

KA IWI STATE PARK

MASTER PLAN
AND
FINAL ENVIRONMENTAL IMPACT STATEMENT

DEPARTMENT OF LAND AND NATURAL RESOURCES
STATE OF HAWAII

APRIL 1996

KA IWI STATE PARK

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AND
FINAL ENVIRONMENTAL IMPACT STATEMENT

PREPARED FOR:

DEPARTMENT OF LAND AND NATURAL RESOURCES
State of Hawaii

PREPARED BY:

WILSON OKAMOTO & ASSOCIATES, INC.

APRIL 1996

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AND
FINAL ENVIRONMENTAL IMPACT STATEMENT

This environmental document is prepared pursuant
to Chapter 343, Hawaii Revised Statutes.

Proposing Agency:	DEPARTMENT OF LAND AND NATURAL RESOURCES State of Hawaii
Responsible Official:	Gilbert S. Coloma-Agaran for Michael D. Wilson, Director Department of Land and Natural Resources State of Hawaii MAR 4 1996 Date
Accepting Authority:	Governor Benjamin J. Cayetano State of Hawaii
Prepared by:	Wilson Okamoto & Associates, Inc.

PREFACE

This Master Plan has been prepared in response to House Concurrent Resolution No. 261 H.D. 1, S.D. 1 which directs the Department of Land and Natural Resources to conduct a study of the establishment of a continuous scenic shoreline park from Koko Head to Makapu'u with the basic objective of retaining the area, particularly the area makai of Kalanianaole Highway, in open space in perpetuity.

The Final Environmental Impact Statement (EIS), in Chapters XIII - XIX of this document, was prepared pursuant to Chapter 343, Hawaii Revised Statues, and Chapter 200 Title 11 Department of Health Administrative Rules. The format of this EIS is unique since it refers to portions of the Master Plan to fulfill its content requirements.

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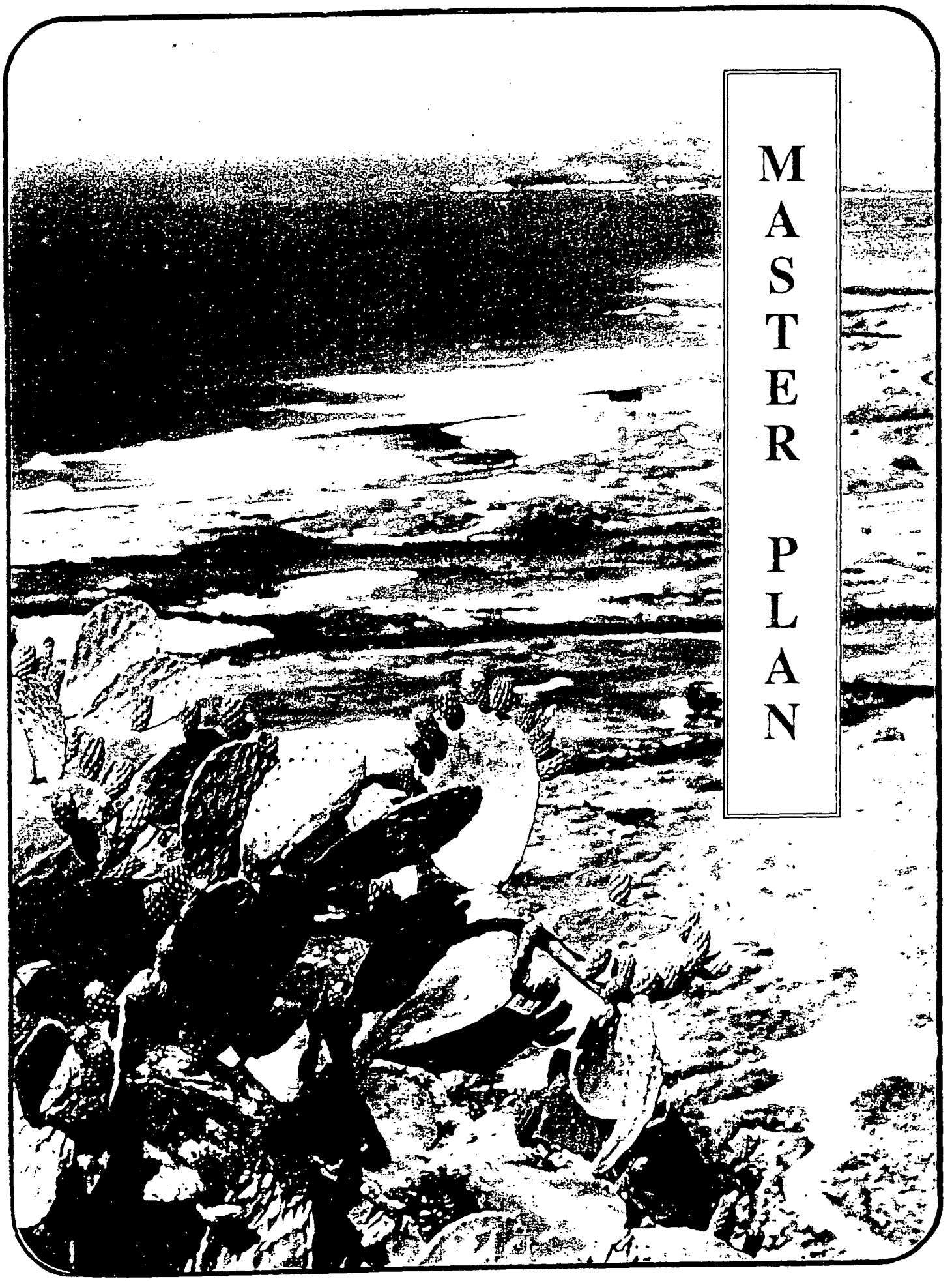


MASTER PLAN

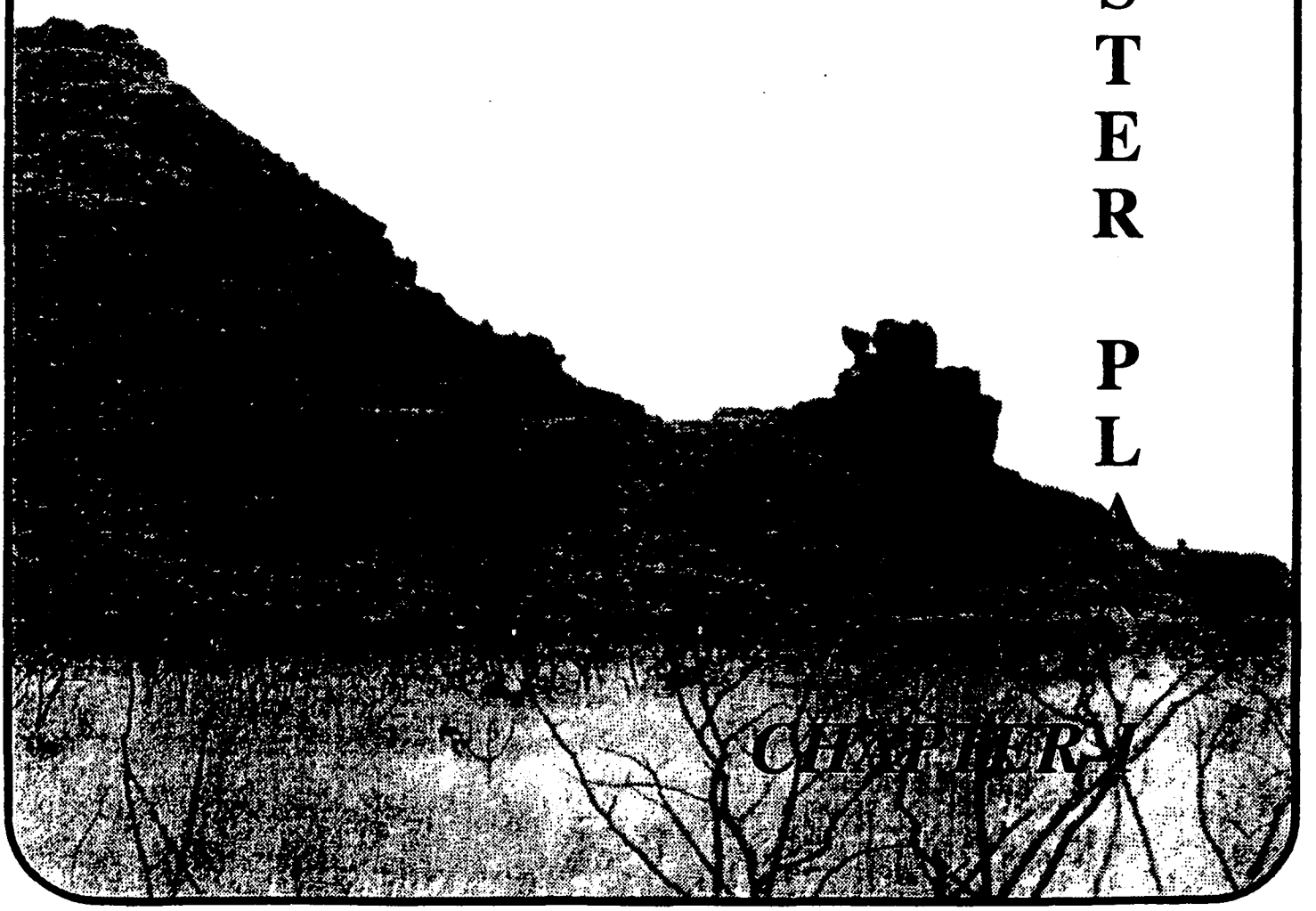


Windward slope of Makapu'u Head



Ka'ili'ili Bay

KA IWI MASTER PLA



CHAPTER I

Beach. A narrow, paved road owned by the State provides public pedestrian access to spectacular views from the slopes of Makapu'u Head and to lookouts above the Makapu'u Lighthouse. A low rock shelf hugs the coast of Makapu'u Head for approximately 4,000 feet. This shelf can be traversed by the careful hiker during calm ocean conditions. Features of the hike include a blowhole comparable to that of Halona, geological features, and several large tidepools along the way.

C. Land Ownership

The study area consists of approximately 1,625 acres. The major landowner is the City and County of Honolulu with 1,260 acres. (see Figure II-2). City land is referred to as Koko Head Regional Park. Within this management area, the City maintains park facilities at Sandy Beach, Koko Crater Botanical Gardens, Hanauma Bay Nature Park, Koko Head Rifle Range, and Koko Head District Park. The City and County of Honolulu also owns the Makapu'u Lookout, a small 0.65-acre area at the crest of Kealakipapa Valley, just off of Kalanianaole Highway.

Within the Ka Iwi site, Kamehameha Schools/Bernice Pauahi Bishop Estate (Bishop Estate) is presently the largest landowner with approximately 316 acres at Queen's Beach, Kealakipapa Valley, and a portion of Makapu'u Head. The State of Hawaii owns about 35 acres around Makapu'u Lighthouse, which was transferred from Federal control to the State of Hawaii in 1987. The area was subsequently established as Makapu'u State Wayside in 1991. The State also owns approximately 13 acres of the north-facing cliff near Makapu'u Beach Park which is encumbered by the Department of Hawaiian Home Lands (DHHL). The United States Department of Commerce owns about 5,000 square feet, or 0.11 acres, which includes the Makapu'u Lighthouse, the surrounding grounds, and utility easements.

II. GEOGRAPHIC CONTEXT OF STUDY

A. Study Area

Located on the eastern coast of Oahu, the Master Plan study area stretches from Kawaihoa Point at Koko Head to Makapu'u Point, a distance of about 5 miles (see Figure II-1). The study area includes all the open land makai of Kalanianaole Highway from Sandy Beach up to the Makapu'u lookout, as well as Koko Crater, Koko Head, and Hanauma Bay at its southern end. The latter geologic features are part of the Koko Rift--a prominent row of volcanic vents of the post-erosional Honolulu Volcanic Series.

The suburban communities of Portlock, Hawaii Kai, and Queen's Gate border the western boundary of the study area. Other nearby communities include Kalama Valley, Kamehame Ridge, and Mariner's Ridge. The Koko Marina Shopping Center is the nearest regional shopping center. A small neighborhood commercial center is located at the base of Kalama Valley. The distance from Koko Head to Downtown Honolulu is approximately 13 miles by car, and the distance from Makapu'u Lookout to Kailua is approximately 10 miles by car.

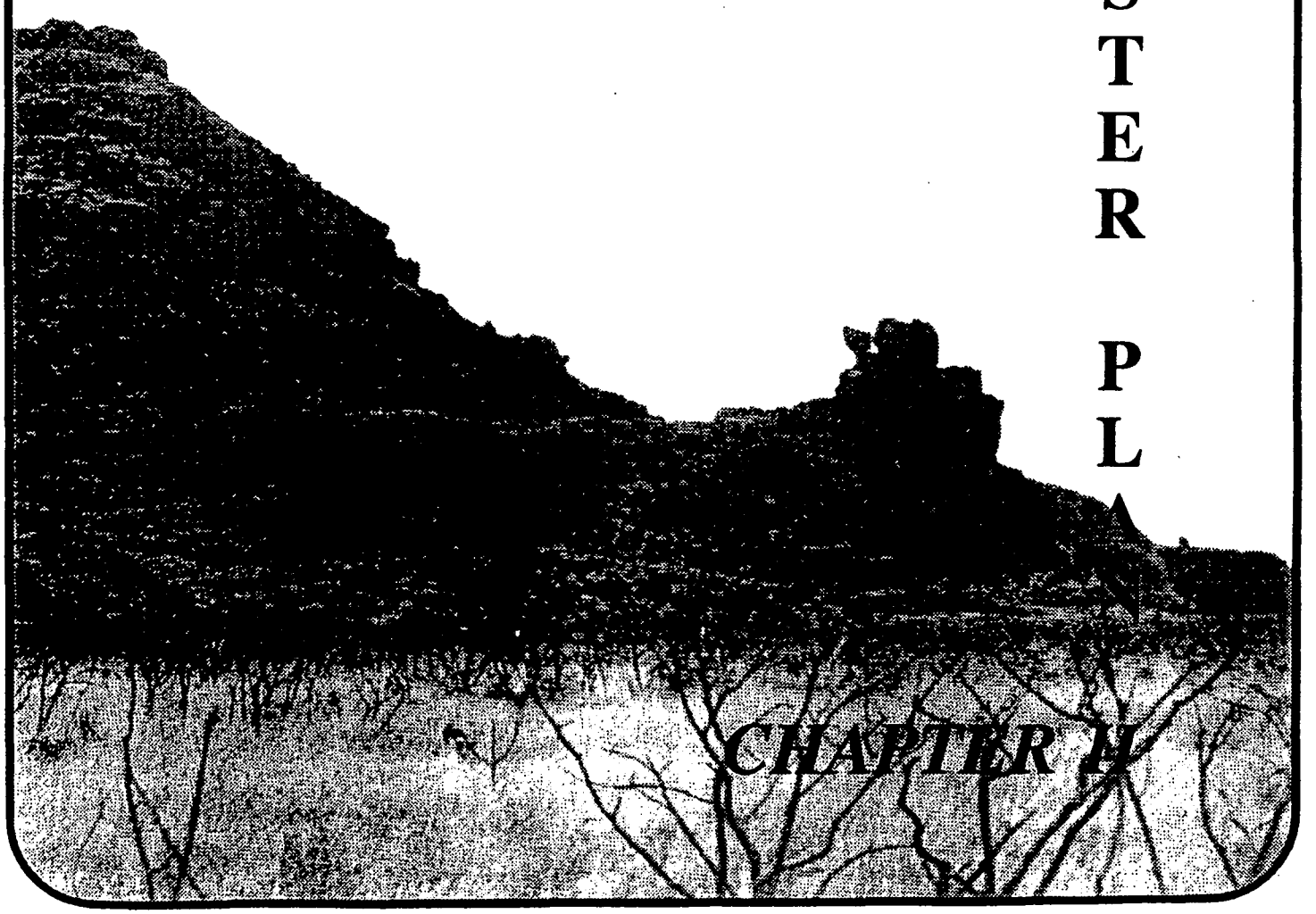
B. Ka Iwi Site

The proposed park site is located about 15.5 miles from downtown Honolulu on the easternmost point of Oahu in the East Honolulu District. Adjoining the site is Makapu'u Beach Park to the north, Hawaii Kai Golf Course across Kalanianaole Highway to the west, and Sandy Beach Park to the southwest. The proposed park site will occupy approximately 354 acres of land, identified as Tax Map Key 3-09-11: parcels 2, 3, 5, 6, 7, and 4-01-14: parcel 1.

The name Ka Iwi is derived from the Ka Iwi Channel, which lies between the islands of Molokai and Oahu. The northeastern portion of the study area is the location of the proposed park site. For ease of discussion, the site can be divided into three general regions; Queen's Beach, Kealakipapa Valley, and Makapu'u Head. Queen's Beach generally refers to the shoreline area from Kaloko Beach to the rock cliffs of Makapu'u Head. Kealakipapa Valley comprises the area from Makapu'u Saddle down to Queen's Beach. These two areas contain many native Hawaiian plants. The shoreline features include several tidepools, small sandy coves, and several sea inlets.

Makapu'u Head, rising northeast of Kealakipapa Valley, reaches 647 feet above sea level at its highest point. The lower ridges of Makapu'u Head boast many natural geologic curiosities, including the rock formation known as Kapaliokamoa just above Queen's

KAIWI MASTER PLAN



CHAPTER II

the regional role and function of the Ka Iwi site (Chapter VII). Recommendations are offered regarding its acquisition and jurisdiction for its management.

The assessment of the Ka Iwi site (Part B) examines the site in detail with respect to its various cultural, historic, scenic, recreational, interpretive/educational and ecosystem resource values. A user survey was also conducted to describe current uses and to identify and document potential abuse of the area (Chapters VIII & IX). Based on this assessment, recommendations for management and development of these resources are offered. These are presented in several conceptual park development scenarios based upon consideration of the most suitable recreational and preservation uses (Chapter X). A recommended Master Plan is presented based on public input and a refinement of the alternatives (Chapters XI & XII).

D. Past Planning Efforts

The Ka Iwi shoreline has long been recognized as an important park asset for Oahu. In 1971, the State's Comprehensive Outdoor Recreational Plan (SCORP) identified this area as an important recreational resource. In 1980, the City and County of Honolulu's Department of Parks and Recreation Long Range Plan proposed that the Queen's Beach area become a nature park. Towards that end, the City and County completed a park feasibility study and cultural resources overview of Queen's Beach in 1984. The City and County Coastal View Study identified the area as an important scenic resource in 1987.

Most recent planning efforts in the study area include the City and County's Koko Head Park Master Plan and the National Park Service's Reconnaissance Survey Ka Iwi Shoreline Study. The City and County's Master Plan encompasses only the City and County Regional Park adjacent to the proposed Ka Iwi site. However, some of its recommendations, such as the Sandy Beach Park extension and roadway improvements, impact upon the Ka Iwi site. These recommendations are discussed in Chapter XII under Management Alternatives. In February 1992, the NPS published their Reconnaissance Survey Ka Iwi Shoreline Study to assess the potential of incorporating the area from Hanauma Bay to Makapu'u Point into the National Parks System as the "Koko Rift Unit." The study analyzed the area against three criteria; national significance, suitability, and feasibility. The Koko Rift Unit was found to be nationally significant based on its unique natural resources, diverse recreational opportunities and, to a lesser extent, its cultural resources. In addition, the study determined that the Unit would have met the suitability criteria for a national park were it not for the fact that the majority of the area is already being managed at the State and City and County levels. Likewise, NPS management of the Koko Rift Unit would only meet the feasibility criteria if all of the State and County lands, and a major portion of the existing private lands, were transferred to or otherwise placed under NPS administration. The National Park Service's study is discussed in Chapter VII, Existing Recreation Management.

E. Contents of the Master Plan

The Master Plan assesses the value and role of the Ka Iwi site as a potential addition to the State park system from both a regional context and for the site itself. The regional context (Part A) provides an overview of the shoreline from Koko Head to Makapu'u. Discussed in the regional context section are existing resource opportunities (Chapter III), recreational demands (Chapter IV), land use controls (Chapter V), and jurisdictional management alternatives (Chapter VI) for the region, and how these could help to define

Hawaiian landscape. According to many park proponents, preserving the open space of the coastline makes good economic sense by ensuring quality tourism.

In addition to its striking scenery, advocates of an integrated shoreline park cited the area's unique natural and cultural history. Ecologically, the area supports one of the most prominent remaining stands of native strand (shoreline) vegetation on Oahu. Many of the indigenous plant species are adapted to the area's hot, dry climate. Culturally, Hawaiian oral history connects the area with the volcano goddess Pele and her younger sister Hi'iaka. The historic and cultural importance of the sea in this area as a traditional resource is demonstrated by the dedication of a *kupua* (a supernatural being, one with magical powers) to the area to keep *uhu* (parrot fish) plentiful.

In terms of recreation, the most accessible beach parks on Oahu are very crowded, while others are well-frequented in spite of their limited accessibility. Visitors to Hanauma Bay Nature Park, for example, must walk a considerable distance to reach the crater-rimmed beach. Shoreline parks are clearly the most widely used recreation resource on Oahu, and the shoreline from Koko Head to Makapu'u offers an ocean experience unlike any other. The Ka Iwi site boasts a natural shoreline setting suited for fishing and hiking, passive recreation, and interpretive education.

C. Landowner's Position

The Kamehameha Schools/B.P. Bishop Estate, which is the landowner of the approximately 316 acres of private land at the Ka Iwi site, has stated its opposition to the State's effort to acquire Queen's Beach. Spokespersons for Bishop Estate emphasize that the 1,265 acres of public land, which comprises Koko Head Regional Park and includes Hanauma Bay and Sandy Beach, were originally owned by the Estate and dedicated to the City and County of Honolulu in 1928. They also contend that the Ka Iwi site has always been accessible to the public for recreation, and this status has provided a continuously accessible shoreline from Koko Head to Makapu'u. Therefore, they oppose the government acquiring any more of their land for public use.

Bishop Estate and their lessee, Kaiser Aluminum and Chemical Corporation, is currently pursuing litigation in the form of eight separate lawsuits against the City and County of Honolulu for actions which downzoned Queen's Beach from a resort designation to preservation. A suit in Federal Court was dismissed in March of 1991. Should the prior designations be restored, the land value would be significant. Thus, Bishop Estate has indicated that purchasing the land from them for a park would be prohibitively expensive.

