following:

- Plan Policies organized in three groups

  . Coastal Access and Recreation Policy
  . Marine and Land Resource Protection Policy
  . New Development Policy

- Comprehensive Land Use Plan for Santa Catalina Island

- Appendices: (A) Related General Plan Policies; (B) the Catalina Open Space Easement Agreement; (C) A Study of the Marine Environment of Catalina Harbor, Santa Catalina Island, California, With Reference to a Proposed Residential-Recreational Development; (D)Excerpts from the General Development Plan for Recreation, (D-1) Demand Analysis and (D-2) Area Plans, Policies and Programs; and, (E) Excerpts from the Resource Management Plan, (E-1) The Resources, (E-2) Past Management Practices, and (E-3) The State of the Catalina Environment: Historical and Future.

Goals And Objectives Of The Santa Catalina Island LCP

Open Space Easement Goals and Objectives are as follows:

- Provide a variety of recreation and outdoor education experiences for a major segment of Los Angeles County's seven million residents including the young, disadvantaged and handicapped.

- Accomplish this recreation goal without destroying, minimizing, or in any way compromising the essential natural integrity of the Easement area.

- Develop protection techniques for unique ecological re sources of the Island, including species of plants and ani mals found only on the Island.

- Manage the feral herbivores (i.e. goats, wild deer, pigs, and bison).

- Reverse erosion processes caused by overgrazing.

- Establish management policies and contingency procedures for dealing with man-made hazards such as oil spills, fire, and saltwater intrusion into ground water.

- Establish management policies for dealing with negative impacts of user groups on natural areas.

- Outline priorities for future research.

Non-Easement Goals and Objectives are as follows:

- Determine the level of resource protection needed to assure continued enjoyment by the public of non-Easement areas, and encourage major new development only in a manner consistent with established resource protection levels.

- Protect the role of existing land uses in the Non-Easement/ Non-Conservancy areas and insure that these uses can continue and expand consistent with their needs and specialized role in the economy and in providing services to Santa Catalina Island.

- Encourage visitor-serving, recreation, education, research and open space uses, including support facilities, in a manner that insures the preservation of the Island's unique life style and environment. To minimize impact, new development shall be concentrated in the following locations:

  . Avalon Canyon

  . Two Harbors and the Marine Science Center

  . Little Harbor

  . Airport-In-The-Sky

  . Middle Ranch

  . Empire Landing

  . Pebbly Beach/Jewfish Point

  . Emerald Bay/Howland's Landing

- In Avalon Canyon, consistent with recommendations of the Avalon LCP, allow for resort/recreation facilities and activities, support housing, low density residential use and relocation of County facilities.

- Provide the Two Harbors area with residential, commercial, scientific research and public services needs, including land allocation for a broad range of resort recreation opportunites, visitor lodging, housing, commercial and public services to support the needs of permanent residents, visitors, and the USC Marine Science Center.

- At Little Harbor improve the campground, add ranger station.

- At Airport-In-The-Sky expand restaurant and plane facilities, add lodge and staff housing.

- At Middle Ranch add lodge, stable facilities and support housing.

- In the Empire Landing area:

  . Permit a major public landing point and beach recreation area, facilitating direct access into the Con-servancy lands.

  . Allow for coastal dependent marine services (small boat storage, boat and floats haul-out, etc.)

  . Allow for support housing, ranger station and services.

  . Allow for mineral resource recovery only in the designated rock quarry area and limit public access to the quarry.

- In the Pebbly Beach/Jewfish Point area:

  . Allow continuation, expansion and addition of industrial, utility and disposal services consistent with existing use of the area and coastal dependent marine services, and continuation of support housing.

  . Allow for future breakwater development for additional protected boat mooring area and boat yard area.

  . Develop a County Vehicle Maintenance Center. Allow continuation of mineral resource recovery (rock quarry operation).

- In the Emerald Bay/Howland's Landing area:

  . Continue Agency Camps.

  . Continue recreational boat-in facilities.

  . Add visitor-serving facilities and services.

Issues And Opportunities

In meeting the requirements of the Coastal Act and providing the necessary technical data, two priority issues were identified for the Santa Catalina LCP:

- Maximization of recreation opportunities and coastal access consistent with protection of the Island's unique resources.

Establishment of appropriate uses and levels of intensity of development for areas outside of the Open Space Easement, especially in Two Harbors.

The policies and recommended implementing actions set forth in this Santa Catalina Island LCP provide an opportunity to protect the fragile environment of the Island for many generations to come, while providing additional visitor-serving, educational, commercial and residential facilities.

Phase III- Implementation of the Local Coastal Program

The Local Coastal Plan on the following pages designates the types, intensities and distribution of land use for the unincorporated portion of Santa Catalina Island, as the second phase of the Local Coastal Program.

Phase III, to follow in subsequent months, covers implementation of the Land Use Plan. Among the procedures the County will consider in carrying out the policies and land use program are as follows:

- Zoning - Community standards districts and specific plans for individual areas of the island such as Two Harbors and Pebbl Beach. Application of existing adopted ordinances will these include Open Space, Hillside Management and Density Bonus for Affordable Housing.

- Low Cost Recreational Facilities - Provision of additional low cost recreational facilities in the Two Harbors develop-ment area such as hostels, lodges, campsites and shuttle bus service from Two Harbors to Little Harbor will be tied to development phasing at the Two Harbors area. Especially important in the equation of development to recreation facilities will be a determination of the percentage of time-share units to be developed as visitor-serving accommodations. Additional water needs for recreational use will also be determined and accounted for on an equal basis with other water demands for the Island.

II. SANTA CATALINA ISLAND PLAN POLICIES

A. Coastal Access and Recreation Policy

B. Marine and Land Resource Protection Policy

C. New Development Policy

A. Coastal Access and Recreation Policy

1. Shoreline Access

2. Recreation and Visitor-Serving Facilities

3. Recreational Boating

1. Shoreline Access

a. Coastal Act Policies

Section 30001.5

(c) Maximize public access to and along the coast and maximize public recreational opportunities in the coastal zone consistent with sound resource conservation principles and constitutionally protected rights of private property owners.

Section 30210.

In carrying out the requirement of Section 4 of Article X of the California Constitution, maximum access, which shall be conspicuously posted, and recreational opportunities shall be provided for all the people consistent with public safety needs and the need to protect public rights, rights of private property owners, and natural resource areas from overuse.

Section 30211.

Development shall not interfere with the public's right of access to the sea where acquired through use or legislative authorization, including, but not limited to, the use of dry sand and rocky coastal beaches to the first line of terrestrial vegetation.

Section 30212.

(a) Public access from the nearest public roadway to the shore line and along the coast shall be provided in new development projects except where (1) it is inconsistent with public safety, military security needs, or the protection of fragile coastal resources, (2) adequate access exists nearby, or (3) agriculture would be adversely affected. Dedicated accessway shall not be required to be opened to public use until a public agency or private association agrees to accept responsibility for maintenance and liability of the accessway.

(c) Nothing in this division shall restrict public access nor shall it excuse the performance of duties and responsibilities of public agencies which are required by Sections 66478.1 to 66478.14, inclusive, of the Government Code and by Section 4 of Article X of the California Constitution.

Section 30212.5

Wherever appropriate and feasible, public facilities, including parking areas or facilities, shall be distributed throughout an area so as to mitigate against the impacts, social and otherwise, of overcrowding or overuse by the public of any single area.

b. Issues Identified

- Access to both harbor and inland areas by all social and economic groups.
- Specialized access areas for handicapped persons particularly from ocean to land and associated anchorages and moorings.
- Protection of environmentally sensitive habitat areas and special use areas from unrestricted access.

c. Research Analysis

- Introduction

Because of Catalina's unique role as an island of major recreational significance, consideration of access to and on the Island must be addressed in a manner somewhat different than for other coastal areas.

Island access must take account of the following provisions: (1) access from the mainland to Catalina Island; (2) access to coves around the Island by boats; (3) access to beaches along these coves; (4) access to inland areas from coastal coves; and (5) access to coves from inland areas. Information in this chapter regarding availability, frequency, and scheduling of cross channel transit is current as of April 1982.

- Departure Points From Mainland to Island

Catalina Island is accessible by both surface and air transit. Catalina Cruises operates motor cruisers departing year round from San Pedro and Long Beach. During busy summer months, each port offers 6 or 7 round trips per day, the first boats departing at approximately 8 a.m. and the last boats arriving back on the mainland generally before 11 p.m. Trips during off-peak season months are somewhat less frequent. Catalina Passenger Service also operates a motor cruiser service from Newport-Balboa during summer months.

A commuter boat operates between San Pedro and the Island. The Catalina Channel Express operates seven days a week stopping twice at Avalon and once at Two Harbors.

A new boat terminal has been approved for Long Beach/Catalina Cruises in Long Beach. This new terminal will be part of a new development called Catalina Landing. The construction should be completed by late 1983 resulting in improved transportation facilities between the mainland and Santa Catalina Island. Catalina Cruise Boats will be encouraged to provide preboarding and onboard information to visitors to the Island with special emphasis on Open Space Easement information.

Allied Air Charter provides regularly scheduled air taxi service from Long Beach Airport. Air taxi service from John Wayne Airport in Orange County is operated by Trans Catalina Airlines.

Air taxi planes generally have a capacity of approximately 8-10 persons.

- Arrival Points on Island

Avalon Bay is the major point of arrival on the Island, accepting commercial passenger boats originating from San Pedro, Long Beach, Newport-Balboa and Two Harbors. It is, additionally, a site for amphibian plane landings.

Heliport facilities are located at Pebbly Beach with bus service to Avalon provided. Additionally there is an amphibian aircraft ramp at Pebbly Beach which is currently utilized by amphibian planes on an unscheduled basis.

Isthmus Cove (Two Harbors) is the other major Island arrival point accepting commercial passenger boats originating from San Pedro, Long Beach, and Avalon on a daily basis during summer. Direct mainland to Isthmus Cove transit via commercial passenger boat during off-peak season months (October through May) is available on Fridays and Sundays only. Additional trips to Two Harbors are provided when a threshold of 60 passengers is reached.

The Two Harbors area also provides heliport and amphibian facilities. However, no commercial seaplane or helicopter carrier currently provides service to or from this area.

In the event that the heliport at Wells Beach (Two Harbors) proves insufficient or inconvenient to handle the extra passenger loads resulting from the additional development in the Two Harbors area, there is an alternative for additional commercial helicopter facilities. A new site just southeast of the Isthmus along the road leading into the Easement is a potential location for a new heliport. The existing heliport at the USC Marine Science Center is used for emergency purposes only and should remain so.

Catalina's Airport-In-The-Sky accepts air taxi service from Long Beach and John Wayne Airports and is, additionally, an alternate site for helicopter landings in instances where heavy fog prohibits useage of the Pebbly Beach or Two Harbors facilities. Bus shuttle service is available from Airport-In-The-Sky to Avalon. Airport-In-The-Sky also handles private and specially chartered aircraft up to approximately 26,000 lbs.

Airport-In-The-Sky is indicated on Map 3. Also shown in the Avalon area is an airport proposed by the Los Angeles County Aviation Commission in their transportation plan. A precise location will be determined by a study to be contracted out by the Airport Commission and funded by the Federal Aviation Administration. Possible locations could include Pebbly Beach and Jewfish Point. This airport will be a general utility airport with a runway of at least 2,300 ft.

local coastal program

unincorporated
santa catalina island

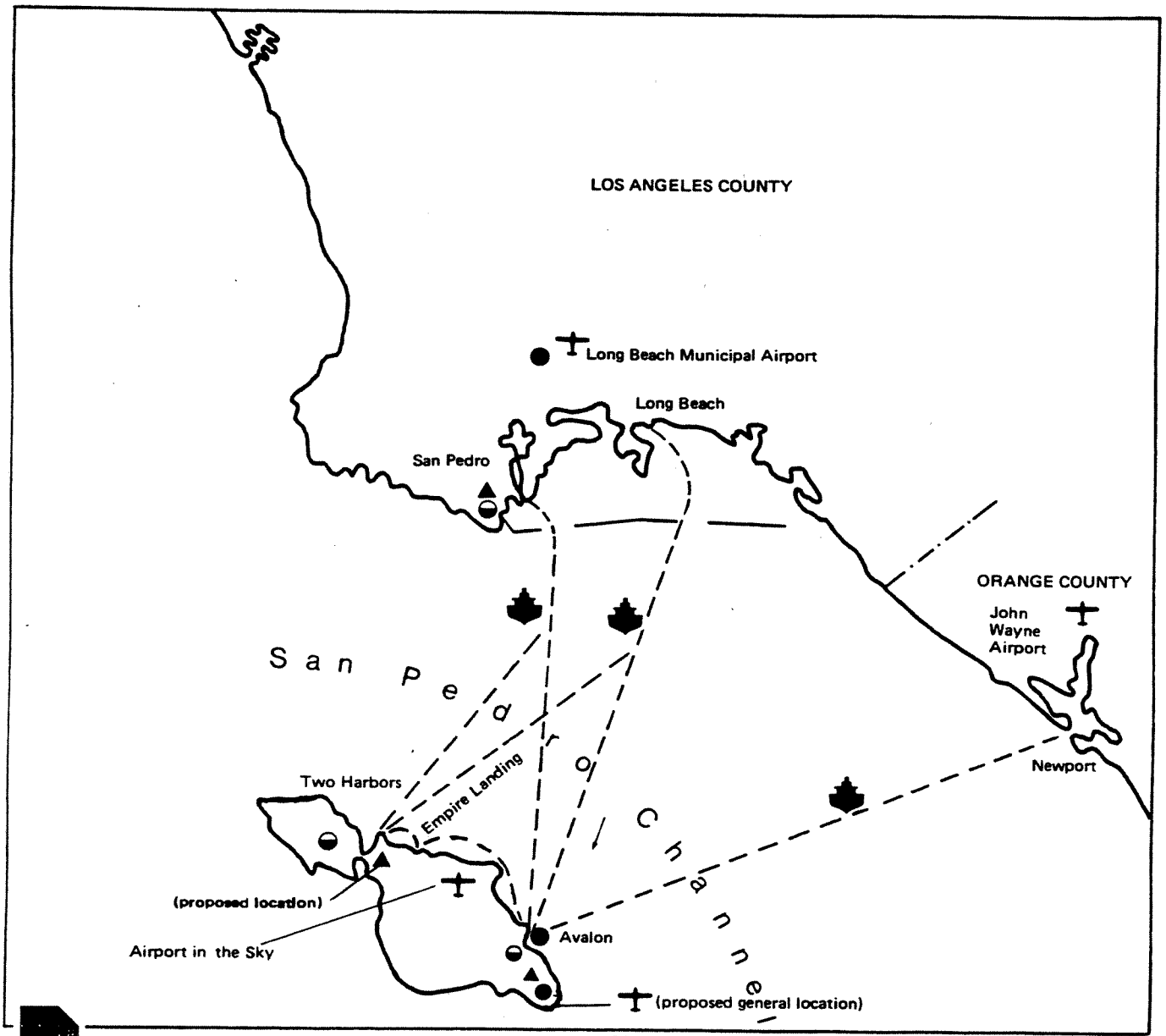
map 3

COMMERCIAL TRANSPORTATION ACCESS PLAN

- Heliport
- Scheduled Amphibian Airplane Service (departure/arrival site)
- Amphibian Airplane Facility and Heliport
- Airport
- Cruise Boat

N

10 MILES



in length. The airport is needed because of deficiencies at Airport-In-The-Sky such as frequent foggy conditions and distance from the City of Avalon.

- Access to Coves/Beaches

Although no permanent boat slips exist on Catalina Island, extensive anchorage and mooring is available in coves primarily on the San Pedro Channel side of the Island and at Little Harbor and Catalina Harbor.

While boats may anchor free of charge, a rental fee must be paid to the Catalina Cove and Camp Agency to moor private craft at Isthmus Cove and other coastal areas (except Avalon). This fee helps maintain moorings and related harbor service facilities which are privately provided. A majority of yachtsmen don't want to anchor and the moorings provide an important safety factor.

An additional fee is levied by the agency for going ashore at beaches other than those within the Conservancy or the City of Avalon. This fee is included in the ticket price when disembarking from the Catalina Cruiseboats.

Boat-in camping is available now and should continue to be available in the future at the following coves: Willow Cove, Italian Gardens, Goat Harbor, Cabrillo Harbor, Ripper's Cove and Parson's Landing. These coves are all considered primitive camp sites.

Permission of various cove lessees must also be obtained prior to going ashore at several coves due to the organized camp useage at these coves. Most coves are operated by either the YMCA, Boy Scouts of America or Girl Scouts of America. When they are not being utilized by these organized groups they are often used by some portion of the general public.

- Inland Access

Access into the interior of Catalina Island by private and commercial vehicles is controlled by SCI Conservancy. Vehicles are permitted under a permit system requiring proper insurance coverage and payment of an annual or daily use fee. Unauthorized vehicles are not permitted.

SCI Conservancy has instituted a program whereby several people share the same vehicle. If the vehicle is properly insured, any number of people are permitted to use it on a daily basis by paying the daily fee to enter the interior.

Taxi cabs, under permit to SCI Conservancy, also provide a means of transportation into the Island's interior.

The Inland Motor Tour, originating from Avalon, is available to Island visitors desiring a guided tour of the heart of Catalina's 66 square miles of open space and wildlands.

The Skyline Drive Tour, also originating from Avalon, takes visitors ten miles into Catalina Island's Open Space Easement and to the Airport-In-The-Sky.

The two major entry points to the Island's inland areas are Avalon and Two Harbors. Airport-In-The Sky is considered a secondary and specialized point of entry. However, access by foot and bicycle to the interior can also be achieved by use of unpaved roads leading inland from coastal beach sites.

While most roads and trails on the Island are restricted to service and fire vehicles only and are unavailable for private vehicular use, all inland roads and trails are open to hikers and backpackers on the Island. Permits are required and may be obtained free of charge through the Conservancy Office, County Parks and Recreation Office, Information Center in Avalon, the Cove and Camp Agency at Two Harbors or the Airport-In-The-Sky.

Inland roads used by private vehicles are also the main routes on the Island for bicycle traffic. The roads have recently been made available to mopeds. There is no fee for bicycling or mopeds but permits are required and may be obtained at the locations mentioned above. Bicycles are available for rental in Avalon or may be carried from the mainland on Catalina Cruises cross channel boats. The restrictions applicable to transporting bicycles on boats are the following:

- Space exists for a maximum of only ten bikes per trip.
- Space is allotted on a "first-come, first-served" basis.
- Front and rear wheels must be removed and strapped to frame.
- Bicycles must be carried over on an afternoon boat departing from Long Beach and return on a morning trip from Avalon to Long Beach.

These restrictions could change at any time.

A descriptive listing of Catalina's beach sites addressing both land and water access availability is presented in Figure 1. The locations of these sites are indicated on Map 4.

There are four public, overnight campgrounds in the unincorporated area of Catalina Island. Two are operated by the Los Angeles County Department of Parks and Recreation (Black Jack and Little Harbor), by the Cove and Camp Agency (Little Fisherman's Cove), and one by the Great Western Council Boy Scouts (Parson's Landing). Fee payment is required at each. The Cove and Camp Agency handles reservations for the Parson's Landing Camp as well as for its own camp.

Picnicking facilities are provided at each of these public camp sites as well as at Toyon Junction and Ben Weston Beach. Catalina Island recreation facilities, including an evaluation of demand and planned facilities, are more extensively addressed in the Recreation and Visitor-Serving Facilities Chapter of the LCP.

d. Findings

- Current modes of access to and on Catalina Island provide acess for a full range of Island experiences. However, current provisions which force vehicles and hikers to share several of the same roads are indicative of the need to establish more hiking trails.
- SCI Company and SCI Conservancy have devised programs whereby the majority of the Island including all major coves is available for agency and public use.
- Current cross channel transit between the mainland and Catalina Island (motor cruisers, amphibian aircraft, and air taxis) appears adequate to handle current cross channel passenger loads. Frequency of trips would necessarily increase as recreational demand upon the Island increases. Improved air transportation is also needed.
- The current system of requiring permits for entrance into the Island's interior is an effective management system for an island setting such as Catalina.
- If additional heliport facilities become necessary at Two Harbors, priority should be assigned to provision of a new heliport southeast of and along the road leading into the Isthmus.

e. Plan Policies and Recommended Actions

1) Hostels should be located in developed areas as needed. Potential sites are in the Two Harbors area, Avalon Canyon and Airport-In-The-Sky. Funding from the California State Department of Parks and Recreation should be sought for construction of hostels.

2) Campgrounds should be upgraded and expanded as set forth in the Recreation and Visitor-Serving Facilities Chapter.

3) Those visitors with physical disabilities requiring structural access alterations (primarily the wheelchair-bound) shall be afforded special consideration via provision of appropriate access improvements. Priority for such improvements will be assigned to sites where such provisions would least conflict with the natural/visual resources of the site and where existing development facilitates the construction of such improvements such as at new pier landings and campgrounds.

Specific types of structural improvements will depend upon the specific conditions at a given site and shall be designed on a site-by-site basis.

4) Private carriers (Catalina Cruises, Inland Motor Tours, etc.) are encouraged, even where not required by existing law, to provide improved access for the physically handicapped. The extent of these efforts could appropriately be appraised at such time as these carriers licenses are considered for renewal by the Public Utilities Commission.

5) New development will not be permitted to interfere with, but rather shall enhance, the public's right of access to the sea where acquired through use or legislative authority, including, but not limited to, the use of dry sand and rocky coastal beaches to the first line of terrestrial vegetation.

6) Current efforts by SCI Company and SCI Conservancy to encourage recreational use of the Island in off-peak time periods by offering groups and the public-at-large reduced travel fares/user fees are most desirable and they should be encouraged through expanded publicity.

7) Reserve space for a possible additional heliport southeast of the Isthmus along the road leading towards the Open Space Easement.

8) The public shall have the right to recreational access to and along the shoreline including use of any sandy or rocky beach around unincorporated Santa Catalina Island, subject to the limitations of the policies of this section.

9) Public shoreline access in the following areas may be limited by the landowner where public safety may be jeopardized:

   (a) Pebbly Beach industrial area and Pebbly Beach rock quarry consisting of Los Angeles County Assessor (LACA) Lot 3 and that portion of LACA Lot 1 to the northern edge of industrial development.

   (b) Empire Landing rock quarry area, consisting of LACA Lot 85 shoreline.

   (c) USC Marine Science Center helipad and mole area at Big Fisherman's Cove.

10) The landowner may reserve the right to control, but not restrict, access to the shoreline in topographically rugged areas if such access is clearly inconsistent with public safety.

11) Major vertical accessways for public use shall continue to be Avalon and Two Harbors. The following areas shall also be designated as vertical accessways for general public use which will allow public access from the Island interior to the shoreline and vice versa, and access from the water to the shoreline:

Starlight Beach
Parson's Landing
Emerald Bay
Cherry Cove
Fourth of July Cove
Isthmus Cove
Empire Landing
Ripper's Cove
Italian Gardens/Goat Harbor area*
White's Landing
Willow Cove*
Silver Canyon**
Salta Verde**
Ben Weston Beach**
Cottonwood Beach**
Little Harbor/Shark's Harbor
Catalina Harbor

12) Shoreline areas that are not leased to organizations and have been available to the general public in the past shall remain so.

13) In order to obtain lateral and/or vertical accessways in an area that is leased to an organization, an offer to dedicate easements for lateral and/or vertical access shall be obtained at the time a coastal permit is granted for new development. The offer to dedicate shall be made to an appropriate public agency or private organization which will accept responsibility for maintenance of the accessway.

14) Vertical access easements shall be at least ten feet in width and shall run from the shoreline to the nearest roadway or trail available for public use. Lateral access easements shall extend to the inland extent of the sandy or rocky beach.

15) In the following shoreline areas leased to non-profit camps or educational facilities, lateral and/or vertical access dedications shall be for pass and repass purposes only in order not to disrupt organized shoreline activities:

*Boat-in access only due to rugged inland topography.
**Access to these beaches by boat may be hazardous due to surf conditions.

Cherry Cove
Sullivan's Beach
Emerald Bay - West
Parson's Landing
Gallagher's Beach
Toyon Cove
White's Cove
Buttonshell Beach
Little Gibralter Harbor

In the following leased shoreline areas (other than those indicated above) lateral access dedications shall allow passive recreational use along the shoreline when such use would not disrupt occasional periods of organized activity:

Little Fisherman's Cove
Fourth of July Cove
Little Geiger Cove
Big Geiger Cove
Emerald Bay - East
Moonstone Beach
Howland's Landing

16) In the proposed Two Harbors development, the public shall have the right of access over all areas designated "View Corridor" and "Conservation/Recreation" with the following limitation that, in the shoreline area around the Ballast Point salina, access may be controlled but not restricted, in order to preserve the sensitive habitat area.

Figure 1
CURRENT COASTAL ACCESS INVENTORY (1982)
Santa Catalina Island Local Coastal Plan
(See Map 4 for locations)

BEACH SITE[1]	Type of Access	Type of Road/ Trail	Water Access Limitations[2]				Ownership	Private Lessee(s)	Recreational Use[3]		Public Pass-Through Provisions During Organized Use[6]	Anchorage	Mooring[7]	Structures or Facilities	Natural Features
			Northeast Winds Santa Anas) Fall/Winter	Northwest Winds Spring/ Summer	Southeast Winds Winter	Other			Peak-Season (Summer)	Off-Season (Nov-May)					
1. Isthmus Cove/ Little Fisherman's Cove	land & water	vehicular (by permit) and foot					SCI Company[4]	-Isthmus Yacht Club -Channel Crusing Club -King Harbor Yacht Club -Cove & Camp Agency	-boating -beach recreation -hiking -camping -snorkeling -diving	-boating -beach recreation -hiking -camping -scuba-diving (outer reefs)	-vertical access -passive rec. use of shoreline [8]		249	-Pier -Banning House -Union Army Barracks -Restaurant -Marine service -Employee housing -General store -Showers/ toilets -Campground	-sand beach -bird Rock -Ship Rock -Eagle Reef -Isthmus Reef
2. Fourth of July Cove	land & water	vehicular (by permit) and foot					SCI Company	Fourth of July Yacht Club	-boating -hiking	-hiking	-vertical access -passive rec. use of shoreline [8]	200	42	-Yacht Club -pier	-Land Beach
3. Cherry Cove	land & water	vehicular (by permit) and foot					SCI Conservancy[5]	San Gabrial Valley Boy Scouts	-Camping -hiking -boating	-hiking	-vertical access -pass/ repass only	104		-pier -organized camp facilities	-sand beach -Lion's Head

1. Listed counterclockwise from Isthmus Cove
2. For additional information see Hazards: Santa Anas and Storm Winds
3. Not including activities common to all sites (bathing, swimming, viewing and picture-taking)
4. Santa Catalina Island Company
5. Santa Catalina Island Conservancy
6. Pass through provisions means that the public is allowed access through these camps and coves
7. Moorings listed with State Lands Commission
8. Use subject to restrictions during organized use. (see p. II-10)

Figure 1
CURRENT COASTAL ACCESS INVENTORY (1982)
Santa Catalina Island Local Coastal Plan
(See Map 4 for locations)

BEACH SITE[1]	Type of	Type of Road/ Trail	Water Access Limitations[2]				Ownership	Private Lessee(s)	Recreational Use[3]		Public Pass-Through Provisions During Organized Use[6]	Anchorage	Mooring[7]	Structures or Facilities	Natural Features
			Northeast Winds (Santa Anas) Fall/Winter	Northwest Winds Spring/ Summer	Southeast Winds Winter	Other			Peak-Season (Summer)	Off-Season (Nov - May					
4. Little Geiger Cove	water	foot only	X				SCI Conservancy	Off-Shore Cruising Club	-boating -hiking -diving	-hiking	-passive rec. use of shoreline[8]	3-15	1	-small shelter -BQ area	rock beach
5. Big Geiger Cove	land and water	vehicular (by permit) & foot	X				SCI Company	Blue Water Cruising Club	-boating -hiking	-hiking	-passive rec. use of shoreline[8]	10-35	-	-picnic shelter -water -chemical toilet	sand beach
6. Howland's Landing/ Sullivans Beach	land & water	vehicular (by permit) and foot	X				SCI Company	-L.A. Yacht Club -Catalina Island Boys Camp	-camping -boating -hiking	-hiking	-passive rec. use of shoreline[8]	4-5	42	-pier -organized camp facilities	sand beach
7. Emerald Bay-East (Corsair Cove)	land & water	vehicular (by permit) and foot	X				SCI Company	Corsair Yacht Club	-boating -hiking -snorkeling -diving	-hiking	-passive rec. use of shoreline[8]	35	101	Yacht club facility	sand beach
8. Emerald Bay-West	land & water	vehicular (by permit) and foot	X				SCI	Great Wes-Council Boy Scouts	-camping -boating -hiking -snorkeling -diving	-hiking	-vertical access -pass/ repass only			-pier -organized camp facilities	sand beach

Figure 1
CURRENT COASTAL ACCESS INVENTORY (1982)
Santa Catalina Island Local Coastal Plan
(See Map 4 for locations)

BEACH SITE[1]	Type of Access	Type of Road/ Trail	Water Access Limitations[2]				Ownership	Private Lessee(s)	Recreational Use[3]		Public Pass-Through Provisions During Organized Use[6]	Anchorage	Mooring[7]	Structures or Facilities	Natural Features
			Northeast Winds (Santa Anas) Fall/Winter	Northwest Winds Spring/ Summer	Southeast Winds Winter	Other			Peak-Season (Summer	Off-Season (Nov-May)					
9. Parson's Landing	land & water	vehicular (by permit) and foot	X	X			SCI Conservancy	Great Western Council Boy Scouts	-camping -boating -hiking	-hiking	-vertical access -pass/repass only	10-20		Primitive Campground	sand beach
10. Starlight Beach	land & water	foot only					SCI Conservancy	———	-hiking -diving -wilderness -camping	-hiking	-vertical access				sand beach
11. Catalina Harbor/ Wells Beach	land & water	vehicular (by permit) and foot					SCI Company	-California Yacht Club -Del Rey Yacht Club	-boating -hiking	-boating -hiking	-vertical access	235	98	-4 piers -2 yacht club facilities -2 ramps -storage building -picnic area	-sandspit -tidal flat -protected harbor
12. Little Harbor/ Shark Harbor	land & water	vehicular (by permit) and foot		X	X		SCI Conservancy	———	-camping -boating -hiking -surfing -beach rec.	-hiking (day use)	-vertical access	10-40	———	-campground -water -telephone -chemical toilet	-sand beach -reef -cottonwood stream
13. Cottonwood	land & water	vehicular (by permit) and foot	dangerous	X	X		SCI Conservancy	———	-surfing -beach rec.	-hiking (day use)	-vertical access, but no access from water	———	———	-outhouse -picnic tables -fire rings	-sand beach

Figure 1
CURRENT COASTAL ACCESS INVENTORY (1982)
Santa Catalina Island Local Coastal Plan
(See Map 4 for locations)

BEACH SITE[1]	Type of Access	Type of Road/ Trail	Water Access Limitations[2]				Ownership	Private Lessee(s)	Recreational Use[3]		Public Pass-Through Provisions During Organized Use[6]	Anchorage	Mooring[7]	Structures or Facilities	Natural Features
			Northeast Winds (Santa Anas) Fall/Winter	Northwest Winds Spring/ Summer	Southeast Winds Winter	Other			Peak-Season (Summer	Off-Season (Nov-May)					
14. Ben Weston Beach	land only	vehicular (by permit) and foot		X	X		SCI Conservancy	———	-camping -boating -hiking -surfing -beach rec.	-hiking (day use)	-vertical access, but no access from water	———	———	-outhouse -picnic tables -fire rings	-sand beach
15. Salta Verde Point	land only	foot only				poor conditions year round	SCI Conservancy	———	-hiking -boating -wilderness -camping	-hiking -scuba diving	-vertical access, but no access from water	5-10	———	———	-rock beach -cliffs
16. Silver Canyon Landing	land only	foot only				poor conditions year round	SCI Conservancy	———	-hiking -boating -wilderness camping	-hiking	-vertical access, but no access from waters	———	———	———	-sand beach
17. Pebbly Beach	water	vehicular and foot	X		X		SCI Conservancy SCE Company	———	-hiking -beach -recreation -bicycling -snorkeling -beach & road only	-hiking -bicycling	-Organized use; -industrial area; -limited access[8]	———	———	-industrial pier -employee housing -boat yard -serv. fac -freight ramp	-pebbly beach -Seal Rooks

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BEACH SITE[1]	Type of Access	Type of Road/ Trail	Water Access Limitations[2]				Ownership	Private Lessee(s)	Recreational Use[3]		Public Pass-Through Provisions During Organized Use[6]	Anchorage	Mooring[7]	Structures or Facilities	Natural Features
			Northeast Winds (Santa Anas) Fall/Winter	Northwest Winds Spring/ Summer	Southeast Winds Winter	Other			Peak-Season (Summer	Off-Season (Nov-May)					
18. Gallagher Beach	water only	none, at foot of steep cliff	X				SCI Conservancy	Intervarsity Christian Fellowship	-boating -hiking -studies	-hiking -educational studies	-pass/repass only	3-5	———	-organized camp facilities	sand beach
19. Toyon Bay	water	vehicular and foot service & fire vehicles only)	X				SCI Conservancy	Catalina Island Marine Institute	-boating -hiking -marine studies	-hiking -marine studies	-pass/repass only	6	6	-organized camp facilities -pier -permanent building	sand beach
20. Willow Cove	water only	none; steep terrain	X				SCI Conservancy	———	-boating -snorkeling	———	-boat-in only	4	———	———	rock beach
21. Moonstone Beach	water only	none; steep terrain	X				SCI Conservancy	Newport Harbor Yacht	-boating -day use beach	-boating -day use beach	-passive rec. use of shoreline[8]	(included with #22 & #23)	39	-pier -yacht club facility	rock beach
22. White's Cove	land & water	vehicular (by permit) and foot	X				SCI Conservancy	L.A. Girl Scouts	-boating -hiking -camping	-hiking	-vertical access -pass/repass only	50-150	17	-pier -organized camp facilities	sand beach
23. Hen Rock	water only	none; steep terrain	X				SCI Conservancy	Balboa Yacht Club	-diving -boating -day use beach	-boating -day use beach	-boat-in only		25	———	rock beach

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BEACH SITE[1]	Type of Access	Type of Road/ Trail	Water Access Limitations[2]				Ownership	Private Lessee(s)	Recreational Use[3]		Public Pass-Through Provisions During Organized Use[6]	Anchorage	Mooring[7]	Structures or Facilities	Natural Features
			Northeast Winds (Santa Anas) Fall/Winter	Northwest Winds Spring/ Summer	Southeast Winds Winter	Other			Peak-Season (Summer	Off-Season (Nov-May)					
24. Button-shell Beach	water	foot only	X				SCI Conser-vancy	Glendale YMCA	-boating -camping -hiking -snorkel-ing	-hiking -camping	-pass/repass only	10	9	-pier -organized camp facili-ties	-sand beach -Long Point
25. Italian Gardens	water only	none; steep terrain	X				SCI Conser-vancy	———	-boating -hiking -snorkel-ing -scuba	-hiking -scuba fishing	-boat-in only	5-7	———	———	rock beach
26. Goat Harbor	water only	none; steep terrain	X				SCI Conser-vancy	———	-boating -hiking -camping -snorkel-ing	-hiking -scuba fishing	-boat-in only	5-10	———	- ———	sand beach
27. Little Gibralter Harbor	water only	none; steep terrain	X				SCI Conser-vancy	Long Beach Boy Scouts	-camping -boating -hiking	-hiking	-pass/repass only -boat-in	5-7	———	-undevelop-ed camp	sand beach

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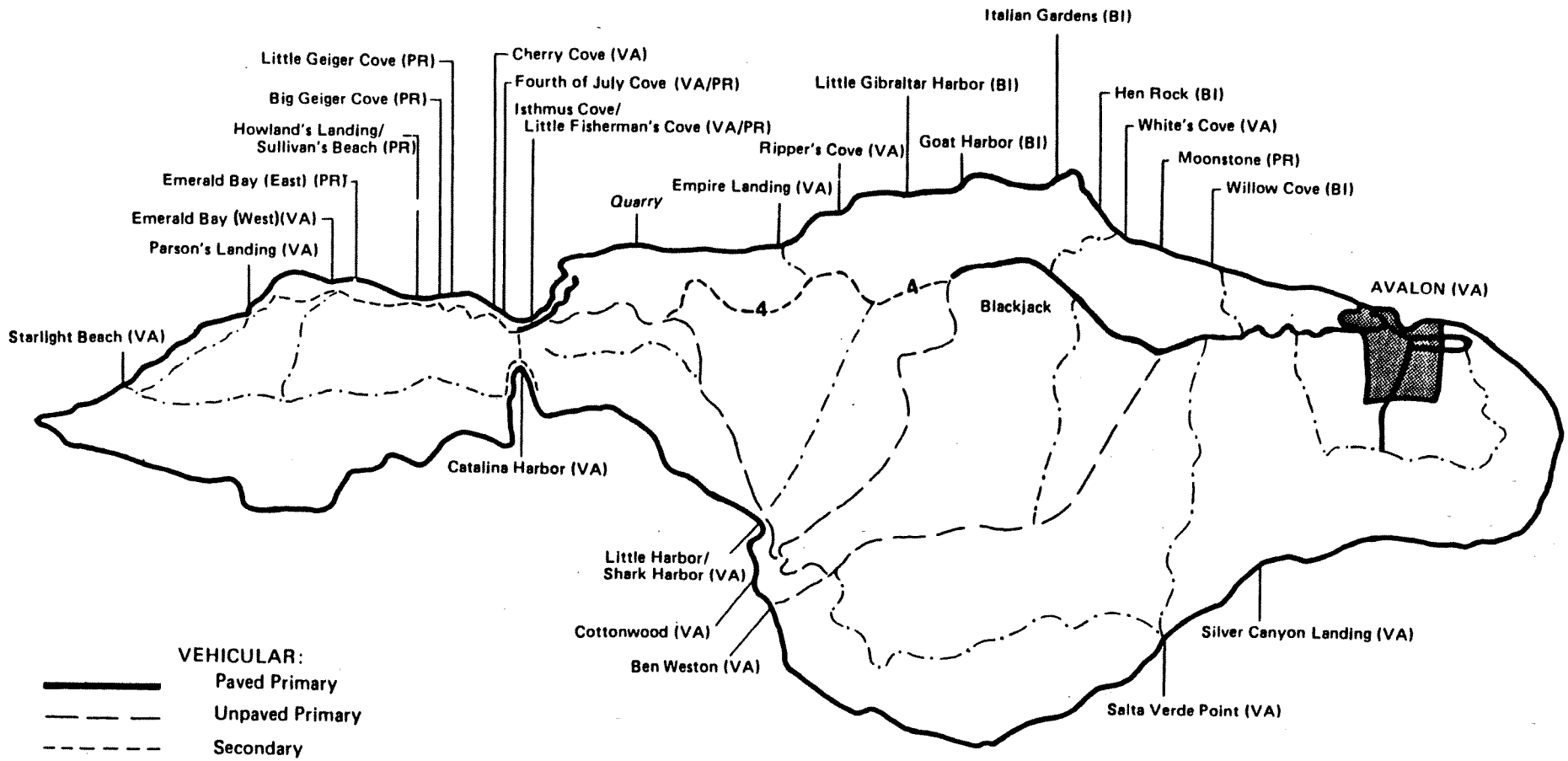
EACH. SITE[1]	Type of Access	Type of Road/ Trail	Water Access Limitations[2]				Ownership	Private Lessee(s)	Recreational Use[3]		Public Pass-Through Provisions During Organized Use[6]	Anchorage	Moorings[7]	Structures or Facilities	Natural Features
			Northeast Winds (Santa Anas) Fall/Winter	Northwest Winds (Santa Anas) Spring/ Summer	Southeast Winds Winter	Other			Peak-Season (Summer)	Off-Season (Nov-May)					
28. Ripper's Cove	land & water	foot only	X				SCI Conservancy	———	-hiking -boating snorkeling -diving	-hiking	-vertical access	10	———	———	sand beach at low tide
29. Empire Landing	land & water	vehicular (by permit) and foot	X				SCI Company & SCI Conservancy	Connaly Pacific Rock Quarry	-boating -diving -hiking	-hiking	-vertical access [11]	20	4 [9]	-pier -employee housing	sand beach
30. Big Fisherman's Cove	land & water	vehicular (by permit) & foot)					University of Southern California/ Marine Science Center	———	-boating -marine studies -diving	-marine studies	-limited	———	10 [10]	-pier/mole -hyperberis chamber -lecture hall -dormitory -cafeteria	-sand beach

9. Barge moorings for quarry use
10. For use by USC Marine Science Center
11. Subject to restrictions in quarry area.

COASTAL VERTICAL ACCESS AND MAJOR ROADS/TRAILS (EXISTING)

NOTE:
Road classifications are not reflective of road classification system in L.A. County General Plan
All Island roads and trails are open to hikers.



LOS ANGELES COUNTY DEPARTMENT OF REGIONAL PLANNING

2. Recreation and Visitor-Serving Facilities

a. Coastal Act Policies

Section 30001.5

The Legislature further finds and declares that the basic goals of the state for the coastal zone are to:

(a) Protect, maintain, and, where feasible, enhance and restore the overall quality of the coastal zone environment and its natural and manmade resources.

(b) Assure orderly, balanced utilization and conservation of coastal zone resources taking into account the social and economic needs of the people of the state.

(c) Maximize public access to and along the coast and maximize public recreational opportunities in the coastal zone consistent with sound resource conservation principles and constitutionally protected rights of private property owners.

(d) Assure priority for coastal-dependent development over other development on the coast.

(e) Encourage state and local initiatives and cooperation in preparing procedures to implement coordinated planning and development for mutually beneficial uses, including educational uses, in the coastal zone.

Section 30212.5.

Wherever appropriate and feasible, public facilities, including parking areas or facilities, shall be distributed throughout an area so as to mitigate against the impacts, social and otherwise, of overcrowding or overuse by the public of any single area.

Section 30213.

Lower cost visitor and recreational facilities and housing opportunities for persons of low and moderate income shall be protected, encouraged, and, where feasible, provided. Developments providing public recreational opportunities are preferred. New housing in the coastal zone zone shall be developed in conformity with the standards, policies, and goals of local housing elements adopted in accordance with the requirements of subdivision (c) of Section 65302 of the Government Code.

Section 30220.

Coastal areas suited for water-oriented recreational activities that cannot readily be provided at inland water areas shall be protected for such uses.

Section 30221.

Oceanfront land suitable for recreational use shall be protected for recreational use and development unless present and foreseeable future demand for public or commercial recreational activities that could be accommodated on the property is already adequately provided for in the area.

Section 30222.

The use of private lands suitable for visitor-serving commercial recreational facilities designed to enhance public opportunities for coastal recreation shall have priority over private residential, general industrial, or general commercial development, but not over agriculture or coastal-dependent industry.

Section 30223.

Upland areas necessary to support coastal recreational uses shall be reserved for such uses, where feasible.

Section 30250.

(c) Visitor-serving facilities that cannot feasibly be located in existing developed areas shall be located in isolated developments or at selected points of attraction of visitors.

b. Issues Identified

- Conflicting recreational demands on land, on and in ocean.
- Optimum carrying capacity of open space easement.
- Adequacy of marine safety personnel and facilities to handle capacity crowds.
- Airport area as a possible recreational facility.
- Specialized storage areas on cross channel transit system for recreational equipment (bikes, SCUBA, etc.)

c. Research Analysis

- Introduction

The primary public recreational document incorporated into this LCP is the General Development Plan for Recreation prepared by the staff of the County Department of Parks and Recreation.

The Plan for Recreation first looks at the recreational desires of user groups visiting the Island.

- Recreation Experience Levels

In developing the recreation plan for the Island, the recreational needs of both the experienced recreationist and those urban residents who are less familiar with the Island's resources were major considerations. With an overall management direction and goal of increasing recreational users' understanding and appreciation of the Catalina Island environment, a classification of recreational experience levels was developed based on the United States Forest Service (USFS) classification system. Both the type of recreational use and the type of facilities and improvements necessary to support each experience level are discussed below.

Introductory Recreational Experience

Designed for the first-step experience, with the intent to provide the visitor with a brief exposure to the Island's natural resources. A variety of media and communication methods are employed to provide an immediate image of the Island's sights and sounds, along with the range of programs and operations available. No outdoor skills required. Activities are not necessarily facility dependent.

Development may include structures, with modern basic conveniences, and paved access. Examples of improvements may include interpretive centers, observatory and arboretum.

Uses and activities may include graphic displays, brochures, slide programs and classroom instruction.

The facilities at Avalon, Two Harbors and, to some degree, the Toyon/Haypress Junction sites, will have as a central function the orientation of visitors to the Easement area. This will be accomplished by provision of informational and educational displays, video programs and staff presentations.

Interpretive Recreational Experiences

Designed for a second level of experience, with emphasis on short-term and day-use experiences. User convenience and comfort are important; however, physical experience and increased awareness of the Island's natural resources is emphasized. Beginning outdoor skills required. Activities are somewhat facility dependent, and support services are required.

Development may include structures, limited paved access, surfaced trails, vehicle barriers, ramadas, native plantings and minimal lighting. Examples of improvements may include self-guided nature trails, various outdoor activities, instructional schools, water play areas, and picnicking areas.

Uses may include hiking, botanical exploration, wildlife observation, outdoor programs and picnicking.

The Toyon/Haypress Junction area will be the primary staging area for providing visitors with this level of recreational experience.

Directed Use Recreational Experiences

Designed for a third-step experience, with the emphasis placed on actively involving the user with the environment, usually involving overnight stays. Some site protection and visitor comfort facilities provided. Moderate degree of outdoor skills required. May be facility dependent and some support services required.

Development includes primitive road access, vault or pump toilets, level tent spaces, signing, portable water available at toilet locations. Examples of improvements and uses may include guided hunting programs, family and group camping, backpack stations, bicycling, horseback riding, underwater nature trails, and hiking.

This experience level will be facilitated out of the improved campgrounds at Little Harbor, Black Jack, and Toyon/Haypress.

Primitive Recreational Experiences

Designed for a fourth-step experience, with emphasis on intimate involvement of small groups or individuals with the environment. This level is characterized by the absence of man-made intrusions and a low level of support services and development. Requires highly developed outdoor skills.

Development includes brush clearing, no road access, small sleeping flats, rustic vault toilets. Water not available on site; and, visitors pack in supplies and pack out rubbish. Examples of uses may include backpacking, research collection, photography and wildlife observation.

Back country camps located on the West End and Salta Verde area will be the primary locations of the primitive level of experience.

Participatory Recreational Experience

The fifth step of possible user involvement with the Island is focused on both enjoying and contributing to the preservation of natural resources. Outdoor skills are necessary with the level of user services moderate to minimal, dependent upon the specific program the user chooses to participate in.

Development may include running water with vault toilets adjacent to site. Examples of improvements may include tent cabins for docent work programs, and ongoing research and restoration activities for habitat areas.

Specific sites will vary dependent upon the type of research being conducted. This level of experience will usually occur in areas identified as preservation zones.

- Recreational Planning Concept

The preferred alternative as indicated in this plan, provides a mix of the range of possible recreational experience levels, from the introductory to the participatory levels. Physical development is concentrated at four main sites (hubs) so as to minimize impacts, with less facility dependent activities and experience levels radiating outward from the hubs. (See Land Use and Facilities Improvement map at the end of the Summary). The hubs are generally identified at Avalon, Toyon/Haypress Junction, Airport-In-The-Sky, Little Harbor, and Two Harbors. The boundary of each hub may include other nearby sites, such as the inclusion of Empire Landing in the Two Harbors Hub.

The Open Space Easement, as indicated on the Land Use and Facilities Improvement Map, is organized into several zones which indicate the management emphasis and type of development to occur in these areas. The majority of the Easement area is contained within an Open Space/Structured Recreation designation. Lands identified for development have been somewhat disturbed and facilities are located so as to minimize further resource impacts. Developments required to support visitor use and other support operations are contained within the developed areas or hubs. The Conservation Primitive Recreation zones include sensitive resources requiring special management attention. Within these areas, activities such as field research and primitive camping would be the primary uses. Access corridors provide access between the developed areas, and entail the range of possible transportation modes from hiking, bicycling, to equestrian use and/or vehicles.

There are two main purposes of the Open Space Easement as mentioned and as defined in the Santa Catalina Island Open Space Easement Agreement. Quoting from that document,"...the express purposes of the Open Space Easement are (1) to provide an opportunity for, and to encourage, access by the public including without limitation civic, charitable, patriotic and religious groups and similar organizations to substantial portions of Santa Catalina Island for scenic, open space and recreational purposes, and (2) to preserve portions of Santa Catalina Island for protection of wildlife, plants, and unique geological and archaeological sites."

The following goals apply to all management and visitor activities within the Open Space Easement area, and are based on the two purposes defined in the agreement. Many of the following goals are contained in one of a series of reports completed in 1976 by the Center for Natural Areas*. The goals contained in that report were further refined and objectives delineated to reflect input and review by members of the public as well as other agencies. The goals have been classified under the general terms of resource management, visitor use and easement operations. Management objectives for each goal are also described.

Resource Management Goals

- Protect and preserve the quality of the open space and natural features, particularly the native plants and animals, of Catalina Island.

  . Protect significant cultural resources.
  . Limit unnatural sources of air, noise, water, and visual pollution, to the greatest degree possible.
  . Protect and help propagate rare and/or endangered plant and animal species and ecosystems.
  . Restore natural resources when impacted.
  . Preserve and protect scenic resources.

- Continue to encourage basic and applied research in the natural, social and physical sciences that focus on the special features of Santa Catalina Island.

  . Encourage research efforts which will contribute to knowledge regarding the Island's natural processes as well as respond to its management needs.

Visitor Use Goals

- Provide varied and unique recreational opportunities to visitors and residents of Los Angeles County.

  . Provide a choice of both structured programmatic activities as well as unstructured self-generated activities.
  . Provide the opportunity for a high-quality wilderness experience.

*Interim Goals & Policies Report: Santa Catalina Island, Center for Natural Areas, 1976.

- Instill an understanding and appreciation of the dependence of human beings on the natural environment for long-term survival and emphasize the ecological features and native plants and animals of Catalina.

  . Provide interpretive services and programs that relate both the natural processes and cultural significance of Catalina to visitors with a broad diversity of backgrounds and interests.
  . Encourage thoughtful, minimum impact use of the easement resources.
  . Orient visitors both prior and during their Island visit and inform them about opportunities the Open Space Easement provides.
  . Promote public understanding of policies and programs.
  . Balance interpretive programs with personally conducted services carried out by professional staff.

- Provide an opportunity for all people, and especially the economically, culturally, or physically disadvantaged, to interact in an open space environment.

  . Provide interpretive services and programs that utilize a variety of methods and materials which can respond to varying groups' needs.
  . Assure the user's services and programs will be available to all groups.
  . Provide and encourage accessible transportation services that facilitate visitor circulation and enhance both the preservation and enjoyment of the easement resources.
  . Continue to provide a permit application system that is fair and equitable to all potential visitors.

Easement Operation Goals

- Recognize the limitations of a closed system environment in proposing new or expanded developments or the programming of existing facilities.

  . Locate new facilities and/or developments so as to minimize impacts on resources, including visual resources.
  . Reduce or eliminate the use of fossil fuels through use of alternate energy sources such as solar power or wind power.

. Utilize both traditional and innovative systems for the disposal of sewage (as well as the provision of water).
. Spread visitor use of the Easement area evenly throughout the year, so as to minimize impact on the resources.
. Encourage year-round use and programming of leased coves.
. Provide those facilities necessary to support the recreational and educational use and enjoyment of the Easement area as well as to protect the rights, safety, and security of all visitors and employees.

- Provide a plan implementation process and enforcement mechanism that complement and foster the County-wide land use planning process.

. Continue to coordinate with staff of both the Department of Regional Planning and the State Coastal Commission, the land owners, and representatives of the City of Avalon, in the implementation of the plan.
. Develop appropriate regulations and ordinances for the Open Space Easement area, for inclusion in the zoning ordinance of the County and other implementation programs in the Countywide General Plan and the Local Coastal Program.
. Meet the requirements of other County and appropriate state regulatory agencies in the provision of services.
. Work with representatives of the National Park Service, specifically representatives of the Channel Islands National Park, to exchange ideas, problems and solutions, and ideas.

- Easement Area Improvements

Since 1975, the number of annual camper days has steadily increased (including YMCA, YWCA, and other organized camps). In 1977, nearly 11,000 people (not including children) enjoyed the two County operated campgrounds, Little Harbor and Black Jack. The number of hikers enjoying day outings in the Conservancy/Easement area have increased nearly 200 percent in just the last four years. Based on this steady increase in camping, hiking, and bicycling, and other recreational activities on the Island, it is safe to say that the potential demand for enjoying the Island's recreational resources will always exceed the insular environment's ability to sustain it. Therefore, the types of recreational development proposed are based on the management goal of increasing access and recreational opportunities, while minimizing the impact on the Island's unique natural resources.

Toyon/Haypress Junction

This is the first flat area encountered by visitors as they enter the Easement area from the Avalon side of the Island. The improvements currently existing on site are picnic tables and water to support day picnicking. Past uses have also included hunter camps. The area is sparsely vegetated with both native and introduced species of trees and grasses.

Situated at the eastern entry of the Easement area, the minimal structures to be provided at this site will allow visitors to sense through sight, sound and touch the Conservancy/Easement experience, prior to progressing further into the interior. The natural character of the area will be retained, and eventually enhanced by means of a restoration project aimed at reintroducing native plant communities into the area.

Those portions of the area identified for structural development are disturbed through either the past actions of either man or animal. Since the majority of the Island's visitor and resident population accesses the Island through nearby Avalon, this site is identified for improvement with a ranger headquarters within which a variety of interpretive services and programs will be provided. A staffed kiosk will monitor access into the Easement for the purpose of visitor safety and security. This will be a secondary entrance station, with initial entry into the Conservancy/Easement area monitored at Hogsback Gate. Visitors will be provided with information regarding both the Easement resources and the facilities which are provided within its boundaries. Caretaker housing for essential County and Conservancy staff will also be provided. This need may be reduced if housing can be developed in or near the developed area of Avalon.

A possible constraint to development in this area is sewage disposal capability; and if necessary, alternative liquid waste disposal methods will be explored. Ancillary improvements in the area include a campground, and revegetation of the area with a memorial grove of native species of plants. The initial campground may accommodate 50 PAOT,* with an upward limit of 100 PAOT based on need and the capability of the resources to sustain additional use. This will require fencing of the grove area, approximately 100 to 150 acres, to prevent disturbance by feral animals. The existing day use picnic area will be expanded.