I. MASTER PLAN BACKGROUND

A. Legislative Intent

The Ka Iwi State Park Master Plan was prepared pursuant to House Concurrent Resolution No. 261 H.D.1, S.D.1 (H.C.R. 261), entitled "Concerning an Integrated Scenic Shoreline Park in East Oahu Extending from Hanauma Bay to Makapu'u Point," 1988 Legislative Session. H.C.R. 261 directed the Department of Land and Natural Resources to take all steps necessary to keep this coastal area in open space.

Approximately 1,265 acres along this coastline are currently owned and managed as open park space by the City and County of Honolulu as the Koko Crater Regional Park. However, the approximately 316-acre area known as "Queen's Beach," and including most of Makapu'u Head, is privately owned by Kamehameha Schools/Bishop Estate.

As recently as 1982, a portion of this 316-acre area was designated for resort and commercial development by the City & County of Honolulu. The site is presently in the State Land Use Urban District which would allow such development if required City and County entitlements could be restored. Development of a golf course is also possible. Thus, State acquisition of the site for the establishment of a park is regarded as one alternative for keeping the Queen's Beach and Makapu'u Head area in undeveloped open space in perpetuity.

The Ka Iwi Master Plan was prepared to help the State determine whether the Queen's Beach and Makapu'u Head area, referred to hereafter as the Ka Iwi site, should be acquired for inclusion in the Hawaii State Parks system. The Department of Land and Natural Resources has the power to establish State parks by acquiring land through "agreement, gift, devise, lease, or condemnation". (§184-3, Hawaii Revised Statutes)

B. Supporting Public Testimony

Prior to the adoption of H.C.R. 261 during the 1988 Legislative Session, much of the public testimony presented was in support of the integrated shoreline park concept. Many persons testifying emphasized how the entire shoreline at the southeastern tip of the island, from Koko Head to Makapu'u, is the last easily accessible natural open space available on Oahu. Others noted the area's special geological history which is readily interpreted, and how its volcanic forms contrast dramatically against the deep blue water of the Ka Iwi Channel, providing scenic vistas which attract millions of visitors annually. Tourists venturing out of Waikiki seem especially drawn to this coastline for its uniquely

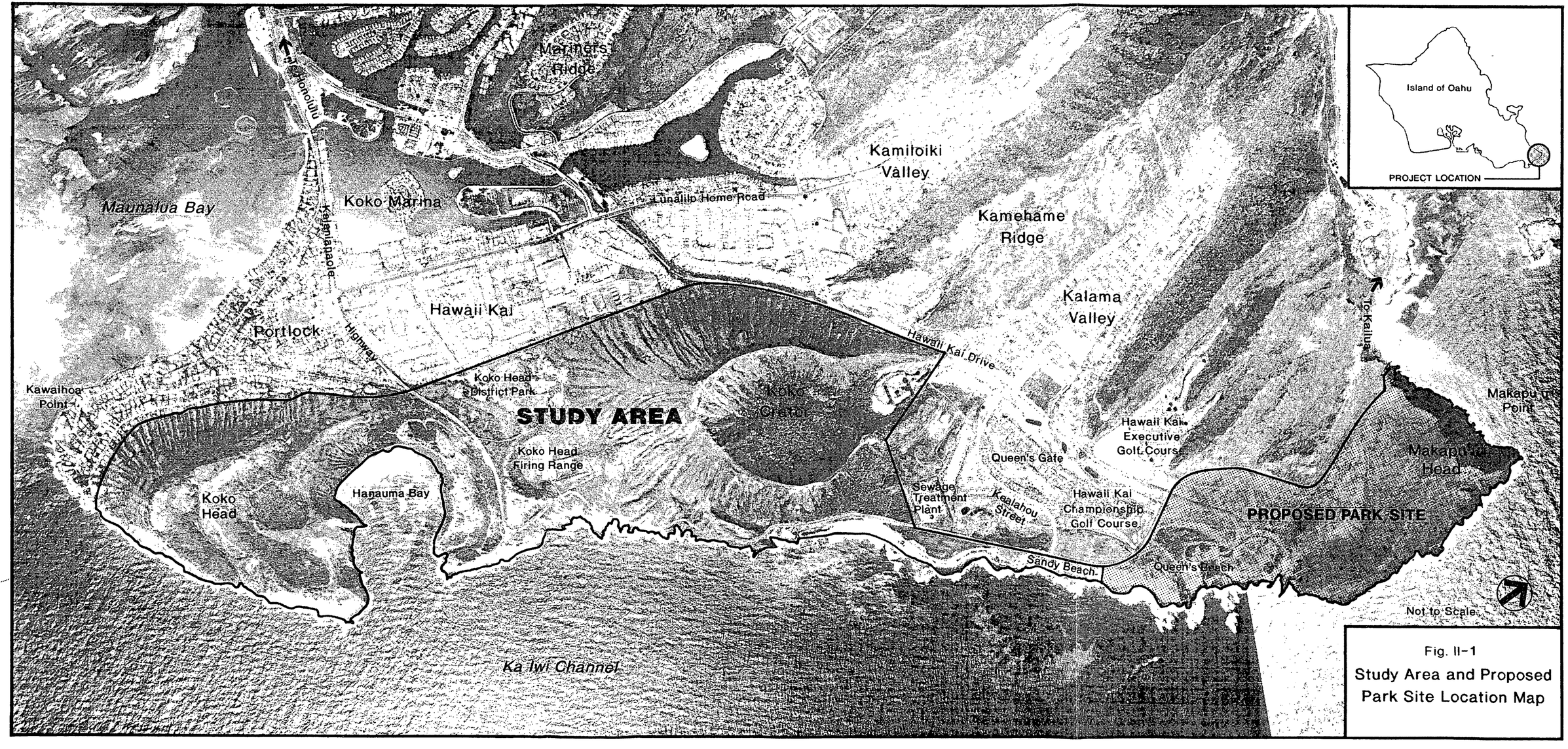


Fig. II-1
Study Area and Proposed Park Site Location Map

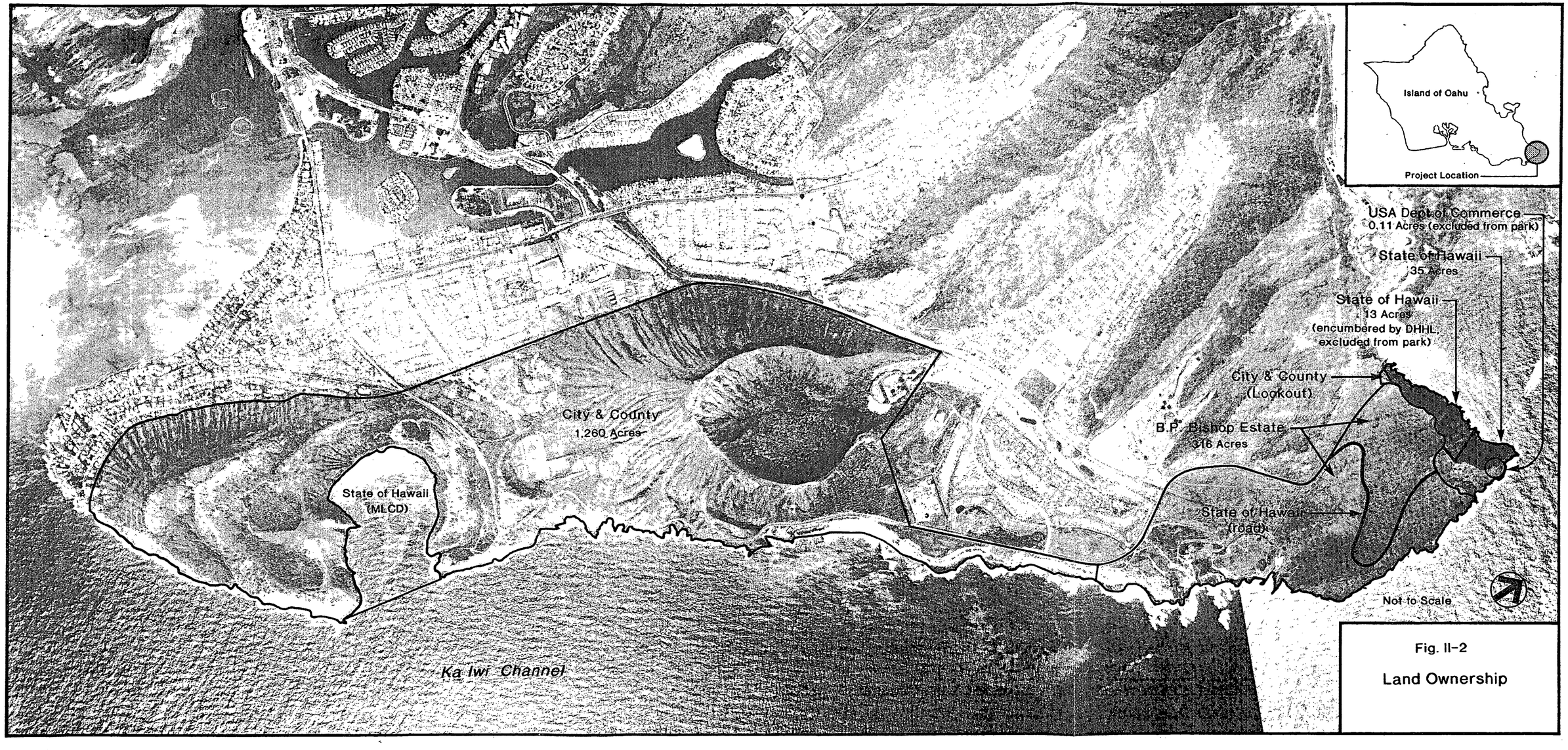
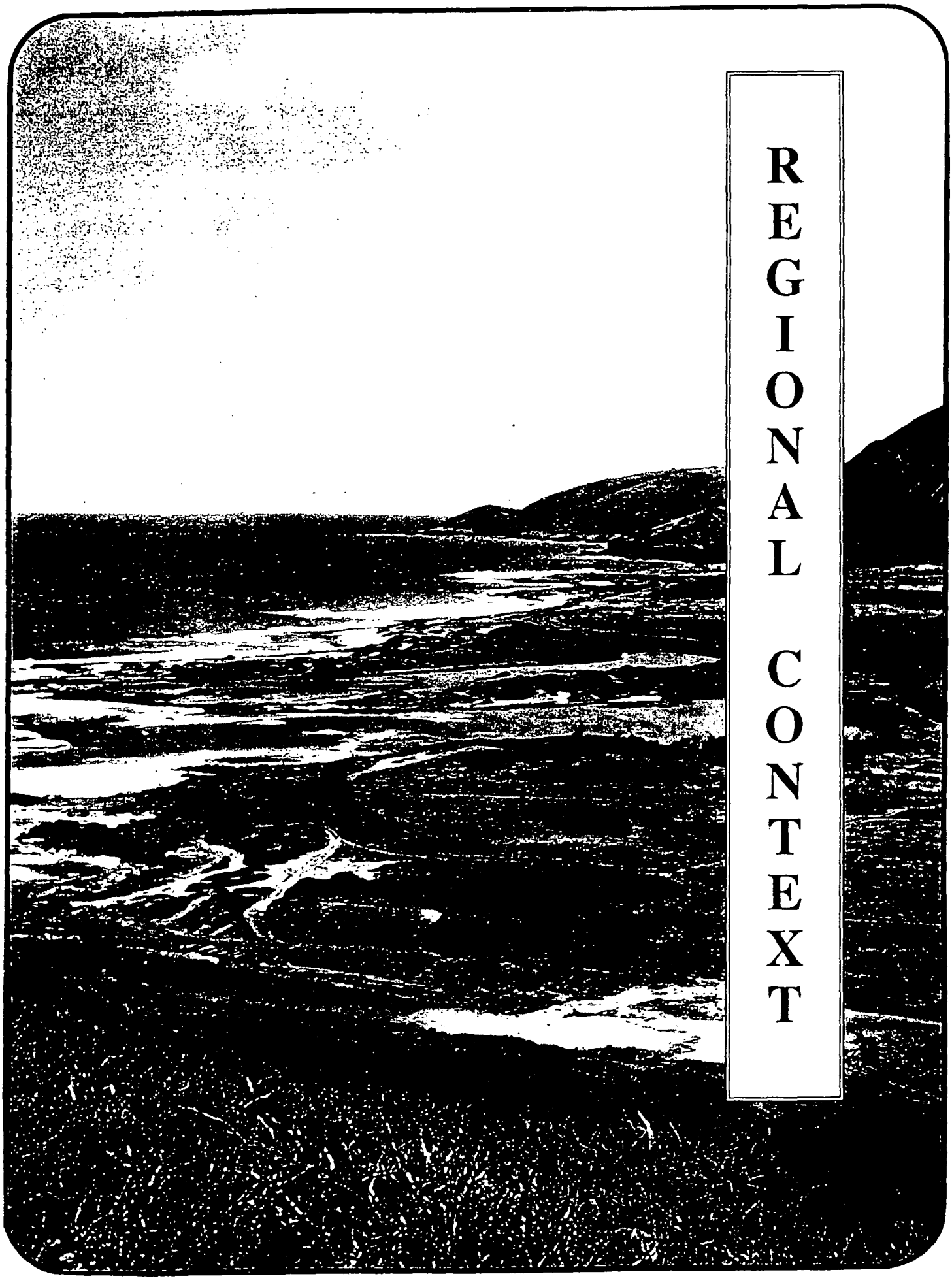


Fig. II-2

Land Ownership



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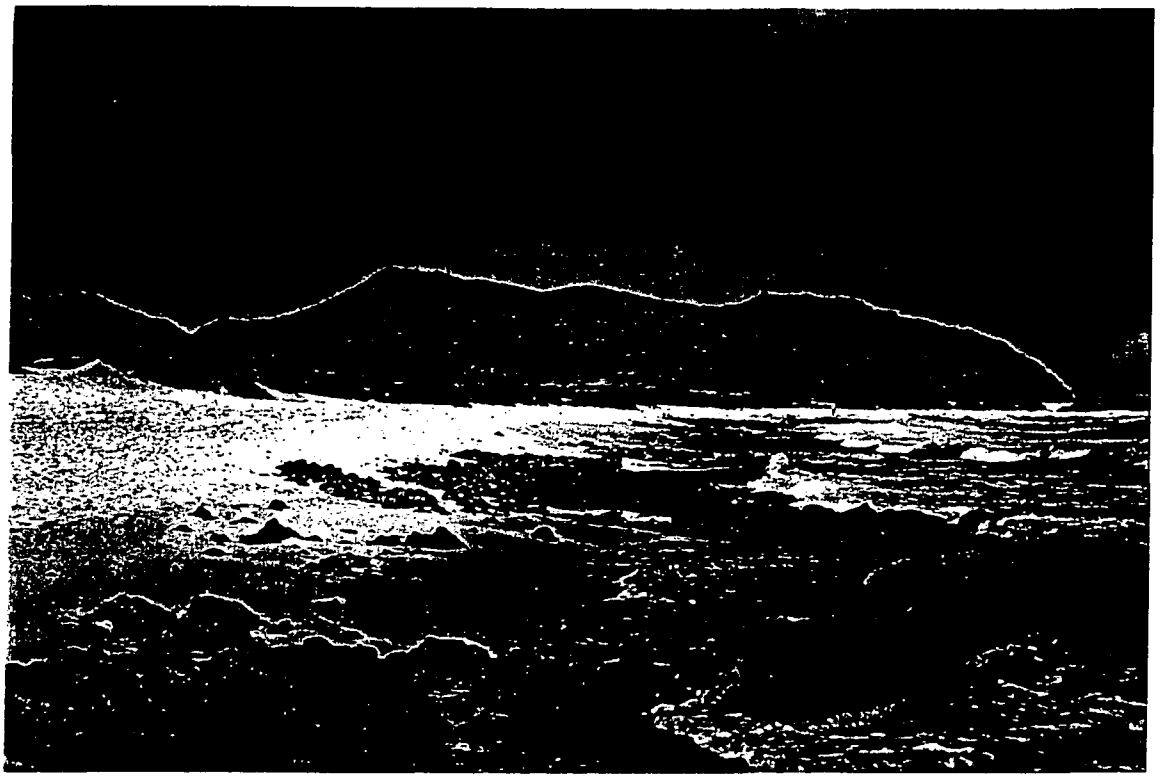
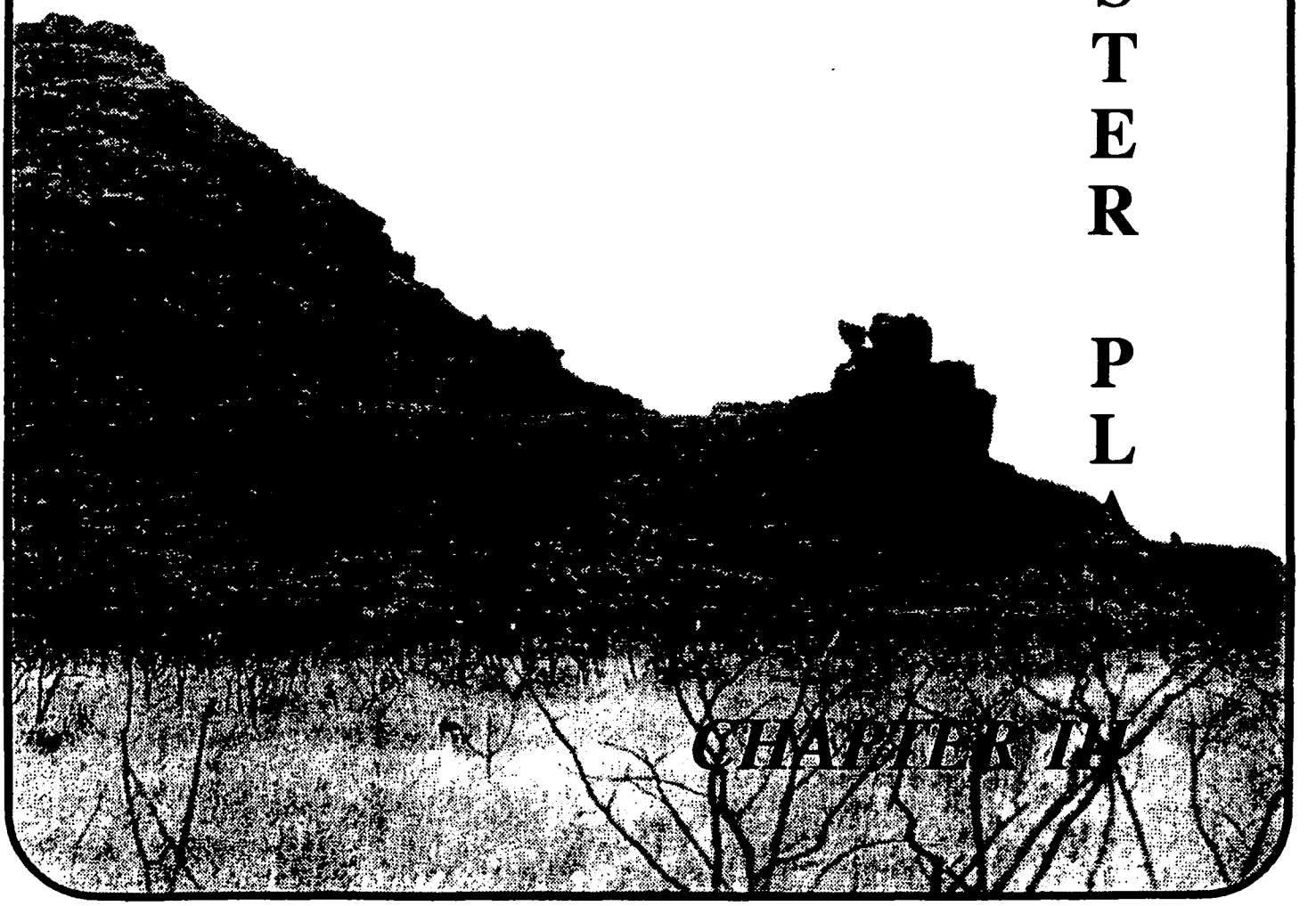


Makapu'u Headland from Queen's Beach



Koko Crater and Koko Head (background) from Queen's Beach

KA IWI MASTER PLA



CHAPTER TH

III. RESOURCE OPPORTUNITIES IN THE STUDY AREA

A. Scenic Shoreline Resources

The dramatic volcanic landforms which jut into the deep blue water of the Ka Iwi Channel offer excellent picture-taking opportunities along the study area shoreline. To take advantage of the region's scenic qualities, several lookouts have been constructed which can be reached by pulling off of Kalanianaole Highway. These include the Kuapa Pond Lookout which faces in the mauka direction toward Koko Crater and overlooks Hawaii Kai; Lanai and Halona Lookouts which offer views across the channel and up and down the shoreline; and Makapu'u Lookout where the view extends from the ridges of the Koolau mountains to Manana and Kaohikaipu Islands. Though not on Kalanianaole Highway, the Hanauma Bay overlook within Hanauma Bay Nature Park is also accessible by car and provides a spectacular view of the ocean-breached crater. (see Figure III-1).

For those with more leisure and resolve, even more spectacular views are available by getting away from the highway. For the ambitious hiker, there are sweeping views available from the top of Koko Head and Koko Crater. Spectacular views are more easily available from Makapu'u Head. Views from the Makapu'u Headland Road up to the lighthouse look out over a large portion of the Ka Iwi shoreline and parts of East Honolulu, as well as out to sea. Makapu'u Head is also known to be the best spot on Oahu for whale-watching. The view from the ridgetop at Makapu'u Head toward both the windward and leeward sides of Oahu extends as far as Mokapu Peninsula and Diamond Head, respectively.

B. Natural Recreational Resources (see Figure III-2)

1. Hiking Trails

The ridgeline above Hanauma Bay has a trail system and botanic areas which are maintained by the Nature Conservancy. An endangered plant species, *Marsilea villosa*, is protected in this area. Another trail which begins at the Hanauma Bay parking area and leads around the east rim and traverses the coastal shelf all the way to Halona Point. Although not accessible to the general public, there is also a trail that begins at the Hawaii Job Corps and leads up the side of Koko Crater to the high point of the crater rim called Pu'u Mai. Within the crater itself, there is a loop trail which makes a circuit of the Koko Crater Botanical Gardens.