Specific Actions for Toyon/Haypress Junction

. Construct a small visitor center and ranger station.
. Develop campground (100 PAOT) (initial development 50 PAOT).

*PAOT - Persons At One Time

- Retain picnic area and provide additional picnic tables.
- Provide housing for essential permanent ranger staff (10 PAOT).
- Provide shuttle parking area and entry kiosk.
- Develop a memorial grove and nature trail.

Toyon Cove

The former Catalina Island School site in Toyon Cove is currently leased for marine education programs. Existing facilities include both staff and student residences, kitchen and eating facilities, conference rooms, and a library and ceramics studio. Because of the self-contained nature of the cove, many uses could be accommodated here, such as conferences (with overnight accommodations) and a variety of recreation/education programs, along with marine sciences. Although a long period of time remains on the existing lease, discussions will continue with representatives of the Conservancy, lessee and sublessees to allow additional use of the site by interested individuals or groups.

Specific Actions for Toyon Cove

- Encourage year-round use and programming of existing facilities.
- Develop and propose programs for lessee and sublessee consideration which could expand the use of Toyon Cove by individuals and groups.
- Encourage the upgrading and improvement of existing facilities.
- Encourage the improvement of the existing road.

Little Harbor

At present, Little Harbor campground comprises the majority of Easement campsites. Interim development by Los Angeles County Parks and Recreation occurred in 1975 resulting in the present campsite design (150 PAOT): picnic tables, sun shades, water, and sanitation facilities. In addition to upgrading the existing campground, prime importance must be placed on the provision of staff to conduct programs, and securing and maintaining the site. Because of the site's accessibility, broad sandy beach, marine resources and fairly calm underwater environment, a marine park is proposed for this site. Equestrian use will contine to be accommodated in perimeter areas of Little Harbor on a permit basis. The possibility of expanding the camping capacity by 50 PAOT, via expansion of the campground boundary, will be explored and is contingent upon physical carrying capacity studies.

Specific Actions for Little Harbor

- Construct ranger station and interpretive display/camper information board.
- Improve toilet and shower facilities.
- Retain picnic areas.
- Work with appropriate agencies to develop a marine park or marine recreation area.

Specific Actions for Shark Harbor (located adjacent to Little Harbor)

- Retain primitive camping use.
- Provide alternative parking area up the canyon outside riparian area.

Rancho Escondido

Because it is the location of the Wrigley Arabian Horse Ranch, this site currently serves as a stop along the Inland Motor Tour. Materials on view in the trophy and tack room of the ranch provide visitors an exposure to a unique chapter in the Island's history. Many other historic materials, such as turn of the century buggies and carriages, have been stored on the Island and could be relocated to Rancho Escondido for display. Rancho Escondido has been identified in the Open Space Easement agreement as a possible future lodge site. Although no specific plans are available, the lodge concept, if found to be feasible, would be essentially rustic in character.

Specific Actions for Rancho Escondido

- Retain working ranch, and encourage increased special events, such as rodeos.
- Provide display area for historic vehicles.
- Work with representatives of the Santa Catalina Island Company regarding maintenance, security, and fee concerns.
- Potential lodge.

Eagles Nest

Once a stagecoach stop on the Avalon-Isthmus route, the lodge located in this area is currently the subject of a study on its historic value and potential for restoration. The lodge is located along the road to Middle Ranch, directly across from a perennial stream. The year-round flow of water supports cottonwood and maritime scrub communities.

Site uses in the past have included a campground, though the site was closed due to difficulties encountered with sewage disposal. The lodge and picnic area are currently used as a rest stop. A caretaker residence will also be provided near the lodge.

Specific Actions for Eagles Nest

. Coordinate with the Conservancy in restoring the existing lodge, and developing a caretaker residence.
. Develop/improve restroom facilities and sewage disposal.
. Provide nature trail.
. Provide improved campground (20 PAOT).

Ben Weston

Ben Weston Beach is one of the few broad, sandy beaches on Catalina Island. The beach provides habitat for sensitive sand dune vegetation and continued beach use will require protection measures for this plant community.

Current use is primarily picnicking, though some overnight camping does occur.

Because of the unique resources in this area, this site will not be programmed (no reservations taken).

Specific Actions for Ben Weston

. Retain primitive camping area.
. Provide parking away from the beach area.
. Protect sensitive sand dune plant community.

Black Jack

Black Jack campground is located on a plateau overlooking the channel side of the Island and affords scenic vistas of the mainland. In the center of the campground is a huge barbeque pit built in the 1930's by P. K. Wrigley.

This site is also improved with campsites and can accommodate 75 persons at one time. Water and toilets exist on-site, although present sewage disposal facilities will require improvement. In comparison to the coastal influence experienced at Little Harbor campground, Black Jack Camp has a terrestrial orientation, due to its 1500 foot elevation. The site is vegetated with pines and other exotic species of trees, along with native grasses and brush.

In addition to the hike-in campground, an equestrian campground is proposed on the Cottonwood side of the campground. Improvements include tie-ups and water troughs. It is anticipated that in addition to Island residents' use, the equestrian camp sites will be used for overnight trips originating from the Avalon stables facility.

Specific Actions for Black Jack

. Retain improved campground (75 PAOT).
. Provide equestrian campground (15 PAOT).
. Retain picnic areas.

Airport

This site functions primarily as a recreational airport, and is able to accommodate approximately 300 planes overnight. Airplane parking may be expanded to accommodate 400 planes. Commercial carriers have provided service to the Airport in the past and may possibly in the future.

The Airport site has been identified in the Open Space Easement agreement as a possible future lodge site. As with the Escondido site, no specific plans have been developed; however, the same general concept would apply to the eventual development of a lodge--rustic in character, 50 units or less, and be low to moderate in cost. The same constraining factors to lodge development also apply to this site; that is, development of water sources, and sewage disposal capabilities would be necessary.

Based on the variety of transportation modes to the Airport and its central location, the airport lodge appears the most feasible for a lodge type development of the three lodge sites identified in the Easement agreement. Because of its central location, if and when a lodge is developed, permanent housing for County Parks and Recreation and Conservancy personnel will also be provided.

Specific Actions for Airport

. Expand plane parking area to a maximum 400 planes.
. Provide displays--interpretive and informational.
. Possible rustic lodge (50 units) and staff housing.

Middle Ranch

Middle Ranch is a working ranch which serves as the Catalina Conservancy's operational headquarters. A private riding school is currently in operation and a boarding stable is proposed to complement that use.

In addition to residences maintained by Conservancy personnel, a bunkhouse structure has provided temporary housing for research personnel. This use is expected to be phased out and alternate facilities identified.

The Middle Ranch area has been identified as a possible future lodge site in the Open Space Easement agreement. Although no specific plans are available, the lodge concept would be similar to that described for the Airport.

Specific Actions for Middle Ranch

. Retain working ranch functions.
. Continue field research support functions.
. Resident riding school and possible boarding stable.
. Potential rustic lodge (50 units).

Marine Parks

The following areas have been identified as possible underwater parks or recreation areas. Further studies will need to be performed for each area, specifically to determine the recreation potential and resource sensitivity of each site. The candidate sites are Ripper's Cove, Starlight Beach, Little Fisherman Cove, and Emerald Bay.

As noted above, these areas would be in addition to the proposed underwater park at Little Harbor. Specific regulations to protect the resources at each site would be developed in cooperation with the Department of Fish and Game.

Primitive Camps

On the west end of the Island and the southern portions of the east end, a chain of six primitive campsites are preliminarily identified. The purpose of these sites is to allow a small number of visitors to experience relatively untouched portions of the Island. Site improvement is minimal, providing vault toilets and some site clearance, to accommodate approximately 5 persons at one time. Access to each site is by designated trails and trailheads and special backcountry permits and regulations will apply to the use of these primitive camping areas. Because of the rugged nature of these areas and the maintenance and security problems which primitive camping implies, site specific studies will be conducted to determine the exact location of each campsite and to monitor use and resource impacts. During times of high fire danger or other critical periods, these camps may be closed. Use of the camps will be considered on a rotating basis to limit cumulative impacts at any one site.

Specific Actions for Primitive Camps

. Provide a chain of primitive camps accessible by trail.
. Develop a backcountry permit system and criteria for approval and/or denial of requests to apply to these sites.

Leased Coves

The following coves are located on the Channel side of the Island and support a range of programs for various camping organizations. Although historically seasonal in operation, the majority of cove operations are either considering or implementing year-round camping programs. The numbers identified

as cove capacities include staff. Those coves located in the Easement area are identified as follows:

Cove	Organization	Capacity*
Buttonshell Beach (Camp Fox)	Glendale YMCA	300
Cherry Valley	San Gabriel Valley Boy Scouts	375
Gallagher's Cove	Inter-Varsity Christian Fellowship	210
Toyon Cove	Janss Corporation-Catalina Island Marine Institute	200

Leased coves located outside the Easement area are indicated below:

Cove	Organization	Capacity*
Emerald Bay	Great Western Council Boy Scouts	375
Howland's Landing	Catalina Boys Camp and Girls Camp	270
Steadman Cove (boat-in only)	Long Beach Boy Scouts	27
White's Landing	L. A. Council Girl Scouts	180

In addition to organized camps, the following coves are leased to yacht clubs for the purpose of providing support services for boating enthusiasts. The services provided differ from site to site, ranging from picnic tables to toilet and camping facilites.

Cove	Lessee
Emerald Bay	Corsair Yacht Club
Howland's Landing	L. A. Yacht Club
Big Geiger Cove	Blue Water Cruising Club

*The listed capacities for each cove are presented as guidelines and not intended to impose strict limits if expansion is warranted and does not severely impact the Island resources or require substantial increases in water usage.

Little Geiger Cove	Offshore Cruising Club
4th of July Cove	4th of July Yacht Club
Isthmus area	Isthmus Yacht Club
(includes Little Fisherman)	Channel Cruising Club
	King Harbor Yacht Club
Catalina Harbor	Catalina Yacht Club
	Del Rey Yacht Club
Henrock Cove	Balboa Yacht Club
Moonstone Beach	Newport Harbor Yacht Club

These leases will continue to exist to provide valuable recreational resources to the boating public.

- Recreational Developments In Non-Easement Areas

Non-easement sites are addressed only in concept with suggested recreation uses identified.

Avalon

Although the City of Avalon is not part of this LCP, it is necessary to briefly describe its private and public recreational services because it contains many of these services and is the primary destination for the majority of visitors to Catalina and a major access point to the Open Space Easement/Conservancy area.

The incorporated City of Avalon is a primary destination for the majority of visitors to Catalina, and a major access point to the Open Space Easement/Conservancy area. During peak weekends of the year, more than 7,000 people may arrive in Avalon on any one day, with an additional overnight capacity for 3,000 people. A variety of recreational services and activities exists in and around the City, including a horse rental and boarding stable, bicycle rentals, and equipment for scuba diving and other recreation related equipment. Hotels, restaurants and other types of resort attractions are provided. Avalon Bay provides docking facilities which accommodate both private and commercial boats. In addition there is a marine preserve and an underwater wreck which is frequented by scuba divers.

Offices

A staffed information and reservation office for the Easement area is currently located in Avalon adjacent to the tour bus terminus. Although no specific site has been identified, it is anticipated that the administrative offices of both agencies will eventually be housed within the same structure, possibly as part of a new informational or civic complex. A staffed booth at Cabrillo Mole, the primary point of access to Avalon is also proposed for future implementation so as to provide immediate orientation to visitors. Although the majority of Island visitors arrive by

boat, a proportion of visitors also arrive by air at Pebbly Beach. An interpretive/informational display is proposed at Pebbly Beach terminal to also orient this segment of visitors.

Campgrounds

One campground currently serves the Avalon area at Bird Park, located in Avalon Canyon. This site provides camping space for up to 75 people. Bird Park is the only overnight public campground in the Avalon area with the next nearest campground located approximately 11 miles away at Mt. Black Jack. The Bird Park site is slated for eventual development and an alternative campground location further into Avalon Canyon is proposed by the landowner, to serve as a base camp for Conservancy/Easement visitors. Based on the heavy demand now experienced at Bird Park, a campground capable of serving a larger camper capacity is needed. The proposed overnight camping capacity of the new site is 200 P.A.O.T. In addition, an interpretive display is proposed. The proposed location of the campground is adjacent to several trailheads, and will afford limited access to the Open Space Easement area. This area could also offer a limited potential for housing.

Wrigley Gardens

The Wrigley Memorial Garden is located further into Avalon Canyon and serves as an arboretum of Catalina's native species. It is proposed by the landowner that the boundaries of the Memorial Garden will be expanded.

Vehicle Maintenance Facilities

In addition to staff of the Department of Parks and Recreation, other County agencies perform services in and around Avalon. The Los Angeles County Sheriff Department provides services for both Avalon and the unincorporated areas of the Island while the Los Angeles County Forester and Fire Warden serves the unincorporated area. The Department of Beaches provides paramedic/bay watch services to Avalon and Two Harbors, as well as seasonal lifeguard services to Little Harbor and Ben Weston beaches. In addition to these County departments, periodic visits to both Avalon and the unincorporated areas of the Island are made by staff of the Department of Health Services, the Building Inspector and Mechanical Departments. To provide and service the vehicles utilized by each agency in the performance of their responsibilities, a vehicle maintenance yard is proposed at Pebbly Beach.

Specific Actions for Avalon Area

. Coordinate with representatives of the City of Avalon and the Santa Catalina Island Company in locating and developing the Avalon Canyon campground and the vehicle

maintenance area at Pebbly Beach. Further, explore the feasibility of continuing the maintenance facility with SCI Company's and the Conservancy's maintenance needs.

White's Landing

Leased by the Los Angeles Girl Scout Council from the Catalina Conservancy, White's Landing provides a water oriented camping program for groups up to 180 people. Proposed improvements involve retention of the organized camp and eventual improvement with a lodge and restaurant. Such a facility could accommodate conferences and seminars during the off-season periods. Some road and pier improvement would be required. A water taxi currently serves this site during the summer season.

Empire Landing

Adjacent to the easement boundary, the Empire Landing area encompasses land owned by both the Catalina Conservancy and Santa Catalina Island Company. A rock quarry and limited support housing constitute the existing improvement. Because of the gentle slope of the site and accessibility from water (though unprotected), this site could possibly be developed as a main gateway into the Easement/Conservancy area, with an improved campground with all-weather shelters and improved pier. This area could easily be serviced by the seasonally operated water taxi.

Buffalo Corral

This site has been periodically used as an equestrian campground. It is estimated that 25 people can be accommodated at the site. Improvement to the sewage disposal facilities will be required to support year-round use. The existing corral will be retained.

Specific Action for Other Non-Easement Areas

. Continue coordination and consultation with representatives of the Catalina Conservancy and Santa Catalina Island Company in implementing proposals for White's and Empire Landings.

Two Harbors Hub

Two Harbors is a major access point to both the Open Space Easement area and the organized camps within and outside the Easement boundary (Emerald Bay, Cherry Valley, and Fourth of July Cove, for example). In addition to providing dock facilities for the mainland cruise boat, an estimated 800

private boats can be accommodated at Two Harbors (includes Catalina Harbor, Fourth of July Cove, and Isthmus Cove). Services and facilities provided at the Isthmus include automotive and marine fuel facilities, grocery store, restaurant, small lodge, scuba (air) and various marine related services. These services are needed by the resort recreation visitors who avail themselves of all Island recreational resources during their visit. It is important that an adequate level of these services is offered to support the needs of those visitors entering the Easement.

Located in the immediate area of Two Harbors is Little Fisherman campground, which is operated by a private agency (Cove & Camp). In addition to the existing campground, a hostel is proposed for this location by the operator. An underwater recreation area has been preliminarily identified for this site, subject to further data collection. The USC Marine Science Center is located at Big Fisherman's Cove, the next cove east of the campground.

A staffed information station is proposed for the Two Harbors area to facilitate orientation of Easement visitors. This information office may be shared with the Conservancy. In addition to providing information regarding the Easement/Conservancy area, an interpretive display including the function of the Marine Science Center and Lab is also proposed.

Specific Actions for Two Harbors Hub

. Work with representatives of USC/Marine Science Center, Catalina Conservancy and the SCI Company to provide a staffed information station at Two Harbors.

Emerald Bay

Leased to the Great Western Council of the Boy Scouts of America since 1924, facilities at Emerald Bay can support approximately 375 PAOT in outdoor recreation and activities programs. The existing structures are currently being refurbished to facilitate year-round use.

Parsons Landing

The site, with beautiful geologic landforms (landslide), provides primitive camping (no water, vault toilets), for up to 200 P.A.O.T. Prior to the involvement of the Great Western Council of Boy Scouts, this site was only accessible by foot from Two Harbors. The access has been modified since the Great Western Council obtained a lease agreement with the Catalina Conservancy, and the primary point of access has been transferred to the pier at Emerald Bay. The current lessee proposes to eventually develop water on the site.

- Implementation

The following are the priorities for development:

Phase One.

The following facilities are considered essential to fulfill the purposes of the Open Space Easement agreement and the continued operation of existing improvements. Necessary resources will be immediately sought for the following:

. Toyon/Haypress Junction	- all improvements
. Little Harbor	- ranger station - campground redevelopment
. Black Jack	- seasonal ranger station - campground redevelopment
. Pebbly Beach	- service/maintenance facility
. Two Harbors	- information office and entrance kiosk
. Empire Landing	- major entry way into Easement/Conservancy land

Signing for these facilities and the necessary marking of trails will be provided with that development.

Phase Two.

The following facilities are considered integral to the fulfillment of the Open Space Easement agreement, but are of a lower priority than Phase I improvements. Necessary resources will be immediately sought after completion of Phase One:

. Avalon	- information/reservation center (County and Conservancy)
. Little Harbor	- marine park/recreation area
. Alternate trail routes	
. Primitive campsite development	

Future.

Necessary resources will be sought after completion of Phases One and Two for all other items.

- Staffing Requirements

Based on the large land area involved, and the distance between facilities, an estimated staff of 15 will required to operate the facilities and improvements being proposed for development by the Los Angeles County Department of Parks and Recreation. Two thirds of these positions will be recurrent, or seasonal, terms of duty. The possibility of developing college affiliated programs has been identified as one way of providing quality staff members.

While working a semester or one year tour of duty as an interpretive ranger or recreation specialist on Catalina, students would be able to enjoy unique in-the-field learning and working opportunities in return for course credit. Contact with several California State Universities and out-of-state colleges has substantiated the viability of such a program.

The above staffing estimates do not include positions necessary for law enforcement within the Easement area. This service could be provided by peace officers from County Sheriff staff or special law enforement rangers. Approximately four positions would be necessary for law enforcement purposes.

d. Findings

The facilities and programs proposed by the Department of Parks and Recreation combined with the policies of the Santa Catalina Island Conservancy meet the dual goals of the Open Space Easement to provide for a full range of recreational, educational and scientific activities combined with conservation of the Island.

e. Plan Policies and Recommended Actions

1) Increase opportunities for coastal recreation consistent with protection of natural resources.

2) In the Open Space Easement, recreational uses that require extensive alteration of the environment shall be prohibited. In addition, outside of Avalon and Two Harbors, recreational uses that do not require extensive alteration of the environment shall be encouraged and given priority over those that would require such alteration.

3) Recreational development shall be permitted and encouraged provided that such development is sited and designed to protect views and minimizes alterations to topography, native vegetation and the natural character of the shoreline.

4) Visitor-serving commercial recreational development outside of Avalon and Two Harbors shall be limited to low intensity uses designed to protect and enhance visual resources, and minimize impacts on topography and native vegetation.

5) Visitor-serving facilities that allow for the enjoyment and use of the educational opportunities of the Island shall be encouraged.

6) All unauthorized off-road recreational vehicles (ORV) shall be prohibited off of established roads.

7) Ben Weston Beach will remain a primitive area.

8) The following recreational facilities are open to the general public and shall be retained and protected as important lower cost visitor and recreational facilities:

. Little Harbor Campground
. Parson's Landing Campground
. Little Fisherman's Cove Campground
. Blackjack Campground
. Avalon Canyon Campground
(or Bird Park Campground)

9) As recommended by the Los Angeles County Department of Parks and Recreation in the General Development Plan for Recreation, the following improvements shall be allowed in the Open Space Easement area in order to provide lower cost visitor and recreation facilities and promote greater access and recreational opportunities for the general public.

. Toyon Junction	- Visitor center and ranger station - 50-100 PAOT campground - Ranger housing (10 PAOT) - Shuttle parking and entry kiosk - Memorial grove and nature trail
. Little Harbor	- Ranger station, marine park - Permanent toilet, shower facilities, septic system
. Eagle's Nest	- Campground (20 PAOT) - Caretaker residence - Permanent toilet facilities with septic system

. Ben Weston Beach	- Provide better delineated parking area away from beach and sand dunes
. Black Jack Campground	- Provide new equestrian campground (15 PAOT)

3. Recreational Boating

a. Coastal Act Policies

Section 30224

Increased recreational boating use of coastal waters shall be encouraged, in accordance with this division, by developing dry storage areas, increasing public launching facilities, providing additional berthing space in existing harbors, limiting non-water dependent land uses that congest access corridors and preclude boating support facilities, providing harbors of refuge, and by providing for new boating facilities in natural harbors, new protected water areas, and in areas dredged from dry land.

Section 30234

Facilities serving the commercial fishing and recreational boating industries shall be protected and, where feasible, upgraded. Existing commercial fishing and recreational boating harbor space shall not be reduced unless the demand for those facilities no longer exists or adequate substitute space has been provided. Proposed recreational boating facilities shall, where feasible, be designed and located in such a fashion as not to interfere with the needs of the commercial fishing industry.

Section 30255

Coastal-dependent developments shall have priority over other development on or near the shoreline. Except as provided elsewhere in this division, coastal-dependent developments shall not be sited in the wetland.

b. Issues Identified

- Expansion of boating capacities.
- Surf-launched boating and storage areas.

c. Research Analysis

- Introduction

Fair weather and a large nearby population account for one of the world's largest recreational boating fleets being located in Southern California. Party boats and private pleasure craft often venture to Santa Catalina Island and its environs for fishing, diving, or sightseeing. Since the mid to late 1930's, Two Harbors has occupied a unique role as one of the West Coast's most popular destinations for yachtsmen and other recreational boaters. Local yacht clubs and other boating groups organized entire racing and cruising seasons around boating activities "at the Isthmus". These activities have continued to the present at an expanding pace.

Several coves and boating facilities, including shelters, picnic facilities and piers are leased by private yacht clubs (see Figure 2). Moorings and anchorages are generally available to all boaters in most coves on the leeward (sheltered) side of the Island and a few locations on the windward side (Map 5). There is no charge for anchoring at any location around the perimeter; however, a rental fee must be paid to moor private craft to fixed moorings. No permanent public slips exist on Catalina Island and this plan does not propose provision of such.

The primary points of departure for recreational boating craft from the mainland to Catalina Island are Marina del Rey, King Harbor, Los Angeles Harbor, Long Beach Marina, Huntington Harbour and Newport Beach (see Map 6). Additionally, some boats originate from Santa Barbara and San Diego.

The majority of recreational boating around Catalina Island is pursued with light sailboats and small power boats during day light hours, and predominately on the leeward side of the Island. The windward side of the Island is several miles more distant than sites on the leeward side, features few coves for mooring and is subject to dangerously rough waves due to prevailing winds. However, Catalina Harbor on Catalina's windward side at Two Harbors offers mooring, anchorage and small craft harbor protection year round.

The Catalina Cove and Camp Agency operates a boat fueling facility at Two Harbors.

- Yacht Clubs

The following is a list of yacht destination activity centers with facilities located on Catalina Island's unincorporated coastline:

. Corsair Yacht Club	- Corsair Cove, Emerald Bay
. Los Angeles Yacht Club	- West end of Howland's Landing
. Offshore Cruising Club	- Little Geiger Cove
. Blue Water Cruising Club	- Big Geiger Cove
. Fourth of July Yacht Club	- Fourth of July Cove
. Isthmus Yacht Club	- Isthmus Barracks located between Catalina Harbor and Isthmus Cove
. Channel Cruising Club	- Westend of Little Fisherman's Cove
. King Harbor Yacht Club	- Eastside of Little Fisherman's Cove
. Newport Harbor Yacht Club	- Moonstone Beach, White's Landing
. Balboa Yacht Club	- Hen Rock, Whites Landing
. California Yacht Club	- Ballast Point, Catalina Harbor
. Del Rey Yacht Club	- Eastside of Catalina Harbor

- Piers

There are seventeen piers along Catalina's unincorporated coastline with two at Emerald Bay and one at each of the following locations: Howland's Landing, Cherry Cove, Fourth of July Cove, Isthmus Cove, Big Fisherman's Cove, Empire Landing, Buttonshell Beach, White's Landing, Moonstone Beach, Toyon Bay, Pebbly Beach, Well's Beach, Ballast Point, and the east and west side of Catalina Harbor. These piers are plotted on the Recreational Boating Map (Map 5).

- Los Angeles County Department of Beaches

The Los Angeles County Department of Beaches provides lifeguard services at Avalon Beach, Isthmus Cove, Little Harbor and Ben Weston Beach during summer vacation and during Easter week.

On a year-round basis, the Department operates two Baywatch rescue boats with crews in Avalon and Isthmus Cove, which respond to emergencies around the Island's entire perimeter. The Department also handles beach maintenance at Avalon Beach.

- U. S. Coast Guard

The U.S. Coast Guard is involved in several different activities in the waters surrounding Catalina Island. These include "aids to navigation" (maintenance and servicing of buoys), recreational boat safety inspections, marine environment protection (consultation in permit process for development/activity in coastal waters), and coordination with L.A.County's Baywatch in responding to distress calls and other emergencies. With increased usage of the Island, Baywatch and other emergency services will have to find additional sources of funds. The LCP proposes that these funds be provided by user groups on the Island.

- Anchorages, Moorings, and Shoreline Leases

Figure 3 lists mooring and anchorage capacities at various locations around Catalina Island's unincorporated coastline. The table further lists lessees of each area (if any), and whether the area is leased from the Santa Catalina Island Company or the Santa Catalina Island Conservancy. (Most leases are renewed on a year-to-year basis, however, some are of several years duration). Tide and submerged lands are leased from the State Lands Commission by the littoral landowners. USC/MSC leases off-shore waters directly from the State Lands Commission. In reviewing off-shore leases, the Commission will be concerned about the right of public access to and through shoreline facilities adjacent to leased areas.

There are four other State Lands Commission submerged land leases:

Lessee	Area	Purpose
Connolly-Pacific	Jewfish Point	Barge moorings
Connolly-Pacific	Empire Landing	Barge moorings
Department of Fish and Game	Moonstone Cove	Artificial reef
City of Avalon	Pebbly Beach	Sewer line outfall

Tidelands and submerged lands within the State of California are owned by the State in its sovereign capacity as trustee for the benefit of the people of the State. Jurisdiction over those lands has been placed in the State Lands Commission pursuant to Public Resources Code Section 6301. State owned tidelands are those lying between the last natural mean high and mean low tide lines. State owned submerged lands lie below the last natural mean high tide line and extending seaward to the three mile limit of State Jurisdiction.

All coves that are mostly open at the present time will be maintained as such for use as anchorage sites. These coves are Gallagher's Cove, Toyon Bay, Willow Coves, Italian Gardens, Goat Harbor, Ripper's Cove, Empire Landing, Little Geiger Cove, Big Geiger Cove, Parson's Landing, Little Harbor and Cabrillo Harbor.

d. Findings

- Recreational boating is a popular sport around Catalina Island and during peak season periods, conditions grow quite crowded. However, this appears to present no major management problems as of 1981 as boating activity in highly concentrated periods is self-limiting.
- Use of existing moorings should be maximized as an alternative to providing new moorings. New moorings must be approved by the U.S. Army Corps of Engineers. This permit process is explained in the Diking, Dredging, Filling, and Shoreline Structures section.
- Permanent boat slips are not currently planned for the Island.
- As of 1981 there appear to be no significant use conflicts between different recreational activities. Surfing is pursued where boating is infeasible. Water-based recreational activities such as swimming, snorkling, diving and boating appear compatible.

e. Plan Policies and Recommended Actions

1) Increase use of coastal waters for recreational boating by maximizing the use of existing boating facilities.

2) Continue to monitor the impact of boating on swimming, diving and surfing. If these non-boating recreational uses become excessively congested, certain beaches for non-boating uses only should be designated.

3) Baywatch and other emergency services should be financed by Island user groups including easement users, visitors to Two Harbors and mooring users.

4) Moorings shall be restricted from the following areas in order to provide open water space for anchoring only: Willow Cove, Italian Gardens, Goat Harbor, Ripper's Cove, Empire Landing (except for service moorings), Little and Big Geiger Coves Parson's Landing, Little Harbor and Cabrillo Harbor.

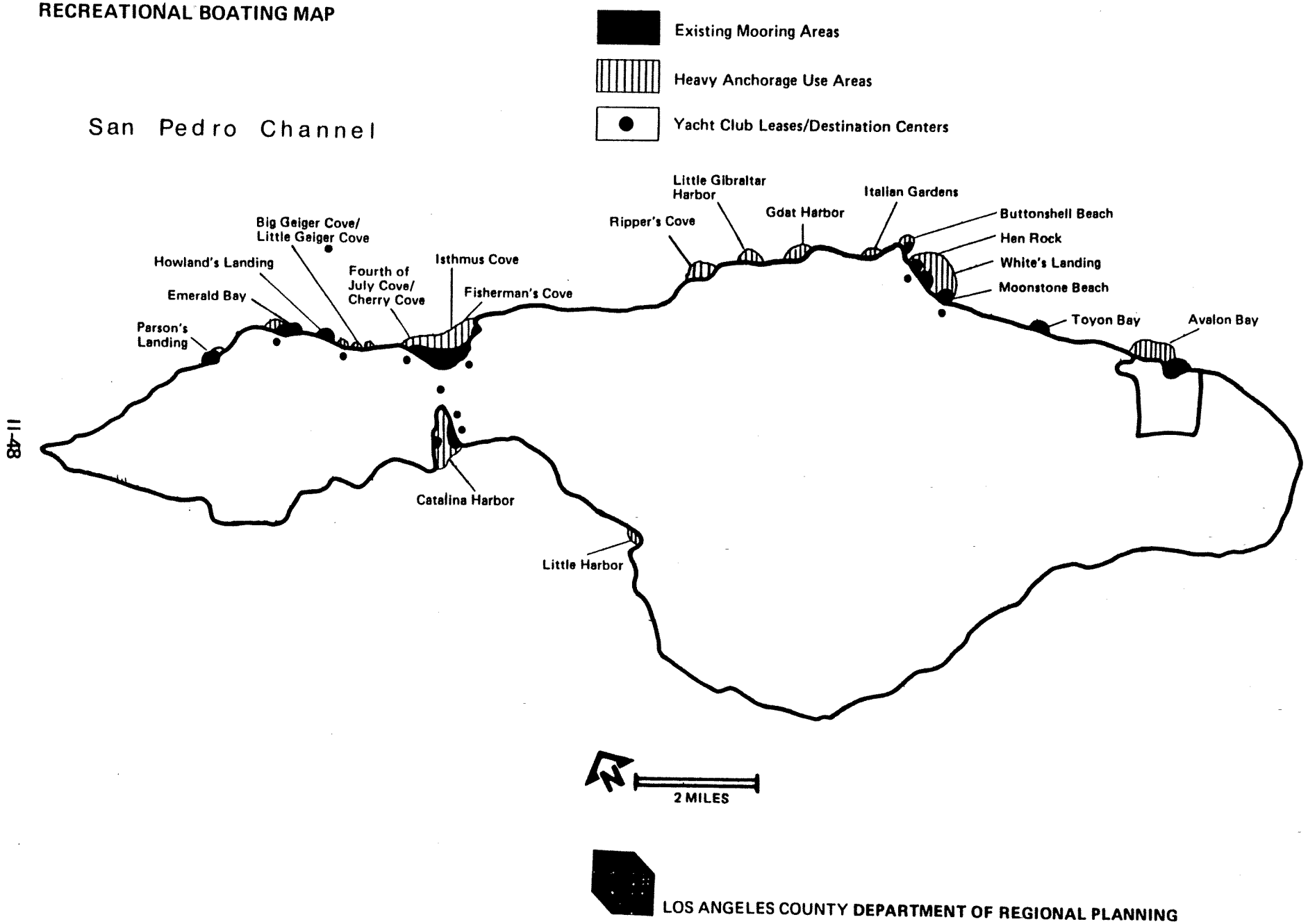
5) Increased use of coastal waters for recreational boating shall be encouraged by maximizing the use of existing boating facilities and by developing only limited new facilities in a manner that does not degrade coastal resources.

6) Future lease agreements involving the operation of Catalina moorings, including amendments to the present lease agreement, shall always contain provision for recreational boater access to the moorings by the general public.

7) Upgrading of Isthmus area piers as called for in the proposed Two Harbors development shall include at least one sewage pumpout station in Isthmus Cove and one in Catalina Harbor for use by recreational boaters.

unincorporated
santa catalina island

RECREATIONAL BOATING MAP



LOS ANGELES COUNTY DEPARTMENT OF REGIONAL PLANNING

map 6

RECREATIONAL HARBOR DISTANCES

Distance in statute miles

Avalon	Isthmus Cove	
50	36	Marina del Rey
38	30	King Harbor
26	23	Los Angeles Harbor (individual marinas not indicated)
32	32	Long Beach Marina
29	34	Huntington Harbour
30	35	Newport Beach

N

10 MILES

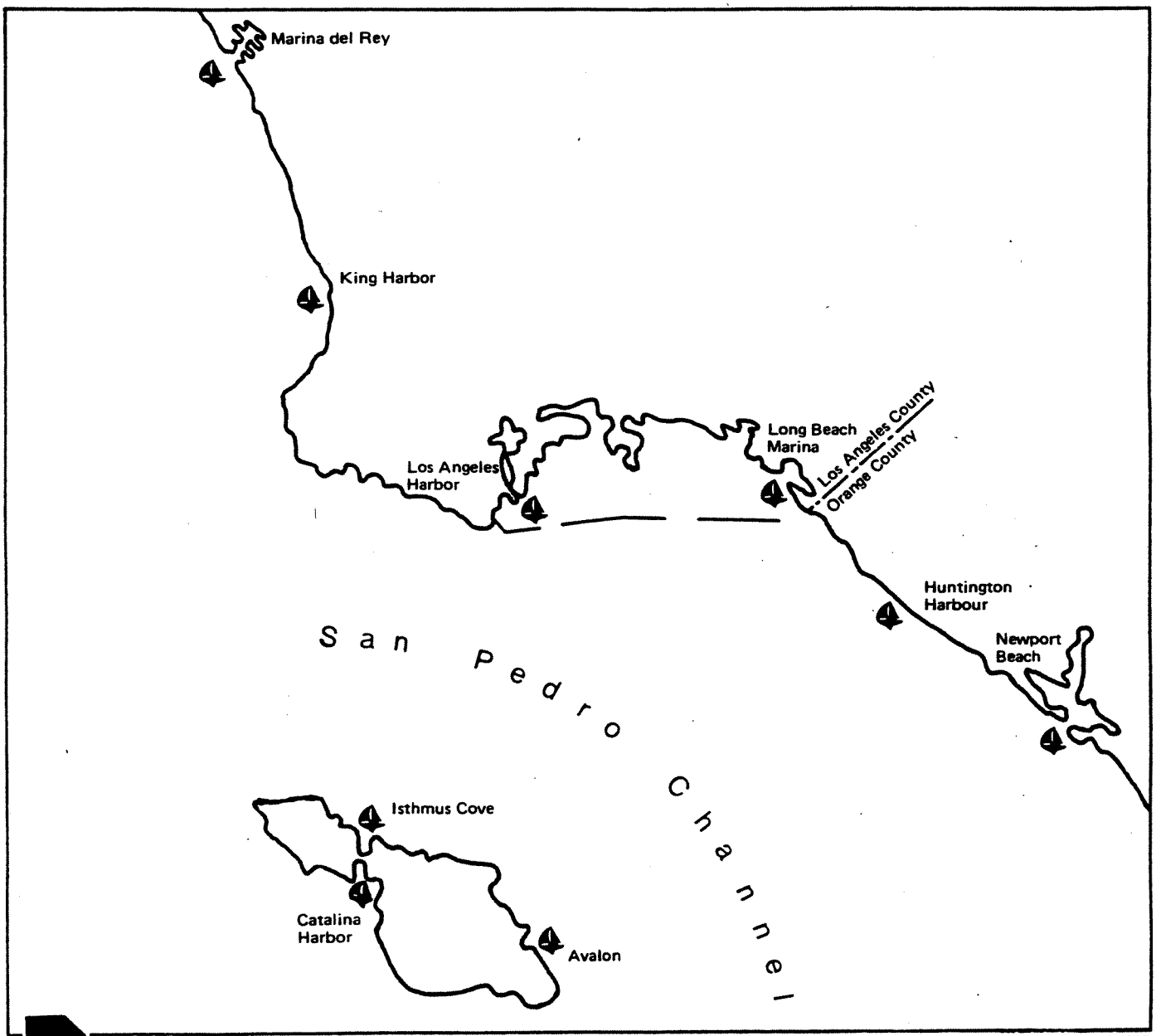


FIGURE 2: Anchorages, Moorings, and Shoreline Leases
(See Map 7 for mapped locations)

Area	Moorings	Anchorage	Lessee
1. Iron Bound	0	Very limited, fairly secure in Santa Anas	---------
2. Eagle Rock	0	Very limited, fairly secure in Santa Anas	---------
3. Parsons Landing	2	10-20	Great Western Council Boy Scouts**
4. Emerald Bay West End	101	35	Great Western Council Boy Scouts*
Corsair Cove	0		Corsair Yacht Club*
5. Howland's Landing	42	4-55	Los Angeles Yacht Club* Catalina Island Boys Camp *
6. Big Geiger Cove	0	10-35	Bluewater Cruising Club*
7. Little Geiger Cove	1	3-15	Offshore Cruising Club**
8. Cherry Cove	104		San Gabriel Valley Boy Scouts**
9. Isthmus Cove	249	200	Isthmus Yacht Club
Fourth of July Cove	42		Fourth of July Yacht Club*
10. Little Fisherman's Cove	(included in Isthmus Cove)		Channel Cruising Club/King Harbor Yacht Club*
11. Big Fisherman's man's Cove	10***		USC/MSC
12. Empire Landing Rock Quarry**	4****	20	Connolly Pacific
13. Rippers Cove		10	----------

(Continued Next Page)

FIGURE 2 (Continued)

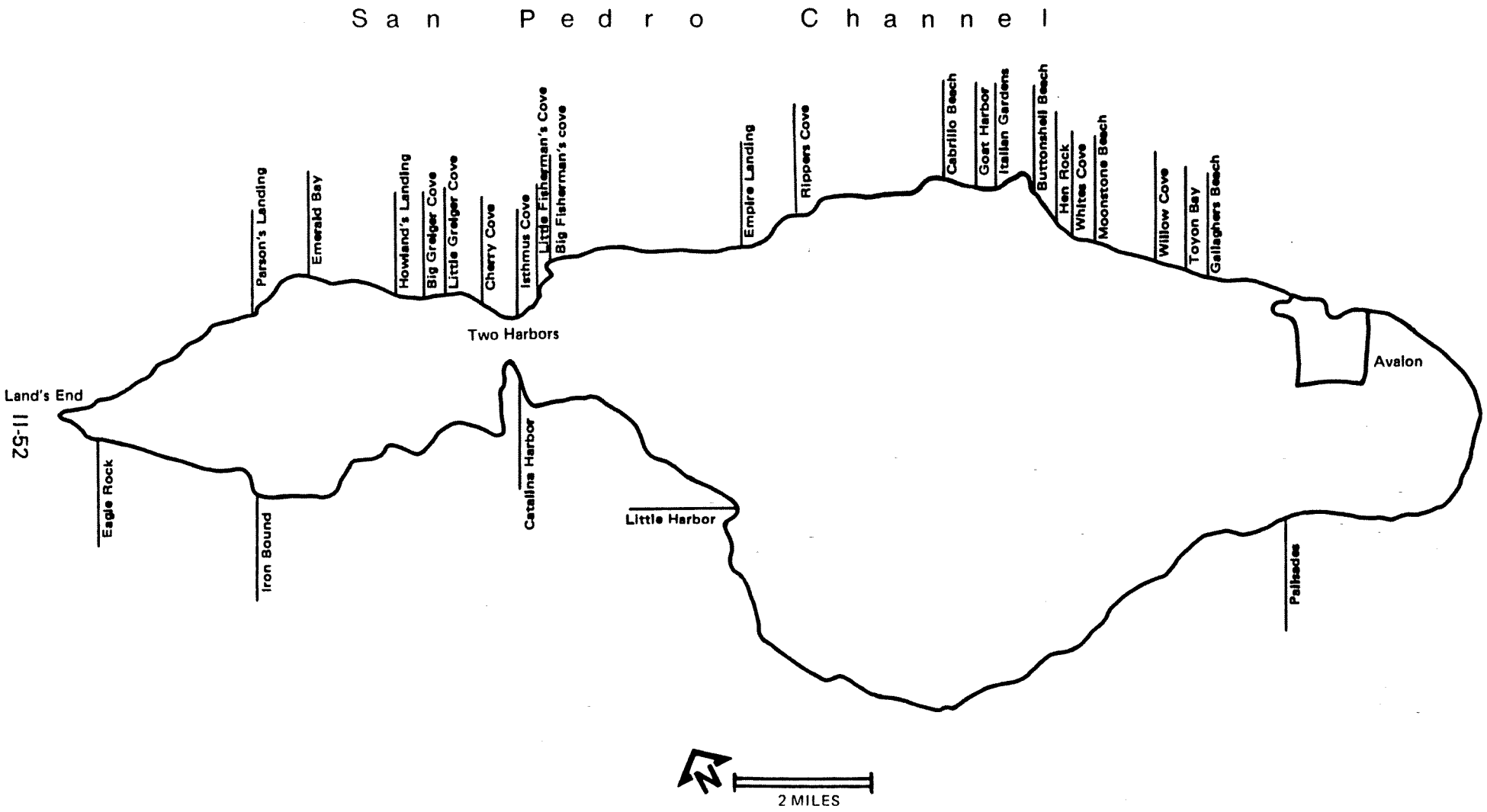
Area	Moorings	Anchorage	Lessee
14. Cabrillo Beach (Little Gibraltar Harbor)	0	5-7	Long Beach Boy Scouts**
15. Goat Harbor	0	5-10	----------
16. Italian Gardens	0	5-7	----------
17. Buttonshell Beach	9	10	Glendale YMCA**
18. Hen Rock	25		Balboa Yacht Club**
19. Whites Cove	17	50-150	L.A. Girl Scouts**
20. Moonstone Beach	39		Newport Harbor Yacht Club**
21. Willow Cove	0	4	----------
22. Toyon Bay	6	6	Catalina Island Marine Institute**
23. Gallaghers Beach	3	3-5	Intervarsity Christian Fellowship**
24. Palisades	0	Very limited, good in Santa Anas	---------- ----------
25. Little Harbor	0	10-40	----------
26. Catalina Harbor Sandspit West Side	98	235	California Yacht Club* Del Rey Yacht Club*
TOTALS	736	800 (approx.)	

* Leased from Santa Catalina Island Company
** Leased from Santa Catalina Island Conservancy
*** SW of dock when not needed by USC (not included in totals)
**** Barge moorings (not included in totals)

Source: Santa Catalina Island Company, Santa Catalina Island Conservancy, Cove and Camp Agency.

Note: Anchorages and moorings in Avalon Bay not indicated. This figure lists mooring and anchorage capacities at various locations around Catalina Island's unincorporated coastline. The state-owned tideland and submerged land sites are all leased by the littoral landowners, and in some cases mooring sites are sublet to other parties. Ownership applies to lands above mean high tide line.

ANCHORAGES, MOORINGS, AND SHORELINE LEASES



LOS ANGELES COUNTY **DEPARTMENT OF REGIONAL PLANNING**

B. Marine and Land Resource Protection Policy

1. Marine Resources

2. Commercial Fishing

3. Environmentally Sensitive Habitat Areas

4. Cultural Heritage Resources

5. Coastal Visual Resources and Special Communities

6. Hazard Areas

1. Marine Resources

a. Coastal Act Policies

Section 30230.

Marine resources shall be maintained, enhanced, and where feasible, restored. Special protection shall be given to areas and species of special biological or economic significance. Uses of the marine environent shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.

Section 30231.

The biological productivity and the quality of coastal waters, streams, wetlands, estuaries and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface water flow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.

Section 30236.

Channelizations, dams, or other substantial alterations of rivers and streams shall incorporate the best mitigation measures feasible and be limited to (1) necessary water supply projects, (2) flood control projects where no other method for protecting existing structures in the flood plain is feasible and where such protection is necessary for the public safety or (3) developments where the primary function is the improvement of fish and wildlife habitat.

b. Issues Identified

- Maintenance of ocean water quality.
- Extent and types of near-shore land and marine development.
- Jurisdictional accountability in off-shore waters.

c. Research Analysis

- Introduction

Increased access to and recreational use of Catalina Island must certainly be balanced with careful and sound

management and conservation of the Island's marine resources. Uncontrolled access and use could lead to rapid depletion of marine life. Even the collecting of marine life for scientific purposes should be pursued under strict safeguards.

There is an ongoing need for the assemblage of a more comprehensive data base relating to Catalina's marine resources and the potential effect of various activities upon these resources.

A comprehensive baseline marine study is proposed to further evaluate the effect on marine species of waste water discharges, entrainment (the capture and inclusion of organisms in the cooling water of power plants), sedimentation, runoff, siltation, and channelization. Recognizing the desirability of a comprehensive study of the Island's marine resources, a study program of the impact of the proposed Two Harbors Resort Recreation Community on the marine environment of Catalina Harbor is included as Appendix C. This study program was prepared by the USC Marine Science Center.

- Marine Plants and Animals

Catalina Island has long been a popular site for commercial and sport fishing activities. Marine fishes of commercial significance include jack mackerel, northern anchovy, pacific mackerel, and pacific bonito. In addition, sport fishermen commonly catch kelp bass, halfmoon, rockfish, and sheep head. (A more comprehensive listing of Catalina's commercial fishes is listed in the Commercial Fishing Section.)

Numerous marine finfish find good spawning and nursery habitat in the kelp beds, eelgrass meadows, and surfgrass areas around the Island. Grunion beaches are also present (see Map 8).

Marine invertebrates of commercial significance include market squid, lobster, abalone and sea urchin. Although non-commercial marine plants and animals of Catalina have not been fully inventoried, the potential for discovering rare or extralimital species appears to be great. For example, Catalina is the only known location in the United States for the threadfin bass (Anthias gordensis), the slate pencil urchin (Eucidaris thouarsii), and the sea cucumber (Holothuria zacae). Catalina has the only known established population of the orangethroat pikeblenny (Chaenopsis alepidota) outside of Mexico, and is the only known location in the Channel Islands for the scythe-marked butterfly fish(Chaetodon falcifer), the zebraperch (Hermosilla azurea), and numerous mudflat organisms (e.g. gobies, fiddler crabs, ghost shrimp, and mud shrimp).

- Fishing Around Catalina Island

The California State Departent of Fish and Game (DFG) has kept records on the harvest of fish since 1916. According to these records, the early 1950's were the last years for good

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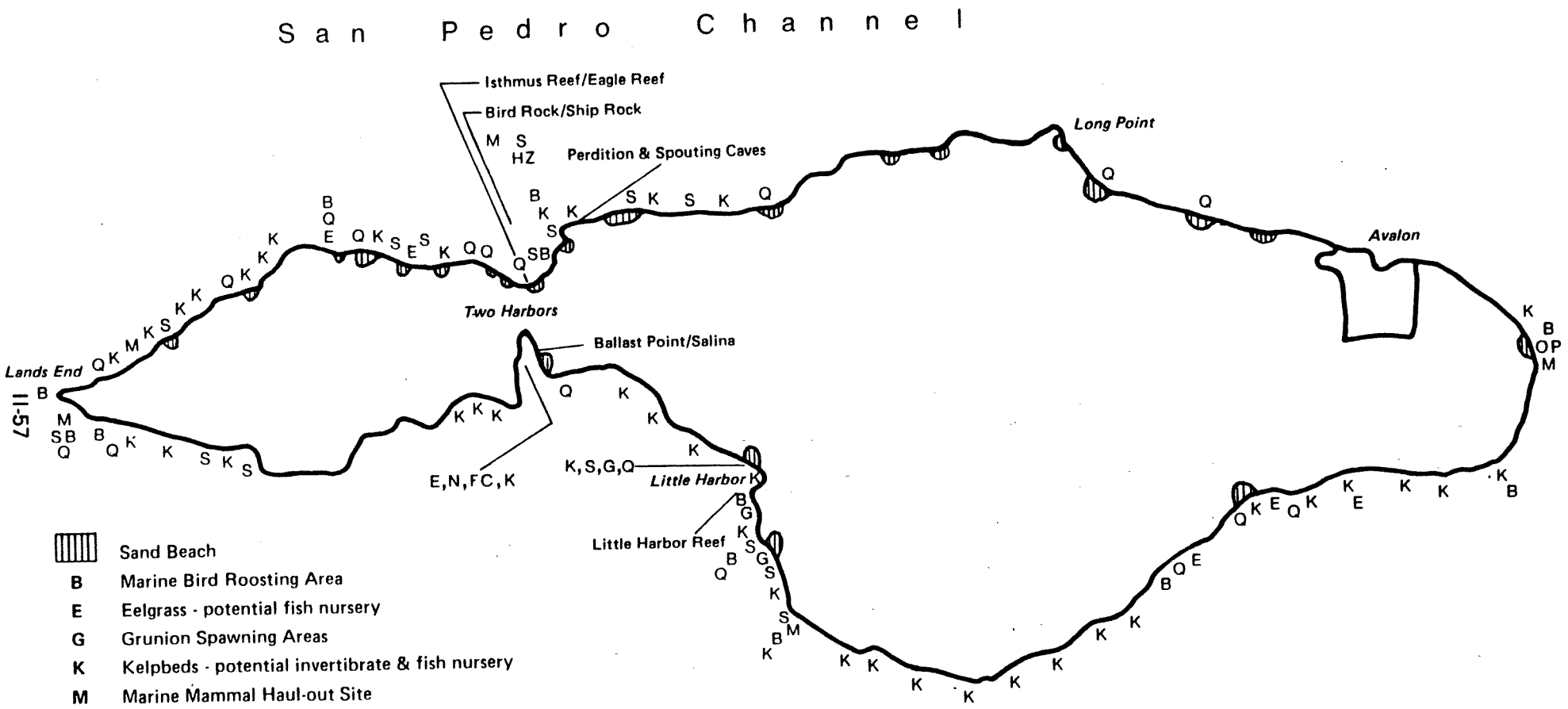
map 8

MARINE RESOURCES*



- Sand Beach
- **B** Marine Bird Roosting Area
- **E** Eelgrass - potential fish nursery
- **G** Grunion Spawning Areas
- **K** Kelpbeds - potential invertibrate & fish nursery
- **M** Marine Mammal Haul-out Site
- **N** Fish Spawning or Nursery Area
- **Q** Market Squid Spawning Area
- **S** Surfgrass - potential lobster & finfish nursery
- **FC** (Locally Unique) Fiddler Crab Area
- **HZ** (Rare) Sea Cucumber Area
- **OP** (Locally Unique) Orange-Throat Pikeblenny
- **SP** (Rare) Scythe-Marked Butterflyfish

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fisheries production in California. Since 1950, a steady decline in harvest has continued until the inshore production of fish now amounts to only 200,000 tons annually compared with 600,000 tons in 1950. According to Island residents, fishing (including spearfishing) in the water surrounding Catalina Island is greatly reduced in comparison to the catch of previous years.

Several factors have contributed to the depletion of many ocean species. Overtaking by foraging fish and inadequate regulation of fishing are two primary factors.

Island sources also point to what they regard as the severe depletion of lobster, abalone and flying fish populations around the Island and the need for additional protective policies to prevent further depletion.

The DFG regulates fishing in the waters surrounding Catalina Island. Fishing is further discussed in the Commercial Fishing chapter of the LCP.

- Marine Mammals

The Marine Mammal Protection Act of 1972 extended federal protection to all species of marine mammals. By the terms of this Act, the management of cetaceans (whales, porpoises, dolphins) and pinnipeds (seals, sea lions) is the responsibility of the National Marine Fisheries Service (NMFS). The U. S. Fish and Wildlife Service (FWS) has management responsibility for sea otters and walruses.

Both agencies employ agents who oversee the populations of these sea mammals. Educational institutions or entities wishing to study any given species must first obtain a permit from the appropriate agency, depending upon the specific sea mammal.

The waters surrounding Catalina Island are home to more than 20 species of cetaceans (whales and porpoises). Recent observations around the Island suggest that the area may be a particularly important feeding area for pilot whales. Iron Bound Cove may be a breeding area for these whales. A number of the large whales passing Catalina are designated as threatened or endangered by the NMFS under provisions of the Endangered Species Act of 1973, as amended.

Two species of pinnipeds frequent the shores of Catalina Island. California sea lions (Zalophus californianus) use the Island principally as a hauling (resting) ground during the spring and fall migration periods. While low numbers are reported to haul out during the summer period as well, no breeding activity is known to occur. Three main sites used as hauling grounds are Seal Rocks, China Point and Ben Weston Point. The Seal Rocks population includes about 300 individuals during the peak of the spring migration period

(March). This location is visited on a daily basis by tour vessels from Avalon Harbor. The China Point and Ben Weston sites are used as hauling grounds for widely fluctuating numbers. Generally only a few animals are present; however, occasional peaks of up to 350 animals have been reported (BLM, 1979). Small groups of sea lions are occasionally spotted elsewhere along the windward shore of the Island.

A population of about 100 harbor seals haulout (come ashore) and breed at scattered locations predominately along the northwest and southern shores of the Island. Harbor seals are only in abundance during the breeding months of March through May. Very low numbers are seen the remainder of the year.

- Marine Birds

Several varieties of marine birds inhabit the coastal areas of Catalina Island. Among the diverse species of waterfowl common around the Island are several varieties of gulls, sandpipers, cormorants and grebes (see Figure 4).

The precipitous cliffs and irregular topography of Catalina's rocky shore areas provide ideal nesting and feeding habitats for marine birds. Little Harbor, Lands End, Bird Rock and Ship Rock are significant marine bird roosting areas. Ship Rock, Frog Rock, and Bird Rock are especially noted as roosting areas for the western gull. The greatest significance of these offshore rocks is that they provide relatively undisturbed marine and shorebird habitats close to populated areas.

Some of the marine birds which alight on the Island spend the majority of their lives on or above the open ocean habitat, coming ashore only at selected rocks to breed and nest. This group includes such species as auklets, shearwaters, and gulls.

- Marine Flora

The maritime flora communities around Santa Catalina are somewhat limited although surfweed (Phyllospadix scouler and P. torreyi are in evidence. At least one patch of Zostera marina is known from about 20 feet of water in Catalina Harbor. The coastal salt flat succulent community is restricted largely to the salinas at Shark, Little, and Catalina Harbors. The small salina within and at the base of Ballast Point in Catalina Harbor has the richest flora with Abylopappus pusillus, Jaumea carnosa, Atiplex leucophylla A. semibaccata, A. watsonii, Salicornia subterinalis, S. virginica, Suaeda californica, Spergularia macrotheca, Frankenia grandifolia, Distichlis spicata stolonifera, Monanthochloe littoralis and Parapholis incurva. Nearby on muddy saline shores and flats around Catalina Harbor are also Spergularia marina, Beta vulgaris maritima and Plantago coronopus.

FIGURE 3: Marine Birds of Catalina Island

	Species	Comments
1)	Black-footed albatross	Alight on island from Pacific Ocean
2)	Short-tailed albatross	
3)	Cassin's auklet	Frequent winter visitors
4)	Rhinocerous auklet	
5)	Blue heron	Year round visitors
6)	California brown pelican	Rookeries along cliffs at Empire Landing & Two Harbors
7)	Baird Cormorant	Roosting at Ship & Bird Rocks
8)	Brandt Cormorant	
9)	Farallon Cormorant	
10)	Eared grebes	Frequently seen in Island coves
11)	Horned grebe	
12)	Pied-billed grebe	
13)	Western grebe	
14)	Bonaparte gull	Rare, predominately seen in winter
15)	California gull	
16)	Heerann gull	Most frequently seen in summer
17)	Herring gull	Rare, predominately seen in winter
18)	Ring-billed gull	
19)	Short-billed gull	Rare
20)	Western gull	Most frequently seen in winter

(Continued Next Page)

FIGURE 3 (Continued)

Species	Comments
21) Killdeer	Most frequently seen in winter
22) Man-o-war	Extremely rare
23) Pacific fulmar	Abundant in channel during winter migration
24) Pacific loon	Abundant on shore and open sea
25) Red-breasted Merganser	Common in winter
26) Red phalarope	Abundant during winter migration
27) Baird sandpiper	Extremely rare
28) Least sandpiper	Common on Island beaches during winter migration
29) Spotted sandpiper	Common in channel during winter
30) Blackvested shearwater	Common in channel July-September
31) Pink-footed shearwater	Common in channel during winter migration
32) Surf scotter	Common during winter migration
33) Forester tern	Rare
34) Royal tern	
35) Tufted puffin	Abundant on shore and open sea
36) Back turnstone	Abundant on Island's rocky beaches
37) Red turnstone	Rare migrant on Island's rocky beaches
38) Wandering tattler	Common migrant seen throughout year
39) White-faced glossy ibis	
40) Wilson snipe	Extremely rare

Source: Catalina Island Museum Society.

Coastal dune grassland is severely limited and the relatively few sandy beaches available have very small dune areas and are heavily trampled by human traffic. The best dune areas are at Little and Shark Harbors and Ben Weston Beach, with their dune flora consisting mostly of Mesembryanthemum crystallinum, M. nodiflorum, Ambrosia chamissonis, Haplopappus venetus furfuraceus, Heliotropium curassavicum, Cakile maritima, Atriplex leucophylla, A. semibaccata, Cressa truxillensis vallicola, Abronia maritima, A. umbellata, Plantago coronopus, and Distichlis spicata stolonifera. Carpobrotus chilensis and Calystegia soldanella, both characteristic dune plants, were reported on the Island many years back but are apparently no longer present.*

Underwater kelp beds are found primarily over rocky habitats at depths typically less than 100 feet. Reasonably high quality water is required for the kelp to survive. The beds usually develop best where there is protection from heavy wave surge. Kelp beds serve as nursery areas for larval and juvenile fish and provide an important habitat and food source for fish. Given a managed living environment, kelp is a renewable natural resource. Protection of kelp is provided for under California Coastal Act sections relating to Environmentally Sensitive Habitat areas (ESHA) 1980, defines ESHA areas as inclusive of kelp beds.

Human related activities which disturb kelp plants include the deposit of domestic and industrial waste, sedimentation from dredging and construction and thermal waste discharges. The CCC has included kelp beds as one of the thirteen categories of marine resources meriting protection from intakes and discharges of thermal power plants. These protective guidelines include identification of sites where (1) no power facility should be located and (2) sites where a facility would be permitted allowing that various ancillary facilities (water cooling conduits for example) meet CCC approval.

Kelp harvesting is regulated by the California Department of Fish and Game (DFG) via issuance of permits for such activity. Regulations include the prohibition that kelp not be cut at a depth greater than four feet from the water's surface.

While the DFG lists the waters surrounding Catalina Island as "open" for kelp harvesting, no such activity is currently being pursued. The reason appears to be that the size and shape of the kelp beds are such that kelp harvesting would not be profitable. Kelp around Catalina has declined in the past few years, possibly due to higher than average winter water temperatures. The DFG should eliminate the areas around the Island from kelp harvesting in order to encourage the expansion of the kelp beds and subsequent recreational activities for divers, fishermen and boaters.

*The information on marine flora has been excerpted from "A Flora of Santa Catalina Island, California" by Robert F. Thorne, Rancho Santa Ana Botanic Gardens, 1967.

- Areas of Special Biological Significance (ASBS)

Four separate coastal areas around Catalina Island have been designated as Areas of Special Biological Significance (see Map 9) by the California State Water Resources Control Board. These areas were designated as such using standards applicable at the the time. Generally, this designation affords special protection for marine life in the designated area from thermal, sewage, and industrial discharges and urban runoff. The seaward extent of each area extends from the mean high tide line to the 300 foot isobath (contour line indicating depths beneath the ocean surface) or one nautical mile, whichever is more distant.

The following is a list of the four designated areas with a brief description of the attendant distinctive marine resources. As Catalina is the location for four separate ASBS designations, they are referred to as "subareas."

Subarea One: Isthmus Cove Point to the west end of the Island, thence to Catalina Head.

This area appears to represent a transitional zone between the northern and southern biota. It contains an excellent example of diverse habitat types and biological assemblages among the submarine vertical rock faces which provide examples of bathymetric zonation, submarine caves, arches, talus slopes and shallow reefs. It includes areas of extreme exposure to wave shock (Land's End) and areas of nearly complete protection (Isthmus Cove).

Subarea Two: North end of Little Harbor south to Ben Weston Point on the seaward side of Catalina Island.

This area contains excellent examples of exposed and semi-protected sandy pocket beaches in proximity to exposed rocky headlands, a submarine canyon, and lush kelp beds. The faunal composition found here is of a highly unusual and distinctive nature.

Subarea Three: Farnsworth Bank Ecological Reserve, located 1.6 nautical miles southwest of Ben Weston Point.

This offshore bank is composed of sheer rocky pinnacles rising from ocean floor depths of 250 feet to within 50 feet of the water's surface. The reserve was set aside to protect the abundant growths of purple coral (Allopora californica) found there. All fishing, swimming, and boating activities are permitted in the reserve waters; however, no coral can be harvested or removed. The coral grows exceedingly slowly (0.2 inches per year) and cannot replenish itself if continually collected or destroyed.

Subarea Four: Binnacle Rock northwest to Jewfish Point (southeast end of Santa Catalina Island).

The physical and biological conditions of this area are unique from the rest of Catalina Island as well as the rest of the Channel Islands. This area is offshore and not affected by the quarry at the east end of the island. The water temperature in this area is the highest in the Channel Islands resulting in marine and plant life not found elsewhere on the islands.

- Salinas

Ballast Point at Catalina Harbor is a salt marsh rare to the Channel Islands and also containing the only known population of fiddler crabs on the Channel Islands. It includes a distinctive mudflat species assemblage.

Temporary salina conditions develop in Little Harbor/Shark Harbor on a seasonal basis as fresh water from feeder valleys or sea water from the large ocean swells collects behind the sand dunes. Due to the temporary nature of the condition, a typical salina biological community is not produced or maintained.

- Subtidal Reefs

Offshore rocky areas serve as attachment points for a high number and diversity of algae, invertebrates, and fish species. The reef environment is a unique and rich resource, used for research, education, and commercial and recreational boating.

Examples of such habitats around Catalina Island are Eagle Reef, Isthmus Reef and Harbor Reef.

- Other Habitats

Emerald Bay, Howland's Landing, Cherry Cove, Isthmus Cove and Big Fisherman's Cove, each a protected cove with sand bottoms and rock sides, feature certain plants and animals not common elsewhere on the Island.

Little Harbor, Cottonwood Cove, and Ben Weston Beach, each an exposed cove with sand bottoms and rock sides, containing plants and animals not common elsewhere on the Island and mainland California.

Catalina's East End contains a subtidal stable sand habitat unique to Catalina. One fish species, the orange throat pikeblenny, is common only here, at Rippers Cove, Big Fisherman's Cove and in the Gulf of California.

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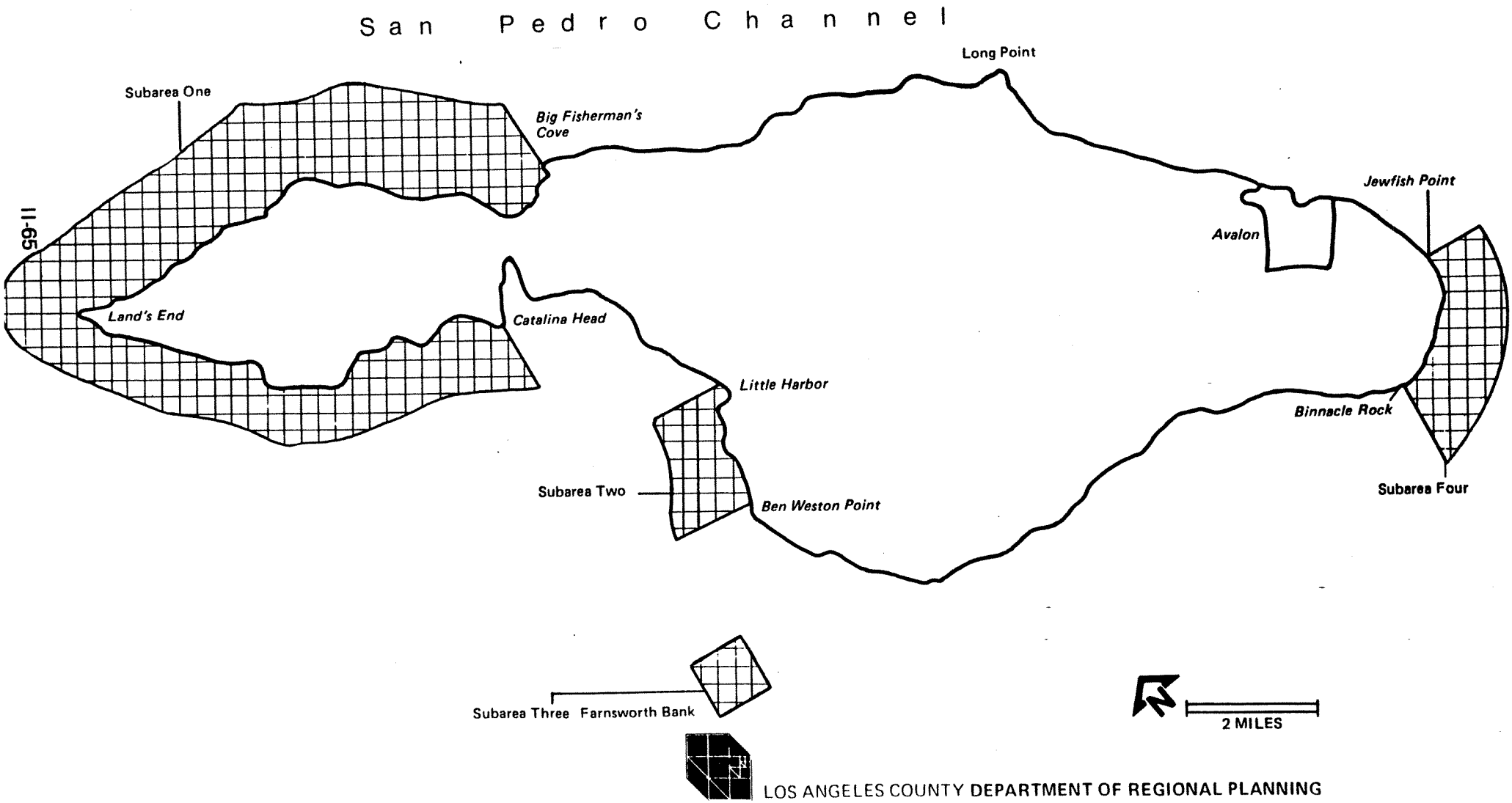
map 9

AREAS OF SPECIAL BIOLOGICAL SIGNIFICANCE (ASBS)

Subareas

Seaward boundary is the 300-foot isobath or 1 nautical mile offshore, whichever is more distant



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- Sand Beach Replenishment

Unlike the mainland, no extensive river or stream system is present to generate large quantities of sand for beaches around the Island. What little sand there is comes from the canyons. Any development including the construction of dams which could negatively impact such sand replenishment will be regulated.

- University of Southern California Marine Sciences Center (USC/MSC)

The Center, established in 1967 at Big Fisherman's Cove, is operated by the USC Institute for Marine and Coastal Studies, created in 1975 as a multi-disciplinary approach to marine studies. The institute supports teaching and research in three primary areas: Marine sciences (oceanography, biology, geology, physics, and chemistry), ocean engineering, and marine policy (law, economics, political science, ocean resource management and other related fields). The Marine Science Center occupies 14.3 acres granted by SCI Company with an an additional 100 acres reserved for future use. Additionally, a 180-acre buffer zone of open space surrounding the Center has been established. The Center also enjoys access to 260 acres of submerged lands at four nearby sites on long-term leases from the State Lands Commission.

An important facility at the Center is a hyperbaric chamber which is used both for medical and biological research and emergency treatment of individuals who have suffered diving accidents. It is one of only two functioning hyperbaric chambers located on the west coast (the other being in Seattle, Washington).

The Federal government in 1980 awarded a grant to USC as one of the three institutions nationwide to establish national undersea manned laboratories. Plans for undersea habitat and submersible facilities are included in the Center's Five Year Development Plan.

- U.S. Army Corps of Engineers (COE) and National Marine Fisheries Service (NMFS)

By exercising its authority in the issuance of Section 10 (shoreline structures) and Section 404 Permits (dredging and filling), the COE controls the construction and/or alteration of shoreline structures as well as all dredging and filling operations in U.S. waters. In the course of the permit process, the COE submits the application to several related agencies for review among which is the NMFS. The NMFS will not recommend approval of any project or activity that will damage any existing or potentially restorable habitat of living marine,

estuarine or anadromous (dual freshwater/saltwater tolerance) resources. "Habitat" may including spawning areas or other areas necessary for the survival of these organisms.

Some of the types of projects and activities which may cause damage to marine, estuarine, or anadromous resources include dredging, filling, river alterations, drainage of wetlands, discharge of effluents, as well as certain construction or operational activities. The activities listed are not intended to be all-inclusive but are representative of activities which are of particular concern to NMFS. The permit process is further discussed in the Diking, Dredging, Filling and Shoreline Structures Chapter of the LCP.

- Marine Resource Protection

The following marine resources are considered distinctive, significant and worthy of protection from significant degradation resulting from pollution, human intrusion, and development:

. Marine fishes, mammals, and birds.
. Surfweed and intertidal areas; especially Ship Rock, Bird Rock, Indian Rock, Black Point, and grunion spawning areas.
. Subtidal reefs, especially Eagle Reef, Isthmus Reef, Little Harbor Reef, and Ballast Point (Catalina Harbor).
. Catalina Harbor, due to its unusual mud bottom, invertebrates community and relatively low flushing rates.
. Canyon mouths with perennial streams.
. Fish spawning and nursery areas, especially for market squid.
. Eelgrass areas.
. Kelpbeds.
. Other Areas of Special Biological Significance (ASBS Boundaries).

d. Findings

- The reports on Areas of Special Biological Significance compiled by the California State Water Resources Control Board provide the latest available scientific information on the present and past conditions of Catalina's marine resources.
- Priority should be given to a search for funding of a thorough research program inventorying and assessing Catalina's marine resources with special emphasis on the following guidelines:

. Fish population structures, migrational movements, interrelationships, annual sports harvests, threats to healthy numbers and other pertinent information needed to manage these living marine resources on a scientific basis.
. Effects of various activities, uses, and pollutants (e.g. pesticides, sewage, thermal discharges) on the ocean environment and its living marine resources.
. Investigation of all intertidal and subtidal areas and development of criteria to serve as a basis for designation of areas with significant marine resources and for creation of underwater parks and conservation areas.

- Kelp harvesting is regulated by the Departent of Fish and Game (DFG). None is presently pursued around the Island.
- The U. S. Army Corps of Engineers currently regulates construction of shoreline structures, dredging, and filling operations in all U. S. waters.
- Populations of pinnipeds and cetaceans (excluding walrus) on and around Catalina Island are managed by the NMFS. Sea otters and walruses are managed by FWS. Management actions include research, enforcement, and interpretation.
- The designation as an "Area of Special Biological Significance" (ASBS) affords limited protection, primarily from waste discharges.
- Except for limited oyster culture experiments in Catalina Harbor, no aquaculture is presently conducted around Catalina Island.

e. Plan Policies and Recommended Actions

1) A formal study of the marine resources in Catalina Harbor shall be completed prior to commencement of the development of any areas which drain into Catalina Harbor.

The general objectives and outline of the study shall be designed to accomplish the goals outlined in Appendix C of this land use plan. The outcome of this study shall be used primarily to establish criteria to guide construction and grading processes during the Two Harbors development so that such processes are compatible with the continuation of the Catalina Harbor marine habitat. This study will assist in guiding the determination of mitigation measures, establishing the type and degree of impact monitoring and determine under what circumstances maintenance dredging can occur in order to maintain existing boat moorings as well as the viability of the unique mudbottom habitat.

2) Funding should be sought for a research program to fully inventory, by season, and assess Catalina's marine resources according to guidelines suggested under the second Finding above.

3) The feasibility of aquaculture operations around Catalina Island should be studied with particular focus upon the most environmentally compatible manner and location in which to promote such operations.

4) The following sites shall be considered for marine preserve designation and/or maintained primarily for scientific research and education: Eagle Reef, Isthmus Reef, Little Harbor Reef, salina at Ballast Point, Perdition and Spouting Caves, and off-shore rocks and islets.

5) Any development that could directly or cumulatively aggravate runoff problems (apart from normal sand/beach accretion) or create significant adverse impacts (sedimentation, siltation, alteration of currents, etc.) upon coastal waters shall be permitted only if adequate measures are taken to prevent degradation of water quality as determined by the State Water Resources Control Board.

6) Any development which could arrest or hamper sand beach replenishment shall be permitted only if adequate measures are taken to mitigate such adverse impacts.

7) Information and interpretation programs should be expanded with tours (supervised and/or self-conducted), public education, and school instruction, to encourage proper use and enjoyment of marine resources. Funding for these programs could be sought from the California Coastal Conservancy.

8) Following collection and assessment of baseline data relating to Catalina's marine resources, the County shall investigate the feasibility of retaining USC/MSC as an on-going consultant which, as a part of its regular curriculum, would monitor those marine resources surrounding the Island not already monitored by other enforcement programs. Funding could be sought primarily through Sea Grant educational funds.

9) Catalina Harbor shall be considered an environmentally sensitive habitat area as defined in PRC Section 30107.5. Catalina Harbor shall also retain its important function as the only harbor of refuge on any of California's off-shore islands.

10) A 100 meter buffer zone shall be established around the perimeter of Catalina Harbor. No new development shall be allowed within this buffer zone other than the land uses identified on the Two Harbors Land Use Map and limited drainage control devices consistent with the hazard policies of this plan when such devices cannot be located outside of the buffer zone.

2. Commercial Fishing

a. Coastal Act Policies

Section 30234

Facilities serving the commercial fishing and recreational boating industries shall be protected and, where feasible, upgraded. Existing commercial fishing and recreational boating harbor space shall not be reduced unless the demand for those facilities no longer exists or adequate substitute space has been provided. Proposed recreational boating facilities shall, where feasible, be designed and located in such a fashion as not to interfere with the needs of the commercial fishing industry.

Section 30255

Coastal dependent developments shall have priority over other development on or near the shoreline. Except as provided elsewhere in this division, coastal dependent developments shall not be sited in a wetland.

b. Issues Identified

- Specialized commercial fishing facilities and aquaculture.

c. Research Analysis

- Commercial Fishing

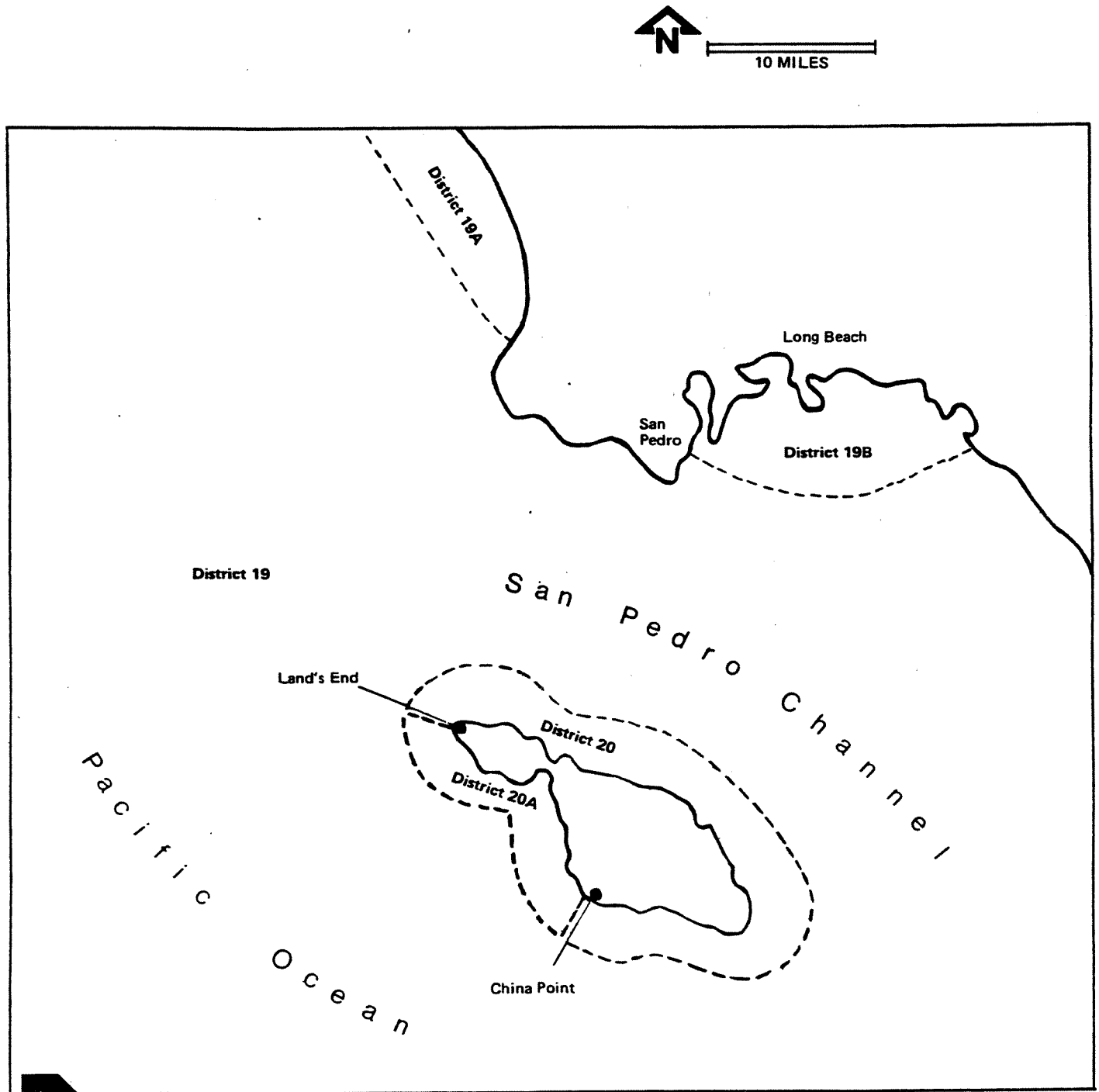
While several regulations limit commercial fishing in the waters surrounding Santa Catalina Island, commercial fishermen catch an abundant variety of fishes in considerable quantities (See Figure 4). For example, Catalina Island provides commercial fishermen with one of the largest supplies of squid in the Southern California area. In 1981 lobster was present in very limited supply due to overharvesting, but is still sought by sportsfishermen in Catalina waters. Commercial lobster fishing is entirely prohibited along the major portion of Catalina's leeward coastline.

The waters extending three miles around Catalina Island have been designated District 20 and District 20A by the California Department of Fish and Game (See Map 10). In District 20, use of all nets, except flying fish gill nets, are prohibited. Use of all nets, except purse and round haul nets, is prohibited in District 20A. Use of trawl nets or dragnets are prohibited in both districts.

The major volume of fish landed around the Island are taken with purse seines (nets for taking surface schooling fish). Bait fisherman and squid fishermen use a simpler net, the lampara, which was a forerunner to the purse seine.

map 10

COMMERCIAL FISHING DISTRICTS
California Department of Fish and Game



Commercial trawling, where a sack net is towed along the ocean bottom at the end of wire cables, is prohibited within three miles of Catalina Island. Other gear used by commercial fishermen in this area include troll or hand lines, round haul nets and spade, shovel, hoe, rake, and other hand operated appliances. Commercial boats are generally small with one or two fishermen aboard.

The California Department of Fish and Game (DFG) is responsible for regulations regarding fishing in the waters extending three miles off of Catalina's shores. One should consult the DFG's Commercial Fish Laws Digest for restrictions concerning length of season, size of fish, type of fishing equipment permitted and various other pertinent regulations regarding Catalina's commercial and sport fishes.

The DFG enforces these regulations via the utilization of patrol boats and aircraft, both operated by fish and game wardens. The wardens control both sport and commercial fishing around Catalina Island, operating primarily out of Long Beach Harbor and, to a lesser extent, Oxnard and San Diego. The DFG also has a permanent mooring in Big Fisherman Cove. While fish and game wardens may moor at any open mooring around Catalina Island, no permanent DFG facilities exist on Catalina Island. The surveillance program covers the entire perimeter of the Island on a regular basis.

The DFG also keep records of commercial and sports fish catches in California's offshore waters. For commercial species, monthly figures are tabulated for statistical blocks of approximately 100 square miles delineated by intervals of 10' longitude and latitude. Similar data is available for recreational species caught by anglers on party boats. DFG personnel urge caution in the use of this data, as reporting by fishermen at ports of landing is not always accurate.

One retail fish market currently exists in Avalon while a licensed fish processor operates at Isthmus Cove.

Additionally, while commercial vessels with nets may navigate the waters surrounding Catalina Island, they may enter harbors in District 20 only in times of distress or emergency.

- Sportfishing

Catalina Island is additionally a favorite location for sportsfishing. The most common year-round varieties of sportsfish are rockfish, opaleye, halfmoon, Pacific bonito, and California yellowtail. Anglers fish primarily from chartered boats but are also free to use private vessels.

FIGURE 4: Commercial, Game Fish and Shellfish Around Catalina Island

Kelp Bed and Rocky Bottom Fish

- x abalone
- x giant sea bass
- kelp bass
- barred sand bass
- x blacksmith
- cabezon
- black croaker
- halibut
- neon goby
- zebra goby
- x halfmoon
- kelpfish
- x lingcod
- x lobster
- California moray
- opaleye
- x black & yellow rockfish
- x blue rockfish
- x brown rockfish
- x copper rockfish
- x gopher rockfish
- x kelp rockfish
- x olive rockfish
- x squarespot rockfish
- x yellowtail rockfish
- sargo rockfish
- x scallops
- x sculpin
- x white seabass
- senorita
- horn shark
- swell shark
- California sheephead
- x squid
- black surfperch
- pile surfperch
- rubberlip surfperch
- walleye surfperch
- topsmelt
- treefish
- ocean whitefish
- x yellowtail

Fish Over Sand Bottom (0-60')

- x northern anchovy
- Pacific butterfish
- yellowfin croaker
- x California barracuda
- jacksmelt
- queenfish
- bat ray
- angle shark
- halibut
- x white seabass
- pile surfperch
- shiner surfperch
- walleye surfperch
- white surfperch
- white surfperch
- topsmelt
- turbot

Pelagic Fish Offshore of Catalina

- x albacore
- x northern anchovy
- x California barracuda
- x Pacific bonita
- Pacific hake
- x jack mackeral
- striped marlin
- Pacific sardine
- Pacific saury
- blue shark
- x bonito shark
- x thresher shark
- white shark
- x swordfish
- x yellowtail
- x bluefin tuna
- x Pacific mackeral

(Continued Next Page)

FIGURE 4 (Continued)

Fish Over Moderate-Deep Sand Bottom (60'-150')

spiny dogfish	English sole
Pacific sanddab	pink surfperch
x calico rockfish	surfperch
x halfbander rockfish	turbot
x stripetail rockfish	turbot
x halibut	

Source: California Department of Fish and Game
Note: "X" denotes fish sought by commercial fisherman.

Sportsfishermen may additionally fish from shore areas and piers around Catalina Island. Bait and tackle may be purchased either in Avalon or at Isthmus Cove. The most intense period of sports fishing on Catalina Island extends from May through August.

Given the fact that fishing activity is a consumptive use of marine resources, monitoring and control of this activity is the responsibility of state agencies.

d. Findings

- Commercial and sport fishing around Catalina Island is regulated and monitored by the California State Department of Fish and Game (DFG).

e. Plan Policies and Recommended Actions

1) The DFG shall continue to monitor and regulate commercial and sport fishing in Catalina waters.

3. Environmentally Sensitive Habitat Areas

a. Coastal Act Policies

Section 30240.

(a) Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on such resources shall be allowed within such areas.

(b) Development in areas adjacent to environmentally sensitive habitat areas and parks and recreational areas shall be sited and designed to prevent impacts which would significantly degrade such areas, and shall be compatible with the continuance of such habitat areas.

b. Issues Identified

- Preservation of environmentally sensitive habitat areas.
- Delineation of Catalina Harbor wetland.
- Impact of the County's Significant Ecological Areas (SEA) designation on land use plan.
- Development adjacent to environmentally sensitive habitat areas.
- Ownership and resource management of all environmentally sensitive habitat areas.

c. Research Analysis

- Summary of Resource Management Planning Process*

Santa Catalina Island has been impacted in the past by grazing of feral herbivores and use of the Island for various recreational activities. However, relative to the mainland, a combination of several factors have resulted in most of the Island having a potential for reverting to a near natural condition. These factors are the concentration of urban development on the Island in the small city of Avalon, the lack of an extensive road system and the restriction on its use, the creation of the Santa Catalina Island Conservancy, the establishment of the County's Open Space Easement and the land management practices of the Santa Catalina Island Company. The Santa Catalina Island LCP will guide the Santa Catalina Island Conservancy and Department of Parks and Recreation in protecting the unique ecological resources of the Island under their control.

There are two types of environmentally sensitive habitat areas outside the Conservancy lands - marine and tidal

*Sections of the Resource Management Plan have been integrated into the text of this section and other sections are included at the end of the report as Appendices E-1, E-2 and E-3.

areas and rare plant communities. Marine and tidal areas are discussed under "Marine Resources". Rare plant areas outside the Conservancy are identified on Map 11. Future development is precluded in these areas and adequate mitigating measures must be undertaken for any nearby development.

The objective of the resource management planning process by the Center for Natural Areas was to provide practical policy guidelines for the protection, enhancement and management of Catalina Island's natural resources, consistent with the joint goals of conservation and recreational use established by the Board of Supervisors for the Catalina Open Space Easement. This practical guidance must also be coordinated with the planning policies of the California Coastal Commission through its local coastal planning process. The Los Angeles County Department of Parks and Recreation, the California Coastal Commission and the Santa Catalina Island Conservancy have established six (6) specific goals and objectives:

- Develop protection techniques for unique ecological resources of the Island, including species of plants and animals found only on the Island.
- Provide methods for managing the feral herbivores.
- Recommend means for reversing erosion processes caused by overgrazing.
- Recommend management policies and contingency procedures for dealing with man-made hazards such as oil spills, fire, ground-water management.
- Recommend methods for dealing with potential impacts of user groups in natural areas.
- Outline priorities for future research.

Coordinated management of the natural resources of an area involves active recognition of and planning for the often complex interrelationships and interdependencies among those resources. To date, the vast majority of imbalances and disturbances to the Catalina ecosystem can be attributed to the historic introduction of large herbivores (i.e. goats, deer, pigs, bison) to an environment with two relatively unique characteristics:

- The flora on the Island had evolved with no large herbivore pressure and had, therefore, no natural defense against grazing pressure from these animals.
- There are no natural predators on the Island to control the herbivore populations. This leaves water, food and human hunting as the only controls on herbivore populations.

While the large herbivores have been the major contributor to the degradation of the Catalina environment, management of the Island's resources cannot concentrate entirely upon control of this influence. It is probable that the combination of herbivores present and, to some degree, competing on Catalina causes some level of population control on each species. The historic and present level of herbivore pressure has resulted in a dramatic decrease in fuel loads and, therefore, decrease in fire hazard in many areas of the Island. Where goats have been eliminated some exotic noxious weeds, such as hore-hound mint, are beginning to take over canyon floors. Finally, the recent and potential increase in human use of Island areas will cause many changes among the interactions present in the Catalina environment.

d. Findings

- The flora on the Island evolved without herbivore pressure resulting in no natural defense against these animals.
- Water, food and man are the only three controls of herbivore populations.
- Severe erosion occurs at many locations on the Island due to herbivore degradation.
- Total removal of herbivores would increase fire hazard.
- Human use of the Island will cause many changes to the Catalina environment.

e. Plan Policies and Recommended Actions

The following are specific measures relating only to impacts on environmentally sensitive areas (rare plants, tidal areas, marine waters) and private land (Santa Catalina Island Company):

1) The Conservancy should obtain legal ownership or complete management control of introduced feral pigs on Catalina Island.

2) The Conservancy should obtain legal ownership or complete management control of introduced mule deer on Catalina Island.

3) No further introductions of any non-native animal including fish, reptiles, amphibians, birds, and mammals should be made to any part of Santa Catalina Island. Efforts to totally remove bullfrogs should be encouraged.

4) Naturally occurring fires shall be allowed to burn except in areas where goats and pigs have not been completly removed or where human habitat and/or extremely rare and fire sensitive plants would be imminently threatened.

5) Convert existing firebreaks to fuelbreaks. If existing firebreaks cannot be converted to fuelbreaks, construct cross drains and catch basins to slow the severe erosion they are causing.

6) In burned areas, reduce levels of all herbivores as close as possible to zero for 5-10 years to give the revegetation process a chance to occur.

7) Provide funding for fire and vegetation research.

8) Institute a general policy of allowing natural revegetation to occur throughout the Island.

9) Use fertilization and possibly reseeding when very quick recovery is deemed necessary or desirable and past reseeding experience on similar site conditions (e.g., soil type, slope, aspect, elevation, location, cost, degreee of recreational use) indicates a good probability of success.

10) After fire events, use inspection and judgement based upon specific site conditions (e.g., soil type, slope, aspect, elevation, location) to determine need for reseeding and type of cover to use.

11) Establish grading and other construction site procedures designed to minimize erosion.

12) Improve water diversion along roads to minimize erosion.

13) Allow use of trails and campgrounds only consistent with results from carrying capacity studies showing minimal adverse impact.

14) Monitor soil and vegetation impacts on trails and camps. Decrease use, or close until recovery, if severe impacts occur.

15) Construct and maintain fences around the following most significant rare plant areas, at a minimum, listed in approximate order of priority:

    a. Swain's Canyon area - Perhaps the richest area for Island endemics. This is also a suitable, stable location for a natural botanic garden/memorial grove.

b. Mt. Orizaba area.
c. Wild Boar Gully.
d. Upper Descanso Canyon.
e. West Gallagher's Canyon area - This is the finest forest on the Island and tallest anywhere for Quyercus tomentella.

16) Institute a program of memorial groves of Island endemics for preservation, natural propagation and public display. These groves would be particularly appropriate in conjuction with some of the more accessible sites.

17) Encourage continued efforts to propagate rare wild plants.

18) Prohibit intentional introduction, even for landscaping purposes, of non-native plants, except when no suitable native species will sufficiently stabilize eroded areas.

19) Discourage equestrian use and placement of trails near rare plant sites, due to dangers of trampling, grazing, or accidential introduction on non-native, weedy competitors.

20) Control the most threatening non-native weeds by manual removal and topical application of weed killers on a localized level.

21) Consider the feasibility of having Catalina Conservancy rangers and/or County Park and Recreation personnel deputized to help enforce marine harvest regulations.

22) The Catalina Conservancy may monitor the biologic impacts of withdrawal rates from waterwells and specifically its impact on downstream water flow of perennial or intermittant streams which support riparian vegetation or habitat. Any documented adverse impacts on riparian vegetation or habitat due to excessive ground water withdrawal rates shall be mitigated by an acceptable decrease in withdrawal rate from the well.

23) Continue cooperative efforts for oil spill contingency planning among Conservancy rangers, L.A. County response personnel, police and fire departments, U.S. Coast Guard, Califorina Fish and Game, National Park Service, and the Southern California Petroleum Contingency Organization (SC-PCO). Upon adoption of the plan, a copy of the Marine Resource map and the Oil Contingency map with supporting map legends will be sent to all these agencies, along with the priorities listed in the next recommendation.

24) Establish the following priorities for oil spill protection listed in descending importance of spill counter measures:

a. Contain the oil at its point of origin.
b. Protect concentrations of marine mammals and seabirds observed at the time of the spill.
c. Protect salinas and areas below them at Shark Harbor, Little Harbor and inside Ballast Point off Catalina Harbor.
d. Protect Catalina Harbor due to its unique mud bottom invertebrate community and relatively low flushing rate.
e. Protect surfgrass and intertidal areas, such as Ship Rock, Bird Rock, Indian Rock, and Black Point and grunion spawning areas.
f. Protect canyon mouths with perennial streams (these have higher sediment concentrations which may cause the oil to sink, thus damaging valuable bottom dwelling marine resources).
g. Protect "Uncommon Ecological Areas".
h. Protect fish and invertebrate spawning or nursery areas.
i. Protect eelgrass areas indicated on the Marine Resources map.
j. Protect kelpbeds.
k. Protect other habitats within the ASBS areas.

25) Revise these oil spill priorities as new marine research provides better data on distribution of sensitive features.

26) Inform spill cleanup personnel of locations of rare plants and eagles on Catalina. Discourage helicopter use near the near the eagle sites and warn against trampling of rare plant sites except during emergencies. Copies of maps will be provided to these agencies. Assure that cleaned up oil is disposed of in a manner that does not threaten any rare plant, important scenic resource, aquifer or marine area.

27) The recognized land manager (either the SCI Conservancy or Parks and Recreation) should prepare annually a report covering at least the following items as they pertain to Santa Catalina Island, so that other decision makers concerned with the Island will have the best and most recent data:

a. Population estimates or indices of abundance of goats, pigs, deer and bison in each management unit. Indication of what trend is implied by each estimate.

b. Number of goats, pigs, deer and bison removed by sport or otherwise from each management unit during that year.
c. Rainfall and humidity detailed each month.
d. Location of new or demolished fences.
e. Listing of major range management activities completed during the past year including experimental seeding and reseeding activities, fertilizing, type conversion, brush spraying, selective herbicide application and introduction of plant parasites--by location, acreage, dates conducted, cost, and apparent effects.
f. Listing of road improvement activities and construction of any new structures--by location and date completed.
g. Reports of dates, locations, (including approximate acreage covered and apparent effects of all fires and significant floods and landslides during that year. A brief discussion of revegetation trends must be included on areas burned within the last 10 years, referenced by slope, orientation and location.
h. Listing of any instances of residents and/or visitors being seriously harmed by wildlife or other natural hazards.
i. Listing of any observed instances of significant ecological damage caused by recreationists.
j. Reports of any sightings of the two-striped garter snake or arboreal salamander.
k. Progress report on success of bald eagle reintroduction efforts.
l. Apparent disappearances of rare plants and discovery of new plant species, specifying location and (if disappearance) probable cause.
m. Any potentially significant "problem resources" or "problem sites" noted for the first time.
n. Water level conditions in reservoirs, by month.
o. Listing of new wells completed--date, location, monthly yield, and downstream flow data if appropriate.
p. Description of any desalinization or ground water recharge projects undertaken by anyone.
q. Contingent on these studies being funded, summary of data from plant exclosures.
r. Listing of research projects presently in progress on the Island during that year, including title, investigator, address, funding agency, management units covered, and percent complete.

28) Areas which support riparian vegetation as designated in this land use plan shall be considered environmentally sensitive habitat areas as defined in PRC 30107.5. All development shall be set back a minimum of 100 feet from the edge of riparian vegetation.

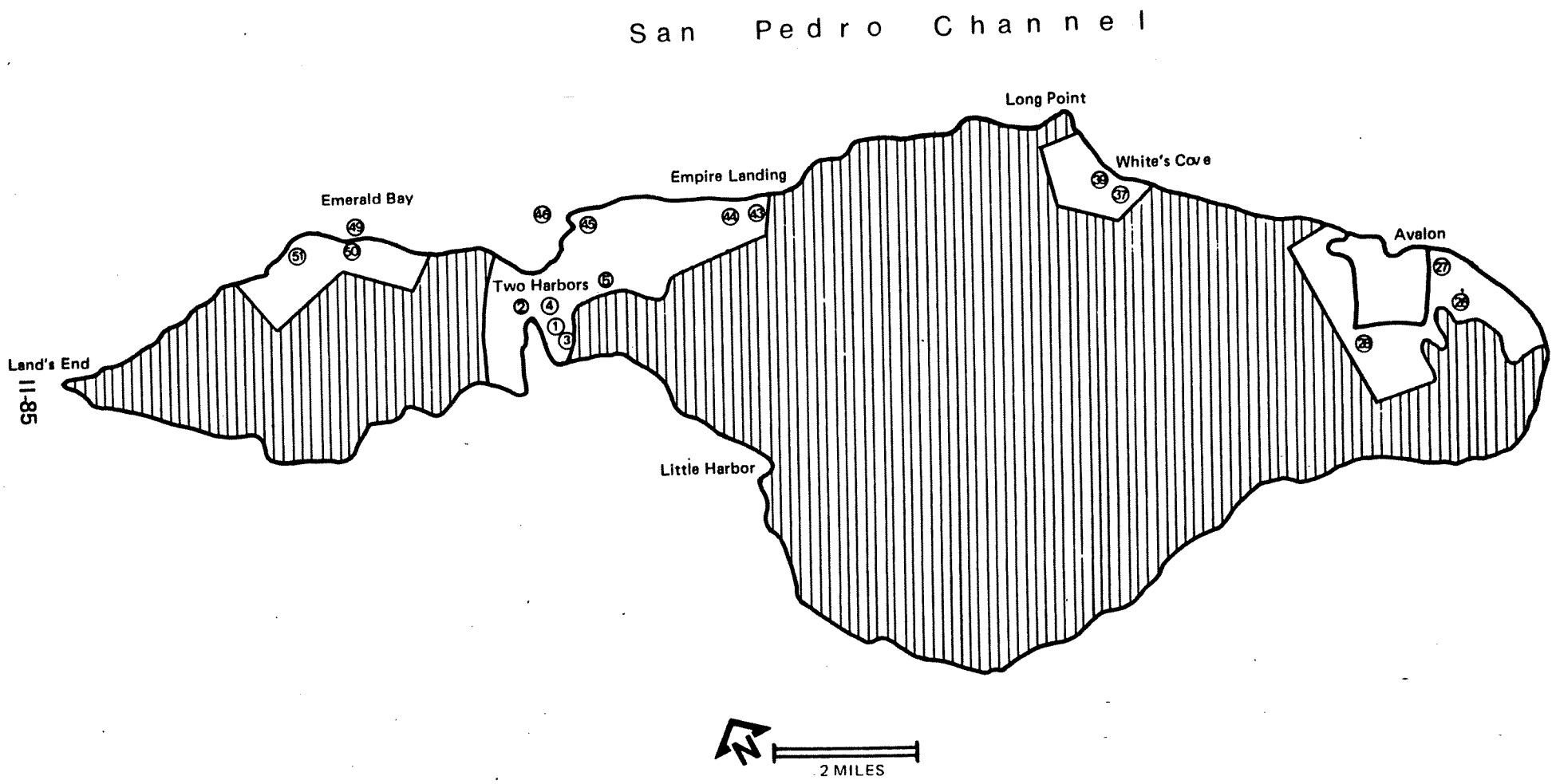
local coastal program

unincorporated
santa catalina island

map 11

RARE PLANTS IN NON-CONSERVANCY AREAS

(legend on preceding page)



LOS ANGELES COUNTY DEPARTMENT OF REGIONAL PLANNING

LEGEND FOR RARE PLANTS IN NON-CONSERVANCY AREAS MAP 11

1. Monanthoohloe littorialis
   Atriplex watsonii
   Salicornia subterinalis
   Salicornia virginica
   Jaumea carnosa
   Cressa trux. vallicola

2. Spergularia marina
   Chaetopappa lyonii
   Atriplex watsonii
   Suaeda californica

3. Aphanisma blitoides
   Phaecelia distans
   Calandrinia maritima
   Microseris heterocarpa

4. Bergerocactus emoryi

5. Lyonothamnus fl. floribundus

26. Dendromecon rigida rhamnoides
   Orobanche fasciculata franciscana
   Stylomecon heterophylla
   Aspidotus californicus
   Gnaphalium icrocephalum
   Quercus lobata
   Lithophragma affine ixtum
   Vitus girdiana

27. Mentzelia micrantha
   Lotus subpinnatus
   Eriophyllum nevinii
   Astragalus tr. trichopodus
   Coreopsis gigantea
   Jepsonia malvifolia
   Andropogon barbinodis

28. Helenium puberulum
   Phaecelia grandiflora
   Gilia capitata abrotanfolia
   Conyza coulteri
   Erigeron foliosus

37. Galvesia speciosa
   Linanthus bicolor
   Coreopsis gigantea
   Gilia nevinii

39. Lotus subpinnatus
   Eriastrum filifoliu

43. Aspidotus californica
   Coreopsis gigantea
   Gnaphalium palustre

(Continue Next Page)

LEGEND (Continued)

44. Jepsonia malvifolia
    Senecio lyonii
    Microseris heterocarpa
    Microseris dougasii platycarpha

45. Euphorbia spathulata
    Eriophyluum nevinii
    Microseris douglasii platycarpha
    Jepsonia malvifolia
    Galvesia speciosa

46. Lavatera assurgentiflora
    Bromus arizonicus
    Coreopsis gigantea

49. Papaver californica
    Aristida adscensionis
    Xylococcus bicolor
    Quercus tomentella
    Dendromecon rigida rhamnoides
    Cardamine californica

50. Lotus grandiflorus
    Aspidotus californica
    Xylococcus bicolor
    Galvesia speciosa

51. Asolepias fascicularis
    Trifolium macraei
    Hordeum californicum
    Coreopsis gigantea
    Pluchea purpurascens
    Psilocarphus T. tenellus
    Cressa trux vallicola
    Trichostema lanceolatum
    Sisyrinchium bellum

Source: Center for Natural Areas Resource Management Rare Plants Map

unincorporated
santa catalina island

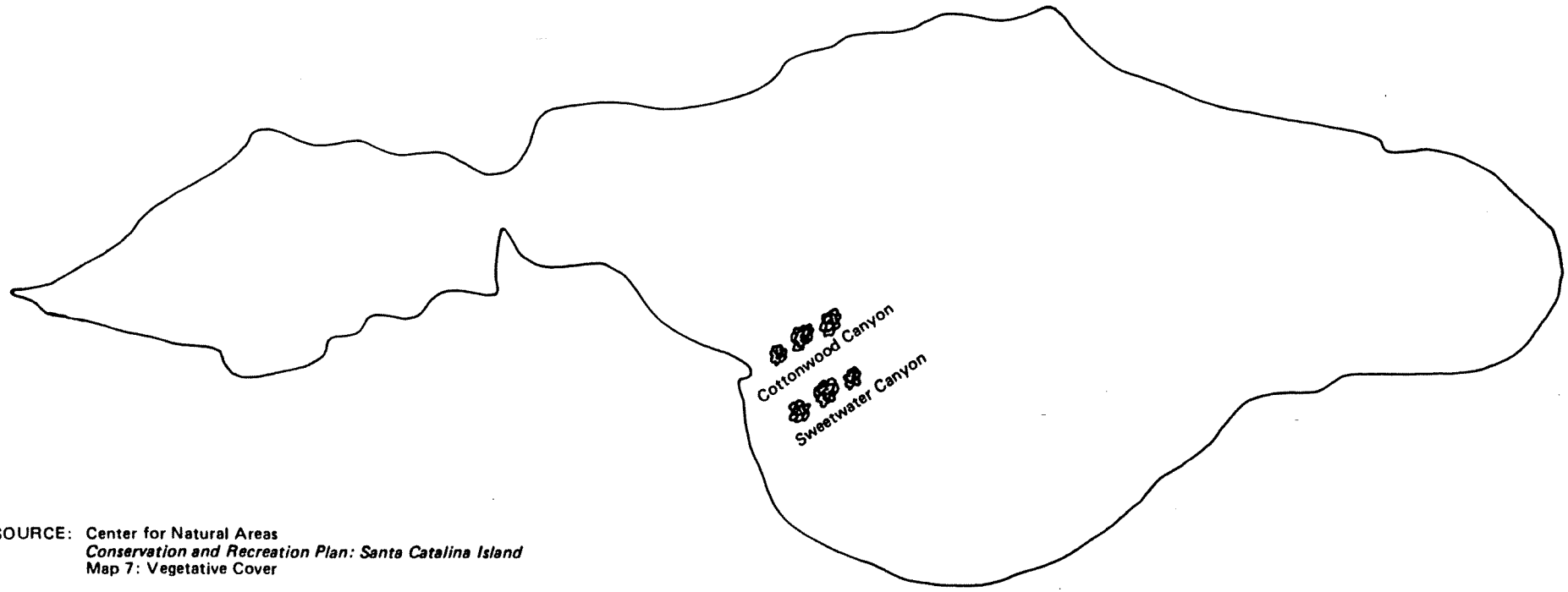
map 11A

RIPARIAN VEGETATION

Riparian Vegetation

N

2 MILES



SOURCE: Center for Natural Areas
Conservation and Recreation Plan: Santa Catalina Island
Map 7: Vegetative Cover

Los Angeles County Department of Regional Planning

4. Cultural Heritage Resources

a. Coastal Act Policy

Section 30244

Where development would adversely impact archaeological or paleontological resources, as identified by the State Historic Preservation Officer, reasonable mitigation measures shall be required.

b. Issues Identified

- Increased use of land may further impact culturally valuable sites and resources.

c. Research Analysis

An important consideration in planning new development is the necessity to recognize significant archaeological and paleontological resources and mitigate the adverse impacts upon them. This is particularly true of resources which are relatively undisturbed.

Santa Catalina Island has been occupied by man for approximately 5,000 years. Nearly all occupation of the Island predates written records. The lifestyles and adjustments of these peoples to population pressures and variable resource availability is preserved in the archaeological record of the Island. The aboriginal quarrying and production of soapstone vessels and other objects is of keen interest to scholars of Southern California archaeology.

- Archaeological Resources

Prior to Spanish contact, coastal Southern California peoples lived in a hunting and food gathering culture. As populations grew, the variety and intensity of food resource exploitation increased. From 500 A.D. until the late 1700's an elaborate hunting and gathering culture developed in which major changes took place in the intensity of resource exploitation. Most important of these changes were the growth in population and the development of an elaborate exchange network.

At the time of first European contact there were two or three distinct Island populations which may be described by the location of their winter villages--one group based at the Isthmus, one at Avalon and one possibly in the Little Harbor area. The settlement pattern for each group focused on a winter or main village. Most permanent structures and the major cemetery were located at the village. Summer camps were located along the coast in large coves, on flats in the larger canyons or on ridges dividing these canyons on the leaward side of the Island.

A variety of small temporary camps existed near major food resources and adjacent to soapstone sources.

It is estimated that there are approximately 2,000 archaeological sites on Catalina Island. A little less than 1,000 have been located and described and only a handful of these have been sci- scientifically excavated. Approximately 850 sites were recorded by a single professional crew of four individuals during one season of work. The remaining sites were recorded during an environmental assessment and they have not necessarily been evaluated in light of all current environmental concerns.

Aboriginal archaeological sites may be divided into three general categories - middens, surface sites, and features. Middens are deposits exhibiting cultural remains mixed with soil. Surface sites are locations where cultural remains are restricted to the surface. Archaeological features may occur in association with one of the above categories or without other forms of cultural remains. The two most common features are soapstone quarries and roasting pits.

The span of time a site was occupied, the variety of activities present at that location and the degree to which the remains are preserved contribute to the value of an archaeological site.

The introduction of new land use or more intensive utilization may have significant negative effect upon archaeological resources. The cultural resources of the Island have been adversely affected by early artifact collecting expeditions, vandalism, casual collecting and erosion. However, unlike the mainland, archaeological sites have not been heavily impacted by residential development.

Collecting and vandalism were restricted to a limited range of resources at primarily large, late period, coastal camps. Erosion has had its greatest impacts upon temporary collecting camps located on ridges. A great many archaeological sites show little or no significant impacts by nature or modern man. The surface of many sites is littered with tools.

The value of these aboriginal remains is not limited to archaeological or anthropological interests. Archaeological sites preserve a record of past climates and environments. They also preserve a 5000 year perspective for the study of Island biology. Resource management topics may include the long range effect of human predation of certain resources, such as abalone populations may be viewed. Changes in sea water temperature may be measured by molluscan remains in archaeological sites.

Without appropriate measures, increases in recreational use of the Island may bring about rapid loss of valuable surface information. Conservation and fire protection programs may also directly affect archaeological resources. Brushing, contouring and reseeding of badly eroded areas, as well as the construction and maintenance of firebreaks, may destroy many important archaeological sites and thus represent management conflicts. Disturbance of the upper 12 to 18 inches of soil will completely disturb most archaeological sites typical to Santa Catalina Island.

The major sources of archaeological information pertaining to Catalina Island are the UCLA Archaeological Survey, the Santa Catalina Island Museum, California State University at Los Angeles and the Archaeological Research Unit of the University of California at Riverside. Much of the information utilized in this section was distilled from the Center for Natural Areas "Archaeological Element for Catalina Island" prepared by Dr. N. Nelson Leonard II of the University of California at Riverside in August 1976.