There are also many informal trails within the proposed Ka Iwi site, including the walk along the wave-cut shoreline around Makapu'u Head and a hike up the Makapu'u

Headland Road to scenic vistas. Many trails at the shoreline of Queen's Beach have been created by off-road vehicles.

2. Shoreline Fishing

Offshore fishing is popular along the entire coastline of the study area, except where prohibited, or difficult to access. Most of the rocky coastline in the study area drops sharply at the water's edge into deep water, making conditions ideal for shore-casting for large trevally (ulua). One area in particular, "Bamboo Ridge" near Halona Point, is named for the multitudes of fishing rods (formerly bamboo rods) which line the perimeter of the point on a good day. Beach areas such as Sandy Beach are also popular but only after swimmers and surfers have left the water at night. Throw-netting is also done in ocean inlets at the Ka Iwi site.

3. Opihi Picking

In the rocky areas popular for shoreline fishing, the Hawaiian limpet (opihi) shellfish can be harvested. Opihi flourish in areas where rocks submerge and emerge with the tide, and particularly where harvesting is difficult or hazardous. Because of this, opihi pickers are often exposed to high waves and surges in areas where falling into the ocean can be fatal, even for experienced swimmers.

4. Diving Areas

For the experienced diver, good diving and spearing is generally available along the entire study area shoreline, access permitting. Beginning at Maunalua Bay, some of the most common diver's access points include Koke'e and Koko Kai Beach Park, Hanauma Bay, and Halona Cove for skin and SCUBA divers. Sandy's, Wawamalu, and Kaloko beaches are for experienced divers only, because of the strong currents, rough wave conditions, and the absence of a protective reef.

5. Surf Sites

There are a couple of well known surf sites between Sandy Beach and Kaloko Point. They include "Half Point" at Sandy Beach Park, and "Pipe Littles" or "Irma's" at Wawamalu Beach. There are also other breaks closer to Kaloko Beach which are less popular. Bodysurfing is popular at Sandy Beach Park and Makapu'u Beach Park.

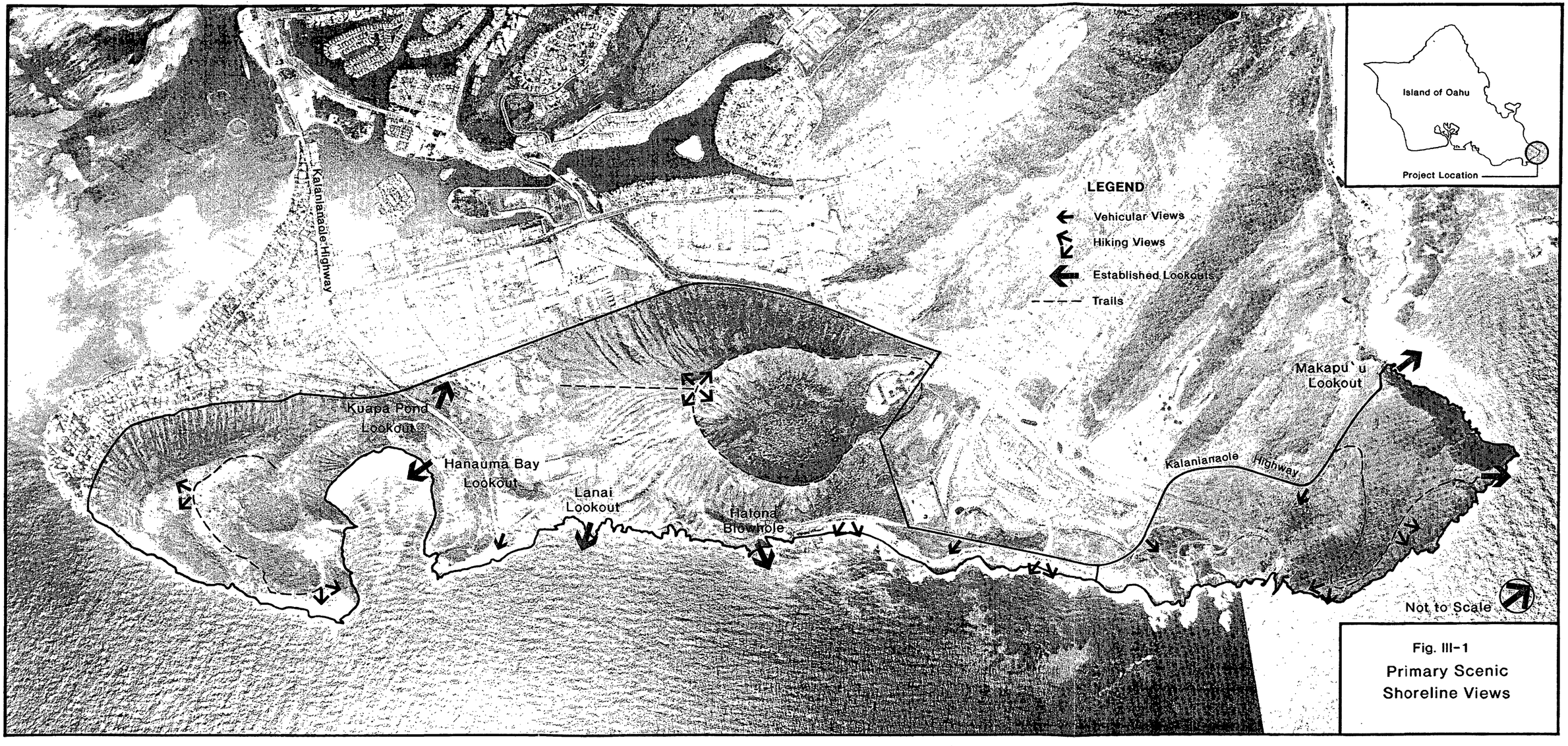


Fig. III-1
Primary Scenic Shoreline Views

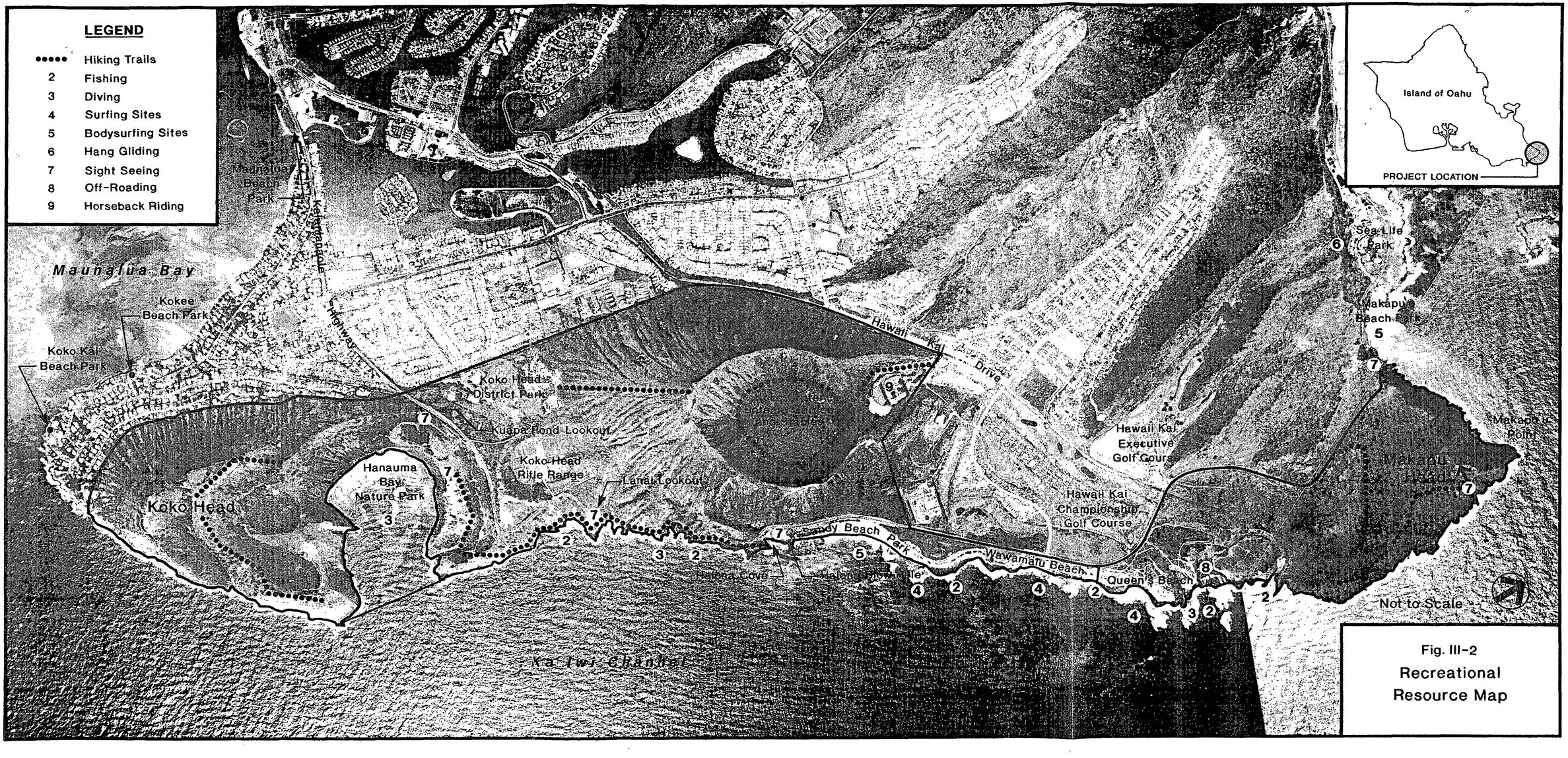


Fig. III-2
Recreational
Resource Map

6. Hang Gliding

The cliffs above Makapu'u Beach Park and Sea Life Park have gained distinction for offering some of the best hang gliding in the world. The steady tradewinds which bank off these cliffs are ideal for sustaining the delicate aircraft for hours. Cliff summits are accessible by private jeep trail from Kamehame Ridge.

7. Off-road Vehicles (ORV's)

A network of dirt trails has been created throughout Queen's Beach and Kealakipapa Valley by off-road enthusiasts. Two principle areas where riders have created trail systems are in the area mauka of Kaloko Beach, and the area surrounding Ka'ili'ili Bay and Kaho'ohaihai Inlet. In spite of efforts by the landowner to prevent access by placing boulders at access points, ORV use continues. Many of the trails in both areas are wide, while some can only accommodate motorcycles.

C. Recreation Facilities

As a natural recreational setting, the study area has attracted the development of a variety of recreational facilities. These existing recreational facilities are divided and discussed in the following section in order of their respective City, State, Federal, or private management jurisdiction.

1. City and County of Honolulu

a. Maunalua Bay Beach Park

Although it is outside the designated study area, this City and County park is mentioned because of its proximity and importance to the Maunalua Bay boat launching ramp. The ramp is on State land and is maintained by the Department of Land and Natural Resources (DLNR) Boating and Ocean Recreation Division, but some support facilities are on City property. The City Beach Park consists of a strip of land between Kalanianaole Highway and the State property, and of three separate parcels to the east and west along the shoreline. The shoreline fronting these areas is a mixture of coral rubble, mud and sand. There is a small cove toward its eastern extent. Park facilities include one comfort station and picnic facilities. Maunalua Bay Beach Park's total area is about 5 acres.

b. Koke'e Beach Park and Koko Kai Beach Park

These two small City and County parks are located along the rocky Portlock shoreline and provide access to the ocean for surfers, divers, and fishermen. They consist of vacant lots with no support facilities. Koke'e Beach Park is 0.5 acres, with 200 lineal feet of rocky shoreline. Koko Kai Beach Park is 0.6 acres, with 150 feet of lineal shoreline.

c. Koko Head Regional Park

Koko Head Regional Park encompasses approximately 1,265 acres which make up all of the study area, excluding the Ka Iwi site. It includes Hanauma Bay Nature Park and Marine Life Conservation District, Sandy Beach Park, Koko Crater Botanical Gardens, Koko Head District Park, Koko Head Rifle Range, Koko Head Job Corps Center, Koko Head Riding Stables (private), Halona Cove, and Wawamalu Beach. More remote locations, including the summits of Koko Head and Koko Crater, are accessible only to those with special permission for access or whom are brave enough to make the challenging hike. These resources are discussed individually as follows:

i. Hanauma Bay Nature Park and Marine Life Conservation District

Hanauma Bay is one of the most popular and interesting recreational areas on Oahu. The naturally protected basin of the bay is an excellent example of the development of a Hawaiian fringing reef and is ideal for viewing reef fishes. In 1967, the State Department of Land and Natural Resources designated 101 acres of the bay's underwater basin as a Marine Life Conservation District and established the Hanauma Bay Underwater State Park. Special controls are maintained to protect this resource, including restrictions on any form of fishing.

A trail along the wave cut terrace on the eastern side of the bay leads to an area called Queen's Bath, or what is commonly known as the "Toilet Bowl." This geologic curiosity is the remnant of a collapsed lava tube which has been sculpted into a smooth lava rock pool in which the water ebbs and surges with waves. For hikers who make the trek, it is an enticing, if not hazardous, adventure to ride the white-water surges in the pool.

A similar trail on the western side of the bay leads to a semi-circular cove where waves frequently break on the rocks with enough force to send plumes of white-water high into the air. The churning motion of water in the cove is said to resemble a boiling cauldron; hence the cove has been dubbed "Witches' Brew."

In recent years there have been concerns that the park has been over-used; hence in 1990, new controls were established to protect the bay. Presently, the park is closed a half-day on Wednesdays for park maintenance. Other limits on park use include new controls on automobile parking, on the number of commercial vehicles, and on drop-offs of commercial tour company patrons. At one point, non-resident visitors were charged an admission fee and, while this is no longer the policy, the issue remains controversial.

Park facilities include 327 parking stalls, picnic areas, a food concession, caretaker's quarters, several comfort stations, trails, a grassed volleyball court, two lifeguard towers, and miscellaneous facilities.

ii. The Koko Head Rifle Range

The Koko Head Rifle Range, which is located within Kahauloa Crater, consists of about 20 acres of ranges for pistol, skeet, and silhouette shooting. Members of the police and judiciary train there during weekdays when public use is low. In March of 1991, the covered pistol range was closed due to concern about spent projectiles found in the Hanauma Bay parking lot. However, the public is accommodated on weekends and holidays at the adjacent combat range.

With increasing recreational use of Hanauma Bay and the surrounding area, the County feels that the location of the range may now be inappropriate. The County plans to eventually phase out the range, with the hope that the State will take the initiative to provide space for a new range in another location.

iii. Koko Head District Park

This park consists of about 40 acres of playing fields, basketball/volleyball courts, and recreation buildings including one office, two buildings for classes, and a gymnasium.

iv. Hawaii Job Corps Center

Consisting of about 30 buildings, the center, located on Koko Head Crater Road, was previously leased to the Federal Government for job training. After the Federal Government vacated the facility, the City and County had hoped to turn the area into a residential camp (short-term accommodations for scouts, seminar participants, and school students). More recently, however, it was proposed that some of the buildings be used for Rehabilitation (Drug/Alcohol). Currently, the Police and Parks & Recreation Water Safety Division occupy a few of the buildings, pending a decision by the mayor.

v. Kōko Crater Botanical Gardens

A botanical garden and plant collection is located on approximately 65 acres within Koko Crater and on part of the 45 acres of the outer crater. These collections are generally grouped according to geographic and climatic zones, e.g. South African, Hawaiian, succulents and cacti. There are currently about 1,000 species represented. A public hiking and walking trail winds through the gardens, leading to a loop trail within Koko Crater. Horseback riding is also permitted. Access to the crater is via a narrow paved driveway from Kealahou Street.

A summary Master Plan report for the botanical gardens proposed the following improvements:

- Expand plant collections
- Construct a visitor center
- Provide an interpretive center
- Provide interpretive exhibit areas
- Create an integrated circulation system

vi. Halona Cove Blowhole and Lookout

This site, located halfway between Hanauma Bay Nature Park and Sandy Beach Park, is accessed by pulling off Kalanianaole Highway. A tiny sand beach is situated between Halona Point and the cliffs of the Blowhole Lookout. The cove is accessible by climbing down the cliffs or, on a calm day, by traversing the wave-cut terrace from the Blowhole. It offers a spot for swimming, diving, and pole-fishing. While it has no park

facilities and is not designated an official "park," the lookout and beach are maintained by the City and County.

vii. Sandy Beach Park

Sandy Beach is a very popular bodysurfing area and attracts large crowds during holidays, weekends, and contest events. There is some surfing and shore fishing along this section. Swimming is extremely dangerous during high surf because of the heavy breakers and currents. The grassed field mauka of the road through the park is a popular kite flying location. This City and County park encompasses about 29 acres and has 4 acres of sandy beach. Park facilities include two comfort stations and 186 parking stalls.

viii. Wawamalu Beach

Wawamalu Beach is located on City and County property, but it is not an official "park" since it remains undeveloped. It is located between Kaloko and Sandy Beaches, and is bordered by Kalanianaole Highway on one side and by a rough lava shelf on the ocean side. The beach is good for sunbathing and fishing, while the offshore area offer surfing opportunities, but swimming is difficult and dangerous due to strong currents and sharp rocks on shore. Nevertheless, the beach remains popular because it can be reached by simply pulling off the highway. The unpaved, informal parking area fronting Wawamalu Beach near the remains of the Wawamalu Ranch wall is also used to access the shoreline portions of the Ka Iwi site.

d. Makapu'u Lookout

This lookout is located on about 0.65 acres of land between Makapu'u Beach Park and Hawaii Kai Golf Course, and it can be accessed by pulling off of Kalanianaole Highway. While it is owned by the City and County, it is maintained by the State DOT, Highways Division. This lookout gives sightseers easy access to one of the most spectacular views of the Windward Coast, from Waimanalo to the Kaneohe Marine Corps Air Station on the Mokapu Peninsula. The steep Ko'olau cliffs and the offshore Manana and Kaohikaipu islands are among the most photographed areas in the State.

e. Makapu'u Beach Park

Though not within the study area, the immediately adjacent Makapu'u Beach is renowned for its bodysurfing waves which attract bodysurfers throughout the islands. For this reason, board-surfing which can conflict with bodysurfing is prohibited. The use of paipo and bodyboards are permitted if they are 3 feet in length or less and do not have a bottom fin. The waves at Makapu'u Beach often produce dangerous rip currents; warnings are posted to alert the public during these conditions.

Most of the nearly 47 acres of the City and County Makapu'u Beach Park is steep and rocky. Usable portions of the park includes approximately one acre of sandy beach, one acre of camping space, and one acre of picnic space.

2. State of Hawaii

a. State Parks

i. Makapu'u State Wayside

The only state park in the study area is Makapu'u State Wayside. This 38.2 acre park encompasses the summit area and eastern-facing cliffs of Makapu'u Head, as well as the one-lane road which weaves up to the site from Kalanianaole Highway. It excludes the 5,000 square foot parcel on which the lighthouse building and grounds are located. The park features two recently installed lookout platforms that have railings and are accessible by the physically challenged. The lookouts face northwest and northeast and provide panoramic views of the Windward coastline, the offshore islands of Kaohikaipu and Manana, the islands of Molokai, Maui and Lanai, the lighthouse itself, and the ocean. Public access to the wayside is provided to hikers via the Makapu'u Headland Road. There is no parking or comfort stations available at the park.

b. Department of Transportation (DOT)- Highways Division

i. Kuapa Pond and Lanai Scenic Lookouts

Immediately adjacent to Kalanianaole Highway, Kuapa Pond and Lanai lookouts are managed by the State DOT, Highways Division as part of the highway. In addition to sightseeing, Lanai Lookout is currently used by

fishermen and scuba divers as a parking area to access the rocky shelf below. A time limit on parking has been established at Kuapa Pond Lookout to prevent its use by visitors to Hanauma Bay Nature Park.

3. Private Jurisdiction

a. Koko Crater Equestrian Facility

Although located in the City and County park, the equestrian facility on 10 acres of the outer portion of Koko Crater is operated as a private concession awarded through a bidding process. The facility is used to board horses as well as provide private riding and training programs. The stables are not available to the general public for recreational riding. Riders use trails within the botanical gardens as well as within the stables' 10-acre area.

b. Hawaii Kai Golf Course

There are two 18-hole golf courses located opposite the Ka Iwi site on Kalanianaole Highway: the Hawaii Kai Championship Golf Course and the Hawaii Kai Executive Golf Course. The Hawaii Kai Championship Golf Course is bordered on its mauka side by a drainage canal and on the east by Kalanianaole Highway, with six holes on the west side of Kealahou Street. The Hawaii Kai Executive Golf Course is located mauka of the drainage canal. The two courses share clubhouse facilities and a parking area which is accessible from Kalanianaole Highway.

c. Sea Life Park

This privately owned and operated marine park is located immediately outside of the study area just across the highway from the entrance to Makapu'u Beach Park. Features of the park include a 300,000 gallon Hawaiian Reef exhibit, Ocean Theater, a Hawaiian Monk Seal care center, and various other marine life exhibits designed to arouse visitor interest in the ocean. Besides its entertainment features, Sea Life Park's Oceanic Institute is also a world-class research facility.

D. Interpretive/Education Programs

1. Hanauma Bay Nature Park

In 1989, a volunteer organization called the Friends of Hanauma Bay initiated the Hanauma Bay Educational Program. The program educates visitors about how to interact with the area's marine life and minimize harm to the environment. Volunteers pick up trash along the shoreline, encourage visitors to feed fish appropriate food, and guide free hourly tours of the bay area to inform visitors about its unique features. The Hanauma Bay Educational Program also services the public school system. The program began through the UH Sea Grant College Program which funds such programs until they can become independent. As of March 1996, Sea Grant will discontinue funding of the Hanauma Bay Educational Program.

The Nature Conservancy of Hawaii manages a small crater above the Hanauma Bay Nature Park which exhibits periodic wetland conditions and contains specimens of the endangered water fern *Marsilea villosa*. The Conservancy monitors the area, but does not use it for interpretation/education.

2. Koko Crater Botanical Gardens

The Friends of Foster Gardens conducts field trips into the Koko Crater Botanical Gardens on a quarterly basis. Also involved in tours of the botanical gardens is the Hawaii Cactus and Succulent Society and classes from the Honolulu Community College. The Sierra Club has service and work projects in the crater from time to time. A summary report dated January 1991 has been prepared by the City and County for the botanical gardens, which includes plans for an extended trail network and an interpretive center. To date, there has been no action toward implementing these recommendations.