- Paleontological Resources

To date no areas of paleontological significance have been identified on the Island. However, bluff and landslide areas are included as potentially having paleontological resource value. Paleontological value associated with these areas centers around the high degree of erosion and strata exposure. Fossil finds are most often marine animals. Bluff and landslide areas should not be construed as the only areas where paleontological finds could occur, but merely that inherent geological factors give rise to exposure of such resources.

d. Findings

- The Island is rich in numbers of archaeological sites.
- Surficial archaeological resources may be lost through increased visitorship to inland areas and should be protected by adhering to this plan's protection strategy.
- Paleontological resources found to date have not been significant.

e. Plan Policies and Recommended Actions

1) Protect and restore all significant cultural resources.

2) When cultural sites are encountered during development, archaeological studies and appropriate mitigation measures shall be required.

3) Undertake an archeological survey prior to moving, disturbing or covering any significant amount of soil. If evidence of a significant resource is found, a qualified archeologist will be called in to recommend measures to eliminate or mitigate impacts.

4) Prohibit casual collection of cultural artifacts.

5. Coastal Visual Resources And Special Communities

a. Coastal Act Policies

Section 30251

The scenic and visual qualities of coastal areas shall be considered and protected as a resource of public importance. Permitted development shall be sited and designed to protect views to and along the ocean and scenic coastal areas, to minimize the alteration of natural land forms, to be visually compatible with the character of surrounding areas, and, where feasible, to restore and enhance visual quality in visually degraded areas. New development in highly scenic areas such as those designated in the California Coastal Preservation and Recreation Plan prepared by the Department of Parks and Recreation and by local government shall be subordinate to the character of its setting.

Section 30253

New developent shall:

(5) Where appropriate, protect special communities and neighborhoods which, because of their unique characteristics, are popular visitor destination points for recreational uses.

b. Issues Identified

- Assessment of height and bulk standards.
- Relationship of new development to immediate neighborhoods and natural features.
- Protection of historical and architecturally significant structures.

c. Research Analysis

The quality of the visual experience available on Santa Catalina Island is readily apparent to anyone who has visited the Island. Once, much of Southern California was as scenic as Santa Catalina Island is today, but urbanization has inevitably reduced the natural scenic quality of California. As the state continues to urbanize, the scenic quality of the Island will become an increasingly valuable resource to the people of Southern California.

The County can protect the Island's scenic character by ensuring that its policies are consistent with the resource management goal of the Santa Catalina Island LCP to protect and preserve the quality of the open space and natural features of Catalina Island.

The Santa Catalina Island Company (SCI Company), succeeded in interest by the Santa Catalina Island Conservancy, agreed in Recital C of the Open Space Easement Agreement to preserve the open space character of most of Santa Catalina Island. In fact, the Recital stipulates that the primary reason for the acceptance of the Easement was to improve public access for scenic and open space purposes. The SCI Conservancy, founded after an extensive study aimed at devising the most effective manner in which to conserve the Island, has consistently developed and pursued policies which seek to conserve the Island in its natural state in perpetuity.

Controlling those activities outside the Easement area which might impair the visual character of Santa Catalina Island presents different problems than those encountered in controlling activities within the Easement area. On non-Easement land, neither the SCI Company nor the SCI Conservancy are bound by the provisions of the Open Space Easement. This accentuates the need for appropriate conservation/development guidelines in the non-Easement areas. The Conservancy is bound by its articles of incorporation to preserve Catalina's natural resources with or without the Open Space Easement agreement.

In order to preserve the quality of the scenic resources on Santa Catalina Island, the County is working closely with the SCI Conservancy to devise methods of controlling certain activities, such as the construction of massive buildings, towers or power lines, which could threaten the Island's scenic character. The SCI Conservancy has largely served this function alone over the past several years with considerable success. Adoption of this coastal plan should strengthen this ongoing effort.

Protection of key visual areas outside of the Conservancy will be assured through development of plans and programs involving the design review of development that could impair the scenic qualities of Santa Catalina Island. Such designs shall recognize the importance of promoting the economic well-being of the Island as well as preserving its scenic quality, particularly in light of the large number of visitors anticipated on the Island.

Among the design review considerations which should be included are:

- consistency of design for all "coastal-facing" developments.
- visually aesthetic screening of marine and other services area.
- unifying architectural theme for commercial area.
- protection of existing areas of scenic quality and scenic vistas.
- preservation of view corridors.
- attractive and appropriately landscaped public areas.
- maintenance of facilities determined to be historically significant resources.

Although the Island as a whole is considered an important scenic resource, the following is a priority list for viewshed protection:

- Land/water interface, including promontories, coastal caves, off-shore islets and rocks, headlands, and sea mammal rookeries.
- Views of ridgeline from water.
- Distinctive geologic features.
- Native trees and vegetation.
- Native and introduced wildlife, especially bison.
- Island streams and riparian habitats.

The following older structures exist on Catalina Island which are of visual interest. The degree of historical significance of each structure should be determined by the Los Angeles County Museum of Natural History.

- Old Union Army Barracks: Located at Two Harbors, the Barracks building was built in 1864 by the occupying Union Army. It is currently in use as a yacht club facility.

- Banning Residence and Cottages: Located on a bluff over looking Isthmus Cove, these structures were built in 1909 by the Banning Brothers for private use. Currently, the Banning Cottages are utilized for employee housing and are in need of restoration.

- Eagle's Nest: Formerly used as a hunting lodge and stagecoach stop, Eagles Nest is now a popular refreshment stop on the inland motor tours out of Avalon.

- El Rancho Escondido: This private residence of the Wrigley family is a major breeding and training ranch for Arabian Horses.

- Camp Cactus: Some partially dismantled World War Two military buildings exist and while they will be completely dismantled, the site should be remembered by a suitable plaque.

Also of historical significance is the sandspit (Ballast Point) and salina in Catalina Harbor. Camphor and ironwood timbers of the famous junk, Ning Po, believed to be the first ship to use watertight compartments, lay just under the mud inside Ballast Point. Built in China in 1773 and held together entirely by wooden tree nails which finally gave way, the Ning Po's history includes smuggling, slave trade, piracy, and finally use as an Avalon cafe and museum. The Ning Po has not been visible for 25-30 years. The site might be identified by a suitable plaque.

The California Yacht Club has leased Ballast Point since 1962. The present facility which was built by club members has been improved, but not expanded, since that date. The structure

structure consists of a wooden platform, sixty feet square, closed on one side, partially closed on another side, and railed in on the remaining two sides. It is partially roofed and contains a kitchen, barbeque equipment, self-contained chemical toilets, electric generator and picnic tables. It is used as a destination gathering/recreational facility. The use of this facility has not been limited to California Yacht Club members, but has been shared with many other Southern California boating groups.

Environmental review at the time of the implementation phase of the LCP will help determine the relationship of biotic resources on the salina to this structure. Should there be significant environmental impacts caused by this structure, an evaluation of the facility would be necessary at that time to look at the possibility of phasing out and relocating the yacht club.

d. Findings

- The entire Island is scenic.
- Priority is assigned to protection of the following viewshed areas: land/water interface, ridgelines, distinctive geologic features, native trees and vegetation, and Island streams and riparian habitats.
- The Open Space Easement will help keep the majority of the Island in an open and scenic state. The Conservancy will assure that the natural beauty of Catalina Island is preserved.
- Zoning and building regulations and constraints will be used to protect scenic resources.
- Structures determined to have historical significance should be preserved and protected.

e. Plan Policies and Recommended Actions

1) New development including buildings, fences, paved areas, signs and landscaping, shall be attractively designed to protect highly scenic natural or historical areas. Views of the shoreline, both from the land and water, should also be protected.

2) Priority shall be assigned to protection of the land/water interface, ridgelines, distinctive geologic features, native trees and vegetation, natural streams and riparian habitats.

3) All intensive new development shall be channeled into non-Easement areas adjacent to already existing development such as Two Harbors, Avalon Canyon, Empire Landing, White's Landing, Airport-In-The-Sky and Pebbly Beach.

6. Hazard Areas

a. Coastal Act Policies

Section 30253

New development shall:

(1) Minimize risks to life and property in areas of high geologic, flood and fire hazard.

(2) Assure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area or in any way require the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs.

Be consistent with requirements imposed by an air pollution control district or the State Air Resources Control Board as to each particular development.

(4) Minimize energy consumption and vehicle miles traveled.

(5) Where appropriate, protect special communities and neighborhoods which, because of their unique characteristics, are popular visitor destination points for recreational uses.

b. Issues Identified

- Development in geologically hazardous areas.
- Development in fire hazard areas.

c. Research Analysis

- Introduction

In order to help develop preparedness plans, hazards are categorized with respect to their probability, potential degree and extent. Where the probability of occurrence is remote, no further evaluation is made. Figure 5 (following page) tabulates the interrelationship of identified hazards and factors related to hazards.

- Earthquakes

Earthquake activity represents a serious problem for all of California. Under present conditions, losses due to earthquake shaking have been projected as high as a total $21 billion in California between 1970 and the year 2000 (Urban Geology, Master Plan for California, Page 7, Californla Division of Mines and Geology Bulletin 198, 1973.)

FIGURE 5: Hazards

Hazards	Probability	Degree of Potential Hazard	Extent of Potential Hazard	Feasible Method of Preparedness
Earthquake	Moderate	Moderate/ Severe	Island-wide	Design mitigation
Faulting	Slight	Low on Island	Localized	Develop avoidance Strategy
Coastal Erosion	High	Severe	Coastal-wide	Develop avoidance Strategy
Subsidence	Very Slight	-	-	-
Landslide	High	Severe	Localized	Develop avoidance strategy or stabilization
Tsunamis	Very Slight	Severe less than 10', none above 20'	Coastal-wide	None for local quakes, effective for distant quakes
Currents	High, certain locations	Low to Moderate	Localized	Lifeguard service
Fire	Moderate	Moderate*	Island-wide	Protection possible with seasonal closure of remote areas and camps
Santa Anas and Storm Winds	High, Fall and Winter	Severe	Localized	Protection possible with foresight in development

*An extremely dry season in conjunction with Santa Ana wind conditions could create a severe degree of potential hazard.

Source: Center for Natural Areas

local coastal program

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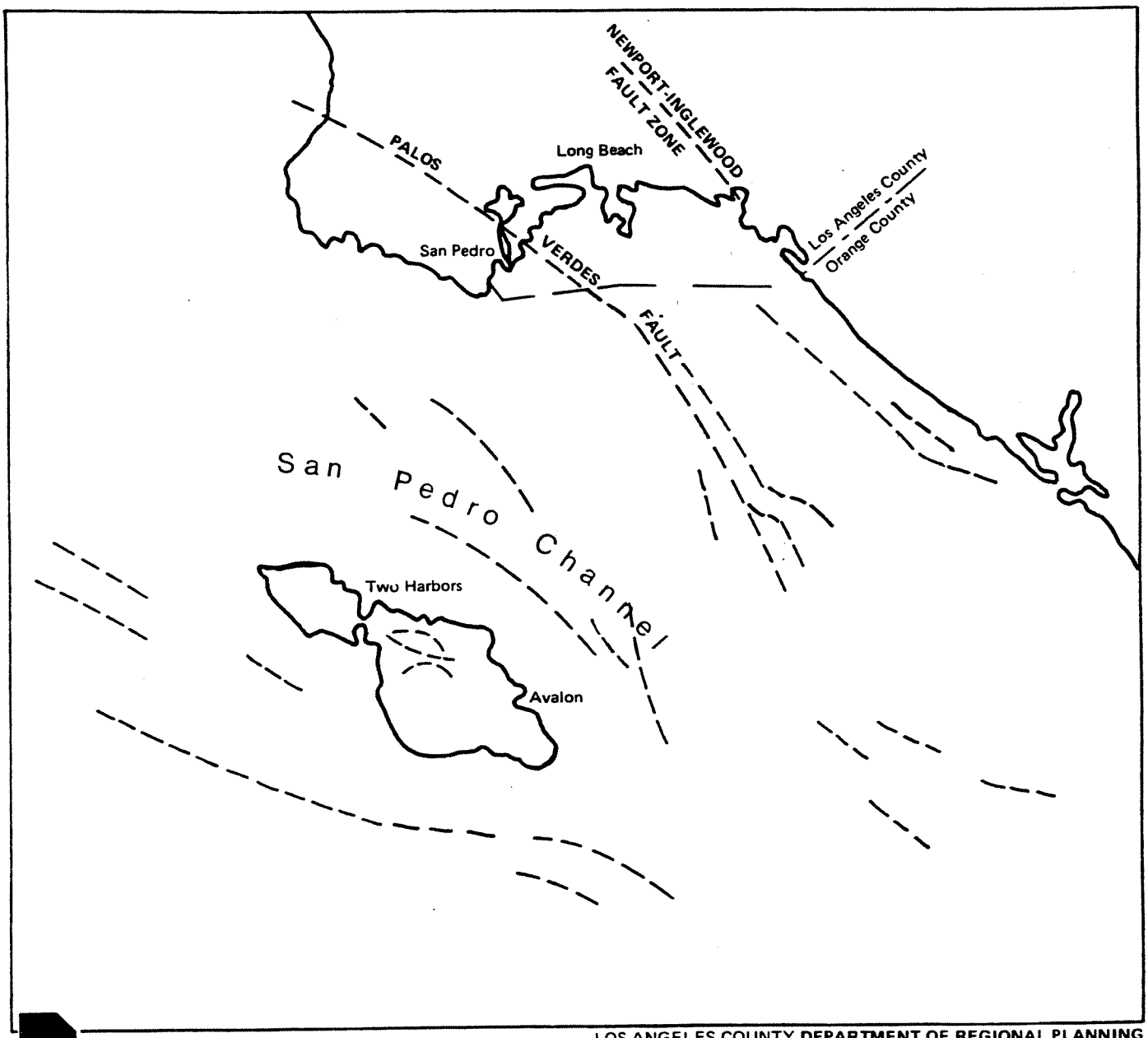
santa catalina island

map 12

EARTHQUAKE FAULTS

Note: Offshore and Catalina Island faults indicated are unnamed



The State of California has enacted legislation, the Alquist-Priolo Act (Ch. 7.5, Division 2, Public Resources (Code), to provide for public safety from the hazard of active faults. As required under the Act, the State Geologist established a program in early 1973 to delineate special study zones. These zones encompass traces of potential and recently active faults, with the zone boundaries positioned 1/8 mile on either side of potentially active faults. No active or potentially active faults have been identified anywhere on Santa Catalina Island.

Santa Catalina Island is in Zone II of the severity zones for earthquake damage in California. Zone II refers to moderate damage from earthquake activity, which corresponds to VII on the Modified Mercalli Scale. Los Angeles, Santa Barbara, and Long Beach are in Zone III, the major California damage zone (Urban Geology, Master Plan for California, pp. 19-23).

The actual effects upon Santa Catalina Island of a future earthquake are difficult to predict, as they would depend upon the amount and type of structures built. Coastal Southern California and the offshore islands, in the vicinity of Santa Catalina Island, are considered seismically active areas. Pipkin, et. al. state that "the three Long Beach earthquakes in 1933, the largest of which was rated at 6.3 on the Richter scale, originated on the Newport-Inglewood fault and are believed to have inflicted relatively little damage to structures on Santa Catalina Island."

Two major faults are located within the general area of Santa Catalina Island: the San Clemente Escarpment to the south and the Newport-Inglewood Fault to the northeast. Of these, the Newport-Inglewood is the most hazardous. At least four other faults are closer to the Island. These include the Catalina escarpment (to the south), an unnamed escarp-ment, the San Pedro Escarpment, and the Palos Verdes Fault (to the north).

Conclusive results have not been obtained from the literature or from various professional scientists about the actual earthquake hazard for Santa Catalina Island. The Island is within a seismically active region and earthquakes have occurred in the past. A magnitude 7.0 earthquake is possible for Santa Catalina Island. Thus earthquakes on Santa Catalina Island are listed as having a "moderate" probability.

- Tsunamis

Within California, it is estimated that losses due to tsunami damage have been projected as high as $40 million,

between 1970 and the year 2000. The greatest damage can be expected in Del Norte County,"... but other sections of the California coast and offshore islands, such as Santa Catalina, are also subject to damage" (Urban Geology, Master Plan for California, p.11). Most of the losses will occur in the coastal areas below the 20 foot elevation above the mean water level.

According to J. H. Wiggins, tsunamis are "large sea waves produced by any large scale, short duration disturbance of the ocean floor. They are principally produced by shallow, submarine earthquakes, but can also result from submarine earth movement (landslides), subsidence, or volcanic eruptions."

The following applies to California and the City of Los Angeles, although it may have a general relevance to Santa Catalina Island. Since 1946 the California coastline has been affected with five (5) significant tsunamis. Tsunamis produced by earthquakes in the Gulf of Alaska Aleutian trench area occurred in 1946, 1952, 1957 and 1964. The tsunami produced by the 1960 Chilean earthquake also caused considerable damage in Southern California. To date, damage from tsunamis has primarily been confined to boats and facilities in harbor areas.

Significant wave run-up from tsunamis has not been reported within the City of Los Angeles. However, had the 1960 and 1964 tsunamis reached the area during high tide, the run-up might possibly have caused some minor damage.

Tsunamis cannot be prevented, but an effective warning system may give many hours of advance notice. The federal government operates two tsunami warning centers-one in Hawaii and one in Alaska. California falls into the area covered by the Alaska region. The tsunami warning center is tied into a series of seismographs. When an earthquake occurs with the potential to generate a tsunami, a tsunami warning is issued for those areas near the epicenter. An alert will be issued for areas further away that would not be affected by a tsunami for several hours.

A series of tide gauges is in operation throughout the Pacific Ocean . If these gauges record the passage of a tsunami, the alert will be upgraded to a warning for those areas in the path of the tsunami. Thus, a warning is only issued if an area is close to the epicenter of an earthquake, or if the tide gauges confirm that a tsunami was generated.

At the state level, a tsunami alert or warning will arrive in the Office of Emergency Services in Sacramento. The same message is received simultaneously at designated coastal warning points (usually the dispatcher in each county sheriff's office).

The Office of Emergency Services will then call each coastal warning point to verify that they received the message. Additionally, Emergency Services also puts out an immediate notice on the Law Enforcement Teletype.

Wiggins points out that in addition to the hazards of tsunamis from distant sources, there is also a possibility of locally generated tsunamis. Since there are several faults in the area directly offshore, there is a potential for earthquake activity.

Although there is no record of tsunami damage on Santa Catalina Island, the hazard potential should not be ignored.* The tsunami warning system must be maintained in a state of readiness. Structures should not be built within tsunami run-up areas.

- Coastal Erosion

The southern side of Santa Catalina Island receives the direct brunt of storm waves from the open Pacific. As a result, wave erosion is most serious on this side. High seacliffs and a few bays have resulted from the wave erosion. On the northern side, the Island is relatively well protected and receives only the refracted storm waves which pass around the northwest end of the Island. Occasionally, severe waves from a Santa Ana wind condition may reach the Island's north side and cause severe erosion.

- Currents

Currents on the north side of Santa Catalina Island are influenced by rocky headlands and promontories. The current may sweep through the areas at rapid rates. Dr. Robert Given, of the USC Marine Science Center on Santa Catalina Island, indicated that one such area on the Island's north side is from Bird Rock (especially the east end) to Blue Cavern.

Dr. Given pointed out that the current in this area could be hazardous at times. The currents can also be hazardous in the Isthmus area, but generally, experienced divers can recognize the hazard by the kelp lying down in the direction

*Tsunami runup in Catalina Harbor is unofficially estimated to have occurred 6-8 times in the last 25 years, with a runup of 11 feet above mean tide on occasion (Bombard-1981).

of the current. At such time, divers can and should avoid the area. A warning system could be established when these conditions are present. Rip tides do occur at one of the major swimming beaches (Ben Weston). As the Island's use increases, swimming or diving in the area probably will increase. The feasibility of posting warnings when currents or rip tides are present should therefore be investigated.

The south side of the Island is subject to oceanic influences. The wave conditions there reflect storms in Hawaii, Japan, and other Pacific areas. Swells and ground surges are more common on this side of the Island, especially near the Palisades. Surges may also occur as waves pass over Farnsworth Bank.

- Fires

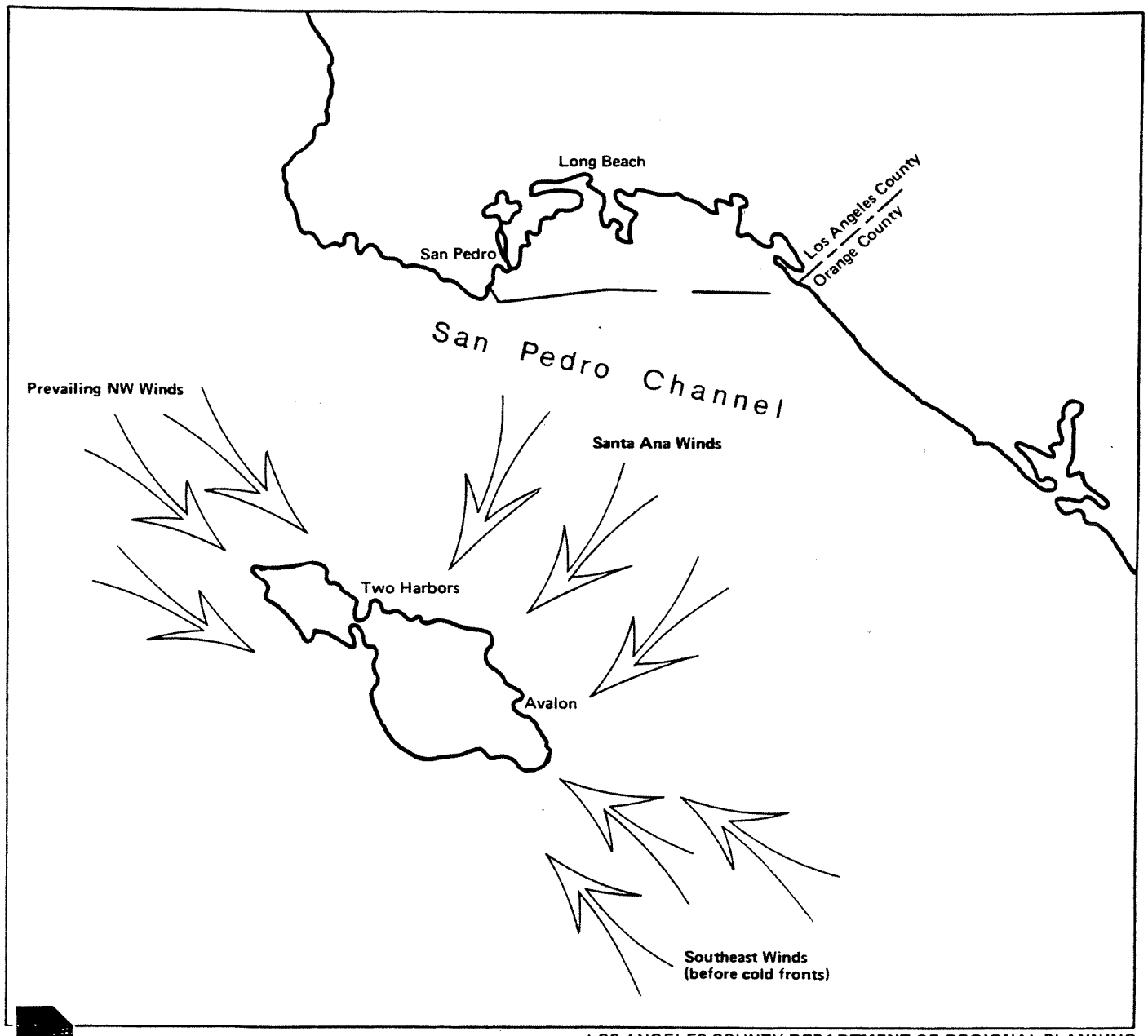
Due to oceanic influence, the Island's fire hazard is less serious than much of the Southern California mainland. For example, its relative humidity and moisture levels are generally higher than those in the rest of Los Angeles County. In the historic past, no critical wildland fires on the Island have been reported.

The State of California has developed a fire hazard severity scale for delineation of wildlands utilizing three criteria: 1) fuel loading in terms of the type and flammability of vegetation, 2) fire weather and 3) slope of land. Santa Catalina Island has light to moderate fuel loading, a moderate range of weather (except during Santa Ana winds) and a moderate range slope classification.

The last fire of substantial size was in 1955. However, the normal fire danger on the Island, coupled with the short-term severity of the annual Santa Ana winds, and the expected increased usage in the interior of the Island creates a potential for serious fire hazard. If a large fire should occur, the Los Angeles County Fire Department is ready to assist. The Department, using helicopters, could respond with a moderate size fire fighting crew. Much of the sophisticated fire fighting equipment would have to be ferried to the Island on a barge. Thus, there would be a significant time lag, possibly as long as one day, before a normal response of men and equipment would reach the Island to achieve control of a major wildland fire. Over the years, the County Fire Department has enjoyed and appreciated the close cooperation and assistance of the Santa Catalina Island Company, Santa Catalina Island Conservancy and the City of Avalon Fire Department. A plan exists whereby the County Fire Department may command the men and equipment resources of the Island to combat wildland fires. It should be noted, however, that the City of has only enough equipment to provide limited assistance.

map 13

SEVERE WINDS



With the proposed primitive campsites on the Island, an increase in the usage of the interior and lack of rapid access and lack of communication on most of the Island, life saving evacuation procedures must be reasonably achi-evable. The only reasonable life saving measure and one that would also provide a measure of fire prevention would be the closure of interior Island facilities during hazardous fire weather.

- Santa Anas and Storm Winds

Santa Ana wind conditions usually occur between November and March. These north to northeast high winds are infrequent but dangerous, sometimes reaching 80 knots from Avalon to the West End, with breakers swamping inshore moorings and dragging moorings ashore.

For safety, during periods of Santa Ana winds, all boats should move to coves protected from N-NE winds. Additionally, the southwest side of the Island provides protection, especially from Little Harbor to the Palisades.

Storm winds occur mainly during the winter and early spring. These winds are primarily from the northwest. However, before the passage of a cold front, they can be from the southeast.

- Landslides

As a result of extensive investigations performed in the Two Harbors area by Bechtel Corporation, Frankian and Doug Moran three types of landslides have been identified:

- active or potentially active landslides that are moving or could move at any time;
- ancient landslides that moved in the prehistoric past, but are not moving now and have not moved in over 5000 years; and,
- massive accumulations of materials that have washed or moved downslope in the prehistoric past that are not moving and are not likely to move.

The 1968 geology map for the Two Harbors area prepared by Bechtel Corporation will be the base map used for all geologic studies undertaken at Two Harbors. This map is hereby incorporated by reference into this Land Use Plan.

It is recommended that active or potentially active landslides be avoided. Additionally, ancient landslides that may now be marginally stable should be avoided. In any case, all

landslide areas must be studied by a qualified geologist and approved by the County Engineer as stable before any development will be permitted.

- Emergency Services in the Island Interior

Emergency services in the interior and around the Island's perimeter are provided by the County of Los Angeles, the City of Avalon and volunteer groups. Search and rescue is provided by trained paramedics from Baywatch at Two Harbors and Avalon and from the Sheriff's Department. They are assisted by volunteer Island residents and the rangers of the Santa Catalina Island Conservancy. An ambulance from the City of Avalon is on call when needed anywhere in the interior.

Fire protection is discussed earlier in this chapter; and the Sheriff's Department is discussed in the chapter on Public Works and Facilities.

At current use levels emergency services on the island are adequate. With an increase in the level of use of the interior more trained personnel will be needed. The major problem with emergency services at the present time is lack of communication between the various agencies and volunteer groups. All of the groups operate on different radio frequencies. A single radio channel needs to be set aside specifically for all emergency services on the Island.

d. Findings

- The entire Island is exposed to a variety of natural hazards.
- Most of the hazard areas are located in the Open Space Easement where intensive urban development is not contemplated.
- There are limited areas of active and inactive landslides in the Two Harbors area which must be considered in planning for development.
- With proper education most people are not likely to be adversely affected by natural hazards on Santa Catalina Island.
- The increased use of the interior of the Island coupled with dry weather and Santa Ana winds could produce situations of severe fire potential.

e. Plan Policies and Recommended Actions

1) In areas of high geologic hazard (seismic, tsunami, landslide, etc.) all proposed structures for human occupancy and other developments that could significantly alter geologic processes or contribute to hazards shall be reviewed and appropriately regulated to avoid undue risks to life and property.

2) Applications to the County Engineer-Facilities for grading and building permits shall be reviewed for adjacency to, threats from and impacts on geologic hazards arising from seismic events, tsunami runup, landslides, beach erosion or other geologic hazards such as expansive soils and subsidence areas.

3) During extreme fire weather conditions, all isolated and primitive areas of the Island may be closed to all visitors and residents except those with a need to enter.

4) Emergency services in the interior and around the Island's perimeter will be provided by Baywatch and other emergency personnel. Funding will be provided by Island user groups.

5) A single radio frequency will be established for use by all agencies and volunteer groups involved in emergency services on the Island.

6) Drainage from rooftops in the proposed Two Harbors development shall be collected and funnelled to a common location away from developed sites in order to prevent absorption into hillside expansive soils.

7) Utilities for the proposed Two Harbors development shall be designed to protect the utilities by taking into account expansive soils, soil creep conditions and conditions associated with designated landslide areas.

8) Landscaping species used on sloping hillside areas shall be selected as to require little or no watering in order not to exacerbate expansive soil conditions, soil creep conditions, and/or reactivate designated slide areas.

C. New Development Policy

1. Design Principles For New Development

2. Circulation

3. Public Works and Facilities

4. Diking, Dredging, Filling and Shoreline Structures

5. Industrial Development and Energy Facilities

1. Design Principles For New Development

a. Coastal Act Policies

Section 30250

a. New development, except as otherwise provided in this division, shall be located within, contiguous with, or in close proximity to, existing developed areas able to accommodate it or, where such areas are not able to accommodate it, in other areas with adequate public services and where it will not have significant adverse effects, either individually or cumulatively, on coastal resources. In addition, land division other than leases for agricultural uses outside existing developed areas shall be permitted only where 50 percent of the usable parcels in the area have been developed and the created parcels would be no smaller than the average size surrounding parcels.

b. Where feasible, new hazardous industrial development shall be located away from existing developed areas.

c. Visitor-serving facilties that cannot feasibly be located in existing developed areas shall be located in existing isolated developments or at selected points of attraction for visitors.

Section 30252

The location and amount of new development should maintain and enhance public access to the coast by (1) facilitating the provision or extension of transit service, (2) providing commercial facilities within or adjoining residential development or in other areas that will minimize the use of coastal access roads, (3) providing nonautomobile circulation within the development, (4) providing adequate parking facilities or providing substitute means of serving the development with public transportation, (5) assuring the potential for public transit for high intensity uses such as highrise office buildings, and by (6) assuring that the recreational needs of new residents will not overload nearby coastal recreation areas by correlating the amount of development with local park acquisition and development plans with the provision of onsite recreational facilities to serve the new development.

Section 30253

New development shall:

3. Be consistent with requirements imposed by an air pollution control district or the State Air Resource Control Board as to each particular development.

4. Minimize energy consumption and vehicle miles traveled.

b. Issues Identified

- Consistency of development pattern adjacent to Avalon.
- Development intensity and pattern at Two Harbors.
- Optimum size and function of USC Marine Science Center.
- Type of development and restrictions outside of the Avalon planning area and the Two Harbors area.

c. Research Analysis

- Introduction

Planning new development on Catalina Island, which has no utility (except phone) or land transportation connections with the mainland, poses additional planning problems to these normally encountered on the mainland ("over town"). Planning for even moderate development for areas removed from Avalon presents a double isolation problem because of the need to extend or create infrastructure systems necessary for urban type services.

The only significant new "urban-type" development in the unincorporated area of the Island is planned to occur at Two Harbors. Any significant development beyond those services and facilities needed to accommodate existing peak season residents is contingent upon the availability of additional water. An assured water supply will be a condition precedent to approval of any extensive new urban development. Only small and specialized new development is planned for several of the other non-Easement areas as indicated below.

- Two Harbors

Many plans have been prepared over the years for Santa Catalina Island and for the Two Harbors area. The Department of Regional Planning has reviewed many of these plans and has made a thorough review of the literature and research projects involving the area. In April, 1980 a draft design for Two Harbors was presented to the staffs of the County Department of Regional Planning and Parks and Recreation by the Santa Catalina Island Company. Following this meeting, DRP staff prepared a list of planning and design considerations for potential incorporation in the LCP. Discussions of these considerations among DRP, SCIC, and the CICAC has resulted in concurrence on many basic parameters for development in the Two Harbors area. Although these considerations apply primarily to Two Harbors, many have some applicability to new development in other non-Easement areas of the Island.

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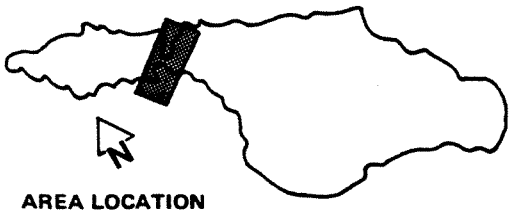
map 14

TWO HARBORS
(Existing Ownership and Development)

Santa Catalina Island Company (Non-Easement, Non-Conservancy)

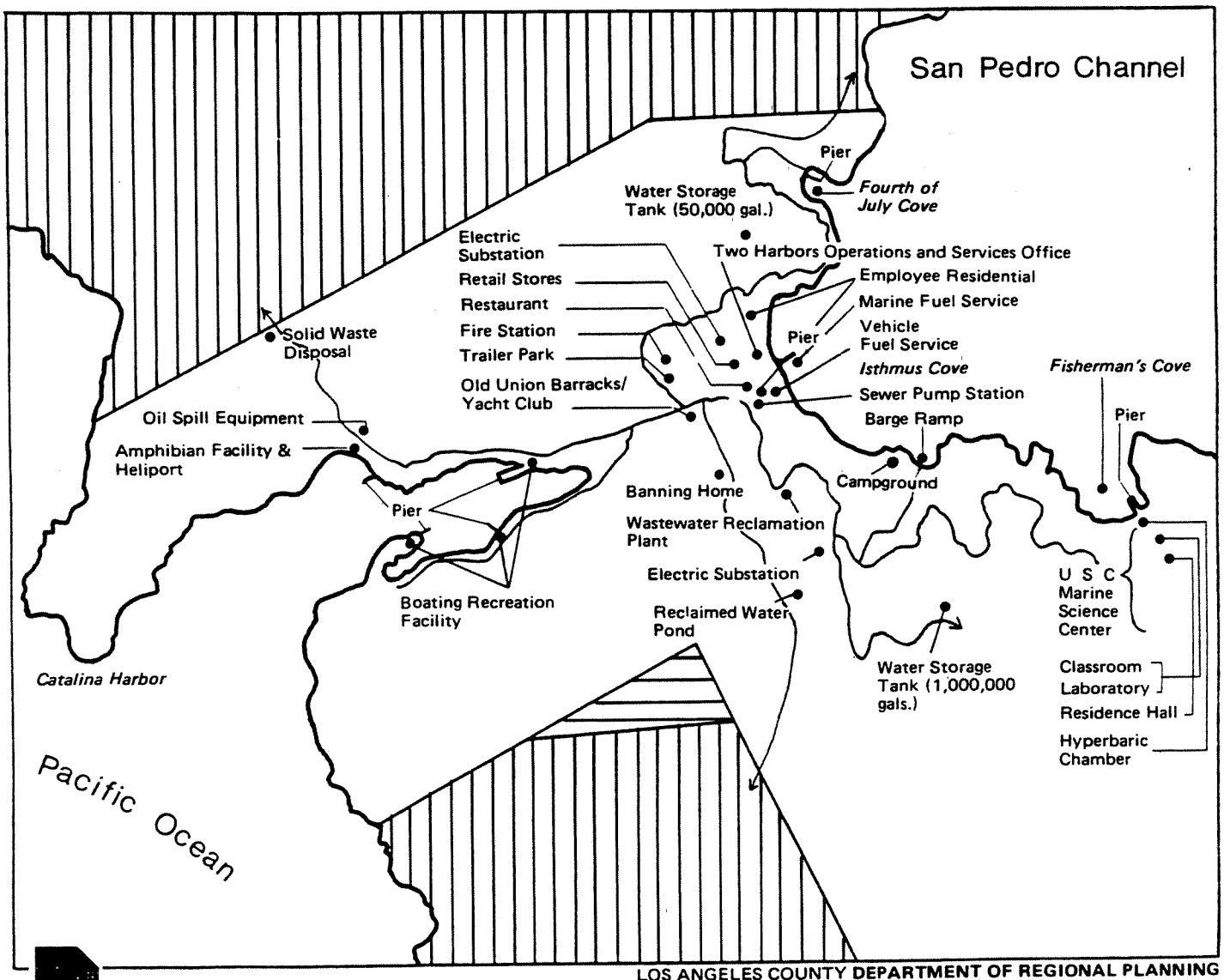
Conservancy Area Outside of Open Space Easement

Open Space Easement/ Conservancy



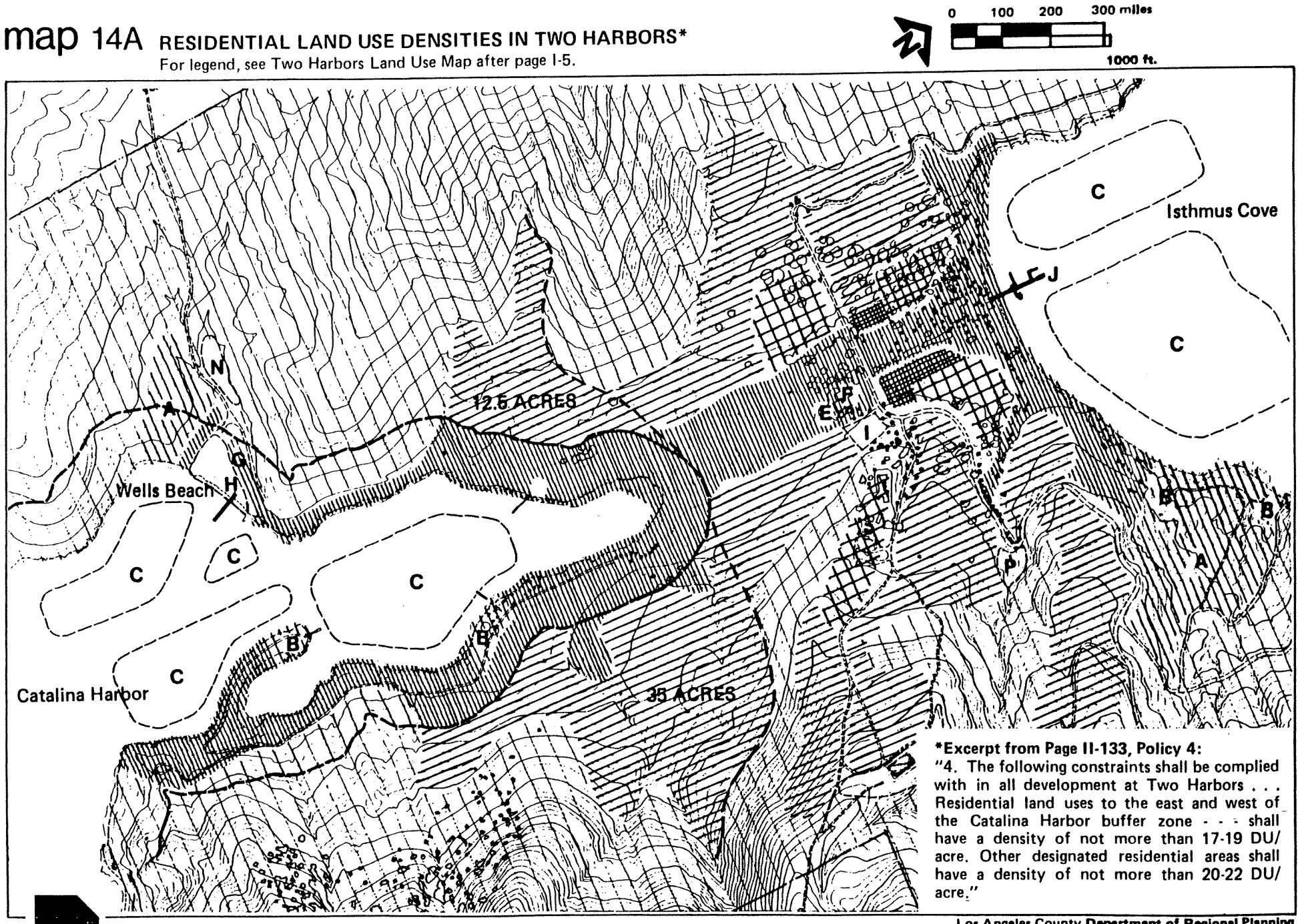
AREA LOCATION

1800 FEET



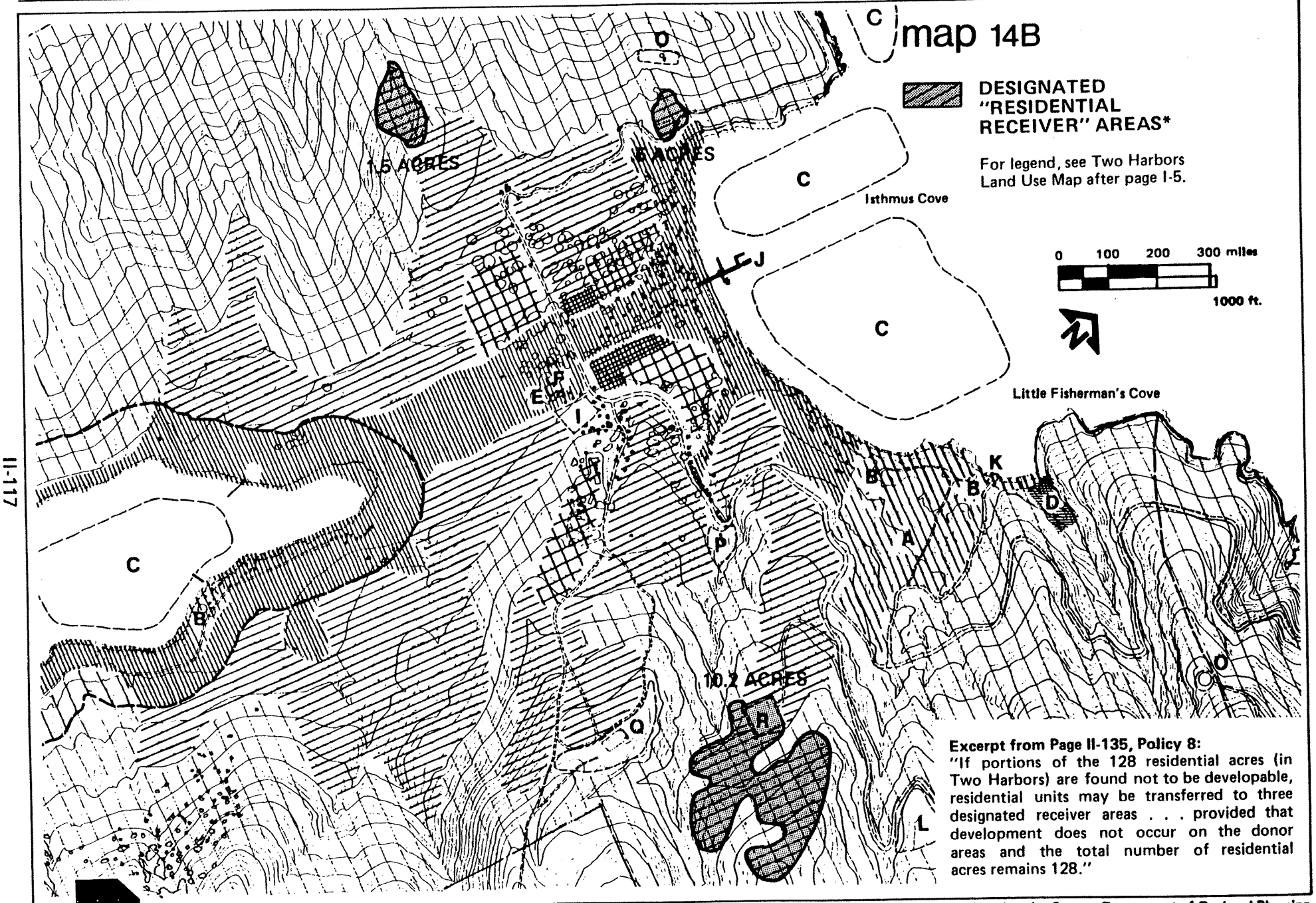
map 14A RESIDENTIAL LAND USE DENSITIES IN TWO HARBORS*

For legend, see Two Harbors Land Use Map after page I-5.



***Excerpt from Page II-133, Policy 4:**
"4. The following constraints shall be complied with in all development at Two Harbors . . . Residential land uses to the east and west of the Catalina Harbor buffer zone - - - shall have a density of not more than 17-19 DU/ acre. Other designated residential areas shall have a density of not more than 20-22 DU/ acre."

Los Angeles County Department of Regional Planning



Excerpt from Page II-135, Policy 8:
"If portions of the 128 residential acres (in Two Harbors) are found not to be developable, residential units may be transferred to three designated receiver areas . . . provided that development does not occur on the donor areas and the total number of residential acres remains 128."

Two Harbors is the main center of population on the west end of the Island. Dock facilities are provided for the mainland cruise boat and approximately 800-1000 moorings and anchorages can be accommodated (including both Isthmus Cove and Catalina Harbor). Services and facilities provided in 1980 included automotive and marine fuel and maintenance facilities, a general store, restaurant, small lodge, various marine related services, air services and emergency services. Additionally, there are several residences, a trailer park, public restrooms, a fire station, sheriff's station, several piers and a barge ramp. At Wells Beach there is an amphibian facility and heliport and an oil spill containment facility. Up the canyon from Wells Beach is the solid waste disposal site.

The population impacting Two Harbors on a peak weekend day in 1980 was approximately 3000 people. This represents an increase of nearly 20 percent since 1970. The 3000 people represent five major user groups: 1) recreational boaters; 2) USC Marine Science Center scientists, researchers, and students; 3) users of the Open Space Easement; 4) tourists; and 5), support and service workers.

At the present time, facilities for the recreational boaters (who bring their own "hotel room," toilet, water supply, shower, food and equipment) have been adequate. The people at the Marine Science Center have their own rooms, toilet facilities and water supply. However, facilities for the other three user groups mentioned above are extremely limited or nonexistent.

Ideally, Two Harbors should function as a balanced service resort community providing a full range of experiences and facilities for all five major user groups. Of necessity, Two Harbors would be completely self-contained since it cannot depend on the larger Los Angeles metropolitan area for ultilities, infrastructure, housing, schools or other services.

Of the 1,530 acres owned by the Santa Catalina Island Company in the Two Harbors area, only 273 acres meet the criteria of "developable land" as defined by the physical and environmental constraints listed below:

- Most development will not occur on slopes of 30 percent or more. Should it be found necessary or desirable to develop slopes steeper than 30%, special hillside planning and design solutions will have to be submitted for approval.
- No building construction shall obstruct natural drainage courses.
- Existing trees and vegetation will be retained and enhanced where possible.

- No development of permanent habitable structures will be permitted within tsunami run-up areas.
- Existing historic structures shall be preserved if economically feasible.
- Paved roads shall be provided to assure adequate access.
- Archaeological sites shall be avoided where feasible.
- Site-specific geology and soils reports shall be prepared by a qualified geologist for all development sites and approved by the County Engineer before any development can commence.
- The use of motor vehicles shall be discouraged in the community and be restricted to emergency, service and group transport vehicles (residents shall be permitted the use of golf carts and other similar small vehicles within the community).
- Significant view corridors shall be retained, and where possible, enhanced.
- Sufficient water resources shall be identified and developed and future solid waste site(s) identified consistent with community expansion needs.

Development costs for all initial capital improvements will be provided by the new development; however, on-going costs for maintenance and operation of all open space and administration may be provided through formation of a Community Services District, incorporation as a city or other form of legally recognized community government which can receive and utilize taxes, fees and other special revenues generated within the community.

The development at Two Harbors should include the following major design principles:

- Enhancement of the Isthmus Cove visitor arrival experience.
- Creation of an overall design for landscape and lighting treatments.
- Provision of a limited variety of architectural styles with overall theme of wood as a basic material and low-rise construction with selected architectural accents approved through design review.
- Provision of an overall signing program, including signs identifying trails, uses and interpretive information.
- Avoidance of large impermeable paved surfaces.
- Avoidance of fences and walls except where absolutely necessary for security and privacy.
- Location of hillside development to preserve significant view corridors.
- Piers to include areas for viewing, sitting and other passive use.
- Location of majority of development within a ten minute walking radius of the "community center".
- No development shall impact upon the Open Space Easement.
- Enhancement of the feeling of the Isthmus as a divide between the two Island masses.

- A three and one-half acre school site will be set aside.
- Provision of a kiosk on either side of Two Harbors on the principal routes into the Easement in order to inform, monitor and control campers, hikers, etc.

The Two Harbors Proposed Land Use Map in the Summary at the beginning of this report shows the Two Harbors developable area divided into areas generally suited for the provisions of residential, commercial, transportation centers, lodges/inns, open space, campgrounds, utilities and services. A 100 meter buffer zone will be established around the perimeter of Catalina Harbor to protect aquatic and shoreline resources. This buffer zone will have as its seaward boundary the mean high tide line. Conditions imposed in the buffer zone area will permit the following uses:

- Land uses identified on Two Harbors Proposed Land Use Map including those for Well's Beach.
- The continued use of existing boat in/or coastal dependent facilities subject to environmental review.
- The continuation and improvement of roads, utilities and drainage systems subject to environmental review.

In conjunction with resort recreation development an inventory of the terrestrial and marine resources in Catalina Harbor and the buffer will be completed along the lines suggested in Appendix C. This study, in conjunction with other required environmental review, will assist in the following measures:

- Conditioning the extent of development around Catalina Harbor.
- Guiding the determination of mitigation measures.
- Establishing the type and degree of impact monitoring.

The purpose and scope of the study should ensure the following results within the buffer zone:

- Focus on information that will specifically guide planning and policy decisions in the preparation and processing of a specific community plan for Two Harbors.
- Provide information that will assist in the maintenance and management of Catalina Harbor marine resources, which includes mitigation and impact monitoring measures.

- Address all issues potentially affecting the Catalina Harbor ecosystem resulting from proposed Two Harbors development and, where necessary, recommend mitigation measures applying to their relative degree of impact.
- Ensure that study results are unbiased and clearly understood by everyone, thus allowing informed and equitable decisions to be made regarding all issues which may affect the future of the Catalina Harbor.

Following are the different land uses and total number of acres designated for possible development in the Two Harbors Proposed Land Use Map:

Campgrounds/Hostels	18 acres
View Corridor/Public Use	56 acres
Lodge/Inn	13 acres
Commercial	3 acres
Marine Commercial/Recreational Boating	6 acres
Residential	128 acres
Transportation Center	5 acres
Utilities/Services	11 acres
	240 acres

It is recommended that a mixture of increased user fees and income generating development be used to provide for the development of Two Harbors. An example of income generating development would be rental pool housing or time share condominiums.

Following is a listing of residential and commercial development contemplated in the Two Harbors area:

Support Residential (including Marine Science Center and service personnel)	650 units
Resort Residential (including housing for management personnel)	2,000 units
Lodge/Inn	400-500 rooms
Commercial	80,000 sq. feet
Hostels	75-150 persons

Designations of specific quantities and timing of affordable and lower cost recreation facilities will be made during the implementation phase of the LCP (See Policy #4, page II-133).

Because of the unique situation of the Island (construction workers cannot commute on a daily basis) temporary construction housing will need to be provided for the development of Two Harbors. This temporary housing will be located in already developed areas or areas proposed for development including, but not limited to, campgrounds and/or hostels.

The infrastructure for this housing (including water and sewage) can then be used by the future proposed development.

Development in the other Island non-Easement areas is addressed in a less detailed manner than land use in the Two Harbors area. Generalized land use designations for the following non-Easement areas appear on the Catalina Island Land Use and Facilities Improvement Map, located at the end of the LCP Summary.

- Fisherman's Cove (USC Marine Science Center)

The University of Southern California Marine Science Center is located on owned and leased land at Fisherman's Cove near the Two Harbors area. The Center conducts educational and research activities year-round, with emphasis on marine science, ocean engineering and marine policy. At present, the laboratory itself consists of five principal components: 1) the laboratory building, primarily set up to support marine biological activities; 2) the administration building; 3) the dormitory and dining facilities; 4) the waterfront area, including the pier, diving locker, hyperbaric chamber, helicopter pad and hangar buildings; and 5), the supplemental living quarters on leased land at Two Harbors. In addition, the laboratory has 260 acres of submerged tidelands in four coastal sites near the laboratory. These are under long-term lease from the California State Lands Commission and are used for undersea tests and research.

For the period 1981-1985 the following developments and improvements are projected:

. Waterfront improvements including the developent of an underwater habitat, a submersible laboratory, upgrading of a smaller hyperbaric chamber and enlargement of the diving support area.
. A complex of 10-12 permanent individual residential units 1200 square feet each, for the housing of short term (less than 6 months) visiting scientists and faculty.
. Dormitory space for 120 persons shall be developed at the Marine Science Center itself. Further accommodations for up to 300 persons will be developed in the Two Harbors area.
. Roads and pathways are to be improved; the sewage treatment plant will be moved from its present location to one of the rear valleys or ravines; and, landscaping with native Catalina Island plantings will be provided.
. An aquarium with several large holding tanks for collected, living specimens; a salt water circulating system; and, laboratory space for the maintenance of the collection will be provided.

- A new physical sciences laboratory building shall be built with 12,000 square feet of laboratories and classrooms behind the existing laboratory building.
- The waterfront hangar and adjacent buildings shall be completely reworked into an engineering building.
- A visitors center is to be built which contains scientific displays, photographs, samples of scientific equipment and audiovisual aids to acquaint visitors with work in progress at the lab.

Landscaping shall be required with the above facilities where appropriate.

- Avalon Canyon

The Avalon Canyon area is proposed to follow a pattern of land use as prescribed by the Resort and Recreation (R/R) land use category of City of Avalon Canyon General Plan. The hillside areas of Avalon Canyon should be low density residential consistent with the Low Density (LD) land use category of the Avalon General Plan.

The Wrigley Memorial Garden is located at the upper end of Avalon Canyon and serves as an arboretum of Catalina's native plant species.

- Several trailheads are located in the canyon for hikers and equestrians.
- Additionally, there are County Fire facilities, County Sheriff quarters, the Avalon Pre-School, a portion of the Avalon golf course, some moderate cost housing, and a ballpark.
- Some additional County/City facilities may be relocated in Avalon Canyon as a result of a joint L.A. County/City of Avalon Facilities Planning Committee study.

- Empire Landing

The non-Easement area generally referred to as Empire Landing contains approximately 350 acres and has approximately 1.8 miles (9,500 lineal feet) of shoreline.

Empire Landing is a possible gateway to the Island because it has an attractive beach area and connections by road and trail to the rest of the Island.

The existing rock quarry operation occupies approximately 200+ acres of land area and fronts on 6,000+ lineal feet of shoreline at the westerly end of the Empire Landing area. This quarry is an important resource of rock and rubble used in the construction of mainland and offshore breakwaters and shoreline protection facilities.The quarry operation area is presently a hazard area and public access should be discouraged.

At the easterly end of the Empire Landing area is a small complex of employee housing occupying approximately 5+ acres. There is an existing small pier in this location. If this area is needed for future public access into the Easement area, a more substantial pier would be required, along with expanded infrastructure and service facilities and precautions necessary to avoid hazards associated with the quarry.

The most westerly end of the rock quarry operations area, which is no longer utilized for rock quarrying, would be well suited for special marine services serving the Two Harbors area. Uses could be small boat storage, local boat and float haul out for short term annual maintenance, mooring maintenance and storage facilities.

The easterly end of Empire Landing area has 300+ lineal feet of sand and rock beach, adjacent tidelands adaptable to aquatic recreation, boat mooring or anchorage during fair weather and immediate uplands adaptable to visitor serving facilities for recreation boaters, campers or specialized agency camp.

The majority of the Empire Landing area is identified on geologic maps as a "complex of multiple landslides", of which 150 acres are noticeably active, and the remainder have varying degrees of stability which could support structures consistent with site specific findings from geologic and soils investigation.

There is an existing road from the easterly portion of Empire Landing providing vehicle and hiking access to the Airport-In-The-Sky area and a hiking trail/4 wheel drive vehicle trail from the easterly Empire Landing area to the Little Springs/Little Harbor area.

It is recomended that the following uses be permitted:

- Possible gateway to the Easement area.
- Visitor-serving facilities for recreation and commercial fishing boaters, campers or specialized agency camp.

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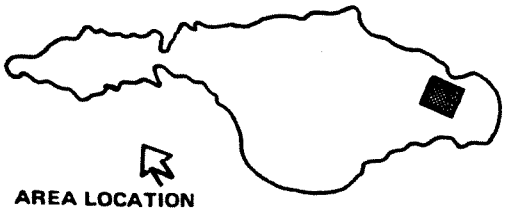
map 15

AVALON CANYON PLAN
(Existing and Proposed Ownership and Development)



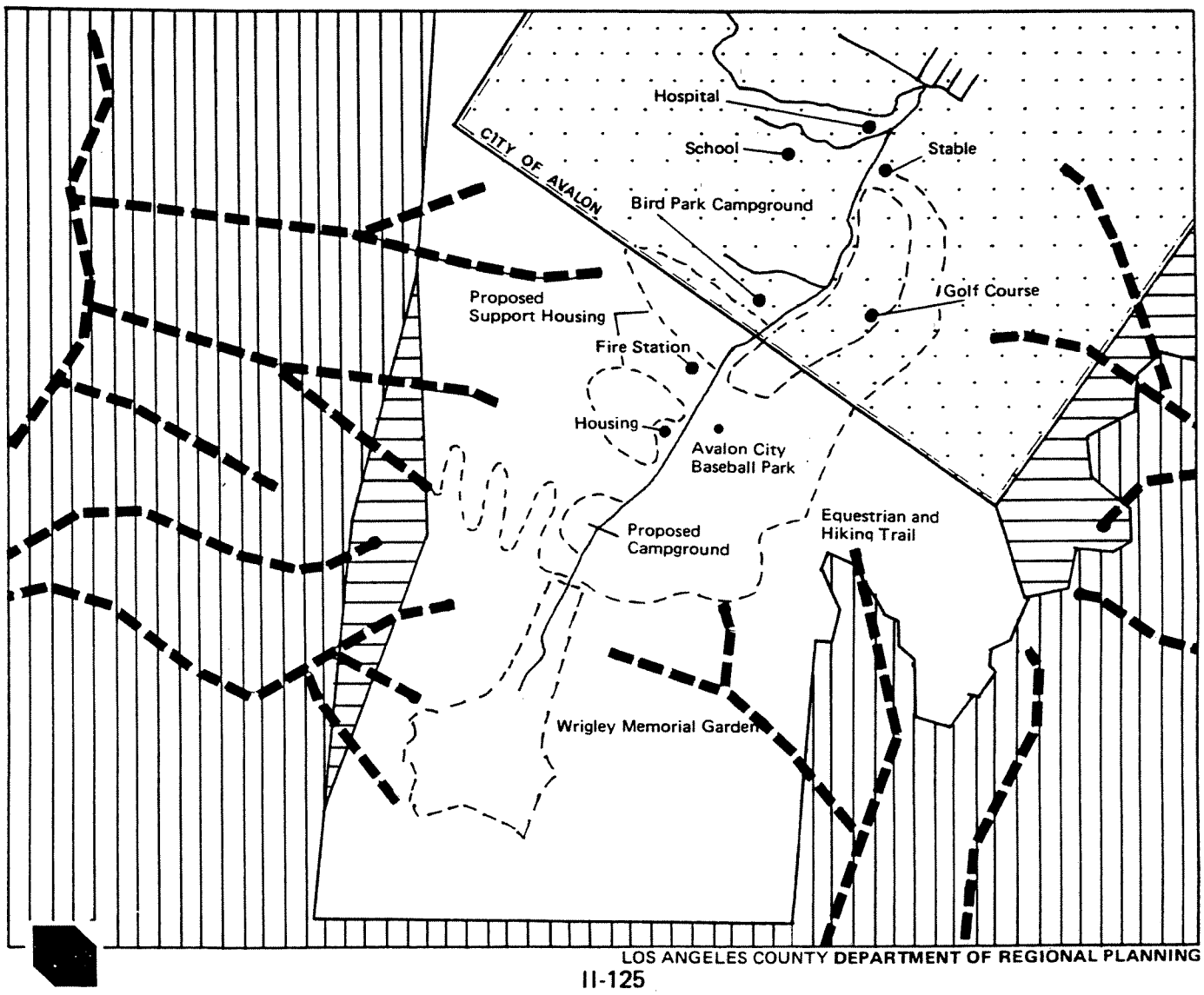
Santa Catalina Island Company (Non-Easement, Non-Conservancy)

Conservancy Area Outside of Open Space Easement

Open Space Easement/ Conservancy

Significant Ridge Lines

1800 FEET



LOS ANGELES COUNTY DEPARTMENT OF REGIONAL PLANNING

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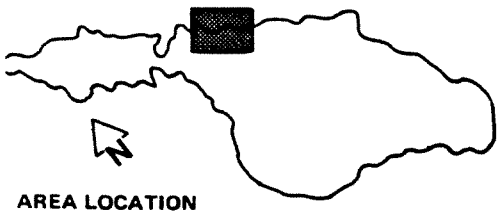
EMPIRE LANDING
(Existing Development)

Santa Catalina Island Company
(Non-Easement, Non-Conservancy)

Conservancy Area Outside of
Open Space Easement

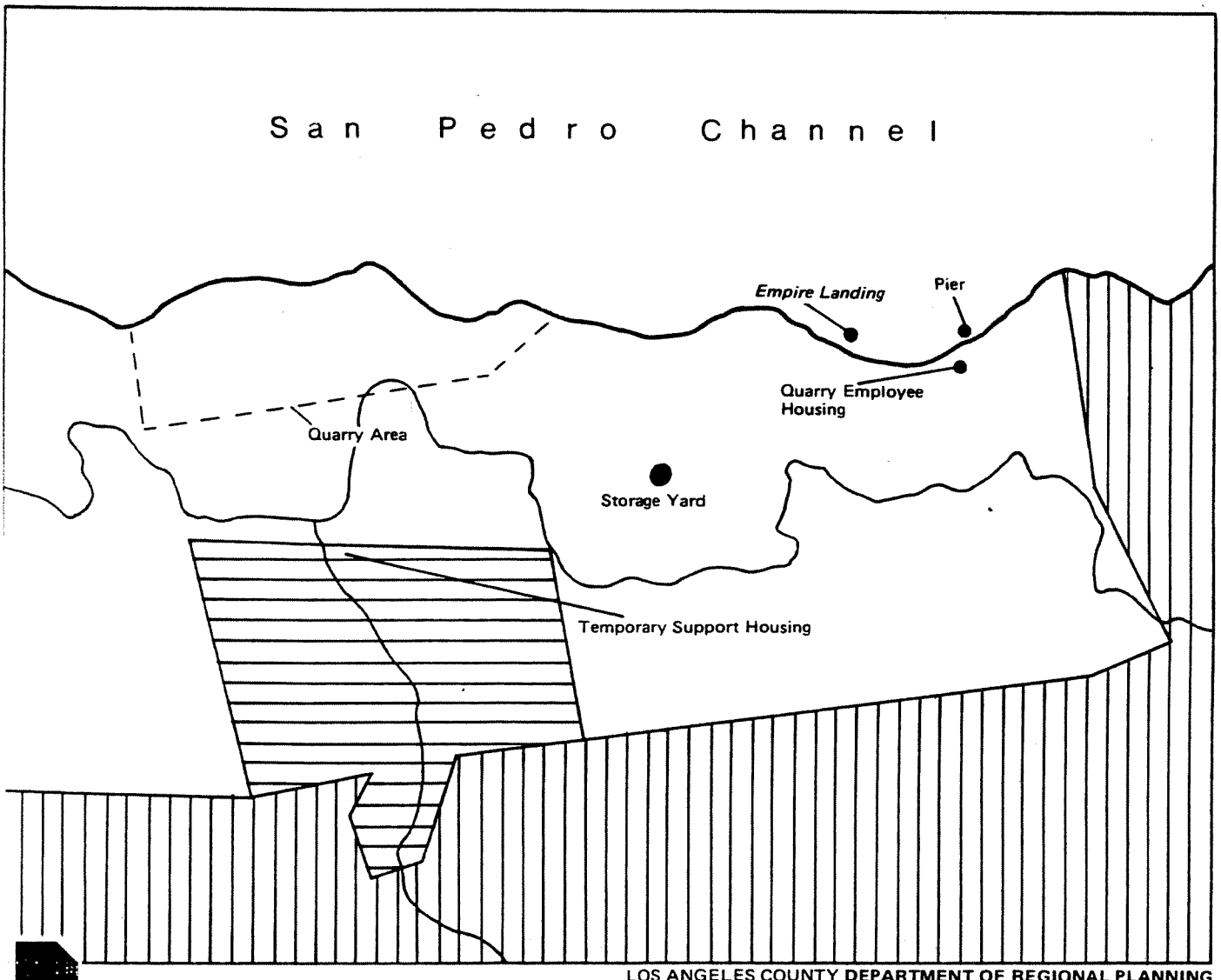
Open Space Easement / Conservancy



AREA LOCATION

N

2000 FEET



LOS ANGELES COUNTY DEPARTMENT OF REGIONAL PLANNING

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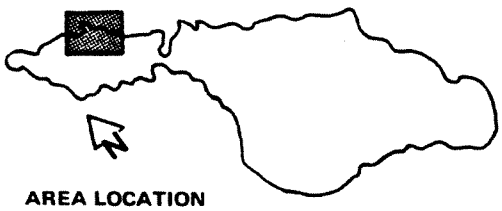
PARSONS LANDING – HOWLANDS LANDING
(Existing Ownership and Development)

Santa Catalina Island Company
(Non-Easement – Non-Conservancy)

Conservancy Area Outside of
Open Space Easement

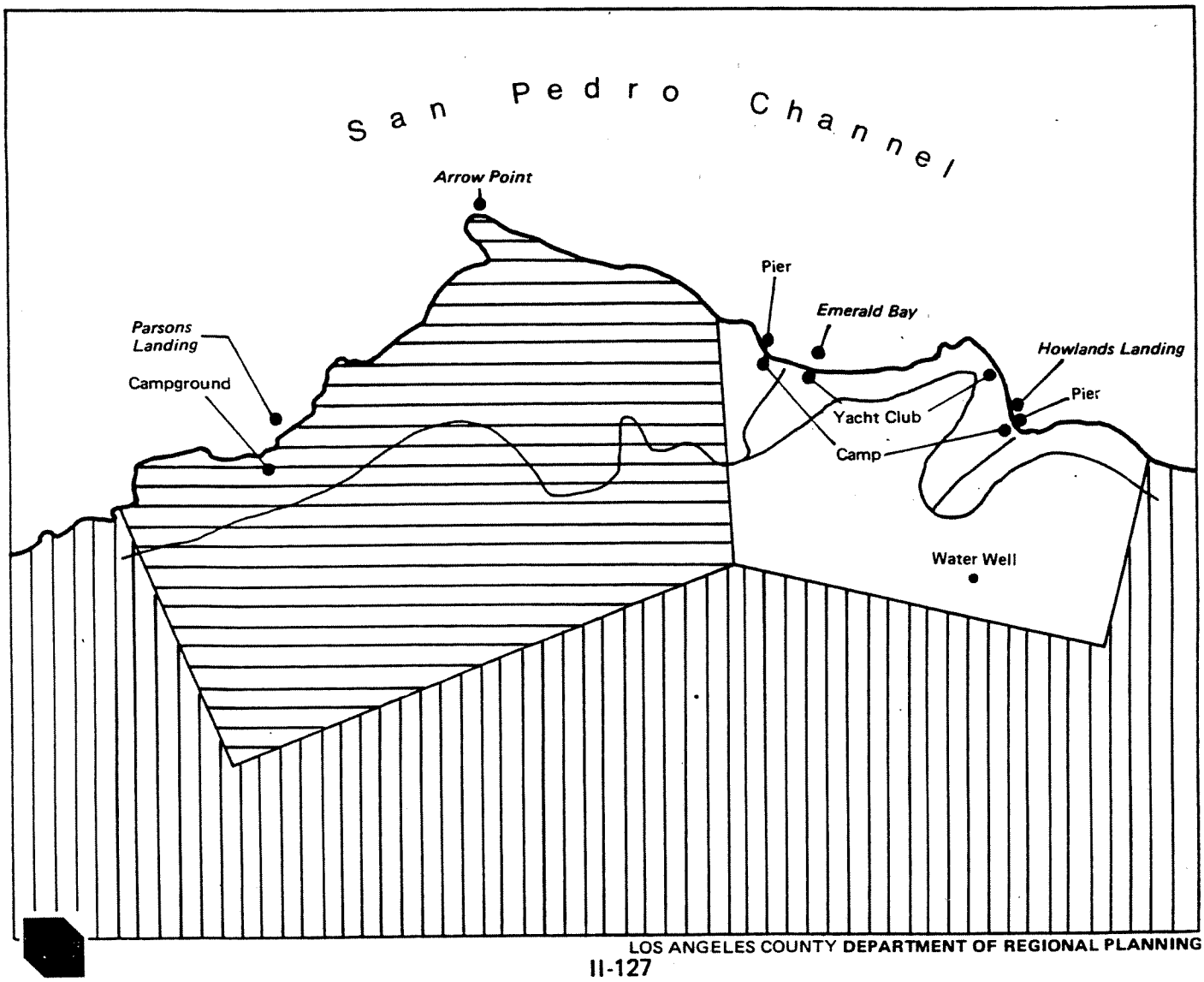
Open Space Easement / Conservancy Area



AREA LOCATION

N

2000 FEET



LOS ANGELES COUNTY **DEPARTMENT OF REGIONAL PLANNING**

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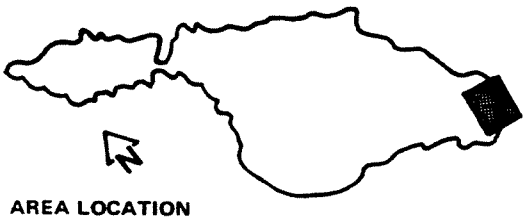
map 18

PEBBLY BEACH – SEAL ROCKS PLAN
(Existing and Proposed Development)

Santa Catalina Island Company
(Non-Easement, Non-Conservancy)

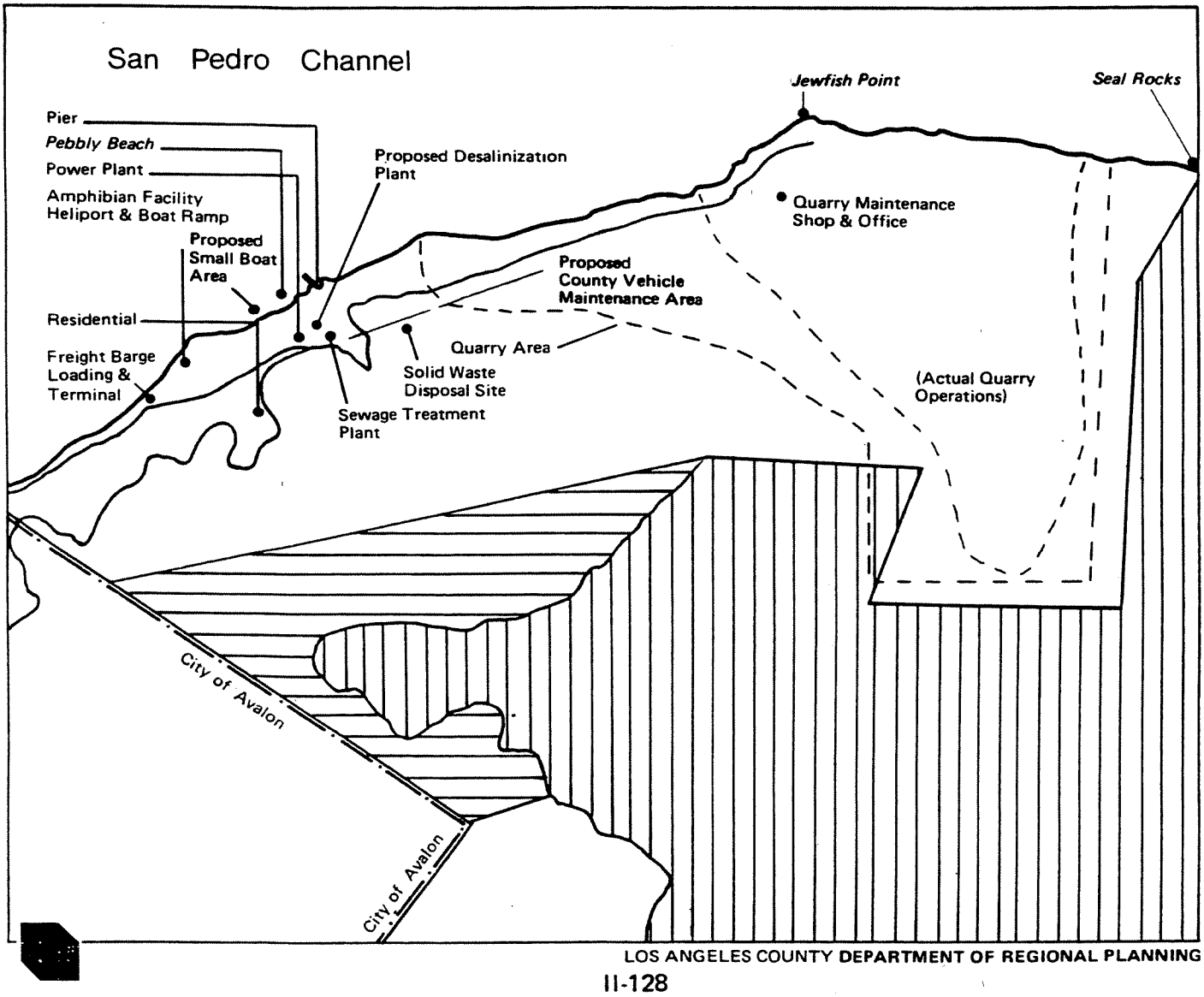
Conservancy Area Outside of
Open Space Easement

Open Space Easement/
Conservancy



AREA LOCATION

1600 FEET



LOS ANGELES COUNTY DEPARTMENT OF REGIONAL PLANNING

. Mineral resource recovery in the designated rock quarry area.
. Coastal dependent marine services and boat storage.
. Support housing and services.

- Emerald Bay/Howlands Landing

The subject land area is identified as Los Angeles County Assessor's (LACA) Lot Number 99, contains 418.4 acres and a shoreline of approximately 9,000 lineal feet (1.7 miles). Approximately 3,000 lineal feet of shoreline can be considered accessible with back land beach above mean high tide line, varying in width from 10+ to 60+ ft. The remainder of the shoreline is steep, rock bluffs which drop directly into the ocean and preclude safe access.

The Emerald Bay/Howlands Landing/Big Geiger Cove area contains six distinct beach and uplands areas described and currently used as listed below. It should be noted that boat-to-shore facilities are less than one acre in size each, and contain day use picnic and recreation facilities only.

Emerald Bay

. Johnson's Landing - Emerald Bay Great Western Council of Boy Scouts Camp
. Corsair Beach - Corsair Yacht Club boat-to-shore cruising destination facility
. Sandy Beach - Easterly portion of Emerald Bay.
. Approximately 1,200 lineal feet of sandy beach open to general public and used primarily for small boat-to-shore camping and day recreation beach during fair weather

Howlands Landing Bay

. Sullivans Beach - Los Angeles Yacht Club boat-to-shore cruising destination facility
. Howlands Landing - Tocaloma Boys and Girls Camp (Note: major domestic water well serving westerly end of Island located in upland canyon)
. Big Geiger Cove - Blue Water Cruising Club boat-to-shore cruising destination facility

Recommended land uses in Emerald Bay/Howlands Landing/Big Geiger Cove area are as follows:

. Continuation of Agency Camps
. Continuation of recreational boat-to-shore facilities
. Visitor serving facilities and services

- Pebbly Beach

The total Pebbly Beach non-Easement vicinity is identified as Los Angeles County Assessors (LACA) Lot No. 1 and 3, containing 177 acres and 533 acres respectively. LACA Lot No. 1 has approximately 4,600 lineal feet of shoreline of which 800 lineal feet can be considered accessible with 40 to 50 feet above the mean high tide line. The remaining shoreline is fronted by large rock rip-rap shore protection, high sea bluffs or shoreline improvements (bulk fuel terminal pier, amphibian ramp, boat haul out ramp, freight barge terminal ramp) which preclude public access.

Approximately 13 acres of relatively flat land in the most northeasterly portion of LACA Lot No. 1 is referred to as the Pebbly Beach industrial/service area and is the location of all industrial/services serving the Avalon area and providing some services to the remainder of the Island.

Land uses in the area are as follows:

. Southern California Edison Company electric power and LPG gas distribution plant, maintenance and service facilities serving the total Santa Catalina Island district. Also, Pebbly Beach is the site of a proposed desalinization system for production of domestic water.
. Standard Oil Company bulk fuel storage serving easterly half of Island.
. Commercial amphibian airplane and helistop terminal serving Avalon area.
. Boat and mooring maintenance and storage.
. Warehousing.
. Sight seeing bus storage and maintenance facility.
. Contractors yards and shops.
. Freight barge terminal and warehouse, etc.

Upland from the Pebbly Beach industrial service area is a small canyon of approximately 5+ acres occupied by support employee housing.

Immediately upland of the Pebbly Beach industrial service area is another small canyon of 10+ acres. The lower 1.5+ are occupied by the City of Avalon sewage treatment plant, and the remaining upper canyon area is programmed for future industrial/services area expansion.

LACA Lot 3 of the Pebbly Beach vicinity adjoins LACA Lot No. 1 immediately to the south and has 6400 lineal feet of shoreline. The area is typified by high rocky bluffs rising directly from the MHTL. The area does not have any beach access areas. The northerly portion of LACA Lot No. 3 is occupied by the City of Avalon solid waste disposal site, and adjacent land area suitable for additional industrial/ services expansion. The southerly portion of LACA Lot No. 3 is occupied by a rock quarry operation which is an important resource of breakwater armor rock and rubble used in construction of Island and mainland breakwaters and shoreline protection facilities. Public access to the rock quarry area is discouraged.

There is a controlled private road which provides access from LACA Lots No. 1 and No. 3 to Avalon.

The following land uses are recommended for the Pebbly Beach area (LACA Lots No. 1 and 3):

. Continuation and expansion of industrial services and utility uses.
. Desalinization plant facility.
. Refuse to energy facility.
. Solid waste and liquid waste disposal facilities.
. Marine related services and facilities.
. Transportation terminal and port for helicopters and amphibian airplanes.
. Mineral extraction.
. Freight barge terminal and storage.
. Future breakwater and shoreline protection for expanded marine commercial facilities.
. Continuation of support employee housing.
. Other related uses, such as County vehicle maintenance center.

It should be noted that any low/moderate income housing displaced from Pebbly Beach will be replaced in the Avalon/ Avalon Canyon Area.

- Other Development

Lodges or inns and related support housing will be permitted in the following publicly used and/or developed areas: Airport-In-The-Sky, Middle Ranch and Rancho Escondido.

d. Findings

- There is a demand for Two Harbors to become a balanced service/resort community to serve the following potential user groups: day use visitors, Conservancy visitors, boaters, seasonal and permanent residents.
- Other non-Easement, non-Conservancy areas should continue to provide recreation activities and services.
- USC Marine Science Center has a need for significant expansion.
- There is need for improvements on the road between Two Harbors and Avalon for public safety purposes.

e. Plan Policies and Recommended Actions

1) The developer at Two Harbors shall provide a 3 1/2 acre school site for Long Beach City School District in the location shown on the Two Harbors Land Use Map.

2) The developer at Two Harbors shall provide funding for study of impacts of development on the terrestrial and marine environment of Catalina Harbor.

3) Development of resort residential units in Two Harbors will be phased to include not less than a corresponding percentage (cumulative basis) of the estimated 1,350 PAOT overnight visitor accommodations as follows:

Resort Residential	Visitor-Serving PAOT (Cumulative)
25% buildout	38 Hostel beds, 50 new PAOT Campground capacity, 125 Lodge/Inn rooms
50% buildout	75 Hostel beds, 100 new PAOT Campground capacity, 250 Lodge/Inn rooms
75% buildout	113 Hostel beds, 150 PAOT Campground capacity, 375 Lodge/Inn rooms
100% buildout	150 Hostel beds, 200 PAOT Campground capacity, 500 Lodge/Inn rooms

4) The following constraints shall be complied with in all development at Two Harbors:

- Development shall occur on slopes of less than 30 percent. Minor intrusions into steeper slopes up to 40% slope (to a ceiling of 10% of developable area) may be permitted provided that natural landforms are protected.
- No building construction shall obstruct natural drainage courses.
- Existing trees and vegetation will be retained and enhanced where possible. Native and naturalized plant materials shall be used and selected for drought tolerance.
- No development of permanent habitable structures will be permitted within tsunami runup areas, defined as the area below the 10'contour line.
- Existing structures of a historical nature shall be preserved if feasible. These structures are the Banning House and the Barracks structure.
- Existing roadway corridors shall be retained to assure adequate public access to the Open Space Easement area.
- Prior to development proposed on the Two Harbors Land Use Map, a comprehensive archeological survey by a qualified archeologist shall be conducted for proposed building site(s) covering areas to be developed. If archeological resources are found, measures shall be required to eliminate or mitigate impacts from the proposed development.
- Site specific geology and soils reports shall be prepared by a qualified geologist for all development sites and approved by the County Engineer before any development can commence.
- The use of motor vehicles shall be minimized in the community and be restricted to emergency, service, group and public transport vehicles. Residents shall be permitted the use of golf carts and other similar small vehicles within the community.
- Significent public view corridors shall be retained, and where possible, enhanced. These public view corridors are identified on the Two Harbors Land Use Map.
- Residential land uses to the east and west of the Catalina Harbor buffer zone as shown on Map 14A, shall have a density of not more than 17-19 du/acre. Other designated residential areas shall have a density of not more than 20-22 du/acre.

5) All design principles listed in Two Harbors section of the research analysis shall be complied with in all new development:

- Enhancement of the Isthmus Cove visitor arrival experience.
- Creation of an overall design for landscape and lighting treatments.
- Provision of a limited variety of architectural styles with overall theme of wood as basic material and low-rise construction with selected architectural accents approved through design review.
- Provision of an overall signing program including signs identifying trails and uses and supplying interpretive information.
- Avoidance of large impermeable paved surfaces.
- Avoidance of fences and walls except where absolutely necessary for security and privacy.
- Location of hillside development to preserve significant view corridors.
- Piers to include areas for viewing, sitting and other passive use.
- Location of majority of development within a ten minute walking radius of the "community center".
- No development shall impact upon the Open Space Easement.
- Enhancement of the feeling of the Isthmus as a divide between the two Island masses.
- Central portion of the comunity will consist of building elements framing a broad public open space view corridor.

6) All development is dependent upon the satisfactory provision of sufficient water, electrical power, solid waste and liquid waste facilities.

7) Development of new water resources within the Open Space Easement shall be added only if they can be shown not to impact the Open Space Easement biotic and water resources.

8) New development at Two Harbors shall be limited to the areas indicated in the Two Harbors Land Use Map and will conform to the following maximum and unit acreage counts:

Maximum resort residential units	2,000	
Maximum support residential units	650	
Total transient visitor-serving units	500	hotel rooms and
(not including campgrounds)	150	hostel beds
Total commercial square footage	80,000	

The 650 support residential units may be exceeded, but only if the number of resort residential units is reduced by the same number.

Campground/Hostel	18 acres
View Corridor/Public Use	56 acres
Lodge/Inn	13 acres
Commercial	3 acres
Marine Commercial/Recreational	
Boating	6 acres
Residential	128 acres
Transportation Center	5 acres
Utilities/Services	11 acres
	240 acres

If portions of the 128 residential acres are found not to be developable, residential units may be transferred to three designated receiver areas as shown on Map 14B provided that development does not occur on the donor areas and the total number of residential acres remains 128.

9) All development at the USC Marine Science Center shall be limited to marine dependent and Island dependent education and research. Future development at the Marine Science Center shall be as shown on the Two Harbors Land Use Map and shall include the following: a) an underwater habitat facility on USC leased submerged tidelands, b) a new physical sciences laboratory building (12,000 sq. ft.); and c) residential structures to include 10-12 residential units at approximately 1,200 sq. ft. each and a 120-person dormitory.

10) Any low/moderate income housing displaced from Pebbly Beach shall be replaced in Avalon Canyon, if otherwise consistent with the policies of this Land Use Plan.

11) Temporary construction housing will be permitted in already developed areas or areas proposed for development in Two Harbors provided that lower cost visitor-serving facilities are not precluded during development.

12) Primary land uses on Santa Catalina Island Conservancy land and portions of other land as shown on the Land Use and Facilities Improvement Map shall be designated as "Open Space/Structured Recreation" and "Conservation Primitive Recreation."

13) Open Space/Structured Recreation is defined as land which is primarily in open space use for resource conservation, but which balances this use with public access and recreation to the greatest extent possible.

Permitted land uses within this designation are specifically limited to the following:

a) Middle Ranch

Middle Ranch is the base of the Santa Catalina Island Conservancy and contains employee housing for local ranch purposes, boarding stables and limited agricultural uses. These uses may be maintained and expanded if otherwise consistent with the policies of this Land Use Plan. In addition, a lodge/inn may be a permitted use if it is available to the general public as a visitor-serving facility.

b) Rancho Escondido

Rancho Escondido is the original site of the Wrigley Ranch where Arabian show horses are bred and maintained. Permitted land uses shall continue to be support housing for local ranch purposes, boarding stables and fenced grazing areas. A lodge/inn may be a permitted use if it is available to the general public as a visitor-serving facility.

c) Airport-In-The Sky

Airport-In-The-Sky serves an important function as a secondary access point to Catalina for recreational flyers and commercial airlines which serve the Island. Existing land uses at the Airport may be expanded if otherwise consistent with the policies of this Land Use Plan. A lodge/inn may be a permitted use if it is available to the general public as a visitor-serving facility.

d) Leased Shoreline Areas

Uses of these areas may expand if otherwise consistent with the policies of this Land Use Plan.

e) Public Recreation Facilities

Existing public campgrounds and future public recreational facilities as outlined under Recreation and Visitor-Serving Facilities in this Land Use Plan.

f) Utilities and Public Works

Necessary utility and public works facilities for the maintenance of existing and planned development, provided that the placement of such facilities is otherwise consistent with the policies of this Land Use Plan.

14) Open Space/Primitive Recreation is defined as land which is primarily in open space use but is open to the general public for low intensity recreational use such as hiking, nature study, photography, etc.

Permitted land uses within this designation are specifically limited to the following:

- Primitive camping areas.
- Education and scientific research.
- Hiking trails.
- Necessary utility and public works facilities for the maintenance of existing and planned development, provided that the placement of such facilities is other wise consistent with the policies of this Land Use Plan.

15) Land uses in upland shoreline lease areas will vary dependent upon the lessee. Land use in yacht club areas shall be restricted to upland support facilities for recreational boating. Upland cove lease areas which support nonprofit agency camps or educational facilities shall be restricted to the following:

- Upland support facilities for water related sports.
- Necessary residential, dining, and service/maintenance areas.
- Recreational and educational facilities to support programs.

16) All upland shoreline lease areas shall be subject to the following restrictions:

- No structures on greater than 30% slope; minimal grading for structures on greater than 15% slope.
- All new development shall be set back a minimum of 25 feet from the inland extent of any sandy or rocky beach, or from the mean high tide, whichever is greatest. Development shall be sited and designed to be compatible with public use of the beach or shoreline.

17) Land uses in Avalon Canyon shall be similar to the Resort and Recreation land uses in the certified Avalon Local Coastal Program associated with the resort character of the Avalon community and are defined to include the following:

- Wrigley Memorial Garden.
- Hotels.
- Recreational Facilities.
- Educational Facilities.
- Visitor-Serving Commercial and Retail.
- Employee Housing.

18) Avalon Canyon hillsides shall be designated for low density residential and low density recreational uses similar to the "Low Density and Low Intensity Recreational" land use zone in the certified Avalon LCP. All structures in Avalon Canyon shall be on slopes less than 30%.

19) Significant ridgelines in Avalon Canyon shall be protected from development for scenic and visual reasons. These ridgelines are identified on Map 15. All structures shall be set back a minimum of 75 ft. measured downslope from the ridgeline.

20) Pebbly Beach shall continue to serve the important function of industrial and utility uses for Avalon as well as the entire Island. Industrial development shall expand at Pebbly Beach to the maximum extent feasible before industrial development is placed elsewhere on the Island, except for industrial development in Wells Beach consistent with the needs of Two Harbors.

Permitted land uses on Pebbly Beach shall consist of the following:

- Industrial, utility, and transportation uses.
- Waste disposal.
- Marine related services and facilities.
- Employee housing.
- Experimental energy facilities.

21) A breakwater adjacent to Pebbly Beach shall be an allowable use if such breakwater is required to serve a coastal dependent use or to protect existing structures from erosion.

22) Empire Landing shall have the following land uses:

- Mineral resource recovery in the quarry area.
- Support housing.
- Necessary visitor-serving facilities to support this area as a future "gateway" to the Easement area.
- Overflow marine related services for Two Harbors, provided that such facilities cannot feasibly be accommodated within the Two Harbors area and do not impact existing or future visitor-serving facilities.

2. Circulation

a. Coastal Act Policies

Section 30254

New or expanded public works facilities shall be designed and limited to accommodate needs generated by development or uses permitted consistent with the provisions of this division; provided, however, that it is the intent of the Legislature that State Highway Route 1 in rural areas of the coastal zone remain a scenic two lane road. Special districts shall not be formed or expanded except where assessment for, and provision of, the service would not induce new development inconsistent with this division. Where existing or planned public works facilities can accommodate only a limited amount of new development, services to coastal dependent land use, essential public services and basic industries vital to the economic health of the region, state, or nation, public recreation, commercial recreational and visitor-serving land uses shall not be precluded by other development.

b. Issues Identified

- Road maintenance.

c. Research Analysis

- Roads

The road system on Catalina Island has thus far been a privately held system. The Open Space Easement includes among the rights reserved by the Santa Catalina Island Company, and also the Santa Catalina Island Conservancy as its successor in interest, "the right to use and maintain roads," and "the rights to use and to permit the use by others, including the public, with or without charge, of such roads as a means of access to, between, and across any and all portions of the land."

All of the roads on the Island are unpaved except for Old Stage Road, Airport Road, and the road leading northeast of Two Harbors. The remainder of the major roads are improved dirt roads. (See Map 19).

At the present time, the main route between Avalon and Two Harbors is Old Stage Road, Middle Ranch Road and Two Harbors Road to the Isthmus. Improving Airport Road and Empire Landing Road would provide a more direct and faster route from Avalon to Two Harbors. This would provide for easier access for emergency vehicles and personnel and reduce traffic through Middle Canyon and other primary hiking areas. A shuttle bus or taxi service should be provide between Two Harbors and Avalon in order to reduce vehicular traffic. Parking areas for private vehicles from Avalon will not be provided at Two Harbors. A small parking lot will be provided at the Transportation Center in Two Harbors.

d. Findings

- The Road system is privately owned by Santa Catalina Island Company and the Santa Catalina Island Conservancy.

e. Plan Policies and Recommended Actions

1) No new roadways shall be constructed in the Open Space Easement. Existing roads can be repaired or improved. Access drives and secondary roads can be developed for normal access to housing and facilities in the Two Harbors development area.

2) No private cars shall be permitted at Two Harbors. Access between Two Harbors and Avalon and from Two Harbors to the interior of the Island shall be restricted to taxis, shuttle buses and business vehicles. Parking shall be provided at Two Harbors for taxis, shuttle buses and business vehicles. Golf cart type vehicles and moped type motor bicycles shall be considered for personal, private use on a controlled number basis.

3) A vehicle control ordinance will be drafted and adopted concurrent with submittal of a development plan for Two Harbors.

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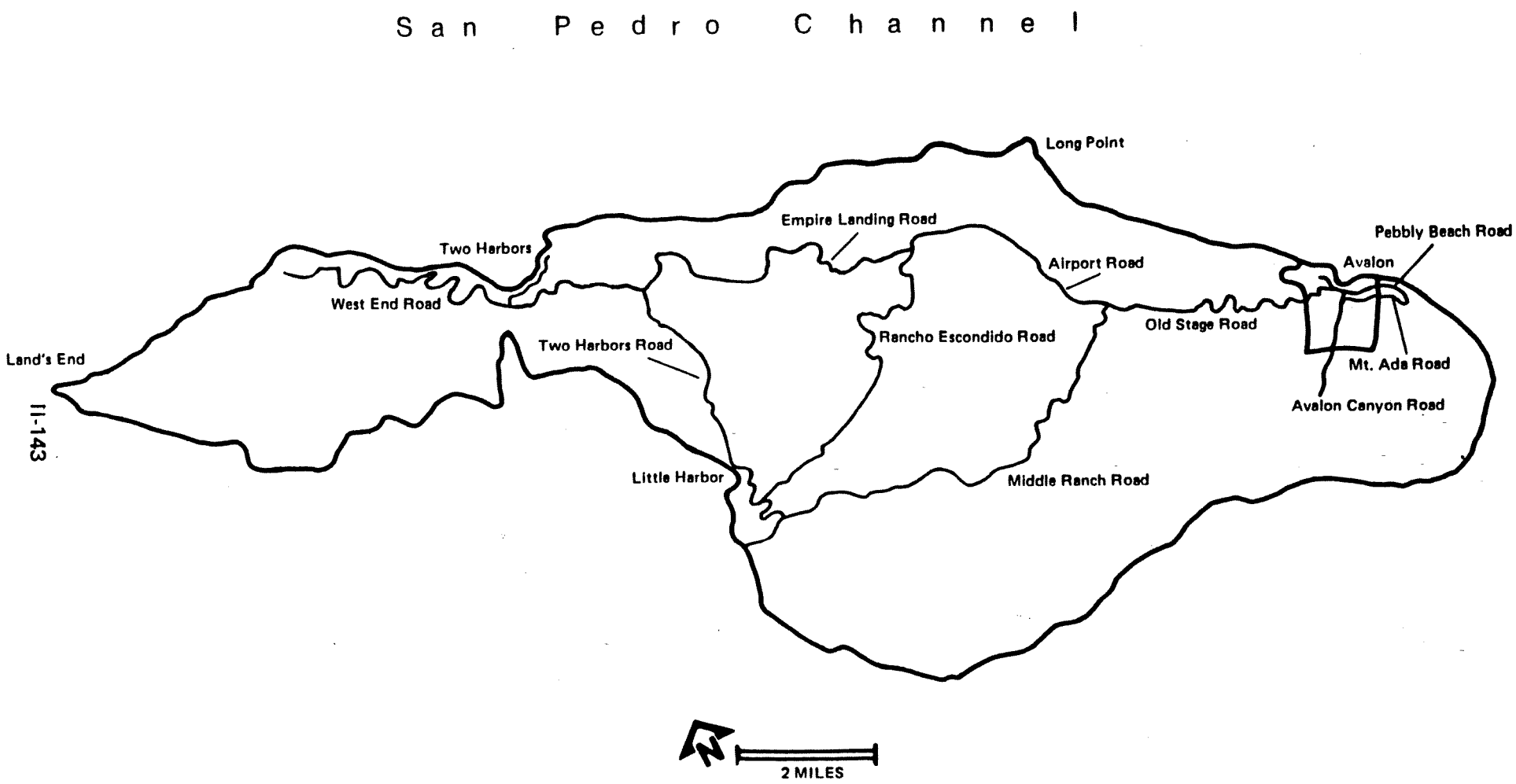
map 19

ROADS MAP



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LOS ANGELES COUNTY DEPARTMENT OF REGIONAL PLANNING

3. Public Works and Facilities

a. Coastal Act Policies

Section 30254

New or expanded public works facilities shall be designed and limited to accommodate needs generated by development or uses permitted, consistent with the provisions of this division; provided, however, that it is the intent of the Legislature that State Highway Route 1 in rural areas of the coastal zone remain a scenic two lane road. Special districts shall not be formed or expanded except where assessment for, and provision of, the service would not induce new development inconsistent with this division. Where existing or planned public works facilities can accommodate only a limited amount of new development, services to coastal dependent land use, essential public services and basic industries vital to the economic health of the region, state, or nation, public recreation, commercial recreational and visitor-serving land uses shall not be precluded by other development.

b. Issues Identified

- Adequacy of water system
- Difficulty in importing water (closed system)
- Adequacy of sewerage system and septic tanks
- Feasibility of desalinization
- Expansion of saltwater systems
- Provision for additional or expanded radio telecommunication facilities.

c. Research Analysis

- Introduction to Water Resources

Water has always been a limiting factor on Santa Catalina Island. From the time of the first Indian inhabitants to the present day, scarce sources of fresh, potable water have restricted development.

The climate of Santa Catalina Island, like that of most of coastal Southern California, is classified as Mediterranean, a climate that is characterized by wet, mild winters, and an extended dry period that lasts from late spring through late autumn. The average annual rainfall for Avalon is 12.3 inches and the corresponding rainfall for the Two Harbors area is estimated to be about 9 inches. About eighty-five percent of the rainfall, on the average, is evaporated and transpired back to the atmosphere. The remaining fifteen percent either runs off or is incorporated into the groundwater. The relatively small amount of recoverable water places a great limitation on the development of the Island.

- History of Water Development

Up until the early 1900's, the only dependable sources of fresh water on Catalina were small and widely scattered springs. Many of the largest canyons were filled with flowing water during wet years; but, in dry years these supplies were not dependable. Two small wells were drilled in Avalon in 1890, but the water was not of high quality. Drinking water was hauled from Wilmington in tanks especially installed on the two steamers serving the Island. Some drinking water was also brought from Torqua Springs, a naturally flowing fresh water spring near White's Landing.

Around 1900 a large well was drilled in the Two Harbors area at Howland's Landing. In 1919 William Wrigley attempted development of several more wells in Avalon Canyon, but these proved to be inadequate. Because of the critical need for fresh water a dual salt water/fresh water, system was built in Avalon. Ocean water was distributed to residences for flushing of toilets and fire suppression.

During the 1920's, wells, tunnels, and dams were constructed at various locations throughout the Island. The Middle Ranch Reservoir project was completed in 1925 and 12 miles of pipeline were installed to carry water from this reservoir to the City of Avalon.

In the Black Jack area a spring and tunnel development was constructed in 1924 to provide for mining operations. Subsequent to 1932, this water source has been used for the watering of livestock. Since 1947 water has been piped from the Black Jack spring and tunnel development to the Airport. Additional water for the Airport was developed in 1952 from Buffalo Spring.

All of the domestic water facilities including the surface and groundwater rights on the Island were acquired by the Southern California Edison Company in 1962. Since Edison took over the facilities, numerous improvements have been made. These include the replacement of most of the Avalon distribution system, replacement of many of the old redwood and steel tanks, replacement of some transmission mains and installation of hypochlorinators.

Edison increased the height of the dam at its main storage facility, the Middle Ranch reservoir, in 1965. This increased the storage capacity of the reservoir from approximately 200 acre feet (AF) to approximately 1,050 AF.* Dur-

*Actual capacity was found to be 1,189 acre feet in 1981 using depth soundings. The figure for the safe annual yield for Middle Ranch Reservoir as shown in Figure 8 does not reflect the new actual capacity. Southern California Edison will update this safe annual yield figure in its yearly report to the PUC in early 1982.

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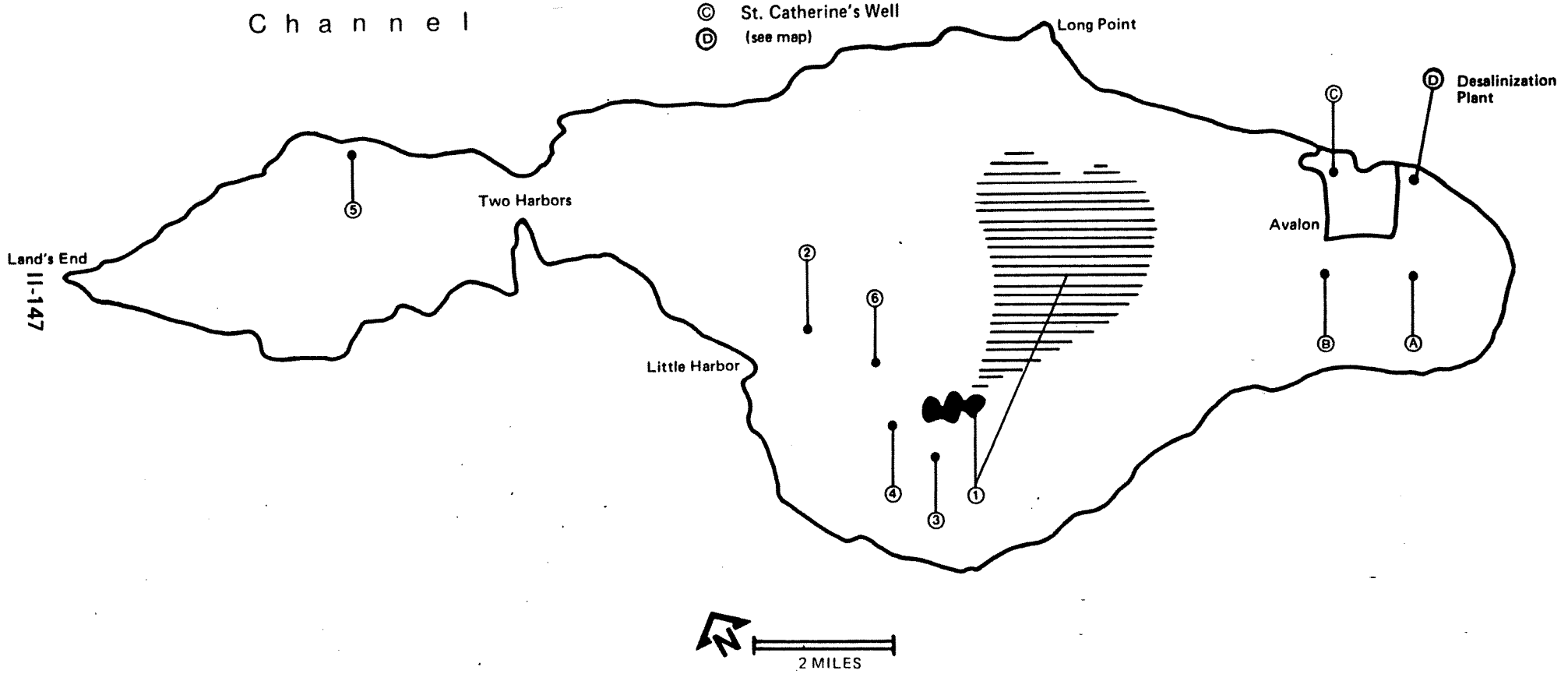
WATER RESOURCES PLAN
(Well within City of Avalon is indicated as it has Island-wide applicability)

Existing:

① Middle Canyon Reservoir/Watershed
② Cottonwood Canyon Well
③ Bullrush Well
④ Eagles' Nest Well
⑤ Howland's Landing Wells
⑥ Sweetwater Well

Proposed:

Ⓐ Golf Links Tunnels
Ⓑ Poultry Farm Tunnel
Ⓒ St. Catherine's Well
Ⓓ (see map)



LOS ANGELES COUNTY DEPARTMENT OF REGIONAL PLANNING

ing the construction period Edison operated a desalinization plant to produce approximately 65.5 AF of distilled water from seawater which was blended with local water sources on the Island.

The reservoir subsequently filled and water was discharged over the dam spillway in 1969 and 1970. The Middle Ranch Reservoir supply declined from 1050 AF in April 1980 to approximately 480 AF in October 1972, increased to approximately 730 AF in May 1974 and declined to 150 AF on July 29, 1977. In 1980 the reservoir was filled to capacity and ran over the spillway.

- Existing Water Resources

The domestic water for the Island is supplied by seven wells, two springs and two tunnel systems. Some of the isolated camps along the coast also utilize natural springs and are not served by the SCE main water system at this time.

The largest water system serves the Avalon area from Middle Ranch Reservoir. The reservoir receives and stores the runoff from Middle Canyon which is the largest watershed area on the Island. Water can be pumped into the reservoir from the two wells in Cottonwood Canyon. Two small tunnel systems in Avalon Canyon also supply the Avalon system.

The Isthmus area is served by the well at Howland's Landing and the two Cottonwood wells.

Two small isolated systems serve the Airport, using two developed natural springs, and camps around White's Landing use water from the White's Landing Well.

Four well sites have been drilled and capped but are considered part of the existing water resource potential. The new Howland's Landing well replaces the old well and does not increase the total resource.

Figure 6 below summarizes the existing water resources and includes the areas supplied:

FIGURE 6: Existing Water Resources

Resource	Estimated Yield AF/Year (safe annual yield)	Area Supplied
Middle Ranch Reservoir	372	Avalon
Cottonwood Canyon Wells (2)	52	Isthmus-Avalon
Old Howland's Landing Well	32	Isthmus
Bullrush Canyon Well	24	Avalon
Eagles Nest Well	31	Avalon-Isthmus
Sweetwater Canyon Well	13	Isthmus-Avalon

(Continued Next Page)

FIGURE 6 (Continued)

Resource	Estimated Yield AF/Year (safe annual yield)	Area Supplied
Eagles Nest Well	32	Avalon - Isthmus
Sweetwater Canyon Well	13	Isthmus - Avalon
New Howland's Landing Well	--	Isthmus
St. Catherine's Well	16	Avalon
White's Landing Well	11	White's Landing, Buttonshell Beach
Buffalo Springs	1.8	Airport Only
Black Jack Springs	0.8	Airport Only
Golf Links Tunnels	3	Avalon
Poultry Farm Tunnel	7	Avalon

Source: Southern California Edison Company

- Limitations on the Existing Resource

The Island experienced a prolonged drought from 1974 to 1977 that resulted in a water rationing plan being authorized by the California Public Utilities Commission (CPUC) from May 1977 to February 1978. Subsequent CPUC proceedings in 1978 established that the existing developed water resource was not adequate to supply new development beyond what was approved for new water connections at that time.

As part of those proceedings Edison was required to annually update demand and resource forecasts which will determine availability of water for this development. On April 1, 1981 Southern California Edison Company submitted the "Comprehensive Report of Santa Catalina Island Water Supply Resources and Potential System Demand" to the CPUC. Figure 7 on the following pages is from that report showing supply and demand figures for 1981 and water availability after 1981.

Before they are approved, development of any water or energy facilities in the Conservancy area should be shown not to have an adverse environmental impact.

- Future Water Resources

Future water resource development is likely from either additional utilization of the natural rainfall or desalinization of seawater. The 12 inch average rainfall results in about 50,000 AF of water. The fifteen percent not lost to evapotranspiration amounts to about 7,500 AF of potentially available supply. Fresh water resource development is then

a problem of collecting and storing this runoff. This can be accomplished by construction of surface collection storage reservoirs or development of wells to tap natural groundwater. Storage areas can also be utilized for additional water supply, but the potential is not as great and precautions must be taken not to overuse the system, drawdown the water table and allow saltwater intrusion. Figure 8 lists potential resources that have been identified on the Island with prelimianry estimated yields.

FIGURE 7: Estimated Total Water Requirements and Supply for 1981

	Acre Feet/Year(AF/Yr)
A. Estimated Customer Requirements	
1. Requirements for 1981	389.4
Net Estimated Customer Requirements	389.4
B. Estimated Water Supply	
Existing Water Supply	AF/Yr
1. Estimated safe annual yield from Middle Ranch Watershed	372
2. Estimated practical sustained yield from Cotton Wood Canyon Well	52
3. Estimated practical sustained yield from four well sites	101
Gross Existing Water Supply	525
4. Less allowance for leakage	(52)
Net Existing Water Supply	473
Supplemental Water Supply	
1. Estimated safe annual yield from St. Catherine's Well	16
2. Estimated safe annual yield from Poultry Farm Tunnel	7
3. Estimated safe annual yield from Golf Links Tunnels (2)	3
Gross Supplemental Water Supply	26
Existing and Supplemental Water Supply	499

(Continued Next Page)

FIGURE 7: (Continued)

	AF/Yr
C. Estimated Water From Present Sources Available For Growth in 1981 (A-B=C)	109.6
D. Estimated Increased Consumption for Existing Customer Growth, Tourism and Authorized New Customers in 1981	74.6
E. Estimated Water Available for Additional Growth in 1981 (C-D=E)	35.0*

*Note: The official allocation list shows 30.34 AF available and has not been revised. The difference is considered additional growth of new customers during the period.