3. Queen's Beach Shoreline

The Waikiki Aquarium, which sponsors natural history study tours around Oahu, conducts frequent excursions to the Queen's Beach shoreline. Guides at the aquarium consider this coastline to be an ideal resource for learning about Hawaii's marine shoreline ecosystem. Themes of some of their excursions include "In Search of Wild Limu," "Rocky Shores and Sandy Beaches/Life at the Edge," and "Natural History of Beach Drift." The Hawaii Nature Center also conducts trips to the site.

4. Makapu'u Lighthouse

Several years ago, public access to the Makapu'u Lighthouse was granted under a licensing agreement between the U.S. Coast Guard and the Hawaii Maritime Center for educational and recreational purposes on a limited basis. Up until the opening of the Makapu'u State Wayside in 1991, the Hawaii Maritime Center was involved in restoring the Makapu'u Lighthouse, maintaining the Lighthouse Access Road, training docents and preparing information brochures for tours of the lighthouse. However, because of liability concerns stemming from the inadequacy of the road to safely accommodate both the Center's planned mini-van tours and the general public hiking to the State Wayside, the Hawaii Maritime Center decided to implement their program on a more limited scale. Hence, the mini-van tours were not implemented. Still, it is apparent that there is significant interest in offering tours of the Makapu'u Lighthouse.

5. Other Organizations

Other groups which have been known to use the study area as an education resource include the Moanalua Gardens Foundation, the Hawaii Audubon Society, the Department of Education, and various hiking clubs within local high schools around Oahu.

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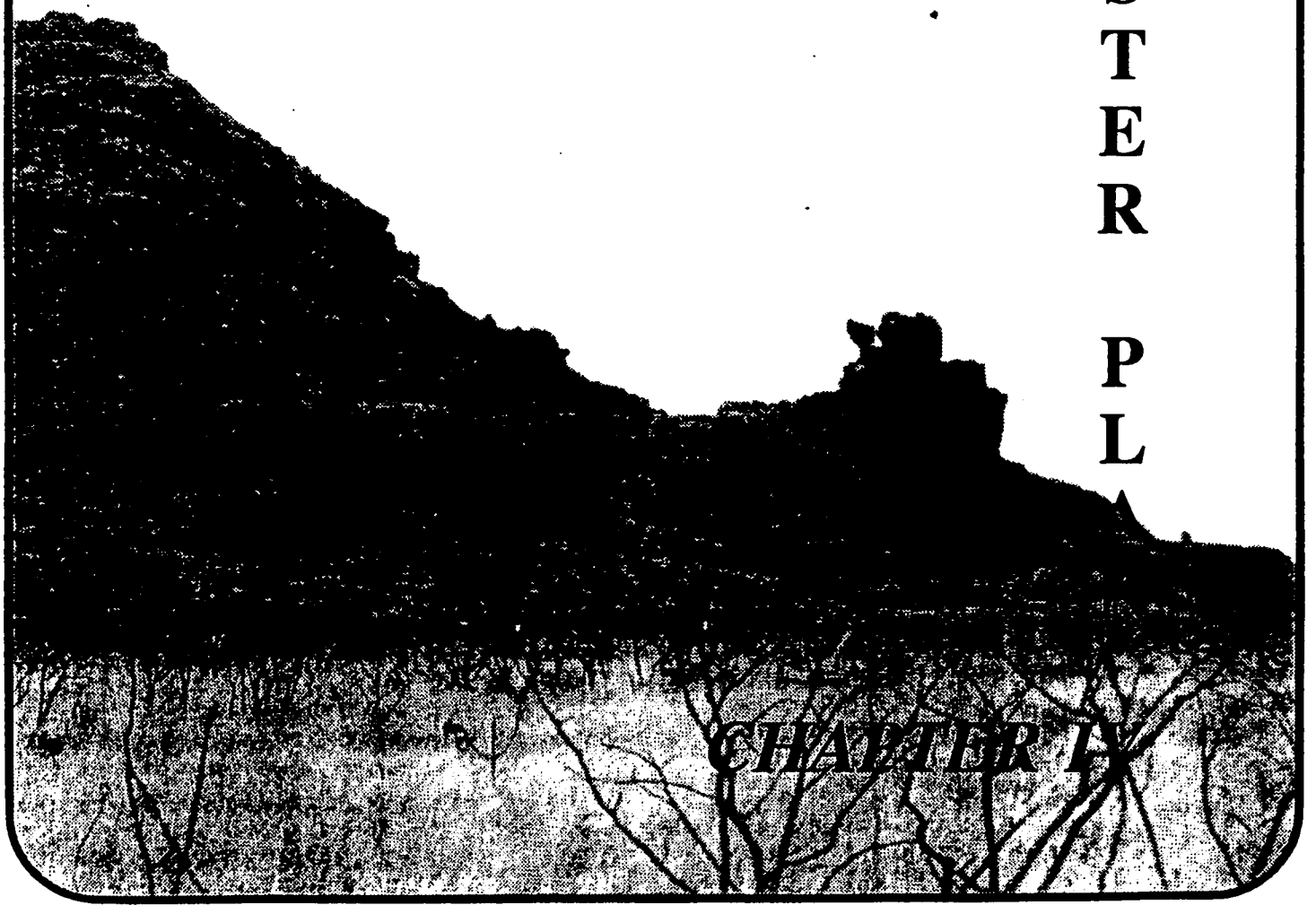

CHAPTER 1

IV. RECREATIONAL DEMAND

A. Present Recreation Demand

In general, determinants of recreation demand include trends in population, age factors, and perceived barriers to specific recreation activities. These determinants are examined in this section in terms of both resident and visitor recreation participation.

To prepare the recreation survey as part of the 1990 Statewide Comprehensive Outdoor Recreation Plan (SCORP), Community Resources, Inc. (CRI) conducted two separate recreation surveys in 1989; one which targeted residents statewide, and the other which targeted visitors to Hawaii. Both surveys were designed to trace recreation patterns by discovering which activities people participated in and which geographical area people preferred for recreational activities.

1. Resident Recreation Participation

a. Population

One of the major determinants of recreation demand is population growth. The resident population on Oahu increased steadily between 1980 and 1990. The resident population of the City and County of Honolulu grew from 762,565 persons in 1980 to 836,231 persons in 1990, an increase of approximately 9.6 percent. Population growth in the Hawaii Kai neighborhood has followed a similar trend, increasing from 25,603 persons in 1980 to 27,432 persons in 1990, an increase of approximately 7 percent. By contrast, the Waimanalo neighborhood population decreased from 9,132 persons in 1980 to 9,055 in 1990, a decline of approximately 1 percent (DBEDT, 1990, 1993-94).

b. Resident Recreation Survey

CRI interviewed 1,017 Hawaii residents by telephone during November and December of 1989. Of this total, 232 of the interviews were conducted with Oahu residents. The data collected by this survey is used in this section to discern current recreation patterns of East Oahu residents. Table IV-1 on the following page summarizes the percentage of residents involved with reported recreational activity in the East Honolulu and Koolaupoko planning areas on Oahu. The numbers include respondents who were personally involved in the activity, as well as other household members reported to have been involved. For comparison purposes, the Central/East Urban Honolulu Planning Area, which

is the most densely populated area and has the most recreational facilities, has been included in the table (DLNR, SCORP, 1990).

TABLE IV-1
SUMMARY OF RESIDENT RECREATION PARTICIPATION
EAST HONOLULU, KOOLAUPOKO AND CENTRAL/EAST URBAN HONOLULU PLANNING AREAS

Recreation Activity	East Honolulu		Koolaupoko		C./E. Urban Honolulu	
	Weekday	Weekend	Weekday	Weekend	Weekday	Weekend
Beach Activity	5%	2%	29%	17%	52%	67%
Diving/Snorkeling	33%	0%	67%	67%	0%	0%
Surfing	33%	33%	17%	11%	0%	11%
Camping	N/A	0%	N/A	67%	N/A	0%
Ocean Boating	0%	17%	25%	33%	0%	17%
Paddling (canoe/kayak)	50%	40%	0%	20%	50%	40%
Shore Fishing	67%	0%	0%	40%	0%	40%
Bodysurfing/bodyboarding	17%	25%	33%	42%	33%	42%
Windsurfing	N/A	33%	N/A	0%	N/A	33%
Jetskiing	N/A	N/A	N/A	N/A	N/A	100%
Hiking	0%	17%	33%	0%	0%	33%
Hunting	N/A	N/A	N/A	N/A	N/A	N/A
Field Games	17%	6%	11%	18%	39%	41%
Court Games	17%	14%	8%	21%	29%	57%
Public Pools	0%	0%	14%	0%	57%	33%
Golf	6%	8%	33%	15%	22%	15%
Walking/Running	9%	7%	20%	20%	44%	50%
Bicycle Riding	7%	0%	34%	38%	17%	19%

N/A = Not Available

Source: Department of Land and Natural Resources; State of Hawaii. State Recreation Functional Plan Technical Reference Document and State Comprehensive Outdoor Recreation Plan (SCORP) December 1990.

As the table shows, shoreline recreation activities have, by far, the highest percentage of participants. On an island-wide basis, Central/East Urban Honolulu is the most frequently reported site of Oahu's most popular activities. Exceptions

are bike-riding, which tends to occur in communities far from Honolulu, and golf, for which West Honolulu is the favored site. For surfing, bodysurfing, fishing, and paddling, East Honolulu represents an important resource (DLNR, SCORP, 1990).

As part of the survey, respondents were also asked whether they felt there was some barrier to their own or a household members' pursuit of outdoor recreation. On Oahu, the percentage of respondents indicating perceived barriers was 23% for beach activities, 16% for park activities, 14% for ocean swimming, and 16% for bicycling. Barriers to beach recreation include beach and park activity complaints focusing on crowding, facility conditions, and lack of bike paths (CRI, 1989).

2. Visitor Recreation Participation

a. Population

The visitor population grew especially fast since 1980 and peaked in 1990. The State of Hawaii Data Book, published by the Department of Business, Economic Development and Tourism, includes a table which measures the number of visitors staying overnight or longer anywhere in the State. Oahu's visitor arrivals totalled 3,934,504 persons in 1980 and grew to 5,350,940 persons in 1990, an increase of approximately 36 percent. In 1992, the visitor count fell to 4,884,270 persons. Oahu's average daily visitor census, which measures the number of visitors in the State on any given day, totalled 66,680 persons in 1980 and grew to 87,400 persons in 1990, an increase of approximately 31 percent. As of 1993, the count declined to 79,070 persons. Despite the recent decline in visitor counts, visitors, combined with residential population growth, has placed increased demand on Oahu's recreational resources (DBEDT, 1988, 1990, 1992, 1993, 1994).

b. Visitor Recreation Survey

The second survey conducted by CRI targeted visitors and was conducted at Honolulu International Airport in August 1989. A total of 105 Japanese and 487 Non-Japanese were interviewed. Overall outdoor recreation patterns for Oahu indicated that Waikiki is still the focus of most visitor outdoor recreation, but strong roles are played by East Honolulu in the areas of beach activities, bodysurfing, hiking, golfing, jetskiing, and especially snorkeling, due to the popularity of Hanauma Bay (CRI, 1989).

B. Future Recreation Demand

Changes in the composition of Hawaii's resident population are expected to affect future recreation demand. Median age of the resident population is forecast to rise from 31.9 in 1990 to 34.1 in 2000. With early retirements and longer life expectancies, older people will have more time for leisure. Some implications of these population changes on recreation include an increase in the demand for golf, the continued popularity of walking for recreation and exercise, and an increase in leisure time spent on relaxing, home-based, non-physical types of activities. Regarding the latter trend, a survey of Oahu residents by the City and County Department of Parks and Recreation revealed that 46 percent of survey respondents favored passive recreational facilities that are used for picnicking or cultural activities.

Due to declining birth rates, the population under 15 years of age is projected to fall from 22.5 percent of the total population to 20.4 percent in 2000. Declining birth rates in Hawaii indicate a change in recreation patterns, particularly since children are often a motivating force for adult recreation. The implications of this include possible declines in the need for new playing courts, fields and other facilities used primarily by the young.

The City and County of Honolulu Department of Parks and Recreation is currently focusing upon the improvement, expansion, and acquisition of existing and future beach park areas. This is in keeping with past surveys of Oahu residents which revealed a preference for beach activity. However, alternatives to "going to the beach" need to be developed according to SCORP, including areas for picnicking, camping, hiking, mountain biking and the appreciation of scenic, natural and cultural resources.

Development of alternative recreation opportunities is especially important as population increases. Based on 1988 M-K projections from the Department of Business, Economic Development and Tourism, Oahu's resident population is expected to increase to 999,500 by 2010. Forecasts of the most likely future based on market forces and the extent to which those forces have been accommodated in the past, it is estimated that the number of visitor arrivals will increase to 11.6 million visitors by 2010. That average daily visitor census is expected to be about 260,000. The increase on Oahu is expected to be 38.1 percent. These projections, however, were calculated prior to the recent decline in the economy, making these figures appear high. Updated information, however, is not available, making these the most current projections.

Within East Honolulu and neighboring Koolaupoko, Table IV-2 provides a broad indicator of projected recreational needs (high, medium, low) in comparison with the rest

of the County. Projected demands were compiled by the State Recreation Functional Plan and SCORP of December 1990.

TABLE IV-2

PROJECTED RECREATIONAL NEED AS OF 1990

	Recreation Categories	Short-term Needs		Island of Oahu	
		E. Honolulu	Koolaupoko	1990-1995 Short-term	1996-2000 Long-term
SHORELINE/OCEAN	Swimming, sunbathing, picnicking	High	High	High	High
	Diving/Snorkeling	Medium	Medium	Medium	Medium
	Surfing	Medium	Medium	Medium	Medium
	Beach Camping	Low	High	High	Medium
	Boat Launches	Medium	High	Medium	High
	Boat Moorages	Medium	Medium	Medium	High
	Paddling (canoe/kayak)	Medium	Medium	Medium	Medium
	Shoreline Fishing	High	Medium	Medium	High
	Bodysurfing/bodyboarding	High	High	High	High
	Windsurfing	Low	Low	Low	Low
	Jetskiing	Low	Low	Low	Low
MAUKA/URBAN/OTHER	Hiking	Medium	Medium	Medium	Medium
	Hunting	Low	Low	Low	Low
	Upland Camping	Low	Medium	Medium	Medium
	Upland Picnicking	Medium	Medium	Medium	Medium
	Field Games	Medium	High	High	High
	Court Games	Medium	Medium	High	Medium
	Playground equipment	Low	Medium	Medium	Low
	Swimming Pools	High	High	High	High
	Golf	Medium	Medium	Medium	Medium
	Walking/jogging/running	Medium	High	High	High
	Bicycling	Medium	High	High	High

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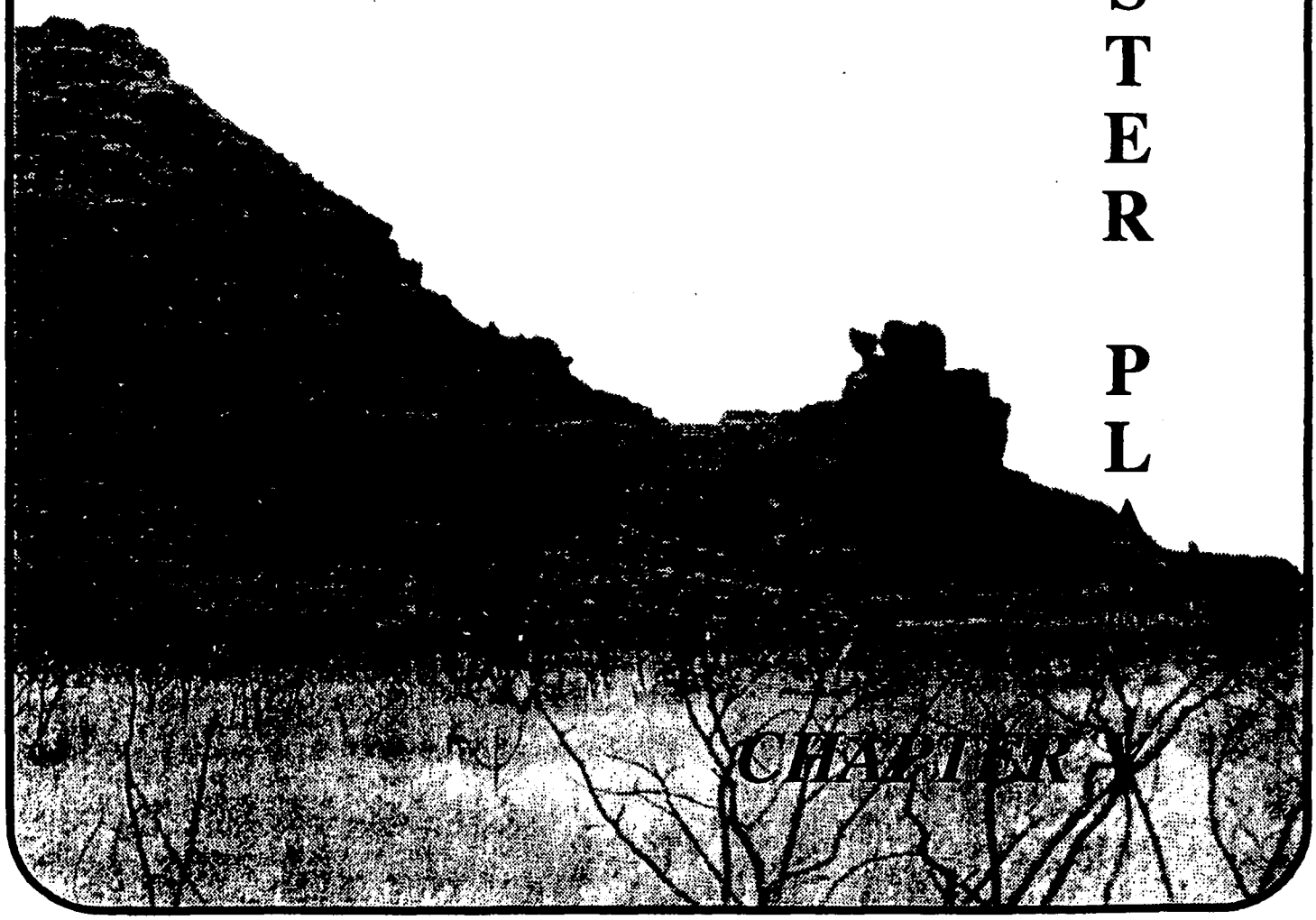

CHAPTER X

V. LAND USE POLICIES

The study area is encompassed by layers of governmental land use plans and programs which establish the regulatory framework within which the Ka Iwi Master Plan was developed. In this section, pertinent aspects of these plans and programs are discussed to delineate this framework and establish the bases for the objectives and policies presented in this plan.

Several levels of State and municipal land use controls have been established for the study area, including the proposed Ka Iwi site, as discussed below.

A. State Land Use District Classification

The State Land Use Law is intended to preserve, protect, and encourage the development of lands in the State for uses which are best suited to the public health and welfare of Hawaii's people. All lands in the State are classified in one of four districts: Urban, Agricultural, Rural and Conservation. Most of the study area is located within the Conservation District. However, within the proposed Ka Iwi site, the Queen's Beach area is located within the Urban District. (see Figure V-1) Control over land uses in Urban Districts is relegated to the County in which they are located; in this case, the City and County of Honolulu.

Conservation Districts include lands which are "necessary for protecting watersheds, and water sources; preserving scenic and historic areas; providing park lands, wilderness, and beach reserves; conserving endemic plants, fish and wildlife; preventing floods and soil erosion; forestry; open space areas whose existing openness, natural condition, or present state of use, if retained, would enhance the present or potential value of abutting or surrounding communities, or would maintain or enhance the conservation of natural or scenic resources; areas of value for recreational purposes; other related activities; and other permitted uses not detrimental to a multiple use conservation concept." (Chapter 205-2, Hawaii Revised Statutes).

Within the Conservation District designation, there are several subzones - Protective (P), Limited (L), Resource (R) and General (G). Two subzones, (L) and (G) encompass the study area. Areas designated (L) include the southwest slope of Koko Head, Hanauma Bay Beach Park, the slopes of Koko Crater and Sandy Beach. All other areas within the Conservation District are designated (G). The objective of the (L) subzone is to "limit uses where natural condition suggests constraints on human activities" and includes lands which are "susceptible to floods and soil erosion, or undergoing major erosion damage; (and l)ands necessary for the protection of the health, safety and welfare of the public

by reason of the land's susceptibility to inundation by tsunami, flooding, landslides, volcanic activity or general slopes of 40 percent or more" (HAR §13-5-12). The objective of the (G) subzone is "to designate open space where specific conservation uses may not be defined, but where urban use would be premature" (HAR §13-5-14).

Use of Conservation Districts as regulated by the Department of Land and Natural Resources through the Conservation District Use Application, are listed on Table V-1.