Source: Southern California Edison Company

FIGURE 8: Potential Future Additional Water Resources

Resource	Estimated Yield (AF/Yr)
1. Various hardrock Wells	16-24
2. Avalon Canyon Wells	8-40
3. Willow Cove Well	8
4. Johnson's Landing Well	8
5. Mill's Landing Well	34-43
6. Silver Canyon Wells	80
7. Cottonwood Canyon Reservoir with Buffalo Springs Diversion Dam	286 +43
8. Bullrush Canyon Diversion Dam	40
9. Silver Canyon Reservoir with Coffee Pot Canyon Diversion Dam	286 + 9
10. Cape Canyon Reservoir	128
Potential Total	980

Notes:
1. Average domestic unit water requirement is 0.2 acre foot per year.
2. Well at Howland's Landing encountered salt water intrusion in August 1976. It was not used from August 1976 to January 1978. Since then it has been back in service and no problems have occured.

Source: Southern California Edison Company

Several other resources have been identified but are not considered feasible at this time.

The construction of a seawater conversion plant is a potential alternative which can be sized for the amount of water required. Seawater conversion has been applied at several Caribbean resort islands for many years now and is most likely to provide the additional water required for the Two Harbors development.

The basic limitation on any of the above alternatives is economic. At this time the various alternatives are being analyzed but none are being constructed. Southern California Edison indicated that most of the aforementioned potential resources were too expensive to be constructed in the (1981) market.

The Department of Parks and Recreation is studying the feasibility of developing small water wells near various campsites to provide water for campers and other recreationists.

- Water Allocation

In response to the limited availability of water for new projects, Southern California Edison applied for and was ordered to establish a water allocation procedure by the California Public Utilities Commission in Decision No. 90265. This decision established a "first-come, first-served" procedure using the existing County and City regulatory commissions to establish the priority of allocation through the existing planning procedures. The basis for the procedure is the building permits which are under the jurisdiction of the County Regional Planning Commission and the Avalon City Planning Commission. They establish the priority of acceptance of permits based on their criteria and then advise Edison of their action.

The existing approved procedure is as follows for available freshwater:

. The potential customer would apply to the issuing agency (City of Avalon or Los Angeles County) for a building permit.
. The issuing agency would then advise Edison of the proposed development and Edison would, in turn, advise the issuing agency if sufficient water is available to serve the development.

- If sufficient water is available, Edison would remove the required quantity of water from availability for other developents.
- If a requested building permit is denied or cancelled for any reason, the denying or cancelling agency would so advise Edison, and the previously committed water would become available to the next person with a building permit application on file with the agency denying or cancelling the prior application for a building permit.

The following is a procedure for available freshwater allocation when salt water sanitation conversion are employed:

- To the extent Edison water customers within the City of Avalon who use fresh water for sanitation purposes convert to salt water sanitation, and there is a corresponding reduction in fresh water consumption, such reduction in fresh water consumption shall be used to serve new developments within the City of Avalon only and shall not be available to serve new developments elsewhere on Catalina Island.
- Any time a potential customer applying to the City for a building permit contemplates that the water to serve his development will be supplied from a reduction in fresh water and consumption resulting from conversion to salt water sanitation, his building permit application shall so indicate.
  The potential customer shall submit a complete Water Requirement Questionnaire to the City together with the building permit application.
- The City Council shall then (i) advise Edison of the proposed development, (ii) transmit the Water Requirement Questionnaire to Edison, and (iii) advise Edison of the number of toilets and urinals identified by street address which will be converted to use salt water. This information shall also include the number of individuals residing at each address on a permanent and a temporary basis and a schedule for when the conversions will take place.
- Edison shall not take any new permanent water service connections where the new development relies on reduced consumption resulting from conversion to salt water sanitation until the conversions described above have been completed.

In relation to this procedure the County of Los Angeles will consider the importance of the following non-prioritized groupings in order to establish a reasonable mix of appropriate uses:

- Low Cost Recreation and Marine Education including camping, hostels, low cost lodging and eating facilities, expanded beach facilities, picnic facilities, scenic overlooks and marine education/marine research facilities.
- Basic Support Services including fire, police, administration, medical and health, public toilets and showers, marine commercial, boat rentals, charter sportfishing, expanded recreational boating, support residential, support and specialty retail.
- Specialized Support Services including hotels, inns and lodges, conference/seminar facilities, hunting, nature tours and other specialized tours/trips.
- Residential including resort residential, specialty and dinner restaurants, parks, ballfields, tennis courts, etc.

In the event of a water shortage on the Island, SCE in conjunction with the PUC has worked out a rationing plan with which all user groups are rationed equally.

- Liquid Waste

The Santa Catalina Island Company has two secondary stage wastewater treatment plants on the Island and the City of Avalon has one plant. The plant at Big Fisherman's Cove at the USC Marine Science Center has a maximum capacity of 17,500 gallons per day with a 1980 average use of 2,000 to 4,000 gallons per day. At Two Harbors, the wastewater plant has a maximum capacity of 27,500 gallons. The average capacity at this plant is currently 12,000 to 15,000 gallons per day.

The City of Avalon Plant has a 500,000 gallons per day capacity which has the capability to be expanded to 1,500,000 gallons per day.

The California Regional Water Quality Control Board recently approved a permit allowing the Santa Catalina Island Company to use tertiary treated water from this plant for fire protection and for public toilets and urinals. Currently water from the holding pond is used to irrigate a portion of the hillside near the pond.

- Solid Waste

There are two landfill dumps on the Island. One is located east of Pebbly Beach near the rock quarry. The other is located near Two Harbors in a canyon above Wells Beach. The method used at both of those sites is á combination of periodic burning and landfill. A trench is cut, filled with solid waste, burned and covered over. Both sites have capacity for three to five more years (1985-87).

A possible new disposal site for the Two Harbors area is in the Empire Landing quarry area. The Santa Catalina Island Company and Southern California Edison are looking at new technologies which would use the heat energy produced by the decomposition of solid waste for electrical energy production and desalinization of seawater.

Additionally, practically every camp on the Island has a dump where they burn their solid waste. This has to be done because there are no roads to transport their waste to the landfills.

- Electricity

Southern California Edison is responsible for the provision of electric service for the entire Island. Five diesel powered generators can provide a peak of 6200 kilowatts (KW) of energy. However, with one engine inoperable for maintenance or breakdown, the maximum capacity is around 5000 KW. The electric distribution system consists of two 12 kilovolt (KV) circuits and two 2.4 KV circuits from Pebbly Beach, another 12 KV circuit from the Two Harbors Substation, and another 2.4 KV circuit from the Manana Poletop Substation. Approximately 3000 KW are used by Avalon with another 300 KW proposed for the Hamilton Beach development. This leaves 1700 KW for the remainder of the Island, including the Two Harbors area.

Modernization of generating facilities and added capacity is needed. In 1983 an existing generator will be rebuilt with a larger capacity to handle new development, including that at Hamilton Beach (300 KW demand). In 1984 another generator will be rebuilt with the possibility of expanding capacity.

A recent study by Southern California Edison indicated that 1500 KW could be transmitted effectively from Pebbly Beach to the Two Harbors area. Should the population of the Island be doubled, the Southern California Edison Company could provide the needed energy without developing new facilities in the interior of the Island or at Two Harbors. One existing diesel generator would be replaced with a new one having a 2500 KW capacity and another new 2500 KW diesel generator would be added. The circuits would either be upgraded to 33 KV or the substation at Two Harbors would be modified to boost the power on the existing 12 KV lines. Neither of these actions would affect the existing natural character of the Island.

The Southern California Edison Company prefers to use alternative energy sources in the future. There are currently four alternative methods of energy production being explored:

. Increasing energy capacity by gathering waste heat from existing diesel generators which operate a biphase turbine which can produce electrical energy and desalinate seawater.

- Wind generation of electrical energy.
- Solar energy in existing and new residential or commercial structures to reduce energy required from primary SCE facility.
- Burning of municipal refuse and utilization of this heat source for production of electrical energy and "flash" distillation of salt water to produce domestically useable water.

The LCP encourages the use of alternative energy sources.

- Telephone

Of the approximately one hundred public telephones on the Island, eighty are in Avalon. There are currently 1,600 lines available for use on the Island with 1,200 actually in use. There is Pacific Telephone Company service on most of the occupied Island which could be extended to any point on the Island within days. The Company operates on 1-, 5-, 10-, and 20-year plans and upgrades service and plans yearly.

Another facet of the Island telephone system is its connection with the mainland. The existing connection consists of two submarine cables and one microwave channel. Each cable has 24 channels capable of handling one call/channel and the microwave has 120 channels capable of handling one call/channel. The microwave system will be expanded to include 180 channels.

The bulk of these channels are used on a lease basis by private companies leaving 55 switchboard trunks available to the mainland. This capacity has proven adequate to date and can be expanded as demand requires. The Pacific Telephone Company is currently studying future demands for its system for the next thirty years.

- Sheriff

The County Sheriff has eleven officers located on the Island. However, there is only one deputy assigned to the Two Harbors area and one other deputy who occasionally is assigned to the interior of the Island. These two officers make up a part time boat crew.

There is difficulty attracting and recruiting officers for the Island because of the higher cost of living due mainly to a severe housing shortage.

Should Two Harbors be developed to a size comparable to that of Avalon and use increase in the interior of the Island, the Sheriff's Department would need a minimum of one deputy

around the clock and one sergeant as a watch commander at Two Harbors. Additionally, a support facility would be needed including holding facilities. Increased use of the interior, especially in the primitive areas and campgrounds would necessitate a full time helicopter assigned to the Island capable of holding three officers and the pilot.*

d. Findings:

- Water resources are limited and potential new sources are limited primarily by considerations of economic feasibility and environmental protection.
- New water resources are needed before new development can proceed, especially at Two Harbors.
- Solid waste facilities will reach full capacity within 3 to 5 years (1985-87).
- New solid waste facilities are needed before new development can proceed.

e. Plan Policies and Recommended Actions

1) Adequate water supplies shall be proven and delivery plans provided before any new development is approved at Two Harbors and other LCP designated development areas.

2) Detailed plans for solid and liquid waste shall be provided before any new development is approved.

3) New technologies for provision of water and for solid and liquid waste are encouraged; and, the most feasible solutions should be implemented before new development is approved dependent upon such new technology.

4) When existing surplus freshwater available for new development is limited (defined as less than two acre feet), existing or proposed public recreation and visitor-serving land uses shall not be precluded by other development.

5) Solid waste shall be concentrated to the maximum extent feasible at the Island's two existing solid waste dumps at Pebbly Beach and above Well's Beach in Two Harbors. When a third landfill becomes necessary, it shall be located at an abandoned quarry area at Empire Landing as shown on Map 16.

6) Sewer outfalls are specifically prohibited in Catalina Harbor.

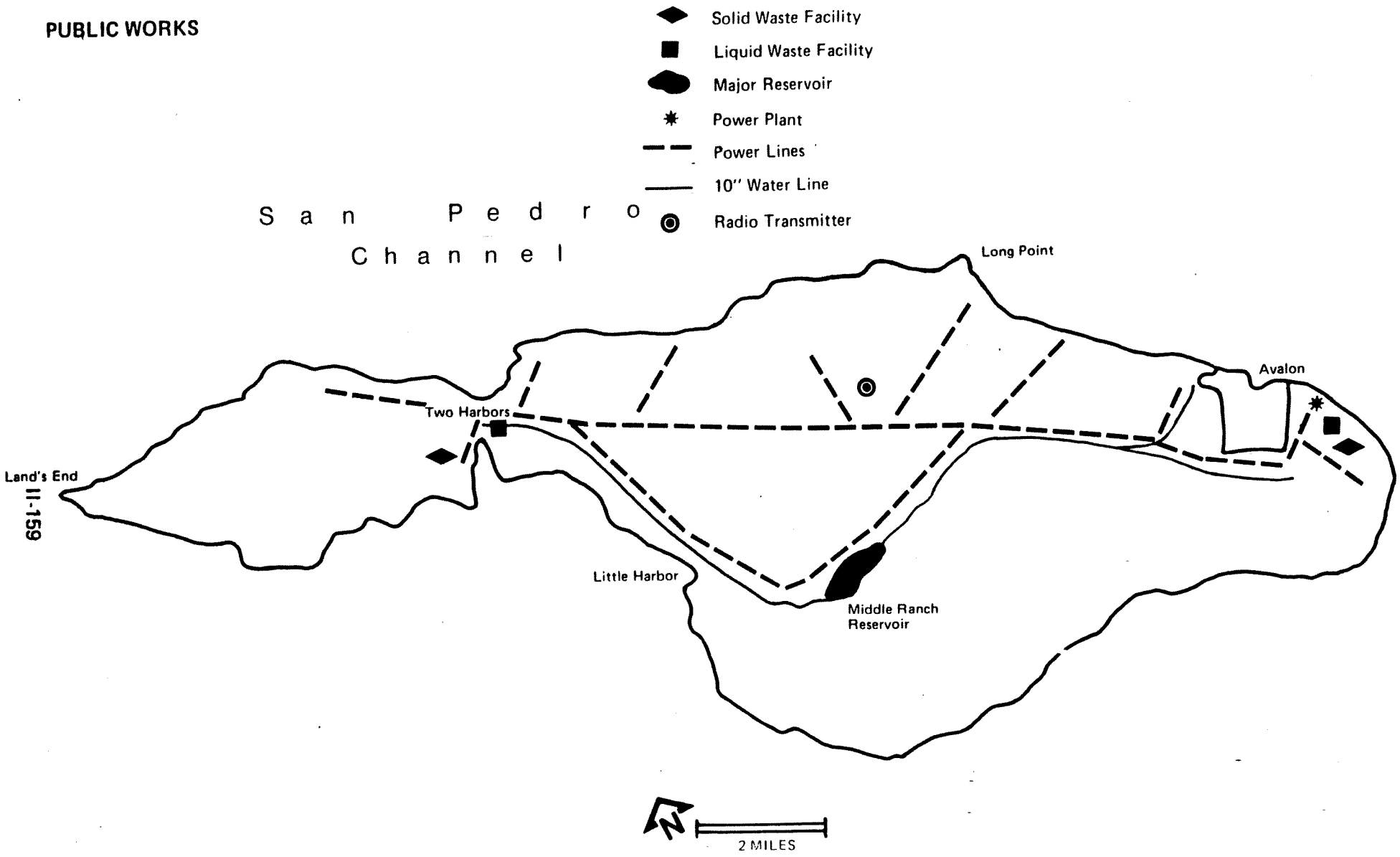
*Note: See Hazards Section for discussion of fire fighting and control. A report from the Avalon Facilities Planning Committee will include estimates for expenditures for the planning and provision of improved public services in Avalon and/or Avalon Canyon.

7) The wastewater treatment plant for the proposed Two Harbors development shall be located adjacent to the existing wastewater reclamation pond ("Q") as shown on the Two Harbors Land Use Map.

8) In order to preserve freshwater resources, new development at Two Harbors shall utilize dual plumbing or tertiary treated sanitary flushing in order to conserve freshwater resources. This policy does not exclude the possible use of desalinated water if feasible.

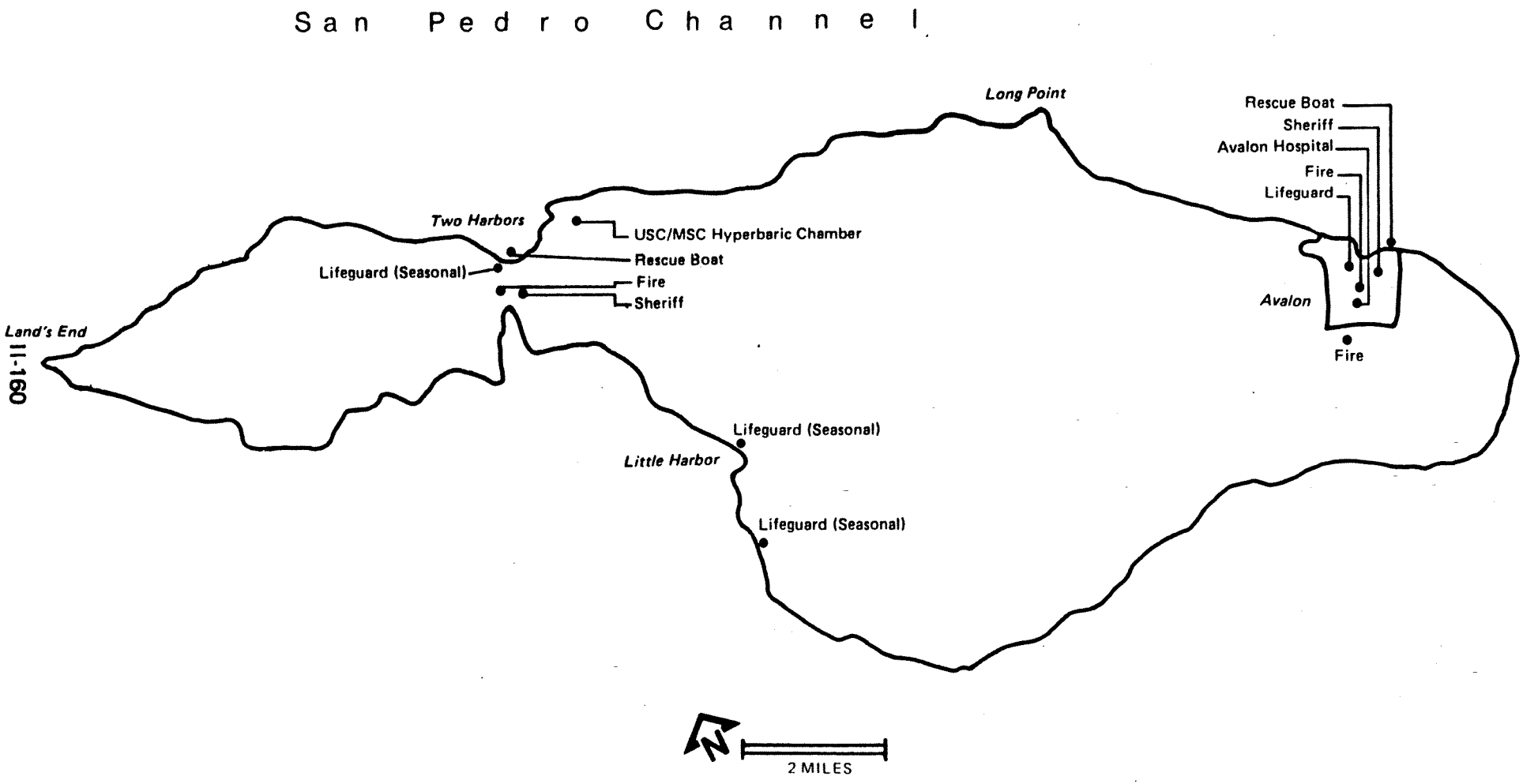
unincorporated
santa catalina island

PUBLIC WORKS



LOS ANGELES COUNTY **DEPARTMENT OF REGIONAL PLANNING**

PUBLIC HEALTH AND SAFETY FACILITIES
(City of Avalon facilities shown have
Island-wide applicability)



LOS ANGELES COUNTY DEPARTMENT OF REGIONAL PLANNING

4. Diking, Dredging, Filling And Shoreline Structures

a. Coastal Act Policies

Section 30233

(a) The diking, filling, or dredging of open coastal waters, wetlands, estuaries, and lakes shall be permitted in accordance with other applicable provisions of this division, where there is no feasible less environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize adverse environmental effects, and shall be limited to the following:

(1) New or expanded port, energy, and coastal-dependent industrial facilities, including commercial fishing facilities.

(2) Maintaining existing, or restoring previously dredged, depths in existing navigational channels, turning basins, vessel berthing and mooring areas, and boat launching ramps.

(3) In wetland areas only, entrance channels for new or expanded boating facilities; and in a degraded wetland, identified by the Department of Fish and Game pursuant to subdivision (b) of Section 30411, for boating facilities if, in conjunction with such boating facilities, a substantial portion of the degraded wetland is restored and maintained as a biologically productive wetland; provided, however, that in no event shall the size of the wetland area used for such boating facility, including berthing space, turning basins, necessary navigation channels, and any necessary support service facilities, be greater than 25 percent of the total wetland area to be restored.

(4) In open coastal waters, other than wetlands, including streams, estuaries, and lakes, new or expanded boating facilities.

(5) Incidental public service purposes, including, but not limited to, burying cables and pipes or inspection of piers and maintenance of existing intake and outfall lines.

(6) Mineral extraction, including sand for restoring beaches, except in environmentally sensitive areas.

(7) Nature study, aquaculture, or similar resource-dependent activities.

(b) Dredging and spoils disposal shall be planned and carried out to avoid significant disruption to marine and wildlife habitats and water circulation. Dredge spoils suitable for beach replenishment should be transported for such purposes to appropriate beaches or into suitable longshore current systems.

(c) In addition to the other provisions of this section, diking, filling, or dredging in existing estuaries and wetlands shall maintain or enhance the functional capacity of the wetland or estuary. Any alteration of coastal wetlands identified by the Department of Fish and Game, including, but not limited to, the 19 coastal wetlands identified in its report entitled, "Acquisition Priorities for the Coastal Wetlands of California", shall be limited to very minor incidental public facilities, restoration measures, nature study, commercial fishing facilities in Bodega Bay, and development in already developed parts of south San Diego Bay, if otherwise in accordance with this division.

Section 30235

Revetments, breakwaters, groins, harbor channels, seawalls, cliff retaining walls, and other such construction that alters natural shoreline processes shall be permitted when required to serve coastal-dependent uses or to protect existing structures or public beaches in danger from erosion and when designed to eliminate or mitigate adverse impacts on local shoreline sand supply. Existing marine structures causing water stagnation contributing to pollution problems and fishkills should be phased out or upgraded where feasible.

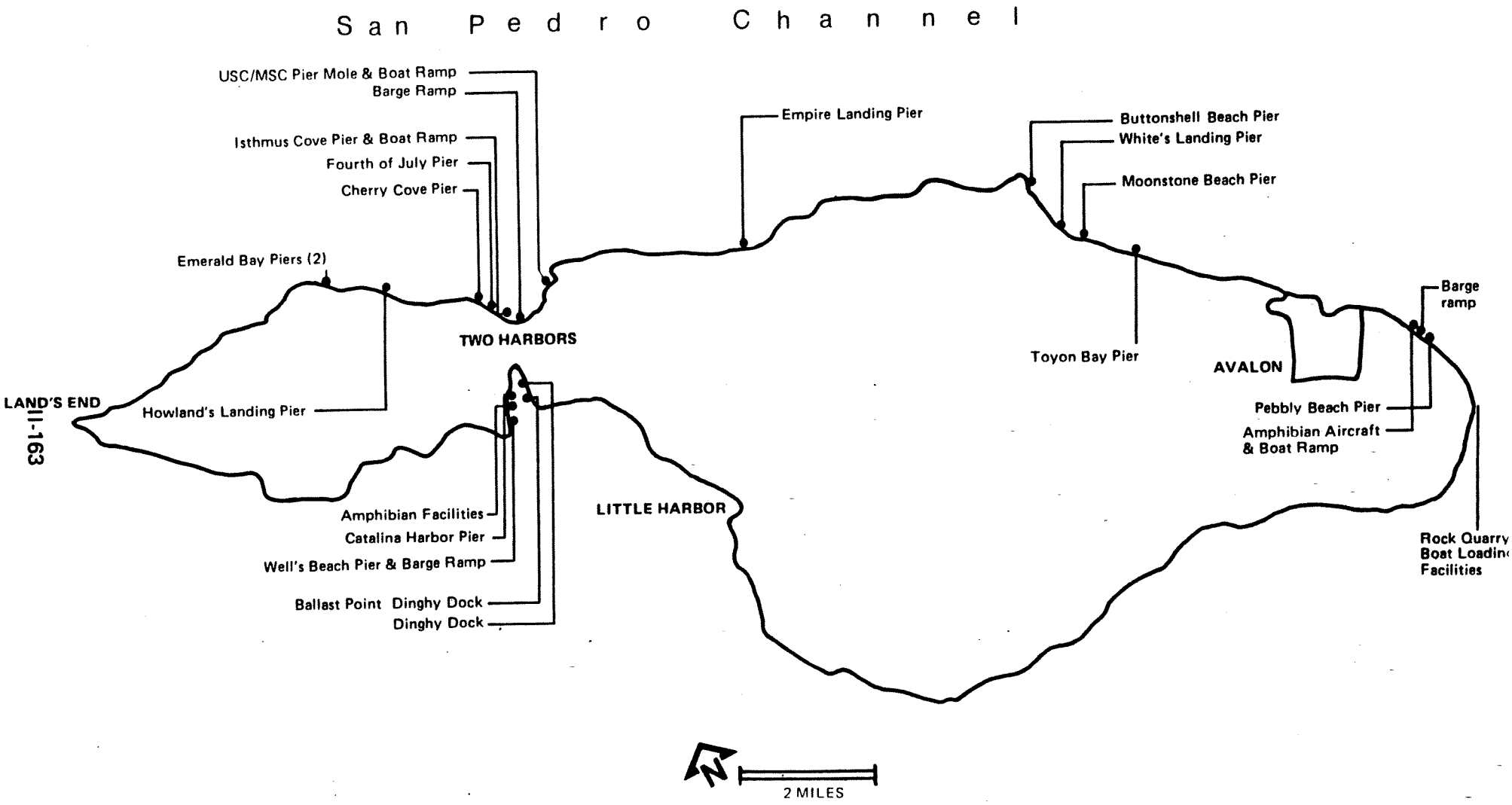
Section 30411

(a) The Department of Fish and Game and the Fish and Game Commission are the principal state agencies responsible for the establishment and control of wildlife and fishery management programs and neither the commission nor any regional commission shall establish or impose any controls with respect thereto that duplicate or exceed regulatory controls established by such agencies pursuant to specific statutory requirements or authorization.

b. Issues Identified

- Shoreline stabilization structures.
- Coastal cliff stabilization structures.
- Impact of new or expanded harbor facilities.
- Barging (food, fuel, quarry rock, etc.) and seaplane facilities.

EXISTING SHORELINE STRUCTURES



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c. Research Analysis

At present, shoreline structures along Catalina Island's unincorporated coastline consist of seventeen piers, two amphibian airplane facilities and two barge ramps. The location of these structures is shown on Map 23. Each of the seventeen piers consists of a permanent pier structure. Floats or extensions are attached to some of these piers during summer months, then removed for the remainder of the year.

The names and locations of these piers are as follows:

- Emerald Bay Piers (2)- Emerald Bay, in front of Great Western Council Boy Scout Camp.
- Howland's Landing Pier - Howland's Landing, in front of Catalina Island Boys and Girls Camp.
- Cherry Cove Pier - Cherry Cove, in front of San Gabriel Valley Boy Scout Camp.
- Fourth of July Pier - Fourth of July Cove, in front of Fourth of July Yacht Club facilitiy.
- Isthmus Cove Pier - Isthmus Cove, in middle of Isthmus Cove.
- USC/Marine Science Center Pier/Mole - Big Fisherman's Cove, in front of USC/Marine Science Center.
- Empire Landing Pier - Empire Landing, in front of quarry housing area.
- Buttonshell Beach Pier - Buttonshell Beach, in front of Glendale YMCA camp.
- White's Landing Pier - White's Landing, in front of Los Angeles Girl Scouts camp.
- Moonstone Beach Pier - Moonstone Beach, in front of Newport Harbor Yacht Club facility.
- Toyon Bay Pier - Toyon Bay, in front of Catalina Marine Institute.
- Wells Beach Pier, Catalina Harbor (west side).
- Dinghy Dock/Pier, Catalina Harbor (east side), in front of California Yacht Club facility.
- Dinghy Dock/Pier, Catalina Harbor (east side), in front of Del Rey Yacht Club facility.
- Catalina Harbor Pier, Catalina Harbor (west side).
- Pebbly Beach Pier, in front of Edison Power Plant.

The amphibian aircraft facilities are located at Pebbly Beach just east of the City of Avalon and at Wells Beach west side of Catalina Harbor. These facilities consist of concrete ramps extending from the land, down the shore, and a short distance underwater. Neither is currently in use as an amphibian facility. Both Pebbly Beach and Wells Beach facilities are now being used as boat launching ramps.

There are also two barge ramps located along the unincorporated coastline of Catalina Island used for accommodating freight barge landings. The ramp at Pebbly Beach is a permanent concrete structure extending down the beach into the water approximately 40 feet at a steep slope, dropping off sharply at the end. The barge ramp at Little Fisherman's Cove (Isthmus Cove) is a temporary structure consisting of rock and gravel which requires frequent resurfacing during periods of heavy use.

Improvement of this barge ramp is envisioned as an integral facet of the planned development at Two Harbors. The Two Harbors development will also necessitate the improvement of the Catalina Harbor, Isthmus Cove, and Wells Beach piers, and the construction of a pier at Little Fisherman's Cove for pigeon hole boat storage.

Recreational boating experts in the heavily used Two Harbors area have indicated the pressing need for boat launching facilities in both Isthmus Cove and Catalina Harbor. No such formal facilities exist at present.

- U.S. Army Corps of Engineers

The U.S. Army Corps of Engineer (COE) has jurisdiction over the construction of shoreline structures and other activities in U.S. waters. The COE exercises this authority by controlling the following permits:

. Section 10 Permit: Pursuant to the Rivers and Harbors Act of 1899, the COE handles permits for any structures, e.g. docks, piers, bulkheads not requiring fills, buoys, moorings, etc.

  Applicants must first obtain approval from the California Coastal Commission and the California Water Quality Control Board (WQCB).

. 404 Permit: Pursuant to the Clean Water Act of 1972, the COE controls all dredging and filling operations in U.S. waters, including any streams or wetlands leading to the ocean.

The permit process proceeds when an application is presented to the COE and is relayed to the environmental section for a preliminary assessment. Public notice is also provided. Then the COE circulates the petition to a variety of other agencies including National Marine Fisheries, U.S. Department of Fish and Game, the Environmental Protection Agency and the Coast Guard. Additionally, the local jurisdiction must also approve the project at this initial stage.

If any objections are raised during this phase, the project may be rejected or modified to satisfy the objections. If all objections are satisfied, a permit is issued and a certain time is designated within which the project must be completed.

The COE is responsible for enforcement assuring that projects and activities conform to COE guidelines and permit provisions.

Since 1976, "general public interest" has increasingly been taken into account by the COE in the granting of permits. This includes concerns relating to navigation, fish and wildlife conservation, pollution, aesthetics, access, and ecology.

d. Findings

- To date, 1981, no extensive research on the effects of shoreline structures upon the Island's marine resources exists.

- No shoreline structures have been proposed for sand beaches and none are proposed as part of the LCP. Catalina Island has no extensive river or stream system to provide beaches with significant sand supply. A small boat launching ramp and protective breakwater structure may be proposed for Pebbly Beach.
- Need is indicated for a boat launching ramp at Isthmus Cove and pigeon hole boat storage, with associated pier and ramp, at Little Fisherman's Cove.

e. Plan Policies and Recommended Actions

1) All development of shoreline structures shall be regulated by the County and the COE to avoid beach erosion and adverse impacts upon habitat resources such as thermal pollution, water stagnation, fish kills and siltation.

2) Wherever existing shoreline structures are found to contribute to beach erosion or negative impacts upon habitat resources, such as water stagnation, thermal pollution, fish kills, siltation, etc., programs shall be formulated to modify such structures or, if necessary, to phase them out.

3) New revetments, breakwater, groins and other such con struction that alter natural shoreline processes shall be permitted only when required for public safety or to serve coastal dependent uses and also, boating, fishing, marine education, etc. or to arrest erosion of public beaches and when designed to eliminate or mitigate adverse impacts upon local shoreline sand supply.

4) Upgrading, expansion or replacement of existing pier facilities for educational/scientific or recreational purposes shall be permitted when adverse impacts to marine resources are avoided. Three priority sites for such improvements are Isthmus Cove Pier, Catalina Harbor Pier, and Wells Beach Pier.

5) Plans for development shall be designed to minimize the need for grading operations.

6) The barge ramp at Little Fisherman's Cove (Isthmus Cove) shall be improved to accommodate increased use resulting from planned Two Harbors development.

7) At Little Fisherman's Cove, provide a pigeon hole boat storage facility and associated pier and ramp.

8) Design of any new or improved shoreline structures must assure unobtrusiveness of structure and compatibility with surrounding environment.

9) In keeping with proposed year round use, a pier should be designated for Gallagher's Cove.

10) Reserve space for a possible additional heliport southeast of the Isthmus along the road leading towards the Open Space Easement.

11) A thorough assessent of the Island's marine resources should predate construction of any shoreline structures with potential for negative impact upon these resources.

12) Where existing structures are found to cause degradation of marine life or other coastal resources, modification or phasing-out of such structures should be addressed in the comprehensive study of marine resources.

13) In conjunction with the planned developent at Two Harbors the following shoreline structures will be provided or improved to accommodate increased use: barge ramp and pigeon hole boat storage at Little Fisherman's Cove (Isthmus Cove), Isthmus Cove Pier, and Wells Beach Pier including provision of launch/retrieval facility for small boats. The improvement of the Isthmus Cove Pier may include development of a landside terminal building for the purpose of visitor-serving, passenger ticketing and necessary staging areas, provided that such a facility is not more than one story in height and is sited and designed so as to minimally impede public views down the Open Space View corridor.

The filling or dredging of open coastal waters around Catalina shall be limited to new or expanded boating facilities, incidental public service purposes, marine education/research, aquaculture or similar resource dependent activities, and mineral extraction, including sand for restoring beaches. "Fill" shall be defined as earth or any other substance or material, including pilings, placed for the purposes of erecting structures thereon in a submerged area.

Within Catalina Harbor, maintenance dredging only shall be allowed to maintain boat moorings in order to preserve the important function as a harbor of refuge and an important recreational boating destination. A qualified biologist shall be consulted prior to maintenance dredging in order to mitigate any adverse impacts which might occur to the Catalina Harbor marine habitat.

5. Industrial Development And Energy Facilities

a. Coastal Act Policies

Section 30254

New or expanded public works facilities shall be designed and limited to accommodate needs generated by development or uses peritted consistent with the provisions of this division, provided, however, that it is the intent of the Legislature that State Highway Route 1 in rural areas of the coastal zone remain a scenic two-lane road. Special districts shall not be formed or expanded except where assessment for, and provision of, the service would not induce new developent inconsistent with this division. Where existing or planned public works facilties can accommodate only a limited amount of new development, services to coastal dependent land use, essential public services and basic industries vital to the economic health of the region, state, or nation, public recreation, commercial recreation, and visitor-serving land uses shall not be precluded by other developent.

Section 30255

Coastal-dependent developments shall have priority over other developents on or near the shoreline. Except as provided elsewhere in this division, coastal-dependent developments shall not be sited in a wetland.

Section 30260

Coastal-dependent industrial facilities shall be encouraged to locate or expand within existing sites and shall be permitted reasonable long-term growth where consistent with this division. However, where new or expanded coastal-dependent industial facilities cannot feasibly be accommodated consistent with other policies of this division, they may nonetheless be permitted in accordance with this section and Sections 30261 and 30262 if (1) alternative locations are infeasible or are environmentally damaging; (2) to do otherwise would adversely affect the public welfare; and (3) adverse environmental effects are mitigated to the maximum extent feasible.

Section 30261

(a) Multicompany use of existing and new tanker facilties shall be encouraged to the maximum extent feasible and legally permissible, except where to do so would result in increased tanker operations and associated onshore development incompatible with the land use and environmental.

goals for the area. New tanker terminals outside of existing terminal areas shall be situated as to avoid risk to environmentally sensitive areas and shall use a monobuoy system, unless an alternative type of system can be shown to be environmentally preferable for a specific site. Tanker facilities shall be designed to (1) minimize the total volume of oil spilled, (2) minimize the risk of collision from movement of other vessels, (3) have ready access to the most effective feasible containment and recovery equipment for oilspills, and (4) have onshore deballasting facilties to receive any fouled ballast water from tankers where operationally or legally required.

(b) Because of the unique problems involved in the importation, transportation and handling of liquified natural gas, the location of terminal facilities, therefore, shall be determined solely and exclusively as provided in Chapter 10 (commencing with Section 5550) of Division 2 of the Public Utilities Code and the provision of this division shall not apply unless expressly provided in such Chapter 10.

Section 30262

Oil and gas development shall be permitted in accordance with Section 30260, if the following conditions are met:

(a) The development is performed safely and consistent with the geologic conditions of the well site.

(b) New or expanded facilities related to such development are consolidated, to the maximum extent feasible and legally permissible, unless consolidation will have adverse environental consequences and will not significantly reduce the number of producing wells, support facilities, or sites required to produce the reservoir economically and with minimal environmental impacts.

(c) Environmentally safe and feasible subsea completions are used when drilling platforms or island would substantially degrade coastal visual qualities unless use of such structures will result in substantially less environmental risks.

(d) Platforms or islands will not be sited where a substantial hazard to vessel traffic might result from the facility or related operations, determined in consultation with the United States Coast Guard and the Army Corps of Engineer.

(e) Such development will not cause or contribute to subsidence hazards unless it is determined that adequate measures will be undertaken to prevent damage from such subsidence.

(f) With respect to new facilities, all oilfield brines are reinjected into oil-producing zones unless the Division of Oil and Gas of the Department of Conservation determines to do so would adversely affect production of the reservoirs and unless injection into other subsurface zones will reduce environmental risks.

Exceptions to reinjections will be granted consistent with the Ocean Waters Discharge Plan of the State Water Resources Control Board and where adequate provision is made for the elimination of petroleum odors and water quality problems.

Where appropriate, monitoring programs to record land surface and near-shore ocean floor movements shall be initiated in locations of new large-scale fluid extraction on land or near shore before operations begin and shall continue until surface conditions have stabilized. Costs of monitoring and mitigation programs shall be borne by liquid and gas extraction operations.

Section 30263

(a) New or expanded refineries or petrochemical facilties not otherwise consistent with the provisions of this division shall be permitted if (1) alternative locations are not feasible or are more environmentally damaging; (2) adverse environental effects are mitigated to the maximum extent feasible; (3) it is found that not permitting such development would adversely affect the public welfare; (4) the facility is not located in a highly scenic or seismically hazardous area, on any of the Channel Islands, or within or contiguous to environentally sensitive areas; and (5) the facility is sited so as to provide a sufficient buffer area to minimize adverse impacts on surrounding property.

(b) In addition to meeting all applicable air quality standards, new or expanded refineries or petrochemical facilities shall be peritted in areas designated as air quality maintenance areas by the State Air Resources Board and in areas where coastal resources would be adversely affected only if the negative impacts of the project upon air quality are offset by reductions in gaseous emissions in the area by the users of the fuels, or, in the case of an expansion of an existing site, total site emission levels, and site levels for each emission type for which national or state ambient air quality standards have been established do not increase.

(c) New or expanded refineries or petrochemical facilities shall minimize the need for once-through cooling by using air cooling to the maximum extent feasible and by using treated waste waters from inplant processes where feasible.

Section 30264

Notwithstanding any other provision of this division, except subdivisions (b) and (c) of Section 30413, new or expanded thermal electric generating plants may be constructed in the coastal zone if the proposed coastal site has been deterined by the State Energy Resources Conservation and Development Commission to have greater relative merit pursuant to the provisions of Section 25516.1 than available alternative sites and related facilities for an applicant's service area which have been determined to be acceptable pursuant to the provisions of Section 25516.

b. Issues Identified

- Type and location of industrial and closely related uses.
- Onshore and offshore oil and gas production, storage and transmission facilities.
- Location and size of oil containment facilities.

c. Research Analysis

Other than the power plant located at Pebbly Beach and related facilities described in the section on Public Works and Facilities, the only facility located on the Island related to oil and gas exploration and other energy related development is an oil spill containment facility at Wells Beach in the Two Harbors area. The facility is administered by the Southern California Petroleum Contingency Organization (SC-PCO). The Island is included in a State Oil and Gas Sanctuary.

The oil spill containment facility is a small shed which contains a Vikoma seapack, a Komera miniskimmer, a supply of dispersants, and various absorbants. There is a contact person at Two Harbors who prepares the materials necessary for the particular emergency and volunteer personnel who begin the preliminary clean-up procedures while other personnel dispatched from San Pedro by helicopter. San Pedro is the location of the main oil spill contingency facilities.

In a presentation to the Bureau of Land Management (BLM) in late 1980, the SC-PCO mentioned that approval is needed from the Environmental Protection Agency (EPA) before any efficient dispersants could be used to combat a major oil spill. Current methods such as skimmers and barriers are inefficient for large spills or in rough water conditions. New technologies should be developed to handle these large spills.

There is no other industrial development at Two Harbors. There are two quarries on the Island at Empire Landing and southeast of Pebbly Beach. The rock from these quarries is used all along the Southern California coast in the con-

struction of shoreline structures. Other facilities at Pebbly Beach were discussed previously in the chapter on Design Principles for New Development.

The Island has been determined to be unsuitable for the siting of thermal power plants.

d. Findings

- The only industrial or energy related facilities on the Island are located at Pebbly Beach. Boosters are located throughout the Island, and an oil spill containment shed is located at Two Harbors.
- The Island is not an appropriate location for refineries or other large scale industrial facilities.

e. Plan Policies and Recommended Actions

1) No refineries or similarly sized industrial facilities shall be peritted on Santa Catalina Island.

2) Cooperative efforts for oil spill contingency planning among Conservancy rangers, Los Angeles County response personnel, police and fire departments, U.S. Coast Guard, California Fish and Game, National Park Service, and the Southern California Petroleum Contingency Organization (SC-PCO) shall be continued.

3) The following priorities for oil spill protection, listed in descending importance for spill countermeasures, shall be established:

a. Contain the oil at its point of origin.
b. Protect concentrations of marine mammals and seabirds observed at the time of the spill.
c. Protect surfweed and intertidal areas, especially Ship Rock, Bird Rock, Indian Rock, Black Point and grunion spawning areas.
d. Protect salinas and areas below them at Shark Harbor, Little Harbor and Ballast Point off Catalina Harbor.
e. Protect Catalina Harbor due to its unique mud bottom, invertebrates community and relatively low flushing rate.
f. Protect canyon mouths with perennial streams because these have higher sediment concentrations which may cause the oil to sink, thus damaging valuable bottom-dwelling marine resources.

g. Protect fish spawning or nursery areas, particularly spawning areas of market squid (See Map 8).

h. Protect eelgrass areas indicated on the Marine Resources map (See Map 8).

i. Protect kelpbeds.

j. Protect other habitats within the ASBS areas (See Map 9).

k. Revise these priorities as new marine research provides better data on distribution of sensitive features.

l. A qualified biologist must be on the scene as soon as possible to aid in the decision making process.

4. Spill clean-up personnel shall be informed of locations of rare plants and eagles on Catalina. Helicopter use shall be discouraged near the eagle sites and warn against trampling of rare plant sites even during emergencies. Cleaned-up oil shall be disposed of only in sites that are approved by state or regional water quality personnel on the scene, or by responsible federal officials in consultation with the state.

5. Research activities dealing with offshore oil drilling will be permitted at the USC Marine Science Center.

local coastal program

unincorporated
santa catalina island

map 24

OFF-SHORE OIL LEASING:
SOUTHERN CALIFORNIA

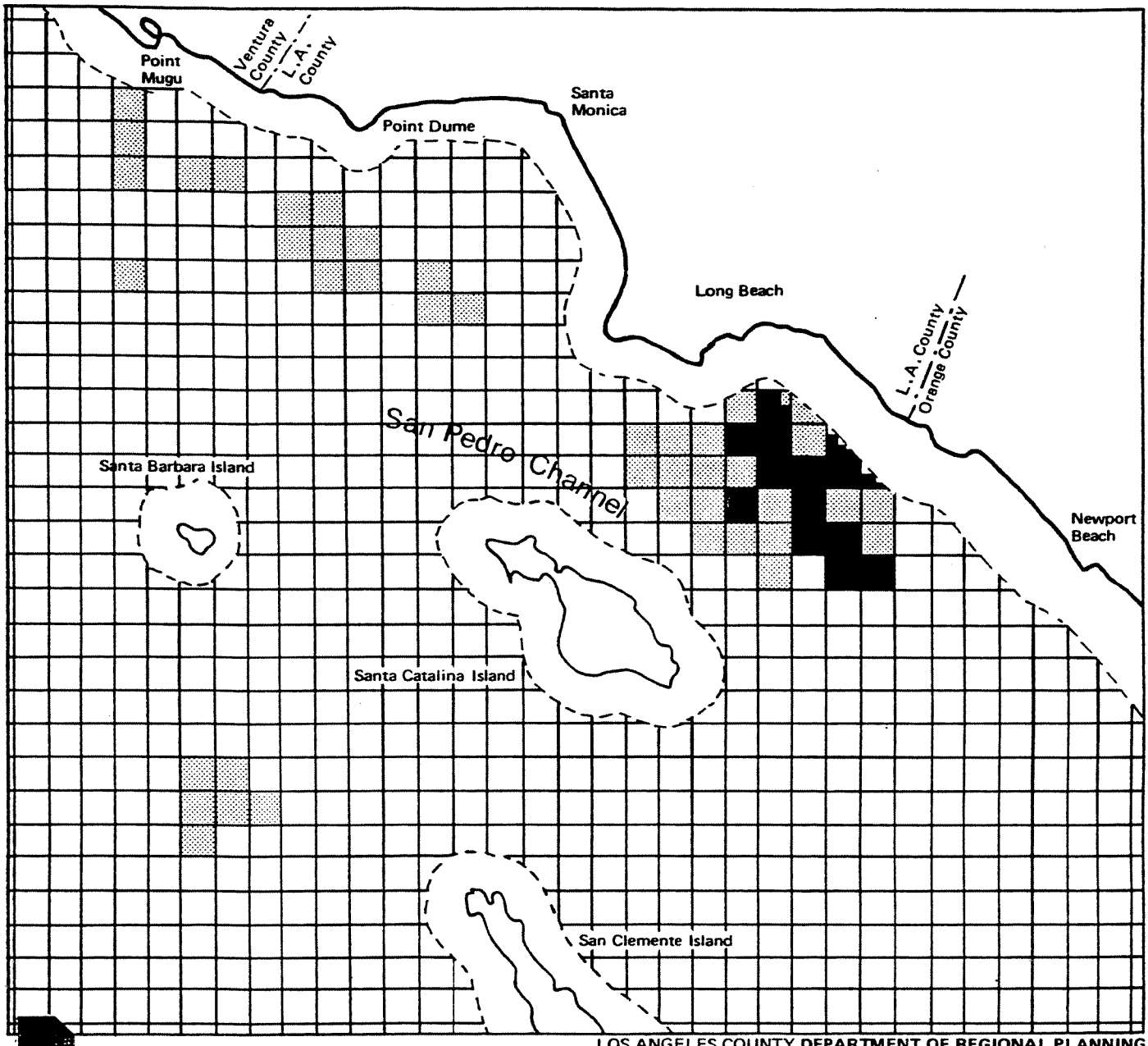
3-Mile State Jurisdiction

Existing Federal Leases

Tracts selected for Environmental Statement (ES) review - Outer Continental Shelf Lease Sale No. 68

N

10 MILES



LOS ANGELES COUNTY DEPARTMENT OF REGIONAL PLANNING

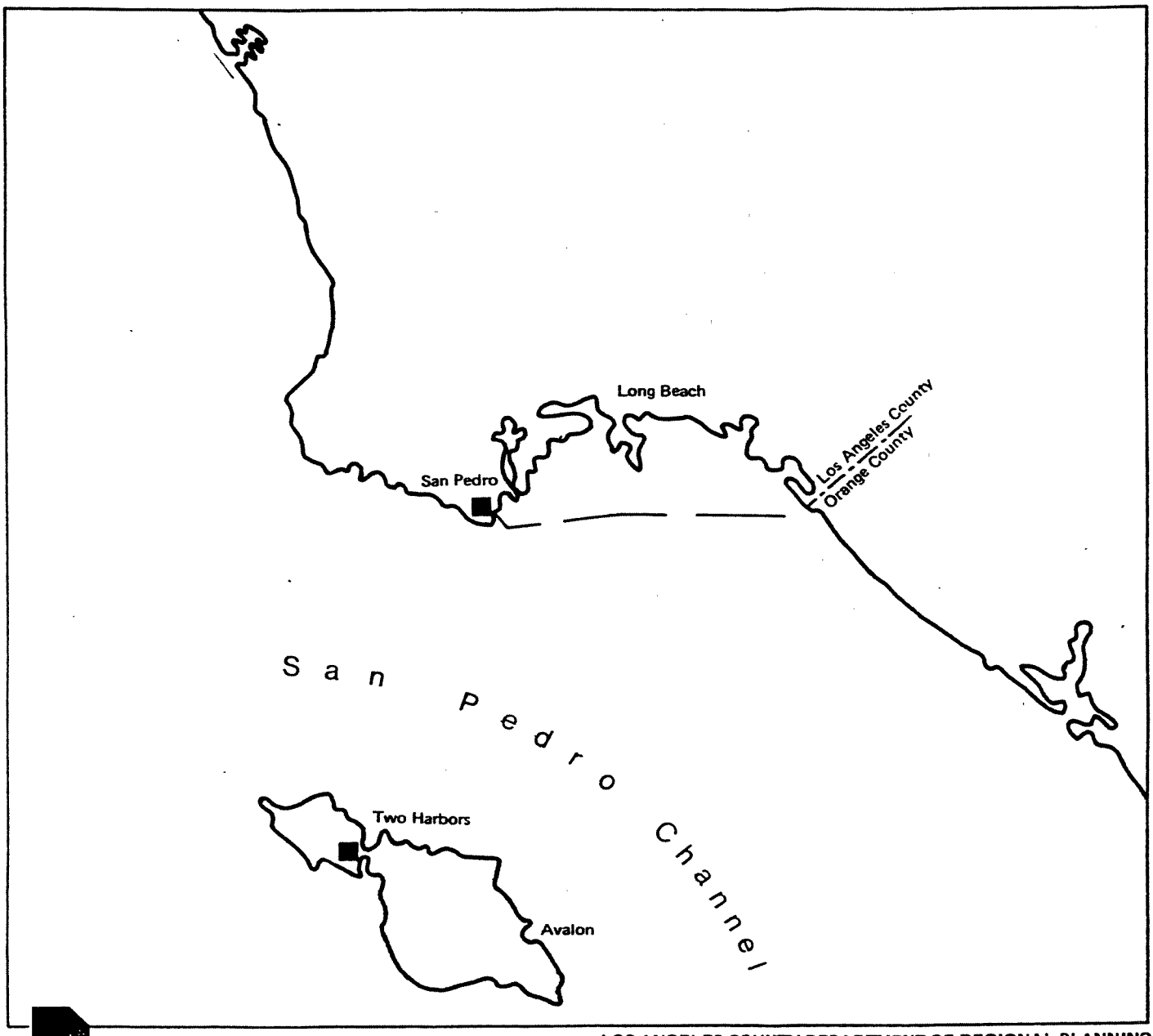
local coastal program

unincorporated
santa catalina island

map 25

■ Oil Spill Containment Facility

OIL SPILL CONTAINMENT FACILITIES



III. APPENDICES

A. County of Los Angeles General Plan Coastal-Related Policies.

B. County of Los Angeles/Santa Catalina Island Company Open Space Easement Agreement.

C. A Study of the Marine Environment of Catalina Harbor, Santa Catalina Island, California, With Reference to a Proposed Residential-Recreational Development.

D. Excerpts from the General Development Plan for Recreation published by the Los Angeles County Department of Parks and Recreation.

E. Excerpts from the Resource Management Plan published by the Center for Natural Areas.

F. Geologic Map for Two Harbors Area by Bechtel Corporation, 1968 (By Reference).

APPENDIX A

County of Los Angeles General Plan Coastal-Related Policies

APPENDIX A

COUNTY OF LOS ANGELES GENERAL PLAN COASTAL-RELATED POLICIES (Adopted November, 1980)

- Protect areas that have significant natural resources and scenic values, including significant ecological areas, the coastal zone, and prime agricultural lands (Page I-20; Policy 10).

- Discourage large-scale urban development and cluster future growth on the most suitable lands in and near Avalon (Page I-32; Policy 73).

- Permit visitor accommodations, services and housing at Catalina Airport (Airport-In-The Sky) that are compatible with the recreational nature of the airport, and consistent with scenic and environmental values in the vicinity (Page I-32; Policy 75).

- Encourage the protection of marine resources in the nearshore waters of the islands (Page I-33; Policy 80).

- Support the conservation of energy and encourage the development and utilization of new energy sources including geothermal, thermal waste, solar, wind and ocean related sources (Page II-26; Policy 2).

- Protect the quality of the coastal environment. Maximize public access to and along the coast and maximize public recreational opportunities in the coastal zone consistent with sound resource conservation principles (Page II-27; Policy 8).

- Preserve and restore marine resources emphasizing the shore and near shore zone, especially lagoons and salt water marshes (Page II-28; Policy 9).

- Encourage maintenance of fisheries through improved commercial and sport fishing practices, habitat improvement programs, and research on fish propagation (Page II-28; Policy 44).

- Support improved public access to coastal recreation areas including the Channel Islands consistent with protecting marine and land environments (Page II-31; Policy 33).

- Actively pursue State Coastal Conservancy grants for the following priority coastal restoration and enhancement projects (Page VIII-34; Policy II-6):

  . Ballona Wetlands
  . Los Cerritos Area
  . Malibu Lagoon
  . Malibu Bluff Line
  . Malibu Coastal Trail
  . Point Dume
  . Santa Catalina Island

- Complete and adopt a Local Coastal Plan and Program consistent with and carrying out the intent of the Coastal Act of 1976. Coordinate this effort closely with other coastal jurisdictions within the County. Upon adoption of the Local Coastal Plan, include it as the Coastal Element of the County General Plan (Page VIII-39; Policy II-21).

- Support fish habitat improvement and protection programs which maintain and improve breeding and spawning grounds within marine environments and inland waters (Page VIII-40; Policy II-14).

APPENDIX B

Open Space Easement

APPENDIX B

OPEN SPACE EASEMENT

This Open-Space Easement is made as of this 28th day of February, 1974, by SANTA CATALINA ISLAND COMPANY, a Delaware corporation ("Grantor"), in favor of the County of Los Angeles, a political subdivision of the State of California ("Grantee").

R E C I T A L S

A. Except for certain portions of the City of Avalon, Grantor is the owner in fee of substantially all that certain real property located in Los Angeles County, State of California, commonly known as Santa Catalina Island.

B. Except for development in relatively small portions, Santa Catalina Island has remained substantially in its natural state and has an open-space character.

C. Grantor is willing and has agreed for a term of years as a gift to Grantee and the public without the payment of any compensation therefor, by means of this Open Space Easement, to forego commercial development of and to preserve the open space character of the major portion of Santa Catalina Island.

D. The express purposes of this Open Space Easement are (1) to provide an opportunity for, and to encourage, access by the public, including without limitation civic, charitable, patriotic and religious groups, and similar organizations, to substantial portions of Santa Catalina Island for scenic, open space and recreational purposes, and (2) to preserve portions of Santa Catalina Island for the protection of wild life, plants and unique geological and archeological sites.

E. Grantee has determined that the preservation of the land covered by the Open Space Easement as open space is consistent with the General Plan of the County of Los Angeles, is in the best interest of said County and is important to the public for the enjoyment of scenic beauty, for the use of natural resources and for recreation.

F. It is the intention of both Grantor and the Grantee that the land covered by this Open Space Easement be protected for a limited production of food and fiber, for the preservation of its essentially rural characteristics and natural scenic beauty and for its value as watershed, and that said land be open to the general public, subject to reasonable restrictions concerning the needs of the land and necessary to the preservation of its unique qualities as described herein below. To this end Grantor and Grantee have agreed as more fully described herein below

to consult in good faith with regard to any proposed development, construction, extensive maintenance or repair the open-space character of said land. Grantor and Grantee acknowledge and agree that improved public access to and use of the subject property for scenic, open space and recreational purposes as more fully described hereinbelow, is the primary reason for acceptance of this Open Space Easement by Grantee and that the imposition by Grantor of unreasonable restrictions on such access and use and/or the failure by Grantor to consult in good faith with Grantee regarding restrictions on access and use, construction or development the subject property by Grantor as provided in this Open Space Easement shall justify a finding that no public purpose would be served by keeping such property as open space, and shall therefore justify the abandonment of this Open Space Easement under the provisions of California Government Code Section 51061.

GRANT OF EASEMENT

NOW, THEREFORE, as a gift without the payment of any compensation therefore, Grantor does hereby grant to the County of Los Angeles an open space easement in the below described real property of the nature and character and to the extent hereinafter set forth which easement shall result from the relinquishment of rights set forth hereinbelow and from the covenants set forth herein below and each and every portion of such real property is and shall be held, conveyed, hypothecated or encumbered, leased, rented, used, occupied and improved subject to the following covenants and relinquishments all of which are declared and agreed upon for the purpose of maintaining, preserving, conserving and otherwise continuing in existence the open space character of said real property. All of said covenants and relinquishments shall run with the land and shall be binding upon all parties having or acquiring any right, title, interest or estate in said real property or any portion thereof whether as sole owners, joint owners, lessees, tenants, licensees, permittees, occupants or otherwise. It is the intent of the parties that this Open Space Easement be an "enforceable restriction" within the meaning of Article XXVIII of the Constitution of the State of California, as provided for in Chapter 6.5 of Part 1 of Division 1 of Title 5 of the Government Code of California, commencing with Section 51050 and as referred to in Section 422, Article 1.5, Chapter 3 of Part 2 of Division 1 of the California Revenue and Taxation Code.

ARTICLE I

PROPERTY SUBJECT TO THIS EASEMENT

The real property subject hereto (the "Land") is situated in the County of Los Angeles, State of California, and is more particularly described in Exhibit A attached hereto.

ARTICLE II

RELINQUISHMENTS AND COVENANTS

Grantor hereby relinquishes to the public for the term of years set forth below the right to construct or permit the construction of any improvements on the Land except as expressly reserved in this instrument. Grantor also covenants with Grantee, which covenant shall run with the Land for said term of years, not to construct or permit the construction of any improvements on the Land, except as expressly reserved in this instrument and, as more specifically provided herein below, after consultation with authorized representatives of Grantee. Without limiting the generality of the foregoing and except as expressly reserved in this instrument, Grantor relinquishes to the public Grantor's right to and covenants with Grantee both not and not to permit others to:

1. Construct on the Land any residential, commercial or industrial structure including without limitation any hotel, inn, condominium or rental apartment project.

2. Extract natural resources from the Land.

3. Engage in or permit any agricultural use of the Land.

4. Cut or permit others to cut timber, trees or other natural growth except as may be required for fire prevention, thinning, elimination of diseased growth and/or similar protective measures or the harvest of trees or other natural growth in a manner compatible with open space purposes.

ARTICLE III

RIGHTS RESERVED BY GRANTOR

Grantor excepts from the foregoing relinquishments and covenants, and reserves unto itself and its successors and assigns, the following:

1. The right to maintain, to use, and, after consultation with, and obtaining the concurrance of, authorized representatives of Grantee to construct, install, restore and improve any and all improvements which may be necessary or useful for or incidental to the enjoyment by the public of open space, scenic, wildlife preservation, scientific, educational or recreational purposes, which improvements may include by way of description, but not limitation, parks, camp grounds, camp sites, picnic areas, hiking trails, bridle paths, scenic lookouts, areas reserved for the preservation of wildlife and plants, historical or memorial monuents, roads, utilities, fences, cabins, shelters, water supply and distribution facilities, sewage treatment and disposal facilities, refuge collection and disposal facilities, museums and exhibit

buildings. If Grantor and the authorized representatives of Grantee referred to above are unable to agree within a reasonable time on the disposition of any matter as to which they are required to consult and concur as provided above, such matter may be referred by either party to the Board of Supervisors of Los Angeles County for determination, which determination shall be final and binding upon both Grantor and Grantee.

2. The right after consultation with authorized representatives of Grantee to construct, install, maintain, restore, use and enjoy public service facilities installed for the benefit of the Land or pursuant to authorization of the governing body of Grantee or the Public Utilities Commission of the State of California, or under the Agreement with the Southern California Edison Company referred to in Exhibit A attached hereto.

3. The rights

   (a) (i) to maintain, repair, and (ii) after consultation with authorized representatives of Grantee, restore and reconstruct all structures and other improvements and facilities presently located on the Land, and

   (b) to construct, provide, install, maintain, repair, restore, replace, expand, use and operate facilities and improvements to the extent permitted under the (i) leases, licenses, easements, permits and other agreements listed in Exhibit B attached hereto, and (ii) any extensions, renewals, and any substantially similar substitutions or replacements of any such lease, license, easement, permit or other agreement.

   Grantor agrees to consult with authorized representatives of Grantee prior to agreeing to extend the term of any such lease, license, easement, permit or other agreement, or performing any construction, installation or expansion work which is permitted but not required to be performed by Grantor under any lease, license, easement, permit or other agreement referred to above.

4. The rights

   (a) (i) to maintain, repair, restore, reconstruct, and (ii) after consultation with authorized representatives of Grantee, to relocate the ranch houses, corrals, stables, barns, fences and other improvements and facilities presently located on Lot 60 of the Land, and

   (b) from and after June 1, 1979, after consultation with authorized representatives of Grantee, to construct,

install, maintain, repair, restore and reconstruct on said Lot 60 a lodge, hotel or other public accommodation facilitiy for the purpose of permitting and facilitating the use and enjoyment by the public of the Land for scenic, open space and/or recreational purposes.

5. The right to maintain, repair, reconstruct, and after consultation with authorized representatives of Grantee, to relocate and modernize from time to time all existing cove and harbor facilities, including without limitation all maintenance and service facilities, wharfs, piers, docks and other landing facilities; seawalls, breakwaters, groins and other protective works; provided however, that no such reconstruction, repair, relocation or modernization shall materially impair the open space character of the Land.

6. The right to repair, maintain, restore, replace, and after consultation with authorized representatives of Grantee, to relocate and expand, as provided herein below, the landing strip, restaurant, maintenance, residential and service buildings and other facilities relating to the airport located on Lot 71 of the Land. Any restoration, replacement, relocation or expansion of the present restaurant, landing strip, residential and maintenance facilities of said airport shall be consistent with the use or enjoyment of the Land for open space, scenic, wildlife preservation, recreational, educational or other purpose described in this Easement and, prior to June 1, 1979, no such expansion shall include the construction of any lodge, hotel or other public accommodation facility except such cabins or other similar limited public accommodations for the purpose of permitting and facilitating the use and enjoyment by the public of the Land for open-space, scenic and/or recreational purposes.

7. After consultation with authorized representatives of Grantee, the right to carry out reforestation, wildlife and plant preservation and other conservation projects, including, but not limited to, the erection of such fencing and other protective works as may be necessary or desirable to protect such reforestation, wildlife and plant preservation or other conservation projects from damage or destruction.

8. The right to continue agricultural operations presently conducted from time to time on Lots 39, 40 and 60 of the Land, and after consultation with authorized representatives of Grantee the right to expand such agricultural operations to a total of not to exceed 200 acres under cultivation at any one time. Such agricultural operations shall not be limited to Lots 39, 40 and 60 or to crops presently or heretofore raised on the Land; provided, however, that the total area of the Land devoted to cultivation of agricultural crops at any one time shall not exceed the above stated number of acres.

9. The right

   (a) to maintain, repair, restore, reconstruct and after consultation with authorized representatives of Grantee, to relocate the ranch houses, corrals, stables, barns, fences and other improvements and facilities presently located on Lot 40 of the Land, and

   (b) from and after June 1, 1984, after consultation with authorized representatives of Grantee, to construct, install, maintain, repair, restore and reconstruct on said Lot 40 a lodge, hotel or other public accommodation facility for the purpose of permitting and facilitating the use and enjoyment by the public of the Land for scenic, open-space and/or recreational purposes.

10. The right to repair, maintain, restore, resurface, and after consultation with authorized representatives of Grantee, to extend, improve with hard surface, and/or relocate any existing roads located within the Land and to use and permit the use by others, including the public, with or without charge, of such roads as a means of access to, between and across any and all portions of the Land including without limitation the above described airport, those portions of the Land subject to the leases, licenses, easements, permits and other agreements listed in Exhibit B attached hereto and those portions of Santa Catalina Island not include within the Land, including without limitation the City of Avalon; PROVIDED, HOWEVER, that no action will be taken by Grantor, without prior consultation with authorized representatives of Grantee, to limit access to, from or across any portion of the Land at reasonable times, or to establish a fee for the use of such roads for open space, scenic and recreational purposes (which use shall be at the user's risk) and no fee shall be charged, without prior consultation with authorized representatives of Grantee, for the said open space, scenic or recreational use of such roads which will materially impair public access for such open space, scenic and recreational purposes by means of such roads to the Land or any portion thereof available for such use; PROVIDED, HOWEVER, nothing contained herein shall be construed to obligate or require Grantor to keep roads open at unreasonable times, including but not limited to times of high fire or flood hazard.

    Grantor also reserves the right, after consultation with authorized representatives of Grantee, to construct, maintain, repair, restore and reconstruct such storage sheds and maintenance and service buildings and shops as shall be required to house, maintain and repair the vehicles, machines, equipment, tools, materials and supplies

used to maintain and repair the above described roads or to service and maintain the scenic, recreational and other improvements and facilities described in paragraph 1 of this Article III.

11. The right, after consulting with authorized representatives of Grantee to extract rock, sand and gravel from the Land for the purpose of constructing, maintaining and restoring roads, trails, parking areas, camp or picnic areas and other improvements permitted under this Easement on the Land.

Whenever either Grantee or Grantor is required to consult with the authorized representatives of the other, as provided in this Easement, the initiating party may give written notice to the authorized representatives of the other, by personal delivery or registered mail, as to the matter with respect to which such party desires to consult. If said authorized representatives of the receiving party shall fail to respond in writing to such notice within thirty (30) days after receipt thereof, it shall be conclusively deemed for purposes of this Easement that the initiating party has consulted in good faith with the other party as to the matters described in said notice. Notwithstanding any other provisions of this Article III, neither party shall be required to consult with the other as to any emergency repair work or other emergency action as to which, by reason of imminent danger to life (including wildlife) or property, practicable, but the party performing such work shall notify the other party promptly after the perforance of any such work or action describing the same in reasonable detail.

No action shall be permitted under any of the foregoing reservations which will materially impair the open space character of the Land.

ARTICLE IV

RIGHT OF ENTRY AND USE

1. Authorized officials or employees of Grantee may enter on the Land at any reasonable time from time to time during the term of this Easement, subject to reasonable rules and regulations, including whenever practicable a requirement of prior written notice to Grantor, to inspect for violations of the convenants and relinquishments set forth herein, to otherwise determine, compliance with or enforce any such covenants or relinquishments, or for any other purpose necessary or desirable to effectuate the purposes of this Easement. It is the specific intent of both Grantor and Grantee that the Land be made available to the public for recreational, scientific, educational, scenic and other open space purposes to the greatest extent possible consistent with protection

of the open space character of the Land, including the protection and preservation of the natural habitat of wildlife and plants thereon, and this Easement shall be deemed to convey to, create in, or otherwise authorize and permit Grantee and the public the right to enter on and use the Land for said recreational scientific, educational, scenic and other open space purposes, subject to the right in Grantor to charge reasonable fees for such entry and use and to impose reasonable conditions, limitations, and restrictions on such entry and use when such conditions, limitations and/or restrictions are necessary for the management and protection of the Land as defined below, are reasonable in scope and effect so as not to unduly or unreasonably impair such public entry and use, and where Grantor has previously consulted in good faith with authorized representatives of Grantee regarding the imposition of such fee or restrictions. The management and protection of the Land as referred to above in this paragraph shall include, but not be limited to, preservation or protection of scenic or other unique natural features of the Land, including the protection and preservation of the natural habitat of wildlife and plants thereon, prevention of activities such as off-the-road vehicle usage which tend to damage vegetation or otherwise scar the surface of the Land, avoidance of any undue fire, sanitation, rubbish disposal or other public health or safety hazard, and prevention of interferance with any reforestation, soil conservation, wildlife preservation or other use reserved or otherwise permitted to Grantor hereunder.

2. Without limiting the generality of the provisions of para-graph 1 of this Article IV, after good faith consultation with authorized representatives of Grantee, Grantor shall have the right to require the payment of reasonable fees and other charges for, and to impose other reasonable and non-discriminatory terms and conditions upon, the privilege or entry upon and/or the use or enjoyment of the Land by the public, including without limitation charging reasonable fees for the use of roads, boat landings, mooring and aircraft landing facilities, and for swimming, hiking, fishing, camping, picnicing, horseback riding, scenic, educational or scientific tours, hunting and other open space, scenic and/or recreational purposes; provided, however, that any fee charged for any such use as shall be permitted from time to time by Grantor shall:

   (a) be reasonable in amount taking into account all relevant factors, including without limitation the conservation and preservation projects to be carried out on the Land, and

   (b) not have the effect of unduly limiting the use of the Land by the public for any such use as shall be so permitted.

ARTICLE V

SPECIAL USE PRIVILEGE

In order to further implement the intention of Grantor to provide public access to and enjoyment of the Land for open-space and recreational purposes Grantor covenants and agrees during the term hereof to reserve and make available to Grantee exclusively for the use of economically deprived children, crippled persons, orphans, disabled veterans and other disadvantaged persons designated from time to time by Grantee, upon not less than 30 days advance written notice, without charge for the use thereof, any and all public camping facilities located from time to time on the Land, owned or operated by Grantor, for not less than three (3) calendar days each month up to an aggregate of not more than five thousand (5,000) camper days in any one calendar year. Said three days of free use of all such facilities may be taken by Grantee any time during each calendar month, and it is understood that such usage may require three consecutive days of use during any calendar month. The choice by Grantee of specific days during the month for such use, shall be subject to previously scheduled conflicting use, and Grantee's free use, as to any calendar month, beyond 30 days prior to the first day of such month. Said three (3) days of free use shall not be transferable from one facility to another and may not be accumulated or otherwise carried over beyond any calendar month. Said five thousand (5,000) camper day limit for each calendar year may not be accumulated or otherwise carried over beyond any calendar year and shall be prorated as of the commencement and termination dates of this Easement as to any partial calendar year in which this Easement commences or terminates. Without limiting the generality or effect of any other provision of this Open-Space Easement, Grantee shall be responsible for and shall defend, indemnify and hold harmless Grantor from and against any and all loss, costs, claims, or liability for injury to persons (including death) or property damage caused by or arising by reason of any such use or enjoyment of any such facilities. The number of camper days of use attributable to each facility for each day of said use shall equal the number of persons using such facility (free of charge as provided above) during each calendar day or portion thereof, provided that use of such facility for any portion of a calendar day ending prior to 12:00 noon following an overnight period of use shall not count as an additional day for purposes of determining camper days as provided herein. The aggregate number of camper days for purposes of the 5,000 camper day limitation set forth above in this paragraph shall be the sum of the total camper days for all facilities used during the calendar year in question.

ARTICLE VI

CONSTRUCTION OF PUBLIC IMPROVEMENTS

From time to time during the term hereof, Grantee may formulate and propose to Grantor plans for the construction, installation, improvement, use, operation and/or restoration of improvements constructed by Grantee which may be necessary or useful for or incidental to the enjoyment by the public of open space, scenic or recreational purposes, which improvements may include by way of description but not limitation, parks, camp grounds, camp sites, picnic areas, hiking trails, bridle paths, scenic lookouts, historical or memorial monuments, roads, utilities, fences, cabins, shelters, water supply and distribution facilities, sewage treatment and disposal facilities, refuse collection and disposal facilities, museums and exhibit buildings. Grantee shall advise Grantor in writing a reasonable time in advance of the proposed commencement of the construction, installation or removal of any such improvement describing in reasonable detail the nature and expected use of such improvement. No such improvement shall be installed or constructed without the prior consent of Grantor but such consent will not be unreasonably withheld or delayed if the construction, maintenance and use of such improvement is consistent with the open space character of the Land including preservation of areas devoted to the protection of wildlife and plants and will not result in the destruction or impairment of any unique natural or scenic features of the Land or interfere with any reforestation, soil conservation, wildlife preservation or other use reserved or otherwise permitted to Grantor hereunder, or cause any undue fire, public health or safety hazard. Any such improvement so proposed by Grantee shall at Grantee's expense be constructed, maintained, operated, and, at the option of Grantor, upon the expiration of the term hereof, or earlier abandonment or discontinuance of the use or operation thereof by Grantee, removed and the site restored as nearly as possible to its condition at the time such improvement was constructed, solely at the cost and expense of Grantee unless otherwise mutually agreed by Grantee and Grantor, Grantee shall defend, indemnify and hold harmless Grantor from and against any and all liability, including without limitation all liability for claims of bodily injury, including death, and property damage arising by reason of or relating to the construction, use, enjoyment, maintenance, abandonment or removal of such improvements. It is the intention of Grantor in granting this Open Space Easement to encourage reasonable public access to the Land for the open space and other purposes set forth above, and this Article shall be construed and applied so as to give full effect to such intention. Nothing contained herein, however, shall be construed as a committment to, nor as a condition or requirement of this Open Space Easement, that either Grantor or Grantee construct or continue to make

available any such improvement. Any such improvements remaining on the Land upon the expiration or earlier termination of this Easement shall be and remain the property of Grantor.

ARTICLE VII

TERM

The term of this Agreement shall be fifty (50) years commencing on the date the acceptance of this Easement, pursuant to resolution of the governing body of Grantee, is endorsed hereon.

ARTICLE VIII

CERTAIN DEFINTIONS

1. As and whenever used in this Easement, the term "recreational use" or "recreational purpose," whether singular or plural, shall mean and shall be limited to "recreational use" as defined in Section 51201 (n) of the California Government Code.

2. As and whenever used in this Easement, the term "authorized representative of Grantee", whether singular or plural, shall mean and shall be limited to the Director of the Department of Parks and Recreation of the County of Los Angeles, his specifically authorized deputies or other representatives, and such other agencies, officials and/or employees of the County of Los Angeles as shall be designated as such "authorized represententives" from time to time by the Board of Supervisors of Los Angeles County.

ARTICLE IX

VIOLATION OF RELINQUISHMENTS OR COVENANTS

ENFORCEMENT

Violation of any of the foregoing covenants (including but not limited to failure to consult as provided above) or relinquishments may be enjoined, added, restrained, or otherwise remedied by appropriate legal or equitable proceedings. No such proceeding shall be brought until thirty (30) days after notice of such violation except as to matters involving imminent and inreparable harm. Preceedings to restrain violation of this Easement may be brought at any time such violation appears reasonably likely to occur in the future.

IN WITNESS WHEREOF, SANTA CATALINA ISLAND COMPANY, as Grantor, has caused its corporate name and seal to be affixed hereto and this instrument to be executed as of the date first above written by its President or Vice President and Secretary or Assistant Secretary, duly authorized.

APPENDIX C

PROPOSAL FOR
A STUDY OF THE MARINE ENVIRONMENT OF CATALINA HARBOR
SANTA CATALINA ISLAND, CALIFORNIA

WITH REFERENCE TO

A PROPOSED RESIDENTIAL-RECREATIONAL DEVELOPMENT

Prepared by:

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Janice Soo Hoo, Ph.D.
Ann Muscat, M.S.
Richard Zimmerman, M.S.

Note: Refer to pages II-114 and II-115 for purpose and scope of this study (the impact of the Two Harbors Community on the marine environment of Catalina Harbor).

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A STUDY OF THE MARINE ENVIRONMENT OF CATALINA HARBOR
SANTA CATALINA ISLAND, CALIFORNIA
with reference to
A PROPOSED RESIDENTIAL-RECREATIONAL DEVELOPMENT
WORK PROGRAM

INTRODUCTION

The purpose of this program is to outline the type of ecological study necessary to evaluate adequately the impact of the proposed Two Harbors development* on the Catalina Harbor ecosystem. It is intended that the results of the study will provide information necessary 1) to condition the extent of development around Catalina Harbor, 2) to guide the determination of mitigation measures, and 3) to establish the type and degree of impact monitoring.

The criteria for evaluating the impact of proposed developments in, or near, a wetland/estuary such as Catalina Harbor have been detailed in the "Statewide Interpretive Guideline for Wetlands and Other Wet Environmentally Sensitive Habitat Areas", adopted by the California Coastal Commission on February 4, 1981.

In the Catalina Harbor Plan, the only proposed "development" actually in the wetland/estuary would be 1) maintenance dredging to recover

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Note: "Development" and other terms which have particular and specific meaning under the Coastal Act have been stared and are defined in the Appendix attached to this report.

lost mooring areas, 2) addition of more moorings, and 3) effect of the proposed development attracting more people and boats to the area.

Section 30233(c) of the Coastal Act requires that "diking, filling or dredging in existing wetland or estuary shall maintain or enhance the functional capacity* of the wetland or estuary". The rest of the actual development (construction, etc.) would be adjacent to* (landside of) the wet areas and would be guided by Section 30240(b) of the Coastal Act:

> "Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade such areas, and shall be compatible with the continuance of such habitat areas (emphasis added)."

In both cases, the key for evaluating development impact on an environmentally sensitive area* is the extent to which the proposed development maintains or enhances the functional capacity of that area. A development which does not significantly degrade an environmentally sensitive habitat will maintain its functional capacity. The type of proposed development, the particulars of its design, location in relation to the habitat area, and other relevant factors all affect the determination of functional capacity.

In order to establish that the functional capacity is at least being maintained, the applicant for development must demonstrate all of the following:

1) That the project does not alter presently occuring plant and animal populations in the ecosystem in a manner that would impair the long-term stability of

the ecosystem, i.e., natural species diversity, and, the abundance and composition are essentially unchanged as a result of the project.

2) That the project does not harm or destroy a species or habitat that is rare or endangered.

3) That the project does not harm a species or habitat that is essential to the natural biological functioning of the wetland or estuary.

4) That the project does not significantly reduce consumptive (e.g., fishing, aquaculture and hunting) or nonconsumptive (i.e., water quality and research opportunity) values of the wetland or estuarine ecosystem.

To assess adequately the impact of the proposed development in the Catalina Harbor mudflat/estuary, using the above guidelines and criteria, we propose a three-part program of an ecological survey, an ecosystem functional study, and an impact prediction study. The information gathered would also be used to guide mitigation measures and monitoring program. According to the 1981 Guidelines, this three-part study program would also address the following: "--- an applicant for a permit to develop within or near an environmentally sensitive habitat area may be required to submit supplemental information ---." "It is recommended that this information be developed before the application comes before the Commission, but the Commission may require additional information as a part of its permit process." Recognizing the sensitivity and visibility of the proposed Catalina Harbor development, we feel that it is prudent at this time to attempt to anticipate the type and magnitude of the "supplemental information" and to build the study program around both the primary and supplemental criteria.

The Guidelines also state "A report should be prepared which demonstrates that all of the criteria for development in environment-

ally sensitive habitat areas have been met. The report should investigate physical and biological features existing in the habitat area and evaluate the impact of the development on the existing ecosystem. The report should be based on an on-site investigation, in addition to a review of the existing information on the area, and should be sufficiently detailed to enable the Commission to determine potential immediate and long range impacts of the proposed projects." The guidelines specifically require, among other items an examination of the following:

1) previous and existing ecological conditions,

2) present and potential adverse physical and biological impacts on the system and

3) mitigation measures, including restoration measures and proposed buffer areas.

The following objectives of the three part study plan parallel and compliment the above items, and address them in detail:

STUDY PLAN OBJECTIVES

SUB-PROJECT 1 - Ecological Study

To survey the marine resources of Catalina Harbor including:

1) composition of the biological assemblages (species, abundance, biomass, life-history, dispersion, etc.)

2) quantity and distribution of abiotic materials (substrates, nutrients, etc.)

3) range or gradient of physical environmental factors (temperature, light, etc.)

SUB-PROJECT 2 - Ecosystem Functional Study

To determine functional relationships among key components of the Catalina Harbor marine ecosystem, including:

1) pathways of energy flow between major compartments and through the system

2) rate of cycling for certain critical elements (e.g., nitrogen)

3) regulation of system by physical environment and by organisms

SUB-PROJECT 3 - Impact Prediction Study

To predict and define the types, degrees and possible effect of developmental impacts on the Catalina Harbor marine ecosystem, including:

1) construction/facilities impacts (erosion, pollution, dredging, etc.)

2) people impacts (habitat disturbance, collection/harvesting, pollution, etc.)

STUDY PLAN DESCRIPTION

To a certain extent, each sub-project is dependent on the findings of others; however, each also has aspects that can be explored independently of the others. Therefore, due to time constraints, the three should be carried out concurrently. Since the sub-projects are interrelated and overlapping close coordination and cooperation among their leaders and participants would be necessary.

Three time phases for carrying out the overall study plan can be identified as follows:

I. Reconnaissance (3 months duration)
II. Data Gathering (12 months duration)
III. Data Analysis (6-9 months duration)

The type of work to be carried out during each of the three time phases is described in outline form below.

RECONNAISSANCE (3 months duration)

The marine environment of Catalina Harbor should be evaluated initially by short-term reconnaissance surveys. These preliminary

surveys are needed to plan the details of the year-long Data Gathering phase. Subtidal, intertidal and adjacent terrestrial habitats should be described and mapped. Preliminary physical and chemical data should be gathered to assess the magnitude, range and distribution of important environmental factors throughout Catalina Harbor. Plants, invertebrates, fishes, birds, mammals, and the herpetofauna should be inventoried qualitatively. Their distribution and relative abundance throughout the harbor should be determined. Obvious behavioral and ecological phenomena (e.g., activity patterns, food habits, recruitment) should be recorded. Present land and water uses should be determined and pollution threats (oil from inside and outside, boat and landslide discharges, etc.) noted. All existing data and literature pertaining to Catalina Harbor should be accummulated and organized.

More specifically, the reconnaissance surveys should produce preliminary information for each of the following categories:

A. Physical and Chemical Characteristics

1) location and size of the study area: boundaries of Catalina Harbor, including volume of water, length of shoreline, etc.

2) geophysical characteristics: topography, substrate geomorphology, sediment composition and quality (inorganics, organics, pH, O_2, H_2S, pollutants, etc.)

3) meteorology: air temperatures, rainfall, wind effects, air quality (light levels, "pollutants", etc.)

4) physical oceanography: water temperatures, salinity, water movement (tides, currents, swells) water quality (turbidity, nutrients, dissolved O_2, "pollutants", etc.)

B. Biological Characteristics

1) species composition, distribution and abundance: rare, unique or sensitive species.

2) behavioral phenomena: locomotion, activity patterns, predator/prey interactions, reproductive behavior, etc.

3) ecological phenomena: productivity, trophic structure, seasonality, species assemblages, habitats, species diversity and population dynamics (recruitment, growth, age-size relationships, fecundity, mortality).

C. Land/Water Uses

1) marine resource harvesting: sport, commercial, aquaculture

2) municipal and industrial activities: refuse disposal, road grading, etc.

3) transportation corridors: roads, sea lanes, etc.

4) recreational uses: boating, scuba diving, tidepooling, etc.

5) scientific research and education

DATA GATHERING (12 months duration)

Information from the reconnaissance surveys should be used to organize the Data Gathering studies. These studies would include all three sub-projects of the proposed work program (ecological surveys, ecosystem function, and impact prediction).

Sub-Project 1 - Ecological Survey

Based on the information gathered in the reconnaissance phase, quantitative survey methods (e.g., transcects and quadrats) should be dictated by the nature of the habitat and species employed in representative intertidal and subtidal habitats. Specific survey methods should be dictated by the nature of the habitat and species present (anticipated methods include core or grab samples for mud dwellers, beach seines for nearshore fishes, plankton tows for water day/night and seasonal monitoring of the above conditions (over a single annual cycle) should be carried out to determine temporal variability. All efforts in this ecological survey should be closely coordinated with the ecosystem function and impact prediction sub-projects.

Sub-Project 2 - Ecosystem Function Study

Concurrent with the marine ecological survey, and relying initially on its results, the ecosystem function study would identify the major functional compartments of the Catalina Harbor ecosystem and measure directly the magnitude of their metabolic rates (see Appendix 2). Conventionally these compartments include primary producers (plants and algae), herbivores (plant eaters), carnivores (animal eaters), and detritivores (detritus eaters). For the Catalina Harbor study, this represents the simplest initial grouping. During the preliminary field work, the adequacy of these groups must be evaluated, perhaps with the subdivision of each compartment into two or more parts with significantly different responses to controlling physical factors. For example, we may anticipate already that it would be desirable to divide the primary producers into sub-groups such as phytoplankton, benthic algae, and sea grasses.

The methods used to measure compartment metabolic rates would depend on the physical characteristics of the system and upon the dominant species present. For primary producers, some combination of light and dark chamber incubation techniques with measurements of oxygen and nutrient change and/or carbon 14 uptake would be likely choices. Such methods have been used successfully in studies of a wide variety of marine ecosystems.

An implicit goal of compartment functional rate measurements is to relate the variability observed to variations in certain physical factors (e.g., temperature, light and water motion). In some cases, correlations can suggest functional relationships, describing, for example, primary productivity as a function of light intensity. Such relationships can provide a key for anticipating the responses

of those compartments to possible perturbations (disturbances) resulting from the proposed development. Two additional approaches may also be useful. First, functional responses may be extrapolated for patterns observed in other ecosystems judged comparable from the descriptive inventory and rate measurements. Secondly, manipulative field experiments may be coupled with the survey measurements to provide specific information on the response of the community to perturbations. Thus, photosynthetic rates observed when screening is suspended over sectors could be compared to control samples to help determine the functional response to reduced light levels.

For this study, the later direct experiments may prove to be an important tool for the prediction of effects of possible perturbations resulting from the proposed development. Once the most likely types of perturbation have been identified, controlled small-scale experiments may be undertaken to anticipate and evaluate their impact.

Sub-Project 3 - Impact Prediction Study

Even during the reconnaissance phase, the potential impacts of all phases of the proposed development, both stated and implied, would be considered. As stated earlier, the two major impact categories deal with 1) the short-and long-term effects of the construction itself and 2) the effect of the increased numbers of people, and their activities, which that construction and development will attract and support.

Particular consideration should be given to the following:

1) <u>Pre-construction effects on the marine environment</u>

   a) site preparation (earth moving)

b) construction roads, barge ramps, etc.

c) size, type and support needs of equipment to be used.

d) source and compatibility of fill dirt.

e) impact of proposed dredging.

f) consideration of mitigation for both construction and post-construction impacts.

g) input into planning compatible recreational and visitor-serving access areas, based on survey data and systems analysis.

2) Construction period effects on the marine environment

a) continued surveillance to the potential impact of newly constructed roads, ramps, paths, etc.

b) potential contamination due to accidental disposal of construction wastes (washing cement trucks, drainage from batch plants, etc.)

c) composition of ground contact materials (road surfacing, landscaping, culverts, etc.) which might reach or be carried to Catalina Harbor in runoff.

d) any mitigation for all of the above.

3) Post-construction effects on the marine environment

a) establishment of the most functional and acceptable monitoring program, subject to periodic updates and revisions.

b) periodic evaluation of the success of the mitigation requirements, with possible alteration and updates.

c) careful documentation and continual assessment of the activities of the people attracted to, and supported by, the development.

DATA ANALYSIS (6-9 months duration; may run concurrently with Data Gathering in some cases.)

During this phase, the data gathered in the other sub-projects would be evaluated with respect to the criteria set forth in the "Statewide Interpretive Guideline for Wetlands and Other Wet Environmentally Sensitive Habitat Areas". Key guideline concepts to be considered in all evaluations would include those relating to functional capacity, long-term stability, natural species

diversity, essential or rare species or habitats, and consumptive or non-consumptive values of the ecosystem.

Combined results from the ecological survey and the ecosystem functional sub-projects would identify those biotic and abiotic components of Catalina Harbor which are relevant to the guideline criteria and the proposed development. Based on results of the impact prediction sub-project, the various potential impacts could be ranked and specific impacts identified as most serious with respect to sensitive parts of the ecosystem. Careful analysis of possible perturbations, coupled with their resulting impacts, would permit informed judgements to be made concerning the extent of development compatible with maintaining the functional capacity of the Catalina Harbor ecosystem. In addition, appropriate mitigation measures could be ascertained, and the most meaningful approach to short- and long-term monitoring could be determined.

To further strengthen the basis for final evaluations, the results of the ecosystem functional study could be formulated into a quantitative model. If the various functional responses to critical environmental factors are determined, these responses can be expressed mathematcally. Utilizing impact prediction results from Sub-Project 3, certain development scenarios can be simulated as forced changes in critical factors, and the ecological consequences calculated. For example, if a major impact is anticipated to be increased freshwater runoff or elevated turbidity during the construction phase, the functional responses of organisms to these perturbations could be included on the model and the extent of resulting effects estimated.

Simulation models are not foolproof, but they can provide a powerful quantitative tool for predicting the consequences of the ecological interactions expressed in the equations and provide a firm basis for the final interpretations and judgements made by experts in the field.

STUDY APPENDIX 1 - GLOSSARY OF COASTAL ACT DEFINITIONS

"adjacent to" -- means situated near or next to, adjoining, abutting or juxtaposed to an environmentally sensitive habitat area. This will usually mean that any development proposed in an undeveloped area within a distance up to 500 feet from an environmentally sensitive habitat area will be considered adjacent to that habitat area.

"development" -- includes placement of fill; construction or alteration of any structure or facility; discharge of any waste material; dredging or extraction of any materials; change in the density or intensity of use of land; removal or harvest of major vegetation except for agricultural purposes; and, other alterations to the land and water in the coastal area.

"environmentally sensitive area" -- means any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments.

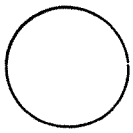
"functional capacity" -- means the ability of the wetland or estuary to be self-sustaining and to maintain natural species diversity. The intention here is to convey the importance of not only how many species there are but also the size of their populations (abundance) and the relative importance of the different species to the whole system (composition). It cannot be overemphasized that the presence of a species by itself is an inadequate indicator of the condition of the natural system.

In a "healthy" wetland ecosystem, the absolute number of individuals of a species and the relative number compared to other species will depend on the size of the organism and its place in the food the food web. Major changes in absolute or relative numbers of some species will have far-reaching consequences for the whole ecosystem because of their interactions with other species.

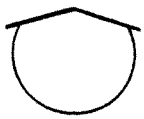
STUDY APPENDIX 2 - ENERGY NETWORK DIAGRAM AND SYMBOL EXPLANATION

This energy network diagram presents the major biotic and abiotic compartments, energy flows, and forces functioning in Catalina Harbor, including the perceived sphere of influence of the proposed development project. It is intended to be a general diagram and does not delineate the complete array of complex interactions occurring in Catalina Harbor. An explanation of the energy circuit language is given below:

Arrow: indicates a flow of energy in a particular direction.



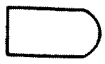
Circular symbol: represents a source of energy.



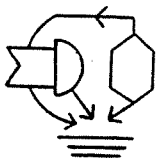
Passive storage symbol: no new potential energy is generated.

Heat sink symbol: required according to the Second Law of Thermodynamics.

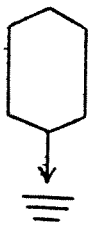
Work gate symbol: a module at which a flow of energy makes possible another flow of energy; + and/or - indicate an increased or decreased effect



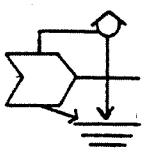
Green plant symbol: represents a combination of



where energy captured by a cycling receptor unit is passed to a self maintaining unit that also keeps the cycling receptor machinery working.

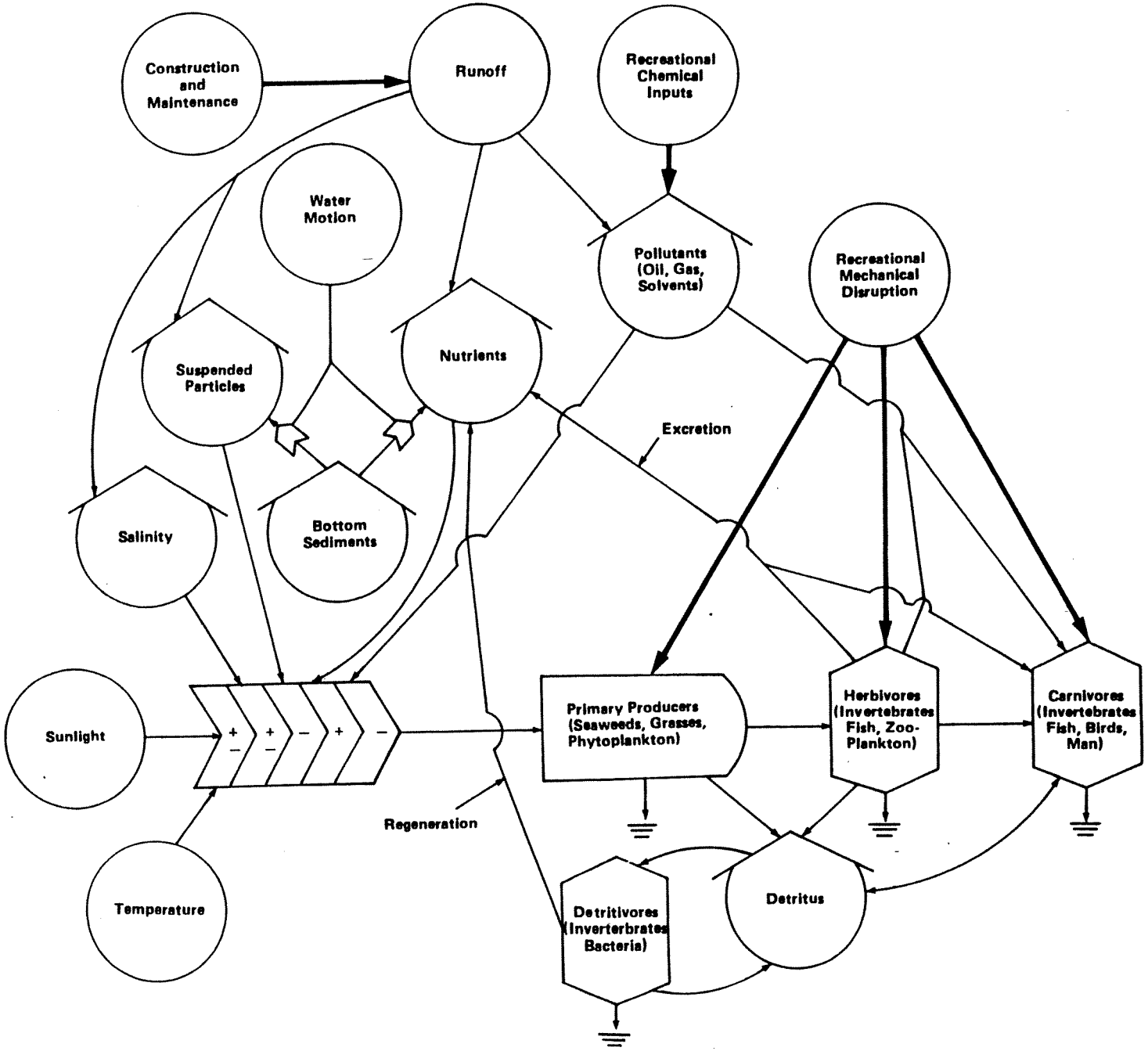


Hexagonal symbol: represents a combination



of where stored energy is fed back to do work on the successful processing and work of that unit.

ENERGY NETWORK DIAGRAM



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Richard Zimmerman - Research Assistant, Department of Biological Sciences

APPENDIX D

Excerpts from the General Development Plan for Recreation

published by the

Los Angeles County Department of Parks and Recreation

D-1. Demand Analysis

D-2. Area Plans, Policies and Programs

APPENDIX D-1 - DEMAND ANALYSIS

Latent Demand

Several factors affecting potential demand for enjoying the Catalina Easement area were identified in the 1977 General Population Survey completed for this Department by the Center of Natural Areas (see appendix). The survey sample was designed to be representative of the population of Los Angeles County, with its primary purpose to assess respondent preferences for recreational use and development of the Open Space Easement area of Catalina Island. The three factors affecting were identified: (1) as the cost of driving and owning a car rises, the alternative trip to the Easement area becomes more attractive, (2) as knowledge is disseminated regarding the Easement's recreational opportunities, demand will be stimulated and increased, and (3) cost, transportation and water supply are the primary limiting factors in responding to this demand.

According to the same General Population Survey, activities with the most unfulfilled (latent) demand were scuba diving, photography, hiking, camping, skin diving, visiting historic sites, backpacking, fishing, and nature study. A full 70 percent of respondents either participate, or would like to participate, in activities such as camping, swimming, and/or relaxing on the beach in natural surroundings. Only 10 percent of those questioned thought it was too expensive to visit Catalina, and nearly one-half of the non-visitors responding had not visited simply because they did not have adequate information.

Regarding specific development, the majority of those surveyed desired the following: (1) an interpretive center with exhibits on the natural environment and history of the Island, (2) circulation and access into the Easement area by shuttle bus, foot, horse, or bicycle, (3) circulation in the backcountry by foot, and (4) the provision of self-guided hiking trails. Three general themes were expressed by the respondents:

"first, a strong preference for a high quality natural experience is expressed and limitations on use and convenience are accepted as necessary to maintain this high quality,"

"second, a strong preference is expressed for a blend of structured programmatic activities and unstructured self-generated activities within the Easement area;"

"finally, a strong interest in the ecology and history of Catalina is expressed, specifically, activities to encourage preservation and appreciation of the natural and cultural environment.

Existing Demand

Quantifying use in terms of people at one time (PAOT) as indicated in the plan does not express the potential year-round use which may occur as a result of plan implementation. At present many activities vary according to seasonal conditions (weather). For example, aircraft landings, hiking permits, camping and motor tour passengers, currently peak in the summer, primarily during July and August, though an increasing trend appears to be forming toward year-round use.

Though overall visitor use has increased during the last few years, as reflected in Table I, there have also been declines. The apparent decline in day hikers with permits does not necessarily indicate a decline in demand for day hiking, rather it may indicate a decline in those people taking the time to obtain permits. The decline in camper days reflected in the figures for 1978 was due primarily to drought conditions, and efforts to reduce the demand on water supplies. The high camper figure noted in 1976 for Little Harbor was due to Los Angeles County-sponsored outdoor education programs operated at that site. Regardless of the above fluctuations, use appears to be increasing, as well as the growing trend toward year-round rather than summer-use only. These factors may be attributed to increased knowledge about the recreational opportunities existing on the Island which has been substantiated informally, through observation.

TABLE I

YEARLY VISITOR USAGE 1975-1979

	1975	1976	1977	1978	1979[1]
Pay hiker with permits	1,953	2,112	2,545	3,337	2,095
Annual auto road permits	497	623	612	524	529
Daily road permits (auto)	413	511	416	363	514
Camper days including organized camps	74,890	77,098	79,861	76,057	*
Camper permits issued at					
Little Harbor and	*	9,408[2]	6,102	5,902	5,015
Black Jack	575	1,608	1,010	1,098	3,721
Fun hunter days	747	724	438	*	865
Actual bow hunters	*	*	419	1,619	969
Visitors on bus tours	32,298	40,191	36,148	38,388	61,299
Private aircraft landings					
No. of planes	19,298	22,652	23,623	22,410	21,796
No. of passengers	*	*	70,694	67,450	65,309
Bicyclists	*	*	*	77**	175
Mopeds	*	*	*	*	37
Passengers arriving at Avalon and Airport-In-The-Sky[3]	426,096	402,225	375,164	475,521	540,525
Visitors in Avalon[4]	--	--	--	774,907	844,721
Visitors arriving at Two Harbors by commercial-transportation[5]	--	--	--	*	24,264
Visitors by private small craft[5]	--	--	--	*	264,000

Source: Catalina Conservancy yearly reports, Los Angeles County Department of Parks and Recreation.

*indicates not available

**first year available

1. Decrease due to hikers not obtaining permits
2. Reflects outdoor education program sponsored by County Parks & Recreation
3. Source: City of Avalon.
4. Source: Avalon Chamber of Commerce
5. Source: Santa Catalina Island Company.

TABLE II

SUMMARY OF EXISTING AND PROPOSED CAPACITIES

Activity	Site	Existing Capacity PAOT*	Additional Capacity PAOT*	Total Proposed PAOT*	(% change)
Camping	Haypress/Toyon Junction	-	+100	100	
	Black Jack	75	+ 15	90	
	Little Harbor	150	-	150	
	Buffalo Corral	-	+ 25**	25	
	Eagles Nest	-	+ 20	20	
	Lodge	-	+ 20	20	
		225	160	385	+ 71%
Primitive Camping	Ben Weston	-	+ 50	50	+100%
	and various backsites	-	six sites	30	+100%
Recreation Flying	Airport In The Sky	300 planes*** and 900 PAOT	400 planes*** and 1200 PAOT	1200 PAOT	+ 33%

*(PAOT = PERSONS AT ONE TIME)

**Denotes equestrian campsites.
***Denotes plane parking capacity.

Please note that the numbers reflect overnight capacities and exclude existing organized group camps such as White's Landing, Toyon Cove, etc.

APPENDIX D-2 - AREA PLANS, POLICIES AND PROGRAMS

In the following text, specific actions regarding visitor use, Easement operations, and resource management are identified. These actions are considered necessary steps to achieving the more general goals and objectives for the Catalina Island Open Space Easement area, and to more fully realizing the original intent of the Open Space Easement agreement.

OBJECTIVE	ACTION
VISITOR USE	
Provide a choice of both structured programmatic and unstructured, self-generated activities.	- Provide, through County concessionaire, professionally guided excursions for those who have neither the equipment, experience nor expertise to initiate these activities on their own. (Examples: horseback, scuba, backpacking).
Provide the opportunity for a high quality wilderness experience.	- Provide a range of recreational activities including hiking, backpacking, diving and nature trails. - Provide opportunities in which the natural sounds, silence and sights of the Island can be experienced.
Provide interpretive services which relate both the natural processes and cultural significance of Catalina to visitors with a broad diversity of background and interests.	- Emphasize in all developments and activities interpretive programs and services for all visitors including schools, clubs, churches youth organizations as well as individuals. - Develop interpretive programs for on-Island residents.
Encourage thoughtful minimum impact use of Easement resources.	- Base maximum capacities for specific sites on resource limitations and the quality of visitor experience proposed.

OBJECTIVE	ACTION
	As information becomes available indicating the need for adjustments, these numbers will be modified, as determined by the recommendations of the park superintendent and Conservancy president.
	- Require that in addition to the varied plant and animal life, paleontological, archaeological, and geological features will be the interpretive theme of nature trails provided adjacent to campgrounds.
Promote public understanding of policies and programs.	- Develop and conduct outreach programs in classrooms and in other organized group settings.
Orient visitors, both prior to and during their visit.	- Utilize audio-visual, video/films and publications to focus on the many educational and recreational aspects of the Island.

OBJECTIVE	ACTION
RESOURCE MANAGEMENT	
Protect rare and/or endangered plant and animal species.	- Identify particulary fragile areas for possible closure. - Implement methods and identify sources of funds for the management of selected feral herbivores. - Deputize County and Conservancy staff to aid in enforcement of State Fish and Game regulations and continue coordination in management of resources. - Restrict visitors from bringing domestic pets from the mainland into the Easement area (does not include guide, hunting and/or signal dog)
Limit unnatural sources of air, noise, water and visual sources of pollution to the greatest degree possible.	- Continue the control of private vehicular access through the Easement area.
Protect and/or restore significant cultural resources.	- Perform archaeological studies when cultural sites are encountered during development, and adhere to recommended mitigation measures.
Encourage research efforts which contribute to knowledge regarding the Island's natural processes, as well as respond to management needs.	- The County and Conservancy will coordinate research projects according to priorities established in the Resource Management Plan, so as to minimize duplication.

OBJECTIVE	ACTION
	- Require collectors wishing to obtain specimens from Catalina to obtain a collecting permit from State Fish and Game Department and have approval from the Catalina Conservancy.
	- Apply campground and general Easement capacities to research personnel as well as to the general public.
	- Place special emphasis on the development of programs to providing services to and for handicapped groups.
Continue to provide a camping permit application system that is fair and equitable.	- Develop a backcountry primitive camping permit system to assure user safety and minimal resource impact.
	- Control visitation by a reservation service, with permits obtained in advance for any overnight use of Easement facilities.
Provide and encourage accessible public transportation services that facilitate visitor circulation and enhance both the preservation and enjoyment of the Easement resources.	- Encourage the provision of a regularly scheduled shuttle service through the Easement area.
	- Work with representatives of major boat transportation companies to coordinate user programming with seasonal boat schedules.

EASEMENT OPERATIONS

Locate new facilities so as to minimize impacts on resources.	- Cluster new facilities and improvements to minimize the area of resource disturbance.

OBJECTIVE	ACTION
	- Design all new facilities, equipment, or improvements to blend into their surroundings and employ natural materials, colors and, in the case of structures profiles which complement the natural environment.
Provide only those facilities necessary to support the recreational use and enjoyment of the Easement area and to protect the rights, safety and security of all visitors and employees.	- Train on-Island staff in first aid techniques, and provide Emergency Medical Training (EMT) courses yearly to permanent and seasonal staff.
	- Provide all Department of Parks and Recreation staff with the capability to attain radio contact with other on-Island County staff for both regular communication and emergency purposes.
	- Provide on-Island staff with low/moderate cost housing. This may require modification of the Salary Ordinance and Regulations of County Engineer-Facilities.
	- Develop a hiking trails system which is separate from existing roadways, as funding becomes available.

APPENDIX E

Excerpts from the Resource Management Plan

published by the

Center for Natural Areas

E-1. The Resources

E-2. Past Management Practices

E-3. The State of the Catalina Environment: Historical and Future

APPENDIX E-1 - THE RESOURCES

Animals

Wild goats, pigs, deer, and bison are the animals most often noted by visitors to the Catalina Easement lands, yet none are native to the Island. Feral goats have been on Catalina for at least 140 and perhaps 300 years, while pigs, deer, and bison have been present for about 50 years. These four species, collectively termed herbivores, are also by far the most ecologically influential species on Catalina; and, for this reason, this management plan focuses on them. We discuss each below and follow with brief discussions of other introduced animals and unusual/important animals of Catalina.

Feral Goats

About 5,000 goats roam Catalina at an average density of about 70 per square mile. They typically travel in herds, with about 20 herds occurring on Catalina. Each herd has an identifiable range usually encompassing about 2 square mile to which both it, and its descendents, remain very loyal. Each herd clings to this same range despite moderate food shortages, overpopulation, and disturbance from humans. Significant outward dispersal of the herd only occurs over periods of time measured in decades. The range of each herd typically includes a ridgetop area used as a bedding area.

Goats are present throughout the Island except in Bulrush, Middle, and Cape Canyons. Of the remaining areas, goats are least numerous in Cottonwood and Avalon Canyons, and most numerous on East End, West End, and in the Silver Canyon drainage. Their diminished numbers around Avalon are due largely to their shyness around people.

Catalina goats are extremely versatile and opportunistic. They feed on almost every kind of plant, require almost no free water, and breed at least once a year depending on range conditions, chiefly rainfall. This versatility gives the goat population the potential to explode in numbers if conditions are ideal. Goats on part of the Island have approached their maximum, biologically possible rate of increase (100 percent) during certain periods with excellent rainfall. The potential for rapid increase of feral goat populations was documented by Rudge and Smitt (1970), who showed that when 80 percent of the goat population on a New Zealand Island was removed, the population rebounded to its former level in only 4 years.

Feral Pigs

Pig populations on Catalina fluctuate widely from about 500 animals in dry years to about 2,000 in wet years. Although no formal censuses have been made, pigs occur throughout the Island and are most numerous in Middle, Bulrush, and Cottonwood Canyon. Unlike goats, they do not avoid inhabited areas and, in fact, are occasionally attracted to such areas in search of food. They prefer areas with dense cover usually within 500 feet of fresh water. Catalina pigs usually travel singly or in family groups of 2-3 animals. Dispersal between drainages and mixing of populations probably occurs regularly.

Pigs require free water and are highly susceptible to heat stress. They can feed on a wide range of foods, but seem to prefer acorns and fruits when available. Generally, they prefer a higher quality food than do goats. The lack of such foods, however, does not prevent habitat damage. They feed primarily by rooting (digging up the soil) and grazing and may be active any time of day or night, although they prefer cooler evenings and nightime during the summer months.

Pigs breed at least once annually depending, like goats, on the rainfall conditions. If rainfall is scant, reproduction fails or is avoided. Pigs born in January through March have a far higher probability of survival than those born in April through June. August is the most critical survival time for young pigs. Despite the lack of water on much of Catalina, pigs have approached (in 1979) their maximum biological rate of increase (250 percent).

Introduced Deer

Approximately 1,000 mule deer are present on Catalina. No formal censuses have been made. They occur throughout the Island, but are most abundant in Bulrush, Middle, Cape, and Cottonwood Canyons. They utilize most habitats and are grazers and browsers. Free water is probably a requirement. Deer respond more slowly to improved range conditions than do goats and pigs. Nevertheless, Catalina deer probably are currently reproducing at a rate approaching the maximum possible for the species (66 percent).

Introduced Bison

Some 400-600 bison are present on Catalina. Of the four major Catalina herbivores, bison are the most inclined to roaming widely between watersheds. However, they are virtually absent from West End, part of Silver Canyon and East End. Being primarily grazers, they prefer grassland areas. Catalina Island has only marginal habitat for bison, and the population has a high percentage of old age individuals. Consequently, the biological maximum rate of increase (about 30 percent per year) is seldom attained. Like deer, they respond more slowly than goats and pigs to changes in range conditions.