TABLE V-1

CONSERVATION DISTRICT LAND USES
CHAPTER 13-5, SUBCHAPTER 3
IDENTIFIED LAND USES

Protective (P) Subzone	Data Collection Fishponds Kuleana Land Use Landscaping, Removal of Noxious Plants Moorings and Aids to Navigation Public Purpose Uses Sanctuaries Signs Structures, existing Structures, accessory Subdivision of Consolidation of Property Tree Removal
Limited (L) Subzone (also includes uses in (P) Subzone)	Agricultural Botanical Gardens and Private Parks Erosion Control Landscaping and removal of Noxious Plants Seawalls and Shoreline Protection Single Family Residence Structures, accessory
Resource (R) Subzone (also includes uses in (P), and (L) subzones)	Aquaculture Artificial Reefs Astronomy Facilities Commercial Forestry Landscaping Marine Construction Mining and Extraction Single Family Residence
General (G) Subzone (also includes uses in (P), (L) and (R) subzones)	Open Space Land Use not Previously Identified

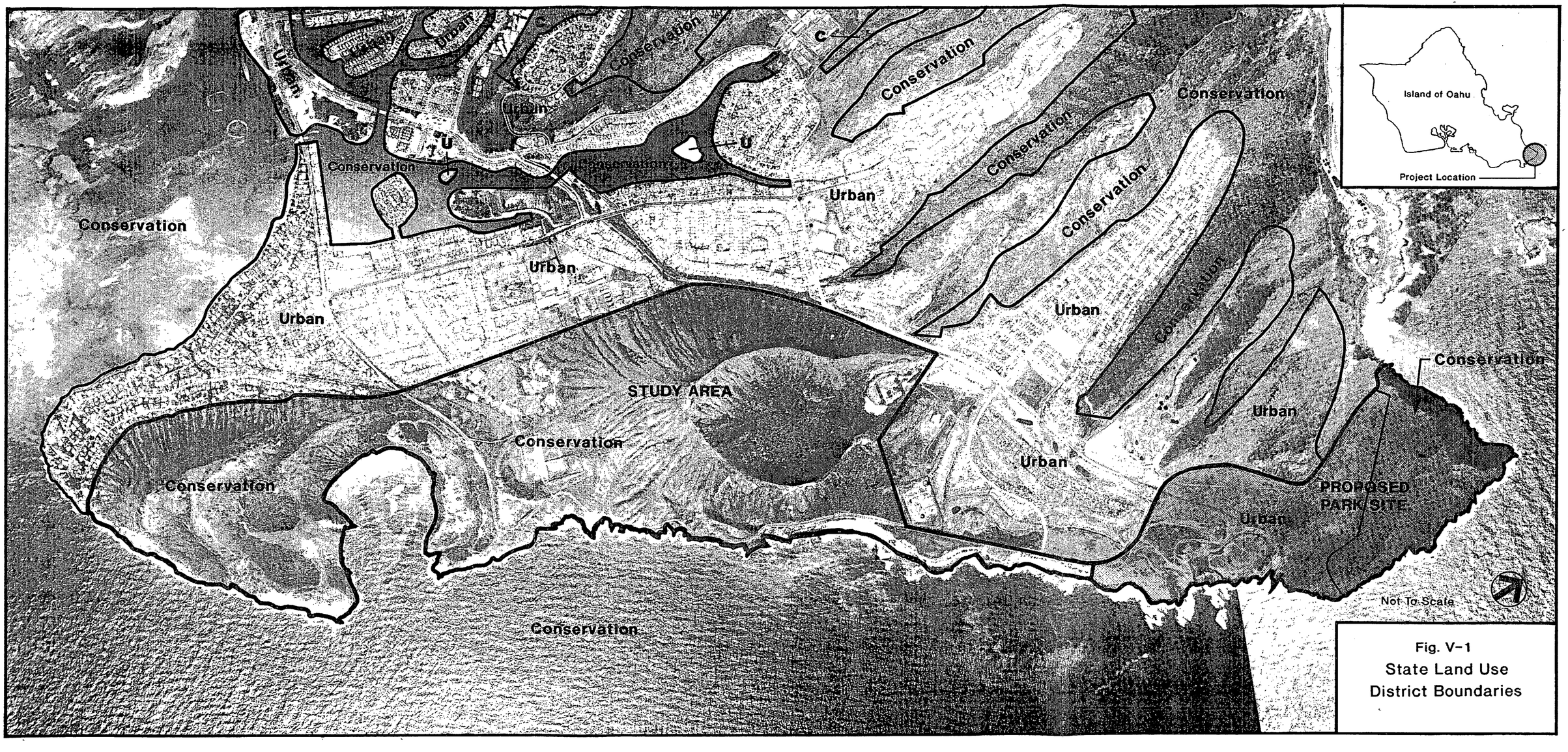

Fig. V-1
State Land Use
District Boundaries

During the 1992 State Land Use District Boundary Review, a Priority 2 recommendation was made to reclassify the Queen's Beach area as Conservation based on the conclusion that the area contains "significant scenic, recreational, coastal, and open space resources." The proposed reclassification of this area to the Conservation District would also be consistent with the County's "Preservation" designation on its Development Plan Land Use Map.

According to the 1992 State Land Use District Boundary Review for Oahu, Priority 2 areas are those which: (1) are already protected because of government or non-profit ownership with conservation objectives; (2) although significant, are not of high quality or abundance as other areas or not as critical to meeting specific conservation objectives; (3) are believed or known to contain resources but require further survey work to verify boundaries or resources; (4) are high quality but resource constraints limit the number of petitions which can be prepared; or, (5) other methods are available to protect the identified conservation values. To date, the Office of State Planning has only petitioned Priority 1 areas for redesignation.

B. City and County of Honolulu Development Plan Land Use

The City and County of Honolulu Development Plan Land Use (DPLU) Map depicts a land use pattern that is consistent with the objectives and policies of the City and County of Honolulu General Plan. The DPLU Map for East Honolulu places the entire study area, including the proposed Ka Iwi site in "Preservation." (See Figure V-2).

According to Chapter 24, Article 1, Development Plan Common Provisions, "Preservation" areas include the following types of lands:

a. Lands necessary for protecting watersheds, water resources and water supplies.

b. Lands necessary for the conservation, preservation and enhancement of sites with scenic, historic, archaeologic or ecologic significance.

c. Lands necessary for providing and preserving park lands, wilderness and beach reserves, and for conserving natural ecosystems of endemic plants, fish and wildlife, for forestry, and other activities related to these uses.

d. Lands having an elevation below the maximum inland line of the zone of wave action, and marine waters, fish ponds and tide pools of Oahu unless otherwise designated on the Development Plan Land Use Map.

e. All offshore and outlying islands of Oahu unless otherwise classified.

f. Lands with topography, soils, climate or other related environmental factors that may not be normally adaptable or presently needed for urban, rural or agricultural use.

g. Lands with general slopes of 20 percent or more which provide for open space amenities and/or scenic values.

h. Lands susceptible to floods and soil erosion, lands undergoing major erosion damage and requiring corrective attention by the State or Federal Government, and lands necessary to the protection of the health, safety and welfare of the public by reason of soil instability or the lands' susceptibility to landslides and/or inundation by tsunami and flooding.

i. Lands used for national, state or city parks.

j. Lands suitable for growing of commercial timber, grazing, hunting, and recreation uses, including facilities accessory to such uses when said facilities are compatible with the natural physical environment.

C. City and County of Honolulu Development Plan Public Facilities

The City and County of Honolulu Development Plan Public Facilities (DPPF) Map identifies public and private proposals for parks, streets and highways, major public buildings, utilities, terminals and drainage. The East Honolulu DPPF identifies several planned parks or park modifications within the study area. These include park modifications for Hanauma Bay Nature Park to be implemented within six years and park modifications for the Koko Crater Botanic Gardens to be implemented beyond six years. New park designations include one scheduled for implementation within six years at an undetermined site in the Queen's Beach area, to be called "Queen's Beach Park," as well as a new park at Makapu'u Head. The latter has already been implemented as the Makapu'u State Wayside, which encompasses approximately 38 acres at the end of the Makapu'u Lighthouse access road (see Figure V-3).

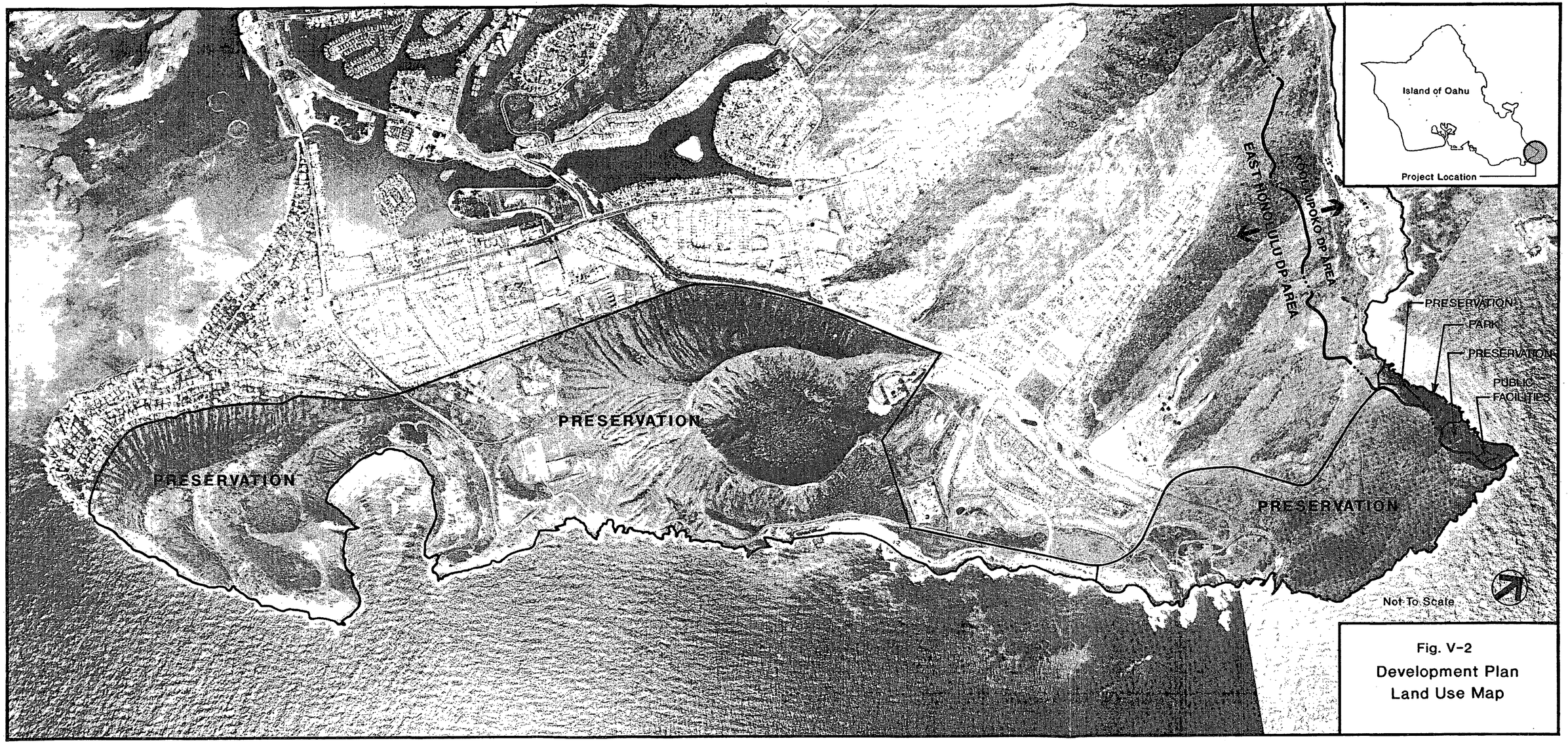

Fig. V-2
Development Plan
Land Use Map

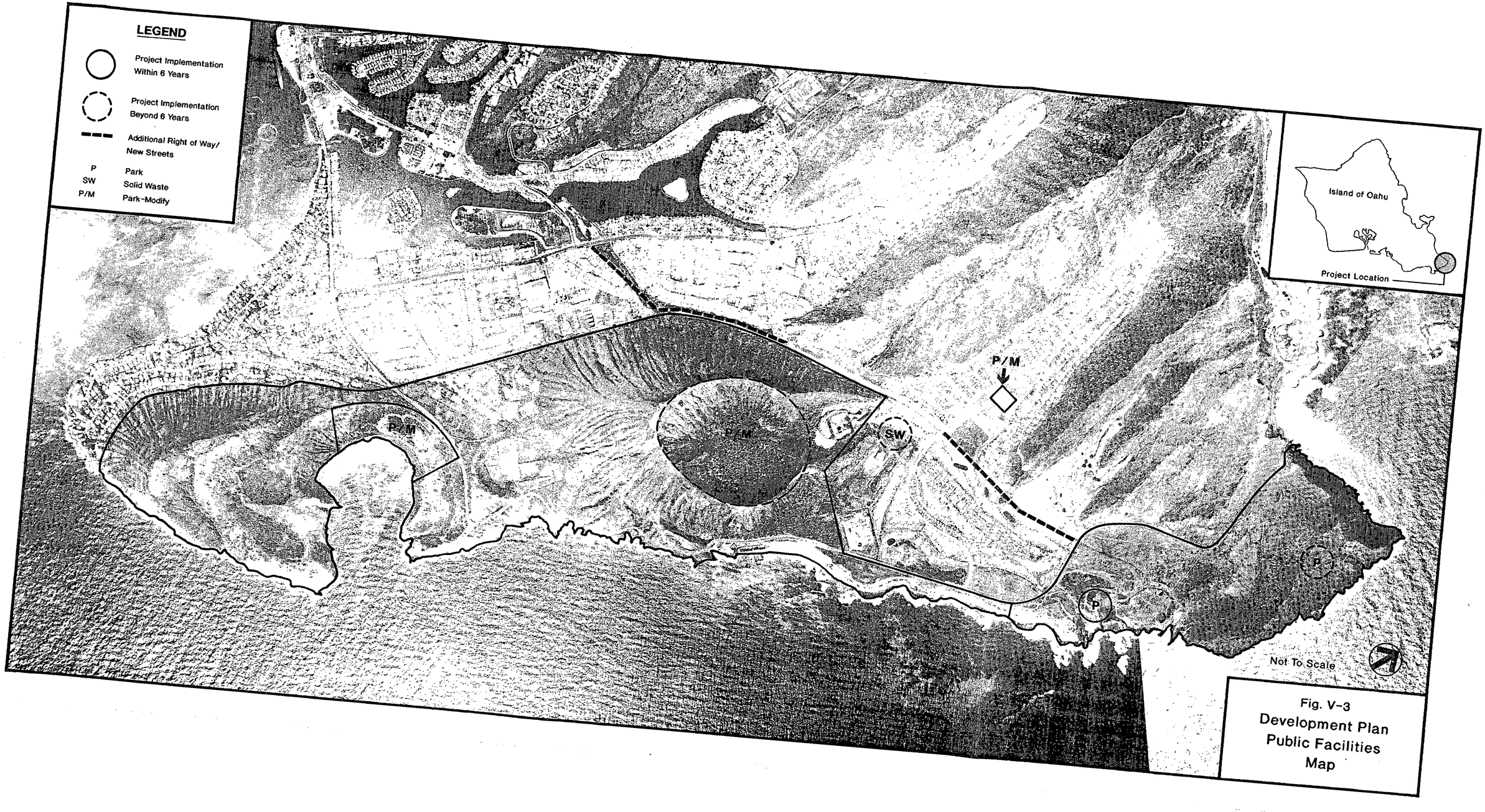

Fig. V-3
Development Plan
Public Facilities
Map

D. City and County of Honolulu Zoning

The City and County of Honolulu Land Use Ordinance and accompanying maps define the allowable uses of land zoned for residential, apartment, business, resort, industrial, agricultural, preservation, and mixed uses. Most of the study area is zoned P-1, Restricted Preservation, while the Queen's Beach area is zoned P-2, General Preservation. (see Figure V-4).

All lands within the State Conservation District are zoned P-1, in which "all uses, structures and development standards shall be governed by the appropriate State agencies." (Section 5.10-1(a) Ordinance No. 86-96). Use of lands in the Conservation District is administered by the State Board of Land and Natural Resources. Land designated Urban by the State may be zoned P-2, when it is "well-suited to the functions of providing visual relief and contrast to the City's built environment or serving as outdoor space for the public's use and enjoyment..." (Section 5.10, Ordinance No. 86-96) Principle uses for lands zoned P-2 include: Aquaculture, cemeteries and columbaria, crop production, forestry, game preserves, golf courses, livestock grazing, public uses and structures, utility installations (Type A) and Telecommunications antennas (with barriers). Golf course use would require a Plan Review Use Permit which must be approved by the City Council.

E. Special Management Area

The State Coastal Zone Management (CZM) Law (Chapter 205A, Hawaii Revised Statutes) charges the Counties with designating and administering Special Management Areas (SMA) along the State's coasts. Any "development" as defined by the Law within the SMA requires an SMA Use Permit. Within the City and County of Honolulu, the SMA Use Permit is administered by the Department of Land Utilization and the decision of its issuance is rendered by the City Council, pursuant to Ordinance No 84-4. Issuance of the SMA Use Permit is based on a development proposal's consistency with the objectives, policies and guidelines of the CZM law which encompass recreational resources, historic resources, scenic and open space resources, coastal ecosystems, economic uses, coastal hazards, and managing development. The SMA boundary is contiguous with the study area, except for a portion of Koko Crater comprising the Botanical Gardens. The Ka Iwi site is located entirely within the SMA. (See Figure V-4).

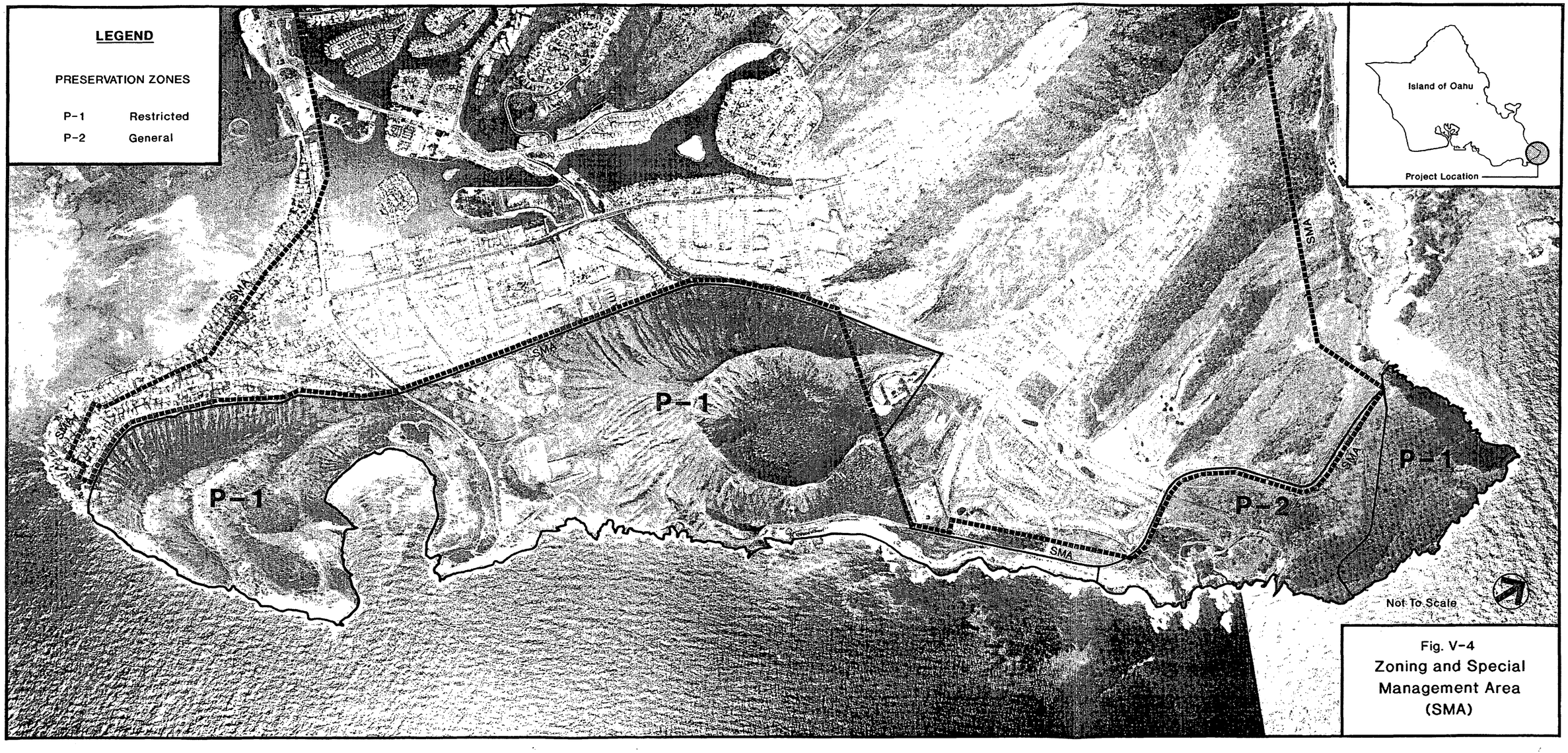

Fig. V-4
Zoning and Special Management Area (SMA)

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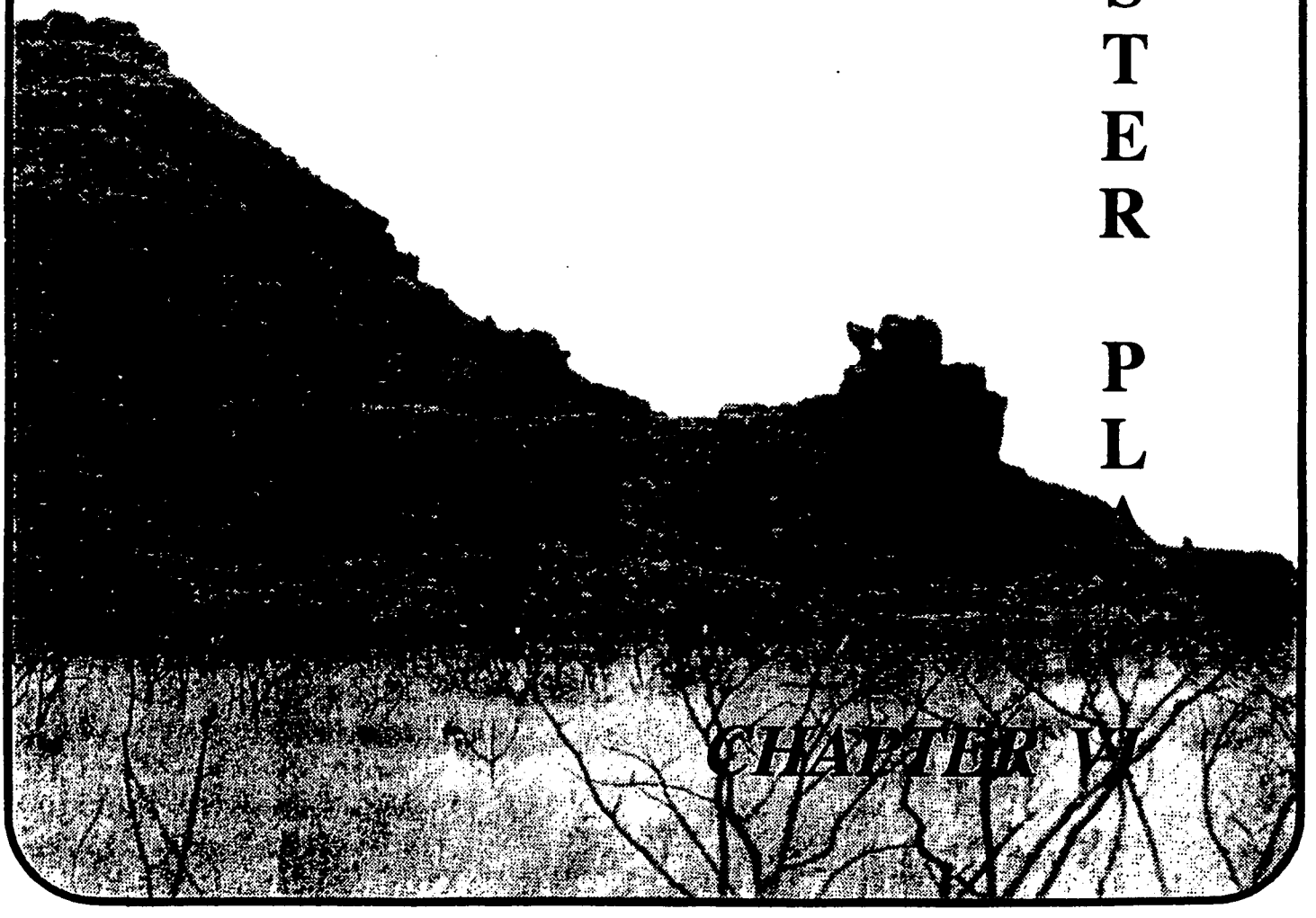

CHAPTER V

VI. EXISTING RECREATION MANAGEMENT

This section consists of a description of the major recreation providers in the State of Hawaii, including Federal, State, and County agencies, as well as selected organizations in the private sector. The descriptions were obtained directly from the State Recreation Functional Plan Technical Reference Document. Also included in this section are organizations which do not necessarily provide recreational opportunities but which play a significant role in the area, for example, through advocacy or land use regulation. Agencies and organizations involved in wetlands management are also described. Those agencies that are currently involved in providing and managing recreation in the study area are listed in Table VI-1 on the following page.