Other Introduced Animals

Blackbuck antelope were introduced to Catalina in 1973 and now number probably fewer than 20 individuals, all in the vicinity of lower Cottonwood Canyon.

A small herd of domestic cattle are maintained, primarily in Bulrush Canyon, and are stocked at a very low rate.

Feral cats have become established within about one mile of inhabited areas, due to repeated and continuing illegal releases, primarily around Avalon, Two Harbors, and Toyon Canyon. Up to six cats per square mile may be present in these areas. They are opportunistic feeders, preying on insects (e.g., Jerusalem crickets), birds (e.g., California quail), and rodents (principally rats and squirrels). They also regularly take alligator lizards and side-blotched lizards. Adult cats will consume 5-9 percent of their body weight per day (higher for pregnant females). Feral cats on San Miguel Island survived and lived for more than 30 years, despite the virtual absence of free water.

Bullfrogs have been present in fairly large numbers in Thompson Reservoir, Cottonwood Reservoir, and probably the Airport Reservoir. They were introduced to California in the early 1900s, and to Catalina Island sometime before 1953. Bullfrogs attain full adulthood 2-3 years after they metamorphose from the tadpole stage. Adults hibernate during the winter in the muddy bottom of the reservoirs, and excessive siltation of the reservoir at this time might cause increased mortality. Adults feed on insects, treefrogs, and possibly garter snakes.

Unusual/Important Animals

The Channel Island fox occurs throughout much of Catalina and other Channel Islands, but not on the mainland. It is not frequently seen but the population apparently is reasonably large, although less than on other Channel Islands. Open chaparral habitat is preferred. Population trends are unknown. Food, at least in summer, has a large fruit component.

The bald eagle bred on Catalina until 1948. It was reintroduced in 1980 but the outcome of this attempt is uncertain as yet.

The two-striped garter snake is a variety (the Catalina population of which is doubtfully distinct) of garter snake discovered in the early 1970s to have a population in Cottonwood Canyon. Recent, intensive searches indicate that it may no longer exist in this area, but there is a small possibility that it is present in Middle Canyon.

Other herptiles (reptiles and amphibians) include two species of salamanders, one species of frog, three of lizards, and four of snakes. None are restricted to Catalina or the Channel Islands. The arboreal salamander is perhaps the rarest herptile on Catalina, but little is known about it. It is elusive but widespread on the mainland. The southern Pacific rattlesnake occurs in moderate numbers throughout most of the Island.

The peregrine falcon, a federally-designated threatened species, occurs occasionally throughout the Island during winter months, but does not breed.

Other birds recorded on, or immediately adjacent to Catalina, include some 211 species. Races of the California quail and Bewick's wren endemic to Catalina are common throughout the Island. No bird species is appreciably more common on Catalina than on widespread areas of the mainland. Several seabird species once nested on rocks around the Island, but presently only 30 pairs of Western gulls remain representing less than 1 percent of the Southern California Bight population.

Terrestrial invertebrates have not been investigated as extensively on Catalina as on other Channel Islands. Possibilities exist that Catalina may harbor endemic insects, snails, or other invertebrates as do other Channel Islands, but research has been very limited.

Aquatic (freshwater) invertebrates have also not been sufficiently surveyed in Catalina's permanent streams and reservoirs.

Vegetation/Plant Communities

The major plant communities on Catalina are Grassland (coastal prairie) comprising 58 percent, followed by Coastal Sage Scrub at 20 percent, and Chaparral and Woodlands at 14 percent. Typical representatives of these communities include the following:

- Coastal Grassland:
  - Stipa spp. (bunchgrasses)
  - Bromus molliz (soft chess)
  - Avena barbata (slender wild oat)

- Sage Scrub: (southern Coastal and Maritime)
  - Salvia apiana (white sage)
  - Salvia mellifera (black sage)
  - Eriogonum giganteum (St. Catherine's lace)
  - Opuntia littoralis (prickly-pear cactus)

- Chaparral:
  - Rhus integrifolia (lemonadeberry)
  - Quercus dumosa (scrub oak)
  - Meteromeles arbutifolia (toyon)

- Woodland:
  - Quercus tomentella (Island canyon oak)
  - Lyonothamnus floribundes (Island Ironwood)
  - Prunus illicifolia lyonii (Island cherry)

Plant communities of lesser extent include riparian woodlands, surfgrass, marine meadow, coastal dune sand plant, salt flat succulent, freshwater aquatic, reservoir semiaquatic, and urban.

Although Catalina's plant communities are superficially like those of the adjacent mainland, there are some important differences caused by Catalina's abundance of feral herbivores, lack of significant fire history, and minimal elevational gradients of moisture. These characteristic differences are as follows:

1. Woody plants are considerably taller than on the mainland, and a "browse line" effect (missing lower limbs) is clearly evident in many areas.
2. Chaparral areas on Catalina are much more open and seldom are extensively contiguous.
3. Woody plants are considerably older than on the mainland.
4. Chamise is not common in the chaparral community.
5. Grassland is considerably more prevalent than woody vegetation.
6. There are considerably fewer species than in similar mainland communities.

In addition to the six factors stated above, slope orientation is a major determinant of what will grow at any given location on Catalina. South facing slopes enhance Coastal Sage Scrub (especially prickly-pear cactus), lemonadeberry, and white lilac (interior Island). North facing slopes or moist marine areas enhance Chaparral, especially toyon, scrub oak, and Catalina ironwood.

Other factors that govern the presence or absence of a particular plant community are soil types, slope, and grazing pressure.

Vegetation - Unusual Plants

Over 500 species of plants occur on Catalina. Some 182 of these have been introduced. Four species and four subspecies occur nowhere else in the world but on Catalina.

- Arctostaphylos catalinae - Catalina manzanita
- Cercocarpus traskiae - Trask's mahogany
- Dudleya hassei - Catalina Dudleya
- Minulus traskiae (last seen 1901, presumably now extinct)
- Eriodictyon traskiae traskiae - Trask's yerba santa
- Eriogonum giganteum giganteum - St. Catherine's lace
- Lyonothamnus floribundus floribundus - Catalina ironwood
- Solanum wallacei wallacei - Catalina wild-tomato

Some 24 other species or subspecies occur only on Catalina and one or more of the other California Islands (including some off Baja, California).

- Island endemics shared with San Clemente Island only:
  Lycium hassei (apparently extinct on both Islands)
  Phacelia lyonii

- Shared with San Clemente and Santa Barbara Island:
  Eriophyllum nevinii

- Shared with San Clemente and Guadalupe Islands:
  Crossosoma californicum - Wild apple
  Dissanthelium californicum (apparently extinct on all 3 Islands)
  Galvesia speciosa - Bush-snapdragon
  Gilia nevinii - Nevin's Gilia
  Scrophularia villosa - Hairy figwort

- Shared with San Clemente, San Nicolas, and Santa Barbara Islands:
  Lotus argophyllus ornithopus

- Shared with San Clemente, San Nicolas, and Guadalupe Islands:
  Trifolium palmeri (not seen on Catalina since 1932)

- Shared with San Nicolas and Santa Cruz Islands:
  Trifolium microdon pilosum (last seen on Catalina in 1897)

- Shared with one or more of the northern Channel Islands:
  Ceanothus arboreus
  Dudleya greenei - doubtfully now on Catalina
  Helianthemum greenei - badly endangered on Catalina
  Sibara filifolia - not seen on Catalina since 1901

- Shared with both northern and southern Islands, but occur nowhere else in the world:
  Ceanothus megacarpus insularia
  Eschscholzia ramosa
  Hemizonia clementina
  Heteromeles arbutifolia macrocarpa
  Jepsonia malvifolia
  Lavatera assurgentiflora
  Lotus scoparisu dendroideus
  Quercus tomentella
  Rhamnus pirifolia

In all, a total of 73 Catalina plants can unofficially be considered endangered.

Soils and Geologic Resources

Catalina soils are of volcanic origin and generally are very shallow and erodable. On the gentler slopes they are of loam to clay texture, while on steeper slopes and on narrow ridges they are of a shallow heavy clay loam, with extensive outcrops of bedrock. Limited amounts of deep loamy soils occur in some valleys and canyon mouths.

The shallowness of Catalina soils is summarized in the following approximate data:

Depth-To-Bedrock	Island Area
less than 10 inches	approximately 24 percent
10-20 inches	approximately 42 percent
20-36 inches	approximately 30 percent
more than 36 inches	approximately 4 percent

Soils are rated "not stony" approximately on 38 percent of Catalina (excluding the shoreline), "cobbly or flaggy" on 27 percent, "very gravelly" on 23 percent, and "gravelly" on 12 percent.

Gravel, soapstone, and various metals are, or have been, mined commercially on Catalina. Numerous fossil localities exist, but apparently none are of outstanding significance nationally or statewide.

Water

As might be expected for an oceanic island having only 12 inches of rainfall annually, both superficial and ground water are very scarce. Of the amount which falls, only 1-2 inches does not evaporate. Very little of this percolates downward through the soil. Instead it runs along the surface until it meets a bedrock fracture where it is stored or eventually diverted to tiny springs at a lower elevation, or to intermittant or perennial streams. Recharge to such fractures (which comprise less than 1 percent of the rock mass) is extremely small and occurs only during very wet years. Thus, there is no water table in the conventional sense, except immediately downstream of, and adjacent to (within about 10 meters) the perennial streams and reservoirs, particularly in the lower portions of the canyons of the larger watersheds. Ground water stored in such limited areas affords good year-to-year drought protection because outflow is very slow.

Streams that exhibit continual base flows are the following:

- lower Sweetwater Canyon
- lower Silver Canyon
- lower Middle Bulrush Canyon
  lower Middle Canyon
- middle part of Cape Canyon
- lower areas of Fern Canyon
- lower Cottonwood Canyon
- one site in the upper part of the east tributary to Little Spring Canyon

No significant bodies of standing water existed at Catalina prior to the 1920s when Middle Ranch Reservoir was constructed.

Portable domestic water is presently supplied to consumers for all household purposes from six wells and nine springs and tunnel sources. The supply is delivered to consumers on the Island through a transmission system supported by 23 storage tanks and a series of reservoirs.

Marine Resources

Marine finfish of commercial significance include jack mackerel, northern anchovy, pacific mackerel, and pacific bonito. In addition sport fishermen commonly catch kelp bass, half moon, rock fish, and sheephead.

Numerous marine finfish find good spawning and nursery habitat in the kelp beds, eelgrass meadows, and surfgrass areas around the Island.

Grunion spawning beaches are also present. Catalina is the only known location in the United States for the threadfin bass (Anthias gordensis) and has the only known established population of the orange throat pike blenny (Chaenopsis alepidota) outside of Mexico. The Island is also the only known location in the Channel Islands for the zebraperch (Hermosilla azurea) and the rare scythe-marked butterfly fish (Chaetodon falcifer). Further inventories are likely to identify other exceptional species occurrences around Catalina.

Marine invertebrates of commercial significance include market squid, lobster, scallop, abalone, and sea urchin. Although non-commercial marine invertebrates of Catalina have barely been inventoried, the potential for discovering rare or extralimital species appears to be great. A recently discovered population of the sea cucumber (Holothuria zacae) off Ship Rock and slate pencil urchins (Eucidaris thouarsii) found at Descanso Bay in 1958 and Emerald Bay in 1963 represent the only known occurrence of these species in the United States. The rare purple coral (Allopora californica) is locally abundant in the United States only at Farnsworth Bank on the Pacific side of Catalina. A new, rare, as yet unnamed starfish has also been found at Farnsworth Bank. Catalina Harbor contains the only extensive shallow mud habitat known from any of the Channel Islands. It is the only known location in the Channel Islands for many mud flat invertebrates (e.g., fiddler crabs (Ura crenulata), ghost shrimp (Callianassa spp.), and mud shrimp (Upogebia pugettensis).

Marine mammals do not presently breed on Catalina, but important haul-out areas for sea lions and seals occur at Seal Rocks, and between China Point and Ben Weston Beach.

Legally designated protection/management areas in addition to those contained within the Easement include those designated by the Areas of Biological Significance (ASBS) Program of the California Water Resources Board:

- Isthmus Cove to Catalina Head, subarea 1
- North end of Little Harbor to Ben Weston Point, subarea 2
- Farnsworth Bank, subarea 3
- Binnacle Rock to Jewfish Point, subarea 4

These are under the legal protection of the California State Water Resources Board, primarily for the purpose of controlling wastes discharged to ocean waters, including point source sewage wastes and nonpoint source silt and urban runoff.

Other significant areas, with no legal protection from development, include the following:

- Catalina Harbor (designated as a Significant Ecological Area (SEA) in the County General Plan)

- Farnsworth Bank Ecological Reserve
- Lovers Cove Reserve
- Casino Point Underwater Park

Cultural Resources

It is estimated that there are approximately 2,000 archaeological sites on the Island. Of these, 920 have been mapped and described. The remaining sites are in more obscure areas of the Island. Archaeological sites are locations exhibiting significant concentrations of cultural evidence such as food wastes, wastes from the production or maintenance of artifacts, the artifacts themselves, modifications of natural elements (e.g., rock surfaces), or the presence of human skeletal remains.

Archaeological sites range from major village sites, to shellfish gathering locations, to soapstone quarries. They may be divided into three general categories - middens, surface deposits and archaeological features. Middens are deposits of cultural remains, usually of a "kitchen" variety mixed with soil ranging in depth from several inches to several feet. Most middens on Catalina are from 12 to 18 inches in depth. Middens represent sites of longest occupation and greatest variety of activity, such as villages or major seasonal camps. Surface sites are similar to middens, but the cultural remains are restricted to the surface and there is no depth to the deposit. Seasonal or small camps would leave such remains. Archeological features are surface modifications such as soapstone quarries, roasting pits, and rock paintings. It is common for features to be associated with surface sites that consist of manufacturing debris, kitchen wastes and other signs of occupation. However, ceremonial features such as rock painting, do not have associated surface sites.

The most extensive and intact remains of aboriginal soapstone quarrying and artifact production in California occur on Santa Catalina Island. The value of these aboriginal remains is not limited to archaeological or anthropological interests. Archaeological sites preserve a record of past climates and environments. Maintenance of human populations depended heavily upon the Island and off-shore floral and faunal associations. The remains of these animals and plants may be found in the datable context of aboriginal trash heaps. The archaeological resources of the Island provide a 5,000 year perspective for study of Island biology. Resource management topics may also be dealt with, such as the long-range effects of human predation. At times, local extinction of certain resources such as abalone populations may be viewed in the archaeological record. Changes in sea water temperature may be measured by molluscan remains in archaeological sites. Changing availability of schooling fish may be viewed over a long period of time. Nearly all archaeological deposits contain datable remains. Many of these deposits occur in association with landslides or sediment build-up in valley bottoms. These archaeological sites may be utilized to date frequency of slides, rates of soil build-up and slope stability.

Herbivore-Resource Interactions

The herbivore-vegetation-soils interaction is probably the single most important ecological force occurring on Catalina.

The populations of goats, pigs, deer, and bison respond strongly to the availability of vegetation, which in turn is controlled by annual rainfall. Rainfall exerts less effect on herbivore populations where the vegetation is comprised of perennial species. However, perennial species are common in only a few areas of Catalina, and these areas have relatively low herbivore populations. Population levels of feral goats and pigs respond to short-term (within a few months) rainfall conditions, while deer and bison respond to conditions of the previous winter. Each goat is capable of removing approximately 1000-1800 lbs. of forage per year (about 2,500 tons per year for the entire herd). Similar statistics are not adequately known, as yet, for Catalina's deer, bison, and pigs. In addition to its importance as food, woody vegetation serves as essential escape cover for pigs and deer.

Competition between the four major herbivores is evident on much of Catalina, particularly during dry years. When a particular food source is sought by goats and one other herbivore species, the competitor usually suffers. This is not so much due to goats depleting the food supply directly as it is to the fact that the goats ruin the soil and weaken the condition of the remaining vegetation so that the carrying capacity for other herbivores is reduced. For example, pigs are not common in Grand Canyon or in the Orizaba area where the home ranges of large goat herds occur, and only three deer were harvested from goat areas in 1975. However, if vegetation is abundant--as in certain areas on the channel side of the island which receive more moisture--goats, pigs, and possibly deer seem to coexist at fairly high densities.

In several ways, activities of the feral herbivores have come into direct, severe conflict with the Convervancy's legal management objective to protection of the rare and unique natural values of Catalina.

Most dramatic has been the elimination by browsing, grazing, and rooting feral herbivores of at lest 32 native plant species (almost 10 percent of the total) from the Island's flora, and the continuing threat posed by these animals to the existence of dozens of other rare plants, including some found nowhere else in the world. The consequences of this loss are more than esthetic or sentimental. There are compelling practical reasons for maintaining the irreproducable genetic information (e.g., potential drought and fire resistant traits) which might be continued in some of these plants, particularly the endemic ones. The fact that some rare plants such as Catalina cherry exist today on Catalina

despite herbivores is overshadowed by the realization that, in many cases, this generation of plants is the last because herbivores are eliminating the more vulnerable seedlings as fast as they arise. Even in areas populated by humans, the otherwise shy goats may invade and strip the vegetation during periods of severe drought, as they did near Cherry Cove where they effectively destroyed nearly half the chamise in only three years (1975-77).

Feral herbivores also may threaten other animals and rare plants indirectly by modifying the dominant vegetation community and thus, the microclimate. Grazed areas typically support less grass and especially less sage scrub. Woody plants typical on the mainland such as chamise, manzanita, bush poppy, and particularly sagebrush are greatly reduced, and annuals such as filaree (Erodium circutatium) and plantain (Plantago) gain advantage over perennial grasses. The result is a drier microclimate generally more stressful to small mammals, birds, and amphibians. Trampling by goats also causes soil compaction which destroys the habitat of potentially significant amphibians, reptiles, and insects.

The destruction of vegetation by herbivores inevitably leads to soil erosion, particularly on steep slopes. This is of concern because (a) it is unsightly; (b) it increases the potential for landslides which can threaten recreationists, archaeological sites, and rare plants, (c) it precludes for many years the use of the land by vegetation and animal; and (3) it results in sedimentation of freshwater and marine habitats. Any unique freshwater organisms on Catalina may have been eliminated long ago by excessive sediment inputs, while unique or rare marine organisms may be vulnerable to sediment damage mainly in coves where there is little flushing from ocean currents.

Although vegetation on the mainland is also regularly stripped by wildlife and humans with relatively localized effect, and although rugged Catalina Island has been subjected to above-average erosion rates long before herbivores were introduced, the recent addition of goats capable of stripping even the steepest slopes inaccessible to other herbivores nevertheless makes the erosion problem on Catalina particularly severe. Moreover, goat trails and bedding areas along ridgetops result in considerable additional soil compaction, accelerated runoff, and erosion. In many areas of heavy goat use the only appreciable soil build-up occurs around prickly pear cactus, which is utilized only secondarily by goats.

Pigs also contribute to the soil damage by their rooting and trailing activities, efficiently removing from production up to 55 percent of the soil surface in heavy use areas. Particularly affected by pigs are the old woodland and chaparral communities. Constantly rooted, contiguous areas of up to an acre or more in size are not unusual in such communities.

In summary, the vast majority of imbalances and disturbances to the Catalina ecosystem can be attributed to the historic introduction of large herbivores to an environment with two relatively unique characteristics:

1. The flora on the Island had evolved with no large herbivore pressure and had, therefore, no natural defense against the grazing pressure from these animals.

2. There are no natural predators on the Island to control the herbivore populations. This leaves water, food, and hunting by humans as the only controls on herbivore populations.

While the large herbivores have been the major contributor to the degradation of the Catalina environment, management of the Island's resources cannot concentrate entirely upon control of this influence. It is probable that the combination of herbivores being present and, to some degree, competing with each other on Catalina causes some level of population control on each species.

Water-Resource Interactions

Free-standing (or flowing) water and soil moisture are both critical to the functioning of a diverse ecosystem on Catalina. Catalina's native flora and fauna are accustomed to very low moisture levels and occasional prolonged drought. Nevertheless, future diversions of water, especially during natural droughts, may push the narrow, drought tolerance levels of several species beyond acceptable thresholds, causing these species to disappear from Catalina. To some degree, proliferation of woody vegetation helps speed water loss by intercepting and evaporating rainfall and, at least in the canyon bottoms, by transporting water upward from the deep soil into the air via evapotranspiration. However, this loss may be offset by the "fog-drip" water recycling effect of these communities.

Of the introduced herbivores, pigs and bison probably depend the most on free water. Substantial decreases in stream flow or reservoir storage will limit populations of these species, as well as many native songbirds, mammals, reptiles, amphibians, and plants.

Most sensitive to reduced stream flows and groundwater intervals would be the following listing of Catalina species.

Equisetum laevigatum - lower Middle Ranch Canyon
Equisetum telmateia braunii - lower Middle Ranch Canyon
Azolla filiculoides - lower Middle Ranch and Cottonwood Canyons

Baccharis douglasii - lower Middle Ranch and Cottonwood Canyons
Baccharis glutinosa - lower Cottonwood and other canyons
*Potentilla gl. glandulosa - upper Middle Ranch Canyon
Anemopsis californica - several streams
Mimulus cardinalis - streams on SE half of island
Mimulus fl. floribundus - streams in several canyons
*Mimulus g. guttatus - stream in upper Middle Ranch Canyon
Scirpus microcarpus - lower Middle Ranch Canyon
Juncus acutus sphaerocarpus - lower reaches of streams at coast
Juncus balticus - Middle Ranch and Little Harbor areas
Elymus triticoides - streams in canyons, SE half of Island
Solidago californica - only at Middle Ranch
*Nemophila m. menziesii - only in Middle Ranch Canyon
*Satureja douglasii - Middle Ranch and Bulrush Canyon
Adiantum capillus-veneris - wet rocks in canyons, SE half of Island

None of the species listed above or directly below are restricted to Catalina or the Channel Islands.

Though not even semiaquatics, several of the following plants inhabiting moist canyon bottoms are also likely to be affected by long-term depletion of groundwater:

Clematis ligusticifolia
Rosa californica
Rubus ursinus
Keckiella cordifolia
Vitis girdiana

Plants inhibiting the shores of Catalina's reservoirs are all largely drought resistant and in any case are non native. Even if they were to be eliminated by very prolonged drought or siltation, they probably would be reintroduced by migrant waterbirds or humans.

The following two column listing indicates animals sensitive to groundwater withdrawls:

Very sensitive	Moderately sensitive
Pacific treefrog	Slender salamander
Bullfrog	Arboreal salamander
Garter snake	Alligator lizard
	Ringneck snake
	Western skink
	Pigs
	Bison

Streamflows and groundwater seepage also dilute the salinity of marine waters at the mouths of the canyons, and thus probably provide a micro-habitat for certain specialized plant and invertebrate species. Prolonged reductions in stream flow

*indicates relatively few individuals exist on Catalina.

stream flow and freshwater outputs, or extreme increase, would cause shifts in the species inhabiting canyon mouth areas. This effect could be beneficial or detrimental depending on which species are affected. Little information is available on what sensitive marine species would be affected. About 16 rare plants presently inhabiting only coastal salinas or salt marshes on Catalina might benefit from increased salinity (reduced groundwater) at gently sloping portions of the canyon mouths.

Fire - Resource Interactions

Fire is totally necessary for the healthy, long-term functioning of chaparral and grassland communities. Paradoxically, without fire these communities will inevitably lose some of their more unique plants. This is because such plants, which have adapted over eons to the periodic occurence of lightning generated fires, depend on fire to sprout or germinate their seeds. Without it, they will eventually fail to reproduce.

The lighting generated fires, to which most Catalina organisms have adapted, typically did not burn large areas simply because at any given time, only a small area of vegetation was of sufficient age and flammability to allow the fire to spread. As the fire encountered adjacent, younger aged, greener vegetation, it usually died out. The result over many centuries, then, was the natural development of a vegetation "mosaic" consisting of diversely aged patches, the oldest seldom being older than 20-40 years. Such mosaic conditions no longer exist where fires have been continually suppressed, either by humans or excessive herbivore populations. Such is the case on Catalina and nearly all of California. In such situations, fire suppression is not preventing large fires, it has only postponed them. Moreover, fire control groups, by being so efficient at extinguishing fires in good weather, have unwittingly restricted uncontrollable fires to the worst fire fighting weather conditions.

Feral herbivores are primarily responsible for the fact that no major conflagration has occurred this century on Catalina. Quite simply, by browsing vegetation so extensively, the herbivores have temporarily maintained low fuel loading conditions over much of the Island. However, should even a small fire occur, shrub and ground vegetation would recover very slowly, or not at all, due to the browsing pressure of Catalina's dense herbivore populations. Only scattered woody species which sprout above the reach of the goats and those relatively unpalatable to goats (e.g., Malosma laurina) would survive. This effect is clearly evident on parts of Santa Cruz Island which burned in 1929.

Environmental disruption by fires is minor in natural, mosaic patterned landscapes, while in "fire-protected", severely grazed landscapes it is severe. The primary disrup-

tions are accelerated runoff, severe soil erosion and landslides, and disruption of wildlife. Sediment yield the first year after a fire, even with few herbivores, is 30 times the rate for stable, vegetated slopes. Increased erosion typically continues for 8 years following a fire (Swanson, 1980) and is generally 2.6 times greater on a 50 percent slope than on a 20 percent slope (DeBano and Conrad, 1976). Post fire erosion is probably greater in grassland and sage shrub communities than in deeper rooted woody chaparral; however, considerable debate still surrounds this relationship. Erosion is relatively minor on mosaic patterned landscapes because remaining vegetation slows the downslope transport of soil.

While fires may certainly be calamitous for the individual animal, their direct effects are usually slight to negligible for wildlife populations and communities as a whole. Their indirect effects--altering the type and amount of available food and cover as well as the interspecific competitive balance--may be profound. Most burrowing rodent, reptile, and amphibian species survive low-intensity grassland fires and some higher intensity chaparral fires, but some, such as the salamanders, might be adversely affected. Species composition of the bird community may shift slightly but more individuals may nest, due to greater availability of insects and seeds. Reproduction of hawks and owls, however, may suffer.

Severe fires certainly have occurred historically on Catalina and can occur again. Although some fire personnel have maintained that a large fire is unlikely to occur on Catalina due to the moistening marine influence, this is clearly not the case. The marine influence seldom extends above 1,000 feet in summer, and strong, drying Santa Ana winds which characterize ideal fire weather are commonplace throughout Catalina from late September through November. At this season all parts of the Island, except those in severly eroded areas where fuel is lacking, can be very flammable, while at other seasons any areas with relative humidity remaining for a long time below 40 percent such as, interior Catalina can be flammable. Moreover, Catalina's fire classification II (using the ratings from "Fire Hazard Severity Classification System for California's Wildlands") is the same as that of Malibu, where severe fires have occurred.

APPENDIX E-2 - PAST MANAGEMENT PRACTICES

Feral Goats

Catalina goats have been subjected to both sport hunting and occasional, organized control efforts. Guided sport hunting by gun and unguided bow hunting remove 400-800 goats per year, or about 10 to 15 percent of the population. The only clearly noticeable outcome of the hunting has been a reduction in the number of very large dominant males. Harvest trends have generally paralleled population trends. Although use of guides has enabled the sport hunting to be focused on areas most in need of goat removal, sport hunting nevertheless has been ineffective at significantly controlling goat numbers on Catalina as a whole.

Organized goat control programs began with the building of a fence between Haypress Reservoir and Salta Verda in 1956. After completion of the fence, goats were systematically sought and removed during 1956-57, until they were completely eliminated from Middle and Bulrush Canyons and the rolling grassland areas comprising the upper portion of the Grand Canyon Drainage.

A second program removed goats from Salta Verde in 1958-59 after the goat control fence was extended to Ben Weston beach. Goats have never been removed totally from Salta Verde, but they have been repeatedly controlled over the years whenever the population has built up to perhaps 50-60 animals.

In approximately 1961-62, an attempt to control goats on West End was initiated. However, these goats never were controlled, and the fence erected from the Isthmus to the tip of West End never functioned as intended. Many goats were removed on West End, but they quickly recovered to pre-control numbers.

Goat control programs have been carried out intermittantly since the early 1960s. None have attempted complete removal, but rather were intended to relieve grazing pressure by causing a precipitous drop in the population. Without exception, the object goat herds recovered rapidly.

Costs for all the early goat control programs are not available. Yocom (1967) reported that the Catalina goat control fences originally cost $2,200-$2,800 per mile.

Recently, a goat trapping operation was conducted on Catalina from 25 May 1979 to 7 December 1979. A total of 815 goats were trapped of which 387 died (47% loss) before they could be sold on the mainland. Clearly this method was not economically feasible in terms of a business venture. However, it represents a potentially inexpensive means of control in the sense that the revenue offsets a major portion of the cost. Drawbacks are the slow rate of removal, potentially high mortality of trapped animals, and removal of nutrients from the Island ecosystem.

Feral Pig

Catalina pigs have been hunted for sport with gun and bow, but no organized control efforts have been attempted. Approximately 200-400 pigs, 20 to 40 % of the population, are harvested annually. Daytime hunting of pigs may be increasing the number of nocturnally active pigs. Harvest probably parallels population trends to some extent.

Introduced Deer

Mule deer have been hunted on Catalina for sport with gun and bow. No organized control efforts have been attempted. Approximately 100-150 deer, roughly 10% of the population, of both sexes are harvested annually. The number of deer harvested has been only remotely correlated with population levels.

Introduced Bison

Bison are not hunted on Catalina. Limited numbers are shipped off the Island to be sold as meat for human consumption. Harvest levels generally do not reflect size of the population.

Vegetation and Soils

Vegetation and soils management efforts may be classified as (a) brush spraying, (b) brush manipulation and seeding, (c) experimental seedings, (d) fertilization, and (e) fire suppression.

Brush spraying involves use of herbicides to control mature shrubs. One such attempt was made on Catalina at an unspecified date. A helicopter was used to spray an invert emulsion of a phenoxy herbicide. Although top kill was excellent, no attempt was made to kill sprouts and they subsequently reproduced.

Herbicides (Tordon and Nopalmate) were sprayed on Catalina cactus in 1964, 1965, and 1968 at rates of 2 and 4 pounds per acre. Moderate short-term control was obtained within the limited areas sprayed. Small amounts of herbicides have been hand sprayed by Catalina Company personnel throughout the 1970s on very limited areas to control certain nonnative plants.

Brush manipulation and seeding involves clearing dense brush, loosening the soil, and broadcast or drill seeding a perennial grass. It is done to provide soil protection and to increase the quantity, quality, and seasonal availability of forage for cattle. Brush clearing and seeding was done in various localized parts of Catalina in 1960-1975. Brush was removed with a D6 bulldozer at the rate of 1.1 acres/ hour (1968 figures). The soil surface was then chiseled to a 4-inch depth (rocks permitting) with chisels on 12-inch centers, at the rate of 1.72 acres/hour (1969 figures). No brush sprouts were chemically sprayed and consequently the sumac, sugarbush, and cactus are coming back.

Seeds were planted with a rangeland drill, to operate on rough seedbeds. A railroad rail drag was pulled ahead of the drill to smooth the seedbed and chains were pulled behind the drill to improve seed coverage.

Hardinggrass was planted at 5 pounds/acre. Other species tried were Perlagrass, Trigo pubescent wheatgrass, Blando brome, and Lana vetch. Seedings were attempted eleven years in the period 1960-1975. A few dry years were judged a poor risk and no seedings were attempted. A total of 1,174 acres were treated. A summary of the seedings appears in Table 3-1. Broadcast seeding, which is faster and therefore cheaper than drilling, was found to work well in good years but not in the marginal rainfall years, making drill planting worth the added expense in the long run.

Experimental seeding test plots for exotic grasses were established in 1956 (Bulrush) and 1962 (Old Lookout). Of eleven grasses tested, only hardinggrass and velt grass did well. Legumes did poorly. Test plots for shrubs were established in 1967-68 above the bombing range. Of four non native shrub species planted from seed, none reproduced with any vigor.

Fertilizer test plots were established at Bulrush Canyon in December 1956 and 1957 and at Middle Ranch in 1956. Conclusions were that the soil is deficient in nitrogen, phosphorus, and sulfur. Recommendations were made to use 400 lb/ acre of ammonium sulfate and 100 lb/acre single super phosphate.

TABLE 3-1. Summary of Catalina Seedings and Results

Year	Acres	Location	Rainfall	Species*	Results**	Comments
60-61	412	Cape Canyon	4.41	H	G	
	18	Cape Canyon		H+L	G	Vetch did not return after first year
	49	Middle Canyon		B+L	G	Good first year only
	26	Middle Canyon		B	G	Grew well, can't tell from nonseeded stands
62-63	13	Little Sweetwater Cyn.	6.33	H	F	Came up second year, not first
	7	Little Sweetwater Cyn.		PG	0	Came first year and died
	38	Bulrush Cyn.		H+L	G	Good first & second year
65-66	46	Bulrush Cyn. - Camp Cactus area	17.94	H	G	
66-67	59	Salta Verde - old radar stn - S. exposure	12.95	H	G	Salta Verde area is not actually salty
67-68	78	Salta Verde - bombing range	11.72	H	F-G	
	10			PG	G	Good also in 1971
	8			L	P	None in 1971
	8			P	P	Variety was 1,488, later named Trigo
68-69	83	Salta Verde-east of bombing range	18.81	H	F	
	5			PG	F	
	5			P	F	Poor to excellent - 1971
69-70	79	Salta Verde-bomb range-higher elev.	7.48	H	G	
70-71	106	Salta Verde - Gray Ridge	12.01	H	G	Drill planted
	4	Middle of above seeding		H	F-G	Broadcast seeded
72-73	33	Salta Verde-between Gray Ridge & SV Point	15.11	H	G	Broadcast seeded
73-74	40	Same as 72-73 only lower elevation	11.34	H	G	Drill planted
	22	lower elevation		H	G	Broadcast seeded
74-75	10	Above beach at Salta Verde Point	12.57	H	G	Drill planted
	10	Verde Point at Salta		H	F	Broadcast seeded
	5	Verde Point at Salta		P	F	Most gone now

*B - Blando Brome, H - Hardinggrass, L - Lana vetch, P - Pubescent wheatgrass, PG - Perlagrass
**Ratings by Jim Sutherland: G - Good, F - Fair, P - Poor, 0 - Failure

Fire control activities have included actual fire suppression and construction of fire breaks. The fire policy has been to attempt suppression of all fires. No major fires have been fought on Catalina during this century. Numerous fire breaks have been constructed on Catalina, mostly on the southeast portion. They have been treated with soil sterilants and are responsible for causing considerable erosion along the ridgelines.

Water*

Up until the early 1900's, the only dependable sources of fresh water on Catalina were small and widely scattered springs. Many of the largest canyons were filled with flowing water during wet years, but in dry years these supplies were not dependable. Two small wells were drilled in Avalon in 1890, but the water quality was not very good.

Around 1900 a large well was drilled in the Two Harbors area at Howland's Landing. In 1919 William Wrigley attempted development of several more wells in Avalon Canyon, but these proved to be inadequate. Because of the critical need for fresh water, a dual salt water/fresh water system was built in Avalon. Ocean water was distributed to residences for flushing of toilets and fire suppression.

During the 1920's wells, tunnels, and dams were constructed at various locations throughout the Island. The Middle Ranch Reservoir project was conceived in 1925, and 12 miles of pipeline were installed to carry water from this reservoir to the City of Avalon.

Since 1947, water has been piped from a Black Jack spring to the Airport. Additional water for the Airport was developed in 1952 from Buffalo Springs.

The sole water supply source for the Two Harbor area, as well as the coves at the west end of the Island, has been the well at Howland's Landing. Since 1975 the water quality of this well has deteriorated due to salt water intrusion. Edison has subsequently constructed a pipeline connecting the million gallon storage tank at the USC Marine Science Center to the Two Harbors water supply system. In addition the well drilled in Cottonwood Canyon in February 1976 will provide more water.

The water for Little Harbor Campground is supplied by a pipeline which taps off the main transmission line from Middle Ranch Reservoir to the storage tank at the USC Marine Science Center.

*Information in the Water section is condensed from the draft report, "Santa Catalina Island Public Works - Water Data," L. A. County Department of Regional Planning, 1979.

All the domestic water facilities including the surface and groundwater rights on the Island were acquired by the Southern California Edison Company in 1962. Since Edison took over the facilities, numerous improvements have been made. These include the replacement of most of the Avalon distribution system, replacement of many of the old redwood and steel tanks, replacement of some transmission mains, and installation of hypoclorinators.

Edison increased the height of the dam on its main storage facility, the Middle Ranch Reservoir, in 1965. This increased the storage capacity of the reservoir. During the construction period, Edison operated a used desalinzation plant to produce distilled water from seawater which was blended with local water sources on the Island.

The reservoir subsequently filled and water was discharged over the dam spillway in 1969 to 1970. The Middle Ranch Reservoir supply declined from April 1970 to October 1972, increased to May 1974, and declined to July 1977.

During 1978 the Edison Company developed additional fresh water resources which they considered to be economically feasible on Santa Catalina Island. New fresh water wells were constructed at Eagle's Nest, Howland's Landing, Sweetwater, and Bulrush.

Marine Resources

Management of Catalina's marine resources is primarily by regulation or creation of preserves. Little or no active management of these resources has been conducted. Research on their distribution and abundance has just recently begun. Research has been conducted out of the USC Marine Lab by USC staff and researchers from the Los Angeles County Museum, and is focusing on the four Areas of Special Biological Significance (ASBS) designated in 1970 by the State Water Resources Control Board (for locations, see Marine Resources Map). Catalina Island is the only Channel Island not totally designated an ASBS.

Cultural Resources

Since Mr. Philip K. Wrigley assumed direction of the Santa Catalina Island Company, Catalina Indian excavations and studies have been carefully controlled through explicit grants of permission in writing to institutions of higher eduction--primarily UCLA--and the permit for each specific undertaking includes an acknowledgement that all artifacts and relics found in such research projects shall be the property of Santa Catalina Island Conservancy because "such findings are of significant historical value to Santa Catalina Island's archaeological knowledge and should be properly identified and preserved for future studies."

This policy has also been adhered to on lands owned by the Santa Catalina Island Conservancy since 1974.

APPENDIX E-3 - THE STATE OF THE CATALINA ENVIRONMENT: HISTORICAL AND FUTURE

Feral Goats

Island wide, the 1980 goat population is probably at or slightly below the numbers of 5 years ago. Substantial declines have occurred in the area between Little Harbor and Catalina Harbor where live trapping was conducted in summer of 1979. Long-term removal programs in Cottonwood and Salta Verde have also been effective in making these areas almost goat free. Substantial and unexplained increases may be occurring in the Orizaba/Mt.Banning area. No absolute determination of goat numbers Island wide has been made. It is obvious from the age structure data, however, that we are still dealing with a population with an immense capacity to expand further.

Feral Pigs

Although the pig population fluctuates drastically, the overall trend in the last decade, and particularly the last five years, has been one of greatly increased numbers. Every indication is that the population will continue to expand, despite temporary setbacks created by drought conditions.

Introduced Deer

Deer numbers appear to be stable over the long-term. Although improved range conditions resulting from increased rainfall have occurred, the subsequent increases in the deer population have been harvested sufficiently to maintain overall population stability. Local increases have, nevertheless, occurred in Bulrush, Middle, Cape, and Cottonwood Canyons where goats have been removed. The deer population on Catalina has declined within the last five years, but has the potential to expand so long as conditions of food availability, goat competition, and harvest limits are favorable. Although deer have narrower food habits than those of goats, they are likely to increase noticeably as goats are removed. However, their potential for environmental destruction is less and their populations are more amenable to control.

Introduced Bison

Over the past decade bison numbers have increased slowly and steadily, particularly in the interior parts of the Island, to a point where locally they may be exceeding the carrying

capacity of the range. This trend will continue so long as favorable rainfall conditions and goat removal programs continue. The increase will be slow, however, due largely to the current age structure of the population which is comprised largely of older aged individuals. At some point, after substantial inroads are made on the goat population, the quality of range for bison will decline as shrubs are given a chance to reproduce and spread.

Other Animals

The population of blackbuck antelope is probably stable. What little is know about Island fox and feral housecats suggests stable or slightly increasing numbers. Preliminary, limited data suggest that foxes and feral housecats do not occur in the same areas of Catalina. Whether this is due to the cats' conscious avoidance of the foxes, to their greater dependence on developed areas, or some other factor is not know. Populations of birds and herptiles are strongly influenced by annual climatic events; otherwise, trends are not know.

Status of Vegetation Communities

Past and Present Vegetation

Centuries ago, most of Catalina was brushland. Chamise and ceanothus dominated the north facing slopes, while sagebrush and St. Catherine's lace populated the southern exposures. Following introduction of feral herbivores, brushland in general and these shrubs in particular declined and were replaced in most areas by increasing stands of scrub oak, sumac, and toyon on north facing slopes and relatively unpalatable lemonade berry, black sage, and white sage on southern exposures. These predominate today.

Over the past few decades, however, brushland vegetation on most of Catalina (about 20%) apparently has undergone no significant further declines. Brushland present 35 years ago is, in most cases, still brushland today. Exceptions occur in several localized areas representing about 25 percent of the Island. On less than one percent of Catalina, brushland has been stripped over the last 35 years, although there is some evidence of improvement in the last eight years due to better rainfall conditions. On about 24 percent of the Island, primarily in areas with few goats, some " recovery" is evident. Stripping of vegetation has occurred mostly in Silver Grand Canyon, the west end, Mt. Orizaba, Mt. Banning and one slope at the southeast end. Vegetation recovery has occurred mostly in Avalon Canyon, Renton Mine Canyon, Bulrush, Cape, and Middle Canyons, Salta Verda

and from the Isthmus to Johnson's Landing. In some of these areas, shrubs have increased to half again their levels 35 years ago. In other vegetation stripping areas, brushland has declined to less than half its 1944 levels.

Future Vegetation

Assuming that Catalina's feral herbivores are not removed any faster than at the current rates, the balance of vegetational change will be one of very slow recovery. Granted, more areas will experience severe (by then, catastrophic) stripping, and local extinctions of rare plants will continue to occur. Nevertheless, brushland vegetation by the year 2024 will have increased to about 8 percent above present densities on northern exposures (oaks, primarily) and about 25 percent above present densities on southern exposures (sumac, primarily). Reproduction, however, will be primarily by means of sprouting from the tops, as goats and other herbivores will continue to remove virtually all seedings. Thus, brushland stands will become increasingly stagnant.

Assuming that populations of all herbivores are drastically reduced, recovery of brushland vegetation will be noticeably more rapid. Within 20 years brushland will cover southern exposures at about the same density as now occurs near Avalon and Renton Mine. Within 40 years northern exposures will be so covered. Thus, by the year 2024, most of Catalina's grassland will have become brushlands. However, severely eroded areas in Silver Grand Canyon, Swains Canyon, Johnson's Landing, and Mt. Orizaba will not experience Avalon type vegetation densities for at least 100 years after herbivore removal. Deeper loamy soils on southern exposures at the southwestern end of the Island may never support substantial brushlands due to their very dry condition.

Qualitatively, after herbivores have been reduced, the first major plant to return, particularly on southern exposures, will be sagebrush. As it proliferates, the now-dominant grass cover and prickly pear cactus will decrease. Eventually, and particularly on northern exposures, lemonadeberry, sumac, and toyon will proliferate. Recovery of these shrubs will be slow due to the fact that the herbaceous European annuals which now cover these sites demand more nutrients and extract soil moisture earlier in the growing season, thus making them tenacious competitors. Chamise and ceanothus will probably never return to their former densities unless an intense fire occurs.

Status of Fire Hazard

Past and Present Conditions

The presence on Catalina of numerous shrub species with life history strategies linked to fire strongly suggests

that fire has long been a major factor on the Island. Surely, the meteorological conditions and brushland densities were favorable for frequent fires.

Presumably, after herbvivores were introduced, fires became less frequent. Indeed, there appear to be almost no reports of major fires on Catalina since at least the early 1900s.

Nevertheless, fire can be supported by the present vegetation in most parts of the Island, and the frequent humidities below the 40 percent threshold generally are considered favorable for burns. The greatest potential for a fast-moving, widespread, though low-intensity, fire is in Cottonwood, Middle, Cape, Little Springs, and Bulrush Canyons. This is because of the abundance of annual grasses. The greatest potential for an intense, very destructive fire is in management units 1 and 21, which include Avalon and Renton Mine Canyons, due to the heavy build-up of flammable shrubs. Elsewhere, ground fuels have been separated from the vegetation canopy by herbivore created browse lines. Moreover, ground fuels in other areas are sparser due to consumption by herbivore. Thus, fire hazard is lower in these areas.

Future Conditions

If all herbivores are not substantially removed, the potential for a severe, high-intensity fire will increase slightly by the year 2024. If all herbivores are removed, and alternative means of brush control are not instituted, fuel accumulation and fire hazard will increase substantially. Heavy fuel accumulation will occur over about 17 percent of the Island, as opposed to less than 1 percent today.

Status of Rare Plants

Past and Present

Because of Catalina's geographic isolation, its plants were long immune to pressures of habitat destruction. Moreover, isolation from mainland vegetation discouraged hybridization and encouraged evolution of distinct species. The introduction of humans, herbivores, and alien plants, however, has caused the disappearance of several native species within the last 50 years. Approximately 74 species may now be unofficially considered rare or endangered on the Island. In just the last five years the condition of some of these, e.g., bush poppy and Trask's mahogany, has worsened considerably, despite the fact that the condition of the vegetation as a whole has improved in several areas of the Island, due to increased rainfall and goat removal.

Future

The future of Catalina's rare flora depends upon the future of the herbivore population. If feral goats are not sub-

stantially reduced, at least 26 plant species in addition to 27 already exterminated by goats will disappear, some within the next 10 years. If feral pigs are not significantly reduced, at least an additional 14 species will disappear. Some rare species, such as Allium praecox and Orobanche fasciculata franciscana, are dually threatened by goats and pigs. If recreational activities are not channeled away from rare plant localities, or rare plants in these areas are not fenced, an additional 21 species could perish. If groundwater withdrawals are not closely monitored, an additional 23 species could vanish. In summary, then, a failure to take action soon will likely doom 84 species to disappearance from Catalina, and in several cases, from the region and the world. Some 74 of these species have been identified as being particularly significant or threatened. This disappearance rate, moreover, is far above what could be expected in any natural system.

Catalina's rare plants may also be threatened by fire, floods, and competition from other plants, although the threat is considerably less severe than that posed by herbivores and people. These natural factors normally would pose little threat, but human activities have intensified their potential for having grave effects. Moreover, some rare plants have been so decimated by humans and herbivores that even moderately severe natural events could wipe them out. Such is the case of the Trask's mahogany, now limited to six non reproducing individuals in one stand in Wild Board Gully of the Salta Verde. This stand could easily be destroyed by a flash flood, now that much of the woody cover upslope has been removed by herbivores. However, if upslope areas continue to recover, flash floods could be a much lesser threat in another 20-40 years.

Fires normally would pose little threat to Catalina's rare plants, but the artificial absence of fire for many decades dictates that the next fire in some areas will be an unusually intense one which a few rare plants may be incapable of surviving, particularly if herbivores are present. These potentially-affected plants include the following:

Cercocarpus traskii	Arctostaphylos catalinae
Holodiscus discolor	Quercus engelmannii
Eriodictyon t. traskieae	Orobanche bulbosa
Orobanche fasciculata franciscana	Lyonothamnus f.floribundus
Quercus tomentella	Q. x macdonaldii
Ceanothus arboreus	C. megacarpus insularia

While other rare plants may be affected, it is a topic which has been poorly researched.

Some disagreement exists as to how significantly the introduced plants have limited, by competition, the rarer native species. There is, nevertheless, concensus on the idea that once herbivore numbers are significantly reduced, most if

not all of the surviving native vegetation will replenish much of its former habitat as it competes successfully against non native species which have held the competitive edge for decades. However, removal of herbivores alone will not be sufficient for native species to steal the competitive edge from the following alien species (species marked with asterisks are especially aggressive and widespread):

Foeniculum vulgare	Ricinus communis
Silybum marianum	*Cytisus linifolius
Xanthium spinosum	Cytisus monspessulanus
Salsola iberica	*Marrubium vulgare
Convolvulus arevensis	Nicotiana glauca

Thus, for these, some type of intentional control effort may be desirable.

Soils

Past and Present

Considerable soil loss has occurred on Catalina within the last century. In 1955, the following soil conditions were found:

- Very severely eroded areas = approx. 24 percent of Island
- Landslide areas = approx. 14 percent of Island
- Barren areas = approx. 4 percent of Island

Slope conditions on Catalina are as follows:

Slope	Extent (Approx.)
0-5 percent	2 percent
5-10 percent	6 percent
10-20 percent	29 percent
20-30 percent	31 percent
Over 30 percent	33 percent

At that time, a range condition survey indicated that Catalina's vegetation was over utilized by herbivores by a remarkable 1200 percent. Even allowing for some lack of precision in this estimate, it is apparent that much soil abuse was occurring. It was estimated that the Island could support 440 animals without observable damage to the soil.

Since that time, soil improvement has probably occurred over more areas of the Island than has soil deterioration. The improvement has occurred mostly due to a combination of herbivore removal efforts, fortuitously adequate rainfall, and on a very localized scale artificial reseeding efforts. Erosion and compaction, however, are still major concerns. Heavy siltation of the reservoirs occurred with severe floods in the winter of 1979-80.

Future

Significant soil improvement will continue only insofar as herbivore numbers are permanently reduced. Given enough time, vegetation will recover naturally.

Water

Past and Present

In 1977, during a prolonged drought, Southern California Edison determined that, at that time, water resources were inadequate to support any additional growth. The Public Utilities Commission subsequently banned further connections for water customers. In 1979, the ban was rescinded, but with the important provision that new customer connections be made only if comparable new water supplies are developed and made available.

Future*

Catalina's scarcity of water severely constrains further significant increases in consumptive use by Island visitors. The monthly variations in water demand for the Island show that summer recreational use increases demand on the water system almost tenfold over the winter demand. Tourism on Catalina is the major water user during the year, and it is steadily increasing. Since recreation places the greatest demand on the water supply systems of the Island, any increase in recreational use will obviously place a stress on the existing system, and may pose a conflict situation between existing residential users, future residential and commercial development, and future recreational users.

Obtaining additional water is not a question of irreversibly depleting existing groundwater supplies. Rather it is a question of economics and ecological impact on riparian communities. Few options are available. Only two options appear to be economically feasible after 1981, and these depend on the residents of Catalina or some other outside source bearing the cost of development. The first is a well system in Silver Canyon projected to provide 72 acre feet/year.

The second alternative is the installation of the one or more desalinization plants. These would be capable of producing up to 296 acre feet/year.

The Silver Canyon wells and associated pipeline would require a capital investment of $1,605,000 (1979 dollars). A 100,000 gallon-per-day desalinization plant at Pebbly Beach

*The "Future" water conditions section is paraphrased from Los Angeles County Department of Regional Planning, 1979.

would cost $2,389,000 (1979 dollars), or at a 10 percent capacity factor, $18.05 per 1000 gallons. A larger 325,000 gallon-per-day desalinization plant would have a capital investment cost of $4,343,000 (1979 dollars), and at 10 percent capacity would cost $82.28 per 1000 gallons, or at 90 percent capacity, $10.63 per 1000 gallons. Thus, all means of obtaining additional significant quantitives of water for Santa Catalina Island will require considerable expense and imaginative financing approaches.

Southern California Edison has studied the best locations on the Island for a new dam and reservoir, and believes that Cottonwood Canyon is the most feasible for development. However, it would be an extremely expensive development, costing millions of dollars to construct. Also, Cottonwood Canyon is a significant ecological area, and reservoir construction might impact sensitive plants and animals in the area. Thus, no large scale water development is presently proposed in the canyon area.

Water conservation measures may help somewhat, but cannot realistically be expected to solve the water demand situation. The Edison Company, for example, is studying a wastewater reclamation system at the golf course in upper Avalon Canyon. Effluent which is not discharged into the ocean will be conveyed to the upper reaches of the golf course for controlled groundwater recharge. Three wells down valley from the recharge area will draw on this recharged aquifer and use the water for domestic flushing and fire suppression in Avalon. Low yield water pumping at campgrounds will not, under normal rainfall conditions, cause significant depletion of ground water resource.

Marine Resources

Past and Present

Scientifically, almost nothing is known of the past condition of Catalina's marine resources, and little is known of their current condition, other than what is compiled in the ASBS areas reports. Kelp around Catalina has declined in the past few years, possibly due to higher than average winter water temperatures. Concern has been voiced by some local scientists that certain resources are being overharvested, both legally and illegally. Enforcement of regulations apparently has been sporadic, and some scientists have voiced the opinion that illegal overharvest may be having an effect on marine resources more severe than sediment runoff or local salinity changes.

Future

Until baseline marine studies are funded, it will not be known whether future decreases in sediment runoff (assuming herbivores are reduced) and freshwater outflows (assuming further groundwater utilization) will cause shifts to marine

species which are beneficial or detrimental from the viewpoint of human interest. The role of increased overharvest by larger numbers of visitors is offsetting any beneficial changes is also unknown.

Cultural Resources

Past and Present

Dean A. Decker of UCLA points out that, in the late 19th century and early first half of the 20th century, investigations of archeological sites on Santa Catalina Island resulted in removal of a tremendous amount of cultural material from its original location. The result of this removal is that a large number of Catalina sites lack the data necessary to provide answers for many types of anthropological problems.

Records of the early excavators indicate that the sites most often "explored" were large, late coastal middens and cemeteries. The primary reason for this focus seems to have been the easy visibility and accessibility of the sites coupled with the knowledge that they contained a great concentration of esoteric and artistically impressive items. Based upon calculations from artifact lists, it seems the artifacts most often collected were: small worked steatite objects (pendants, effigies, various esoteric items), steatite vessels (ollas, bowls, dishes), perforated steatite slabs or comals, doughnut stones, mortars, pestles, implements and ornaments of bone, projectile points and blades, and manufactured shell objects (beads, pendants, and fishhooks). The apparent selective discrimination practiced by early excavators can probably best be dealt with be a modified sampling strategy that will avoid the pitfalls outlined above--i.e., problems should be centered around recovery of ecofactual data and the "less obvious" or "less elegant" types of artifactual data with horizontal distribution being stressed. Vertical location of artifacts should probably be de-emphasized, and samples of burial populations should not too hastily be considered "representative."

In the past 25 years some 20 archeological investigations have occurred. Even so, less than half of the estimated number of sites have ever been mapped.

Future

With the increased use and development of Santa Catalina Island resulting from recreational availability, the potential exists for disturbing many more sites.