In general, Federal and State agencies have a resource management orientation toward recreation. County recreation agencies emphasize facilities and programs for activities at the regional, district, community, and neighborhood levels. Private recreation agencies and organizations either support, supplement, or add to recreation opportunities provided by public agencies or play a primary role in meeting certain recreation needs.

A. Federal Agencies

1. Department of the Interior

   a. National Park Service

   The National Park Services (NPS) is responsible for managing about 254,065 acres of land in Hawaii. Natural, historic, and cultural areas of national significance are maintained by the Park Service for public enjoyment and education. Haleakala National Park on Maui (27,220 acres) and the Hawaii Volcanoes National Park on Hawaii (214,542 acres) are the largest NPS areas in the state. The U.S.S. Arizona Memorial in Pearl Harbor, one of the most popular attractions in Hawaii, is administered by the Park Service.

   In February 1992, the NPS published their Reconnaissance Survey Ka Iwi Shoreline Study to assess the potential of incorporating the area from Hanauma Bay to Makapu'u Point into the National Parks System as the "Koko Rift Unit." The study analyzed the area against three criteria; national significance, suitability, and feasibility.

TABLE VI-1

RECREATIONAL PROVIDERS AND MANAGEMENT AGENCIES IN THE STUDY AREA

	FEDERAL		STATE		CITY & COUNTY		
	AGENCY	FUNCTION	AGENCY	FUNCTION	AGENCY	FUNCTION	PRIVATE
Maunalua Bay Beach Park			DBOR	Maintain boat ramp	DPR	Management	
Koke'e Beach Park					DPR	Management	
Koko Kai Beach Park					DPR	Management	
Hanauma Bay Nature Park and Marine Life Conservation District	NPS	studying managmnt alternatives	UH Sea Grant	Interpretive programs	DPR	Management	Bid-out snorkel concession
			DAR	Oversee MLCD			
			DBOR	Prohibit watercraft			
Koko Head Rifle Range	"	"			DPR	Management	
Koko Head District Park	"	"			DPR	Management	
Koko Crater Botancial Gardens	"	"			DPR	Management	
Koko Crater Equestrian Facility	"	"			DPR		Bid-out
Lookouts - Kuapa, Lanai, Makapu'u	"	"	DOT-Hwys.	Management			
Halona Blowhole Lookout	"	"			DPR	Management	
Halona Cove	"	"			DPR	Management	
Sandy Beach Park	"	"			DPR	Management	
Wawamalu Beach	"	"			DPR	Management	
Queen's Beach/Makapu'u Head	"	"					
Hawaii Kai Golf Courses							private
Makapu'u State Wayside			DSP	Management			
Makapu'u Beach Park			DBOR	Prohibit surfing	DPR	Management	
Sea Life Park							private
Manana and Kaohikaipu Islands			DOFAW	Manage wildlife sanct.			

Abbreviations

NPS - National Park Service
DBOR - Division of Boating and Outdoor Recreation
DOT-Hwys. - Department of Transportation - Highways Division
DPR - City and County Department of Parks and Recreation
UH Sea Grant - University of Hawaii Sea Grant
DAR - Division of Aquatic Resources
DSP - Division of State Parks
DOFAW - Division of Forestry and Wildlife

The Koko Rift Unit was found to be nationally significant based on its unique natural resources, diverse recreational opportunities and, to a lesser extent, its cultural resources. In addition, the study determined that the unit would have met the suitability criteria for a national park were it not for the fact that the majority of the area is already being managed at the State and City and County levels. Similarly, NPS management of the Koko Rift Unit would only meet the feasibility criteria if all of the State and County lands, and a major portion of the existing private lands, were transferred to or in other ways placed under NPS administration.

Despite the conclusion that the Koko Rift Unit does not meet all of the criteria for significance, suitability, and feasibility, the NPS was also directed to prepare a study of management alternatives. This study, completed in 1993, explored four alternatives for managing the study area, including the option to designate the area as a national park. The alternatives are addressed in the following chapter under "Jurisdictional Alternatives."

b. U.S. Fish and Wildlife Service

The U.S. Fish and Wildlife Service (USFWS) protects and manages six wetland areas on the islands of Kauai, Oahu, and Molokai as part of the National Wildlife Refuge (NWR) within the Hawaiian and Pacific Islands NWR Complex. Through its program, the USFWS provides the public with interpretive and educational opportunities where such activities would not endanger its primary mission, which is "to provide the federal leadership to conserve, protect and enhance fish and wildlife and their habitats for the continuing benefit of people." Areas managed by the Fish and Wildlife Service on Oahu include the James Campbell NWR and Pearl Harbor NWR.

c. Department of Defense

i. Morale, Welfare and Recreation Facilities and Programs

Through all of its services, the Department of Defense provides a wide variety of outdoor recreational opportunities for active duty and retired military personnel and their dependents. Facilities include golf courses, camps, recreation centers, marinas, playing fields and courts, and beach parks. A number of these facilities and areas are open to the general

public, including the beaches at Fort DeRussy, Bellows Air Force Base, and the Waianae Recreation Center on Oahu.

ii. U.S. Army Corps of Engineers

The Corps of Engineers addresses recreational opportunities through its regulatory powers and harbor construction program. Department of the Army permits are required for dredge and fill activities in U.S. waters, including offshore waters, rivers and streams, and wetlands. Hence, proposals for small boat harbors, moorings, and boat launch facilities in marine waters, as well as proposed developments in stream and wetland areas, would be reviewed by the Corps.

d. Department of Commerce

i. Office of Ocean and Coastal Resource Management (OCRM)

The national Coastal Zone Management (CZM) program, is administered by the OCRM within the National Oceanic and Atmospheric Administration. The CZM program provides grants to coastal states which have Federally-approved CZM programs addressing the protection of coastal resources. The program provides federal planning and program grants to support State programs. The lead agency for the Hawaii CZM program is the Office of State Planning.

B. State Agencies

1. Department of Land and Natural Resources (DLNR)

a. Division of State Parks

The Division administers the state park system and the state recreation planning program. Programs managed by this division include the Heritage and Recreation Parks Program and the General Administration for Culture and Recreation Program.

The Heritage and Recreation Parks Program is responsible for the development and management of 68 sites which have outdoor recreation and heritage value. The objective of this program is "...to provide opportunities and facilities for unorganized outdoor park recreation activities and for appreciation of unique

natural features. Activities carried out in this program include the acquisition of desirable lands for park utilization; and the planning, development and management of coastal parks, inland parks and parks with outstanding natural features."

The General Administration for Culture and Recreation Program formulates overall policies and plans and provides program direction and other administrative services for the division. Major activities include general administration, planning, contract administration, review of projects for their impact on outdoor recreation resources and opportunities, administration of the Land and Water Conservation Fund and the preparation of the State Recreational Functional Plan and the State Comprehensive Outdoor Recreation Plan.

b. Historic Preservation Division

The Historic Preservation Division administers the State Historic Preservation Program with the purpose of preserving and making available for appreciation and study places of historic and archaeological significance in the state. The Division's responsibilities include conducting archaeological surveys for selected State projects, reviewing archaeological reports (inventory surveys, data recovery plans, data recovery analysis reports, and preservation plans), and reviewing development proposals (permit applications, environmental assessments, and environmental impact statements). The Division also carries out reviews of Federal actions on historic properties, as required under Section 106 of the National Historic Preservation Act of 1966.

c. Division of Aquatic Resources

The Division of Aquatic Resources administers the State's programs in commercial fisheries, recreational fisheries, and aquatic resources preservation and enhancement. The objective of the recreation program is "to enrich the leisure time and recreational opportunities of the public." This program includes conducting surveys of fish populations, research on individuals species, surveys of sports fishermen, operating checking stations to monitor fishing activities, developing artificial reefs, and informing the public about current and proposed actions and fishing rules and regulations. The Division manages the Waikiki-Diamond Head Shoreline Fisheries Management Area, certain Marine Life Conservation Districts, including Hanauma Bay, various offshore Fish Aggregating Devices (FADs) or buoys, and freshwater public fishing areas at Kokee, Kauai, and Nuuanu Reservoir and Wahiawa on Oahu.

d. Division of Forestry and Wildlife

The Division of Forestry and Wildlife (DOFAW) is responsible for the management of forestry and recreation resources on State Forest Reserve lands, wildlife management and protection, administration of the Natural Area Reserves System (NARS), and the Na Ala Hele Statewide Trail and Access System. Activities relating to resource protection and enhancement include watershed and wildlife habitat protection, wetlands management, fire prevention, erosion control, forest pest management, and the protection and preservation of unique native plant and animal species. As part of its program, the Division develops and manages wildlife sanctuaries, such as Pauwalu Point and Kanaha Pond State Wildlife Sanctuaries on Maui and those located on the tiny islands off the windward shore of Oahu.

In 1988, the State Legislature provided funding for a statewide trail and access system, called Na Ala Hele, and directed DLNR to "plan, develop, acquire land or rights for public use, construct, and engage in coordination activities to implement the system." Responsibility for the program was assigned to DOFAW, which has established six island advisory councils, initiated a statewide computerized trail and access inventory, and selected demonstration trails on each island for implementation. Na Ala Hele is working with each of the counties to include all shoreline accessways in the inventory.

e. Division of Conservation and Resources Enforcement

The Division of Conservation and Resources Enforcement (DOCARE) is a consolidation of all enforcement functions within DLNR which were once carried out by the individual divisions. DOCARE enforces the rules and regulations relating to fishing and hunting, as well as those covering activities on Forest Reserve lands, lands and waters within the Conservation District (as designated by the State Land Use Commission), wildlife sanctuaries, Marine Life Conservation Districts, and Natural Area Reserves.

f. Division of Boating and Ocean Recreation

The Division of Boating and Ocean Recreation (DBOR) provides facilities and opportunities for ocean-based recreation activities. Responsibilities include management of State small boat harbors, improving and expanding the capacity of existing small craft mooring and launching facilities, construction of new facilities, boat registration, enforcement of boating laws, administration of a

marine casualty investigation program, and conducting public education programs in boating safety.

The Division administers regulations to protect users of inshore waters where recreational activities may conflict with and endanger the safety of others (for example, surfing or boating in swimming areas). In 1988, a Statewide Ocean Recreation Management Plan (ORMP) prepared by DBOR (which was at that time part of the Harbors Division of the Department of Transportation) was approved by the Governor. The ORMP is intended to address concerns about conflicts between different ocean recreational activities. It established zones for various uses, focusing primarily on the management of thrillcraft.

2. Department of Transportation (DOT)

a. Highways Division

The DOT Highways Division is responsible for planning, designing, constructing, and maintaining State highway facilities throughout the islands. As part of its duties, the Division provides recreational opportunities by planning and developing bikeways on State highways, by beautifying major highways, and by providing scenic roadside lookouts along State highways. Bikeway development is based on the Statewide Master Plan for Bikeways prepared by the Division in 1978.

3. Department of Education (DOE)

The Department of Education provides physical education and interscholastic athletic programs within the public school system. A variety of cultural and recreational activities are offered during and after regular school hours. In addition, DOE administers an adult education program to promote not only scholastic achievement but also to broaden people's cultural, recreational, and social horizons and interests. Playing courts, fields, gymnasiums, swimming pools, and other facilities located on school grounds are actual and potential resources for public recreation. DOE students have priority over the general public for use of these facilities.

4. University of Hawaii

a. Sea Grant College Program

Established in 1968, the Sea Grant College Program funds and administers research, education, and advisory activities in the development and management of marine resources in Hawaii and the Pacific. Sea Grant's Extension Service has been particularly involved in the area of marine recreation. It has provided assistance to the Governor's Task Force on Ocean Resources/Tourism Development, participated in the Ocean Recreation Management Plan workshops, and co-sponsored the May 1990 Congress on Coastal and Marine Tourism, and was a sponsor of the Heritage Interpretation International Congress in 1991.

Sea Grant was instrumental in helping to establish TORCH (The Ocean Recreation Council of Hawaii), and has worked with TORCH and State agencies on adapting a boat mooring system that does not damage coral. Other activities include cooperation with the City and County of Honolulu in developing a land-based nature tour of Hanauma Bay, cooperation with the DBOR (formerly State DOT Harbors Division) in developing boating safety education materials for use in the schools, publication of a series of economic studies dealing with ocean recreation, and mediating conflicts between reef fish collectors and dive operators in Kona.

b. Cooperative National Park Resources Studies Unit (CNPRSU)

Under the University of Hawaii Research Corporation, the CNPRSU responds to various needs of the National Park Service and other resource management agencies in the State, such as the Forest Service and the Nature Conservancy. Current research emphasis is being placed on the inventory and monitoring of National Park resources. CNPRSU evaluates potential park areas and develops techniques for enhancing native ecosystems. The Unit recently completed a Hawaii Stream Assessment, including a review of the recreational potential of streams.

5. Department of Business, Economic Development and Tourism

a. State Land Use Commission

The State Land Use Commission enforces land use classifications and reviews district boundary amendments. All lands in the State are classified in one of four

districts: Urban, Agricultural, Conservation and Rural. *(See also Chapter V, Section A)*

6. Office of State Planning (OSP)

a. CZM Program

The Hawaii Coastal Zone Management (CZM) program is administered by OSP. OSP responsibilities in this program include evaluation of federal actions, such as federal permitting for public and private proposals, for consistency with the objectives and policies of the Hawaii CZM Act. OSP also administers Federal grants-in-aid offered by OCRM through the National CZM program.

C. City and County of Honolulu Agencies

1. Department of Parks and Recreation

The Department of Parks and Recreation is responsible for (1) planning, design, construction, maintenance, and operation of all City and County parks and recreation facilities; (2) providing cultural, recreational, and other leisure-time activities and programs; and (3) beautifying City and County streets. A Board of Parks and Recreation, appointed by the Mayor, serves in an advisory capacity to the Department.

The Department also provides recreation programs at City and County recreation centers, including culture and arts, outdoor recreation, fitness and sports, and special community events. Specialized programs are provided for physically challenged persons and senior citizens, as well as a summer fun program for children. The Department promotes water safety through lifeguard services at selected beaches and through educational programs.

2. Planning Department

Responsible for long-range land use planning, the Planning Department administers the City and County of Honolulu General Plan and Development Plans and reviews applications for proposed amendments to those plans. The General Plan establishes guidelines for the distribution of future population on Oahu as the basis for planning City facilities, including recreational facilities. The Development Plan includes the Public Facilities Map and the Land Use Map, which identify future parks in each of the planning areas on the island. *(See also Chapter V, Sections B & C)*

3. Department of Transportation Services

The Department of Transportation Services (DTS) is responsible for the development of City and County bikeways. The Statewide Master Plan for Bikeways, prepared by the State of Hawaii Department of Transportation -- Highways, is used as a guideline for coordinating development of a bikeway system with the State. In 1990, there were about 36 miles of bikeways on Oahu.

4. Department of Land Utilization

The Department of Land Utilization (DLU) processes various land use permit applications, including zoning. Several of the permits which DLU administers have an impact on recreational opportunities. For example, the department enforces the requirement that public access to shoreline and mountain areas be provided as a condition to subdivision approval. It is also responsible for requiring park dedication as a condition for approval of a subdivision or issuance of a building permit for multi-family development. DLU also processes Special Management Area (SMA) permit applications, which are required for development within designated coastal areas. *(See also Chapter V, Section E)* The SMA permit application process reviews impacts of development on recreational resources, coastal ecosystems, public shoreline access, wastewater management, coastal views, and coastal and environmental considerations such as flood hazards. Shoreline Setback Variance applications are required for any construction that may encroach in the shoreline setback area, the 40-foot strip of land mauka of the shoreline.

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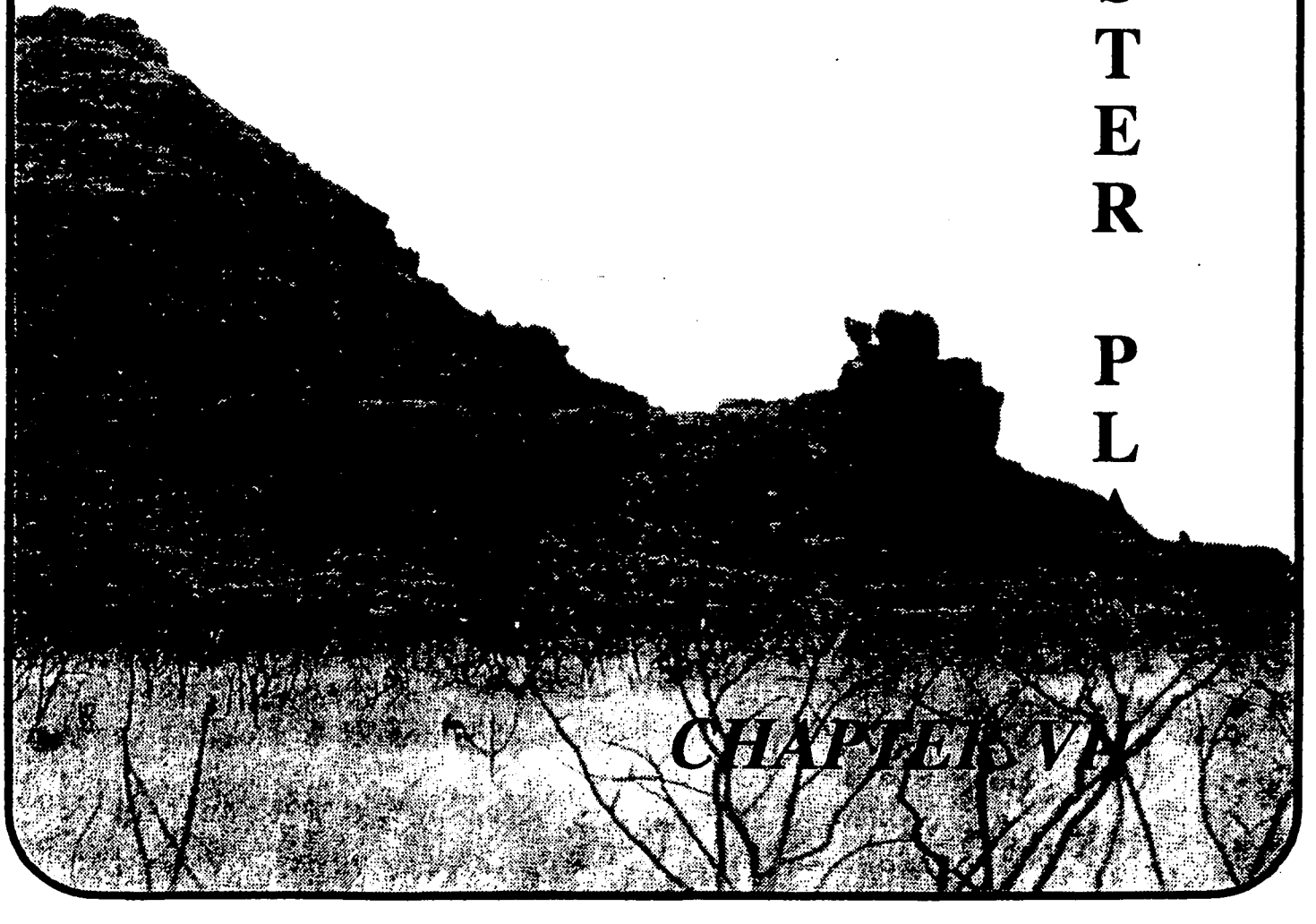


CHAPTER VI

VII. STUDY AREA ASSESSMENT

In this section, the role of the scenic, recreational and interpretive/educational resources of the Ka Iwi site in relation to the study area is assessed along with the existing management system for those resources. Recommendations are offered regarding the need to acquire the Ka Iwi site for protection of resources where existing management may be inadequate. Finally, alternative agency jurisdictions are reviewed as to appropriateness of State acquisition of the Ka Iwi site.

A. Scenic and Open Space Resources

1. Role of the Ka Iwi Site

Scenic and open space resources are discussed below in terms of the role of the Ka Iwi site in forming the overall visual impression of the study area. In the study area, the most commonly shared visual impression is the drive along Kalanianaole Highway. Notably, the makai side of the highway is virtually undeveloped and offers one of the most spectacular scenic drives on the island. The rich texture of the scenery ranges from the steep sculpted Koko Head and Koko Craters, to jagged arid cliffs plunging into the churning blue sea at the Lanai and Halona Blowhole Lookouts, to the stretch of white sand at Sandy Beach. Adding to this rich scenery, the Ka Iwi site offers the only remaining expanse of flat undeveloped land in the study area. Framed by the backdrop of the Makapu'u Head with the curious Kapaliokamoa rock formation on the trailing ridgeline at Kaho'ohaihai, the Ka Iwi site is the final location for a scenic look across Queen's Beach and the rugged Makapu'u saddle to the eastern tip of the island before the highway sweeps over to the windward side. While the flat topography and scrub cover at the Ka Iwi site provide little of the spectacular coastal scenery found along the highway between Hanauma Bay and Sandy Beach or on the windward side from Makapu'u to Waimanalo, it sustains the impression of undeveloped open space characterizing the makai views.

Off of the highway are a number of scenic vantage points which expand and enrich the scenic impression, including the lookouts at Kuapa Pond, Hanauma Bay, Lanai Island, Halona Blowhole and Makapu'u Beach. Of these vantage points, only the views from the Halona Blowhole and Makapu'u Lookout include the Ka Iwi site. From the Halona Blowhole Lookout, the Queen's Beach shoreline appears in the distance as a continuation of the undeveloped southern shoreline. From the Makapu'u Lookout, the Ka Iwi site is not the major attraction, since the sightseers' attention is directed to Makapu'u Beach and the steep pali along the windward Koolaus. Nevertheless, the rugged Ka Iwi site adds to the visual impression with steep rocky cliffs and parched hillsides at this seawind-

swept tip of the island. Notably, Kealakipapa Valley through to Queen's Beach allows the viewer to see both the windward and leeward shores from this vantage point.

More remote locations accessible only to those with special permission for access or who are intrepid enough to make the challenging hike reveal spectacular vistas such as from the summits of Koko Head, Koko Crater and elevated locations along Makapu'u Head. Overlooking Hanauma Bay from the summit of Koko Head, which is off-limits to the general public, are highly contrasting views ranging from the densely urbanized downtown Honolulu beyond Diamond Head, to the makai view over the expanse of ocean, to the residential suburbs of Hawaii Kai and the undeveloped Koko Crater and shoreline to the east. The Ka Iwi site is visible to the east in the far distance.

The view from the summit of Koko Crater, which is accessible only to the hardiest hikers on the precipitous trail along the crater rim, encompasses most of the view available from Koko Head but is even more spectacular because of the higher elevation. Particularly impressive is the view along the shoreline of the study area which, from the high vantage point, clearly exhibits the pattern of developed and undeveloped land. Within this context, the Ka Iwi site is integral to establishing the impression of the undeveloped makai land.

From Makapu'u Head, which is accessible to hikers and pedestrians via the Makapu'u Headland Road, the expanse of the Makapu'u saddle and Queen's Beach, which comprise the entire foreground in the western direction, are particularly impressive. Its usually parched landscape contrasts sharply against the lush golf courses beyond and emphasizes the rugged character at this land's end. The recent opening of the Makapu'u State Wayside, with public access now available on foot up the Makapu'u Headland Road, has created a new public scenic resource overlooking the Ka Iwi site.

2. Resource Management

The scenic and open space resources are primarily protected through land use policies regulating development. The scenic value of the study area, excluding the Ka Iwi site, appear to be fairly well protected under existing land use controls and development plans for the area. The City-owned portion of the study area is in the Conservation District and is zoned Preservation (P-1). Within this area, the Koko Head Park Master Plan establishes the following goal and objective emphasizing the protection of scenic resources:

Goal A: *To preserve and enhance the natural character of Koko Head Regional Park.*

Objective: *Planning for the Koko Head Regional Park shall be directed toward achieving the objective of protecting and enhancing the Park's scenic assets, natural beauty, physical land forms, and historic/cultural resources.*

The City and County's Special Management Area (SMA) Permit also manages future development in the study area since all of it lies within the SMA, except the stables in Koko Crater. While land use controls such as the City's Development Plan and zoning dictate appropriate siting of development, the SMA permit specifies how to protect important coastal resources through mitigation measures on development. In extreme cases, the SMA permit may deny development entirely. Coastal scenic and open space resources are among those addressed by the permit. Given priority are "*line(s) of sight toward the sea from the state highway nearest the coast*" (Section 205A-26 (3)(D), HRS) and "*minimiz(ing) alteration of natural landforms and existing public views to and along the shoreline*" (Section 205A-2(c)(3)(B), HRS). The role of the Ka Iwi site as open space in the future, however, is less certain that in the rest of the study area. Currently, the Ka Iwi area is zoned Preservation (P-2) while the State Land Use Designation for the area is "Urban." Notably, this combination of land use designations would allow the development of golf courses, although a Plan Review Use Permit and a Special Management Area Permit would also be required. A recent State Land Use District Boundary review recommended a Priority 2 down-zoning of the area to "Conservation." Implementation of this designation would likely have forestalled development, including golf courses, in the area for the foreseeable future. However, the Office of State Planning, to date, has only petitioned for downzoning of Priority 1 lands.

In October 1995, it was announced that the City had entered into a negotiated settlement of Bishop Estate's suit against the City regarding its previous downzoning of property across from Queen's Beach. One of the terms of the current settlement proposal would allow a golf course clubhouse, restaurant and golf shop to be built at Queen's Beach. Another term of the settlement would establish a unique procedure for by-passing land use controls such as zoning and permits such as the SMA permit. This would be accomplished by the preparation of an Environmental Impact Report (EIR) which would serve in lieu of the approvals that would otherwise be required.

Within the Ka Iwi site, public views include those from areas readily accessible by the public such as scenic vantage points and the new Makapu'u State Wayside and Makapu'u Headland Road.

Under the proposed negotiated settlement offer, it is uncertain to what degree scenic resources within the Ka Iwi site will be protected.

Another potential concern is the degree to which views from the Ka Iwi area, including views from Kalanianaole Highway. Perhaps the most visible development from the study area which is currently ongoing is above Kamehame Ridge (identified as "3" on Figure VII-1). Construction on the ridge will build-out the entire area currently allowed for development under the State Land Use District designation, City Development Plan Land Use Map, and City zoning regulations. Further development on the ridges is also possible. Figure VII-1 assesses the land use designations of undeveloped land in the vicinity of the Ka Iwi site. Identified are areas which currently have land use designations suggesting the potential for future development. Most notable among these is the "Urban" designation of land at the Ka Iwi site which extends across Kalanianaole Highway and up the adjoining ridges (identified as "1" on Figure VII-1). Development on these ridges would have a significant visual impact on mauka views from the Ka Iwi site. Notably, these lands, are also recommended for down-zoning to "Conservation" by the State. If this recommendation were implemented, then significant protection from development on the ridges will be provided. However, these lands are included in the negotiations between Bishop Estate and the City & County. Bishop Estate has plans to develop this area, with residence.

3. Recommendation

With respect to preserving scenic views encompassing the privately owned land in the Ka Iwi site, current land use designations and planned State-initiated changes in designation indicate that the intent of both the City and State is to disallow urban development in the area. Nevertheless, recent actions by the City Council indicate a willingness to allow development in the area to settle a potentially costly lawsuit in Federal court. Therefore, it would appear that the site should be acquired by the site at this time to protect important scenic resources. With respect to preserving the views from the Ka Iwi site, current land use designations and recommended downzoning would appear to keep further development on visible hillsides in check. On the other hand, the negotiation settlement proposal would allow development of the hillside area. Acquisition of the land and establishment of a public recreation area at the Ka Iwi site could provide a stronger position for protecting important views from the site.

B. Recreational Resources

1. Role of the Ka Iwi Site

East Honolulu has long been recognized as a trove of recreational opportunities serving Honolulu. From snorkeling to hiking to golf, the area boasts a range of natural and developed recreational resources for the public to use. The climate is ideal for outdoor

LEGEND

1 State Land Use: Urban*
Development Plan Land Use: Preservation
Zoning: Preservation (P-2)

2 State Land Use: Urban
Development Plan Land Use: Preservation
Zoning: Preservation (P-2)

3 State Land Use: Urban
Development Plan Land Use: Residential
Zoning: Residential (R-10)

4 State Land Use: Urban
Development Plan Land Use: Preservation
Zoning: Preservation (P-2)

5 State Land Use: Urban
Development Plan Land Use: Residential
Zoning: Preservation (P-2)

6 State Land Use: Urban
Development Plan Land Use: Preservation
Zoning: Residential (R-5)

7 State Land Use: Urban*
Development Plan Land Use: Preservation
Zoning: Residential (R-5)

8 State Land Use: Urban
Development Plan Land Use: Agricultural
Zoning: Agricultural (Ag-2)

9 State Land Use: Urban
Development Plan Land Use: Low Density Apartment
Zoning: Agricultural (Ag-2)

* Recommended to be down zoned from Urban to Conservation.
State Land Use District Boundary Review,
Office of State Planning, March 1992.

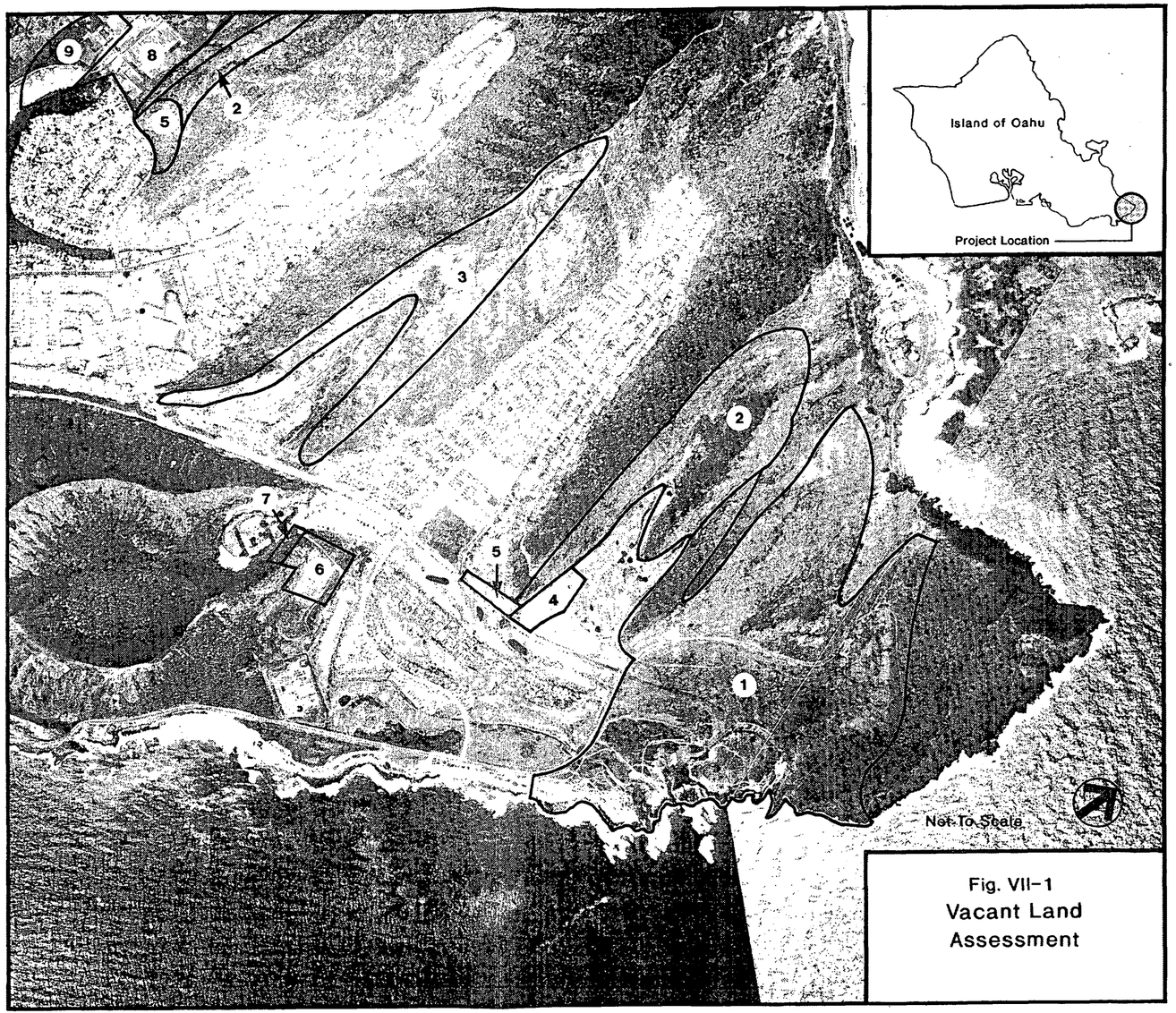


Fig. VII-1
Vacant Land
Assessment

recreation, with low rainfall yet with good exposure to the cooling tradewinds. Recreational resources of the Ka Iwi site in relation to the study area are discussed below.

The recreational resource value of the study area is as diverse as its terrain and shoreline conditions. Outstanding among these are Hanauma Bay with its snorkeling and diving opportunities, and Sandy Beach for its sunbathing, body and board surfing. While the proposed Ka Iwi site does not offer outstanding beaches or surf, it extends existing opportunities in the area for hiking, beachcombing and fishing.

The concept of linkages among the recreational resources in the study area and the Ka Iwi site is not as clearly definable as those involved in a scenic drive or coastal view planes. It is not as if a recreational enthusiast would make a circuit of participating in a range of recreational opportunities available in the area. Instead, the concept of linkage would more appropriately be based on a common theme for recreational opportunities in the study area. Clearly, the emphasis in this area is on resource-based recreation, particularly coastal resources.

Resource-based recreation includes activities which require or are enhanced by natural resources such as breaking waves for surfing, accessible fisheries for shore-casting, calm, clear waters for snorkeling, comfortable beaches for sunbathing, or appealing scenery for hiking and picnicking. Facilities for resource-based recreation are intended to support such activities and may include, at minimum, access and parking. Additional support facilities and amenities may include comfort stations, showers, improved hiking trails, picnic facilities, riding stables and refreshment stands. Hanauma Bay and Sandy Beach Park are examples of highly developed resource-based parks. The hiking trails at Koko Head, Koko Crater and Makapu'u Head are examples of recreational resources not supported by facilities.

There are several facilities in the study area which are inconsistent with the theme of resource-based recreation. These include Koko Head District Park, the Koko Head Firing Range, the Job Corps facility, and the Telecommunication Center at Koko Head. The City's plans for these facilities, however, are intended to address recreation, with an emphasis on natural resources.

The Koko Head District Park is unique among recreational facilities in the study area because it creates recreational opportunities with facilities rather than supporting recreation based on a natural resource. Facilities at the park which create recreational opportunities include its ball-fields, playing courts and recreation center. Koko Head District Park, however, serves the residential areas of Hawaii Kai, and its location and

function is more clearly associated with the community than with the other recreational resources in the study area. Therefore, for the purposes of this study, it would be appropriate to exclude it from the study area.

The firing range, which accommodates recreational shooting as well as arms training for police and other law enforcement personnel, is located in Kahauloa Crater for safety and noise considerations. The City and County plans to eventually relocate the facility if another suitable location can be found. If the facility is relocated, the City plans to build a parking and picnic area.

The City also plans to convert the Job Corps facility into the Koko Head Regional Park Recreation Center supporting the entire Koko Head Regional Park. The proposed center will be oriented toward enhancing the resource-based opportunities in the region as opposed to extending the functions of the Koko Head District Park.

The proliferation of telecommunication facilities at Koko Head is considered a problem aesthetically as well as ecologically due to the trampling of vegetation by off-road vehicles (ORV's), many of which gain unauthorized entrance. The City established a limited use reservation at Koko Head to better regulate impacts of telecommunication facilities and also established scenic lookouts, informational signage and improve hiking trails so that the area is accessible on foot by the public.

Recreational activities at the Ka Iwi site are resource-based although such activities are limited by the absence of supporting facilities. Notably, the Ka Iwi site's most unique feature is the expanse of relatively flat land near the ocean. This feature, which makes the site valuable for resort, golf course or other urban-type development, also makes it versatile for accommodating a range of facilities supporting recreation. Depending on the facilities provided, the site could accommodate a range of resource-based recreational activities, including those identified as public needs in the Statewide Comprehensive Outdoor Recreation Plan (SCORP). Improvements in access and supporting facilities could accommodate walking/jogging and running on trails through the flatter portions of the site, as well as bicycling. These activities are all projected by the SCORP as "high" short- and long-term needs. Opportunities for shoreline fishing, which is projected as a "medium" need in the short-term and "high" in the long-term, could also be improved by greater access. Facilities such as comfort stations and landscaped picnic areas as well as access would support picnicking, while shower facilities and perhaps a pavilion could be added to accommodate camping near the shoreline. Picnicking, along with swimming and sunbathing, are projected as "high" needs in both the short- and long-term. Beach camping is projected as a "high" need in the short-term and a "medium" need in the long-term. Notably, there are no camping sites in the study area, although camping is

available at Makapu'u Beach Park. Facilities to accommodate picnicking and camping could also be provided at the Makapu'u State Wayside, which could address "medium" short- and long-term demands for upland camping and picnicking. No such camping sites are located in the region.

2. Resource Management

Existing recreational resource management of the study area and the Ka Iwi site can be viewed in terms of land use and permit controls, management of specific recreational activities and management of recreational facilities.

a. Land Use Management

Natural recreational resources within most of the study area appear well protected under existing land use controls. Recent events relating to the negotiated settlement of Bishop Estate's suit against the City suggests, however, that the Ka Iwi site may be vulnerable to golf course development which could affect the character of its recreational and visual resources.

Among the various land use permits, the SMA permit, in particular, has a host of policies and guidelines supporting its objective to "*(p)rovide coastal recreational opportunities accessible to the public*" (Section 205A-2(b)(1)(A), HRS). While this permit would appear to protect the recreational resources of the study area, it is uncertain how its objectives and policies would be considered in the review process proposed in the negotiates settlement offer.

For the City-owned portion of the study area, the City's Koko Head Park Master Plan establishes the following goal and supporting objective for recreation:

Goal B: *To provide low-impact recreational opportunities in the Koko Head Regional Park that minimize impacts on land forms, flora and fauna.*

Objective: *Planning for Koko Head Regional Park shall be directed towards the objective of encouraging existing recreational activities such as hiking, bicycling, picnicking, sightseeing, and ocean-oriented resource activities, and promoting the development of*

new opportunities for similar low-impact activities.

Toward realizing this goal and objective, the Plan calls for reducing non-recreational uses in the park, including conversion of the Job Corps Center to a recreational facility and phasing out of the Public Firing Range. This goal and objective establish the resource-based theme for recreation in the study area, and is deemed appropriate for the Ka Iwi site, as well.

b. Activity Management

Specific recreational activities, including fishing, ORV riding and boating are managed to protect natural resources and promote public safety. The Department of Land and Natural Resources (DLNR) manages fishery resources by enforcing laws and rules pertaining to fishing practices through its Division of Conservation and Resource Enforcement. Notable in this regard is the administration of Hanauma Bay as a State Underwater Park by the DLNR through its Marine Life Conservation District Program. In the Ka Iwi site, concern has been expressed about net fishing, including illegal net fishing practices, depleting stocks. Enforcement of fishery rules is hampered at the Ka Iwi site because vehicular access is not readily available. Another area of concern is the effect of runoff from Kalama Valley and the golf course on the estuaries at the Ka Iwi site which serve as nurseries for marine species, including recreational fisheries. This concern, which is not a result of fishing practices, is addressed in the following section on educational and interpretive resources.

The DLNR's Division of Boating and Ocean Recreation manages recreational activities such as boating, sail-boarding, jet skis and surfing. Management efforts are intended to control conflicts among activities, enforce noise regulations, and promote public safety. While the Division has intervened in jet ski concerns at Maunalua Bay, boat anchoring at Hanauma Bay and conflicts between board and body surfing at Sandy Beach and Makapu'u Beach, there does not appear to be a major problem requiring attention at the Ka Iwi site.

The recreational use of ORV's at the Ka Iwi site, which has caused significant damage to vegetation and promotes erosion, is restricted only in the beach area below the high water line by City Ordinance (Section 10-1.5, Revised Ordinances of Honolulu). Police enforcement, however, is hampered because access by regular police vehicles is not available. Moreover, much of the damage is caused above the beach area, where the violation is trespassing on private property.

Prevention of trespassing is largely left up to the landowner who has met with limited success, despite measures such as blockading access routes with boulders.

c. Facilities Management

Public recreational facilities in the study area span the extreme range of approaches for managing the available resources. At one extreme, Hanauma Bay was once managed to accommodate extremely intensive levels of use, to the point that the enjoyment of its recreational opportunities and integrity of its natural ecosystem were threatened. This management approach has since changed with a shift in the role of Hanauma Bay away from the emphasis on recreation and toward interpretation and education, as indicated by the change in the name of the park from "Beach Park" to "Nature Park." The latest master plan for the park articulates this intent, relegating sunbathing, swimming, picnicking and beach sports to a lesser priority that would be more appropriately pursued at other beach parks such as Sandy's and Makapu'u. Strictly enforced rules currently limit access into the park and, hence, the intensity of use. The development plan for facilities at Hanauma Bay reinforces this intent.

At the other extreme, at the Ka Iwi site, the absence of facilities, particularly access and parking, limits public recreational opportunities. The only change in this regard was the establishment of Makapu'u State Wayside at Makapu'u Head. Although public pedestrian or bicycle access is now available to the headland via Makapu'u Headland Road, the only new facilities constructed are viewing platforms overlooking the Windward coastline from Waimanalo to Mokapu Peninsula.

In context of the diverse facilities options represented in the study area, the expanse of relatively flat land at the Ka Iwi site offers flexibility in selecting those appropriate to support desired recreational activities at the site. The task addressed in Part II of this study is to determine what types of facilities would be appropriate.

3. Recommendations

Like scenic resources, existing recreational resources in the study area, particularly the Ka Iwi site, which appear to be fairly well protected from development under existing land use and permit controls may be vulnerable under the recently proposed negotiated settlement of Bishop Estate's suit against the City. Therefore, acquisition of the Ka Iwi site is recommended to protect against its potential development.

The management of fishery resources by recognizing the importance of the inlets and controlling or restricting fishing in them may be appropriate. Like Hanauma Bay, the inlets are conducive to management since they are physically well-defined, which would facilitate enforcement. Acquisition of the Ka Iwi site would be appropriate to allow greater flexibility in coordinating management of landward activities, including access and enforcement.

The potential degradation of the estuaries at the Ka Iwi site presents a problem which is difficult for a private landowner to address since impacts on water quality are, to a large extent, a result of activities outside of the site. Therefore, governmental acquisition of the Ka Iwi site and establishment of a program to address this problem would be appropriate. This issue is addressed further in the following section on interpretive and educational resources.

Effective management of all-terrain vehicles is likely to be achieved only by government acquisition of the Ka Iwi site and establishing a comprehensive program of blockades and strict enforcement against trespassing.

Government acquisition and development of a park with recreational support facilities at the Ka Iwi site would appear to be the only feasible means of accommodating greater public use of this valuable recreational resource. For this park to be consistent with the theme of resource-based recreational opportunities in the study area, the Ka Iwi site would need to be assessed to determine appropriate types and intensity of usage. This is done in Part II of this study.

C. Interpretive/Educational Resources

1. Role of the Ka Iwi Site

Interpretive/educational resources in the study area can be considered in two general categories. In the first category are scenic points such as lookouts where people stop to sightsee. While these stops are presented as scenic vantage points earlier in this chapter, they also serve as potential opportunities to impart interpretive or educational information about what can be seen. The second category is referred to, herein, as participatory venues in which the public may participate in activities such as snorkeling, reef walks, hikes or other activities in the course of receiving interpretive or educational information.

The scenic lookouts along Kalanianaole Highway in the study area from Kuapa to Makapu'u Point as well as the one at Hanauma Bay are all extremely popular, particularly with tourists. Very little interpretation is provided, however, in the form of

signage or displays. Of the scenic venues available in the Ka Iwi site, the Makapu'u Lookout is similar to those available in the study area, being a pullout along the highway with a small parking area and a viewing area. The Makapu'u State Wayside is unique among scenic venues offering an elevated vantage point since it is readily accessible without a particularly strenuous or hazardous hike. While the scenic venues at the Ka Iwi site are similar in their lack of interpretive signage or centralized informational sources, they offer significant potential for interpretation and possibly for integration within a general theme for the area.

By far the most popular participatory venue in the study area is, and will likely continue to be, Hanauma Bay Nature Park, particularly with the City's planned emphasis on this role. Most of the participants will likely be tourists. The Koko Crater Botanical Gardens is the other significant interpretive/education opportunity, although the audience to which it appeals is much narrower than at Hanauma Bay, and probably geared more toward residents. The proposed Ka Iwi site contains a variety of interpretive/educational resources, many of which are already being used by various groups in participatory programs. Without sandy beaches and the reef setting where fish can be readily viewed, however, it is unlikely that the intensity of usage will be on the same scale as that of Hanauma Bay Nature Park. Nevertheless, the site offers a unique aggregation of coastal ecosystems which has significant, though subtle, opportunities for interpretation and education within a scenic seaside setting. Such opportunities would be ideal for school or other organized field trips as well as for residents and visitors seeking more in the way of "eco-tour"-type activities beyond what is offered in the crowded setting of Hanauma Bay.

While the concept of an integrated interpretive program for resource venues in the study area is possible along themes such as volcanic origins or evolutionary adaptation of its vegetation, a more encompassing theme would be similar to the one articulated in the Koko Head Park Master Plan. The Plan offers the following goal and objective for the City-owned land in the study area:

Goal C: *To emphasize and enhance the educational value of the park and its resources.*

Objective: *Planning for Koko Head Regional Park shall be directed towards the objective of encouraging environmental education among park users by centralizing sources of information and providing informational signage where appropriate.*

A theme such as this could establish interpretation and education as a priority use in the entire study area. Future facilities would be planned to support this use. As in the case of facilities supporting recreation discussed earlier, the expanse of flat land at the Ka Iwi site offers significant potential for development of a range of supporting facilities.

2. Resource Management

a. Land Use Management

Protection of the major scenic interpretive venues and interpretive resources at Hanauma Bay and Koko Head Botanical Garden appear assured since they are owned and managed by public agencies. While other interpretive resources, particularly those on private land at the Ka Iwi site, appear to be protected from development by existing land use controls, they may be vulnerable to future development under terms of a proposed negotiated settlement of the lawsuit between Bishop Estate and the City, as discussed previously. While the SMA permit would normally afford some protection through an objective to "*Protect valuable coastal ecosystems from disruption and minimize adverse impacts on all coastal ecosystems.*" (Section 205A-2(b)(4)(A), HRS), it is uncertain at this time how the objection of the SMA permit may be considered under the terms of the proposed settlement.

b. Resource Management

A long-standing concern at the Ka Iwi site has been the degree of alteration caused by previous development efforts, including the incomplete dredging of a waterway in the Queen's Beach area, removal of all mature trees, and stockpiling of boulders in Kealakipapa Valley. These activities have degraded the educational and interpretive as well as scenic value of the area. They are remnants of past public policies regarding coastal resources in this area.

A significant concern has been the degradation of vegetation at the Ka Iwi site due to trampling by off-road vehicles and use of the site for trash disposal. Interpretive opportunities are offered by coastal strand vegetation (the Ka Iwi site contains one of the last large stands of such vegetation on Oahu), endemic Hawaiian cotton (the Ka Iwi site is believed to be the oldest area of habitation for that species in the Hawaiian Islands), and the endangered species *marsilea villosa* (a water fern adapted to ephemeral wetlands). All of these vegetation have been affected by trampling. Although they are not in danger of extinction resulting from trampling or trash dumping, the quality of interpretation is certainly

degraded. The management problem with vehicular access and trash dumping is enforcement against trespassing. The private landowner has attempted to restrict access but to little avail, largely because of the tenacity of the trespassers and the lack of incentive to mount a concerted effort to keep them out.

Another area of concern reported by those conducting interpretive programs at the Ka Iwi site is that water quality at Ka'ili'ili Inlet has been degrading and that the nursery function of the estuary may be threatened. The Queen's Beach area, including Ka'ili'ili inlet, receives diverted drainage from the entire Kalama Valley and golf course in addition to its natural watershed which is Kealakipapa Valley. The expanded watershed is a concern because it serves an urban area which has more impervious surface area than an undeveloped area and, therefore, greater runoff. Urban and golf course runoff may also be prone to containing contaminants such as fertilizer, pesticides and petro-chemicals, although this has not been substantiated.

Management of the drainage system is under the jurisdiction of the City Department of Public Works. The decision to route drainage into the Ka Iwi site was made decades ago and may have been based on plans to construct a marina at the Ka Iwi site. Short of rerouting drainage in the watershed, however, there is little that can be done to restore prior conditions. To some extent, the potential magnitude of the problem can be reduced at the Ka Iwi site by constructing flood control and siltation basins to detain storm runoff, thus reducing the volume going directly into coastal waters and allowing silt to settle out.

Management of water quality, to assure that it meets State Water Quality Standards, is under the jurisdiction of the State Department of Health. The degree of impact, however, may well be within State Water Quality Standards. Technical studies will need to be conducted in order to determine what effects the volume and quality of runoff may have had on coastal waters fronting Queen's Beach.

c. Facilities Management

The scenic lookouts in the study area are under several agency jurisdictions. The Kuapa Pond and Lanai Lookouts are under the jurisdiction of the State Department of Transportation. The City Parks Department manages the lookouts at Hanauma Bay and Halona Blowhole and, while the City owns the Makapu'u Lookout, it is maintained by the State Department of Transportation. The

Makapu'u State Wayside lookouts are under the jurisdiction of the State Parks Division of the Department of Land and Natural Resources.

The divided jurisdictions over the scenic lookouts suggests that if interpretation and education is to be a priority in the study area, agency cooperation in establishing signage or other means of disseminating information would be required, particularly if some integrated educational theme encompassing these lookouts is desired.

Unlike the scenic venues, the participatory venues are fairly independent in the sense that there are no obvious themes that would link these resources. Each venue, including Hanauma Bay, Koko Head Botanical Gardens and the Ka Iwi site would offer unique interpretive and educational opportunities. The binding priority, however, would be to develop appropriate facilities and programs that offer such opportunities.

3. Recommendations

Like scenic and recreational resources, the existing interpretive/educational resources in the study area, including the Ka Iwi site, may be vulnerable to golf course development under the terms of a negotiated settlement of a lawsuit between Bishop Estate and the City. Therefore, acquisition of the Ka Iwi site on this basis is recommended.

Resource management to protect and enhance the interpretive and educational value of the study area appear to be adequate except at the Ka Iwi site where past and present activities have degraded the quality of the resource. It is recommended that the Ka Iwi site be acquired on this basis to provide protection from further degradation and to implement programs to restore the interpretive and educational value of the area. Part II of this study assesses and recommends appropriate measures to achieve this.

Facilities to support educational and interpretive programs at the scenic lookouts in the study area should be provided. For the City-owned portion of the study area, the City's Koko Head Park Master Plan recommends that signage be provided. Within the Ka Iwi site, at Makapu'u State Wayside and Makapu'u Lookout, the State should provide interpretive signage. If the City has initiated planning for their interpretive program, then the State should consult with the City to explore alternatives for establishing an integrated signage program.

Support facilities for participatory interpretive/educational programs on City-owned lands in the study area are discussed in the Koko Head Park Master Plan. Support facilities

at the Ka Iwi site should be designed based on an assessment of the site. This is done in Part II of this study.

D. Jurisdictional Alternatives

The preceding recommendations were offered without identifying a particular agency that would acquire and manage the Ka Iwi site. The discussion below assesses how the three levels of government may relate to the establishment of a park at the Ka Iwi site.

1. Federal Government

At the Federal level, the National Parks Service (NPS) would be the most readily identifiable agency to manage the Ka Iwi site as a national park. Currently, the Service administers seven national parks in Hawaii: U.S. Arizona Memorial (Oahu), Kalaupapa National Historical Park (Molokai), Kaleakala National Park (Maui), Hawaii Volcanoes National Park, Pu'ukohola Heiau, Pu'uhonuaohonaunau National Historical Park and Kaloko-Honokohau National Cultural Park (Hawaii). Both involve large tracts of land for which a major purpose is to preserve unique landforms and ecosystems from development. Recreational uses are allowed to an extent compatible with the primary goal of preservation. High intensity public visitation to these parks tends to center on opportunities for interpretation and education. The intent is to heighten public awareness and appreciation of these areas which are elevated to the status of national treasures.

In their recently completed Reconnaissance Survey Ka Iwi Shoreline Study, the NPS found the Koko Rift Unit, which generally coincides with the study area, to meet national park criteria were it not for the existing management of the area at the State and County levels. In a follow-up study, the NPS explored four management alternatives which included the option to continue City and County/State administration, incorporate the area into the national park system, consolidate management by either the City or State government, or create a partnership approach using cooperative relationships between the public and the private sector.

Two of these alternatives -- continued City and State administration or consolidated management by either entity -- are discussed below in greater detail. The remaining two options which would involve the National Park Service have other implications which would need to be considered. For instance, if designated as a national park, the NPS would have to decide how to incorporate such current uses as Hanauma Bay Nature Park, the rifle range, Koko Crater Botanical Garden, Koko Head District Park and communication facilities on Koko Head. Private lands at Queen's Beach would also need to be addressed, either through direct acquisition or some kind of management rights.

In any case, neither the City, State, nor private landowners have indicated any willingness to relinquish lands for a national park unit.

Under a partnership approach, a commission could be established to assist government entities in developing a comprehensive action plan. The commission would guide initial implementation of the plan once the area was designated by Congress. The federal role, through the NPS, would be to coordinate planning, establish national standards, and provide limited funding and technical assistance over a specified number of years. This would allow the NPS to assist the State and County government in developing and implementing integrated cultural, historical, and natural resource policies and programs. The State and County role would be to provide leadership in planning, organize support, acquire and develop lands as needed, and operate and manage the area. At the end of the specified time, the NPS would no longer provide financial and/or technical assistance.

2. State Government

At the State level, the State Park System, which is managed by the Department of Land and Natural Resources through its Division of State Parks is comprised of a mix of parks ranging from Malaekahana Park (a beach park with camping facilities) to the Underwater Park at Hanauma Bay. In general, however, the State park system promotes public enjoyment and enrichment through the preservation, protection and development of natural and cultural features. The Division administers both a heritage program which emphasizes interpretation, public awareness and appreciation of the Hawaiian landscape and culture, as well as an outdoor recreation program which provides coastal and wilderness recreation opportunities.

Establishment of a State Park at the Ka Iwi site can be considered in two alternative ways. One would be for the State to acquire all or most of the study area, including the Ka Iwi site and the City-owned land, for management as a unit. The other way would be for the State to acquire only the Ka Iwi site while the City continues to manage the remainder of the study area.

The alternative of the State acquiring and managing the Koko Head Park together with the Ka Iwi site would present significant complications for certain facilities. Koko Head District Park provides active recreational facilities and programs for the Hawaii Kai community and should be excluded since the State Parks System does not manage such facilities. The Koko Head Firing Range is also inconsistent with the intent of the State Park System and should be phased out. Sandy Beach Park, which is a typical City-run beach park, is not unlike Sans Souci State Recreation Area but almost all such beach recreation areas around Oahu are under City jurisdiction. Hanauma Bay Nature Park

could be adapted for State management since the waters of the bay are already managed by the State, although the benefits of transferring management are debatable. There is no comparable State park that accommodates the intensity of usage that this park does.

If Koko Head District Park was excluded and the firing range was phased out, then the remainder of the study area would easily fit in with the intent of the State Park System. Additional studies, however, would be required to determine how Sandy Beach and, particularly, Hanauma Bay Nature Park would be managed to best support the State Park Systems purposes.

The alternative of the State acquiring only the privately owned lands at the Ka Iwi site would split the management of the study area between the State and County. Such a split need not imply inconsistency or conflicting management, however. The goals and objectives of the City's Koko Head Park Master Plan are consistent with the overall purpose of the State Park System.

3. City Government

The City Department of Parks and Recreation administers a wide range of recreational facilities, including mini-parks, squares and garden plots; neighborhood, community, district and regional parks; beach and shoreline parks; shoreline rights-of-ways; as well as golf courses, botanical gardens and the Honolulu Zoo. While almost all of the Department's facilities are oriented to active recreation, Koko Head Regional Park, at approximately 1,265 acres, is a notable exception.

The City and County of Honolulu's Koko Head Park Master Plan addresses the City-owned portion of the study area. The plan recognizes the diversity and value of recreational opportunities available in the park area and offers a range of recommendations addressing individual resources and activities. With respect to the coordinated management of the park, the plan states goals and objectives which set the overall themes of preserving the area's scenic and cultural assets, accommodating recreational activities which are consistent with preserving those assets, emphasizing and enhancing the educational value of those assets, and providing linkages between recreational activities in the park. The physical linkage recommended involves constructing a bypass road from Lunalilo Home Road to Kalanianaole Highway near Queen's Beach and converting the existing highway segment between Hanauma Bay and Sandy Beach into a 25 mile-per-hour scenic drive.

The City, in its Queen's Beach Park Feasibility Study (1984), assessed the privately-owned portion of the Ka Iwi site for possible acquisition. While acquisition was not

pursued, it would have expanded the Koko Head Regional Park. The study found that with access, parking and comfort stations, the coastal area had significant potential for substantially increasing camping, picnicking, fishing and diving opportunities.

City acquisition of the Ka Iwi site would be a logical extension of the Koko Head Regional Park. If that option were to be pursued, it may also be logical to further extend the park to include the Makapu'u State Wayside. By placing the entire area under City jurisdiction, coordinated management of the entire area could be achieved. As discussed in this study, and as is evident in the Koko Head Park Master Plan, however, the concept of linkages within the study area are not obvious, other than in regard to general themes which can be achieved even if management is split. The only major physical linkage recommended in the Master Plan is the 25 mph scenic drive along Kalanianaole Highway. Also, the Sandy Beach Road would be extended to the Ka Iwi boundary for greater public shoreline access. If the Ka Iwi site was acquired by the City, this road could be further extended past the Ka Iwi boundary to access Wawamalu Beach and to strengthen the linkage with Sandy Beach. Neither of these improvements would suggest that the Ka Iwi site would necessarily benefit from being under the City's jurisdiction. One consideration if the Ka Iwi site is established as a park is the realignment of the recommended bypass road. Instead of linking up at Sandy Beach, it could run along the drainageway mauka of the golf course and link up with Kalanianaole Highway mauka of the golf course entrance. This would extend the scenic drive past Wawamalu Beach. This alternative bypass road alignment was considered but rejected in the Koko Head Park Master Plan. Extension of the scenic drive, however, is not critical for the Ka Iwi site to become an integral part of the recreational opportunities available in the study area.

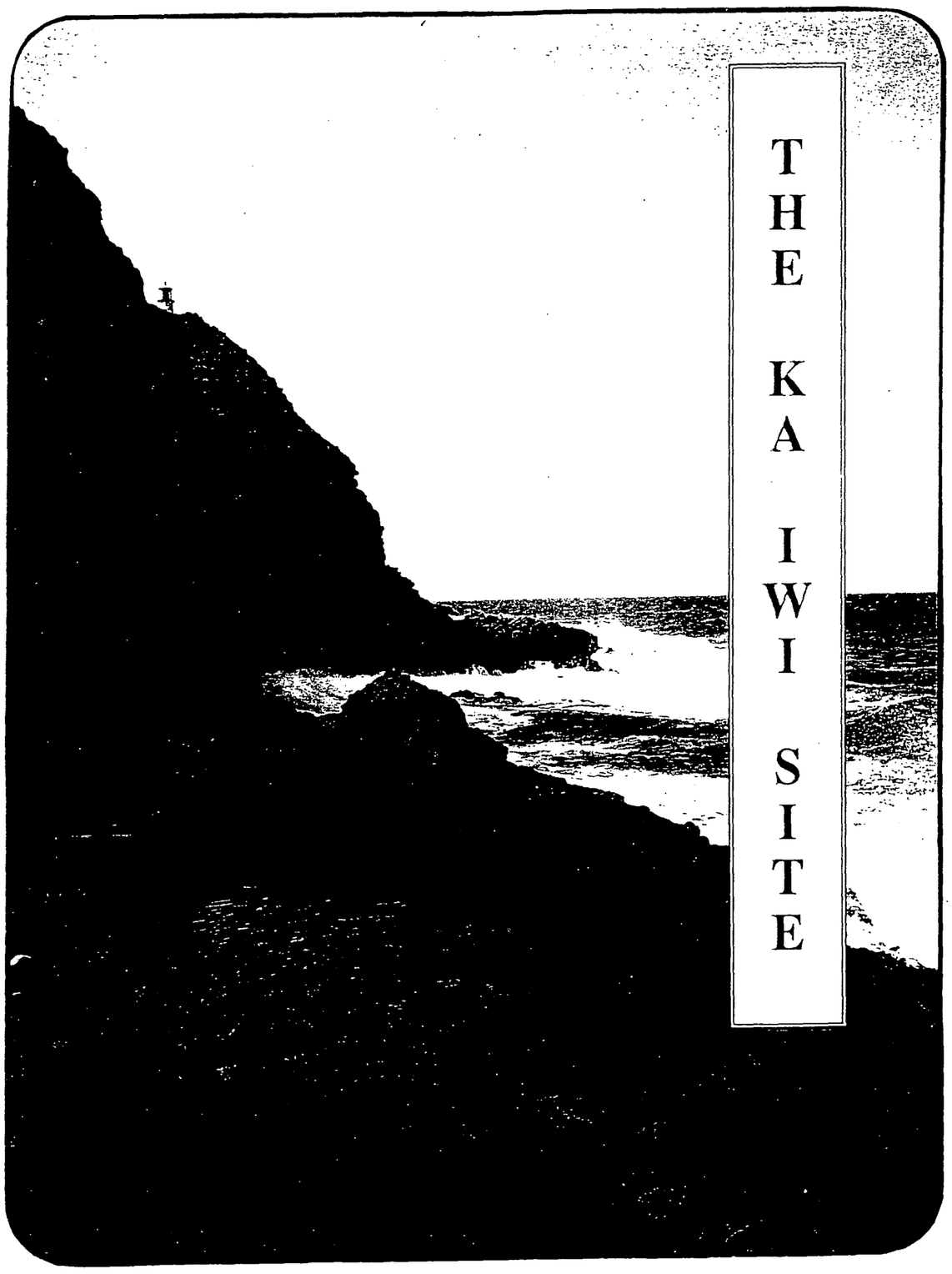
E. Recommendation

It is recommended that the State acquire the privately-owned portion of the Ka Iwi site and proceed to develop a State Park. As discussed in Part B of this document, the proposed Ka Iwi site's scenic, historic, and natural resource values have state-wide significance and as a State park, it would offer state-wide benefits. The Ka Iwi site would also benefit from the conservation enforcement and preservation responsibilities of DLNR agencies. In addition to the Division of State Parks, other DLNR agencies which could have a hand in managing the Ka Iwi site's cultural, ocean, and land resources include the Division of Aquatic Resources, Division of Forestry and Wildlife which administers the Na Ala Hele Statewide Trail and Access System, the Historic Preservation Division, and the Division of Conservation and Resources Enforcement.

Establishing a Ka Iwi State Park would leave the rest of the study area's management to the City and County of Honolulu which is already managing most of the area as a scenic and cultural resource. Establishment of a State Park would be consistent with the general themes of resource-oriented recreation and interpretive/education as established by the City's Koko Head Park Master Plan. Although the Ka Iwi site could conceivably be managed under the City and County Department of Parks and Recreation (DPR), DPR is generally responsible for recreation facilities rather than conservation and resource preservation. Also, since part of the Makapu'u Headland is already owned and operated as a park by the State, the State has taken the first step in the management of the area. A State Park at Ka Iwi would, thus, consolidate management with the adjoining Makapu'u State Wayside.

With regard to the relationship between State management and the City-owned portion of the study area, there does not appear to be a strong sense of linkage. Therefore, the split in management should not be significant. To the extent possible, thematic linkages in interpretive/education program topics could be pursued but such linkage would not be critical to the success of such programs. Following successful establishment of the Ka Iwi park, the State could consider acquiring other City-owned portions of the study area to expand the park.

With regard to land acquisition, the Ka Iwi site is designated Urban by the State and litigation regarding prior downzoning is pending. Should the prior designations be restored, the land value would be significant, possibly beyond the means of the State. However, an alternative to purchasing the land may be a land exchange. In the case of the Heeia wetlands in Kaneohe, Oahu, the State successfully negotiated a land exchange with Bishop Estate for 420 acres. While this may be the best option for acquiring the Ka Iwi site, it should be noted that under the current administration's policy, ceded lands may not be sold or traded in exchange for other lands.



THE KAIWI SITE

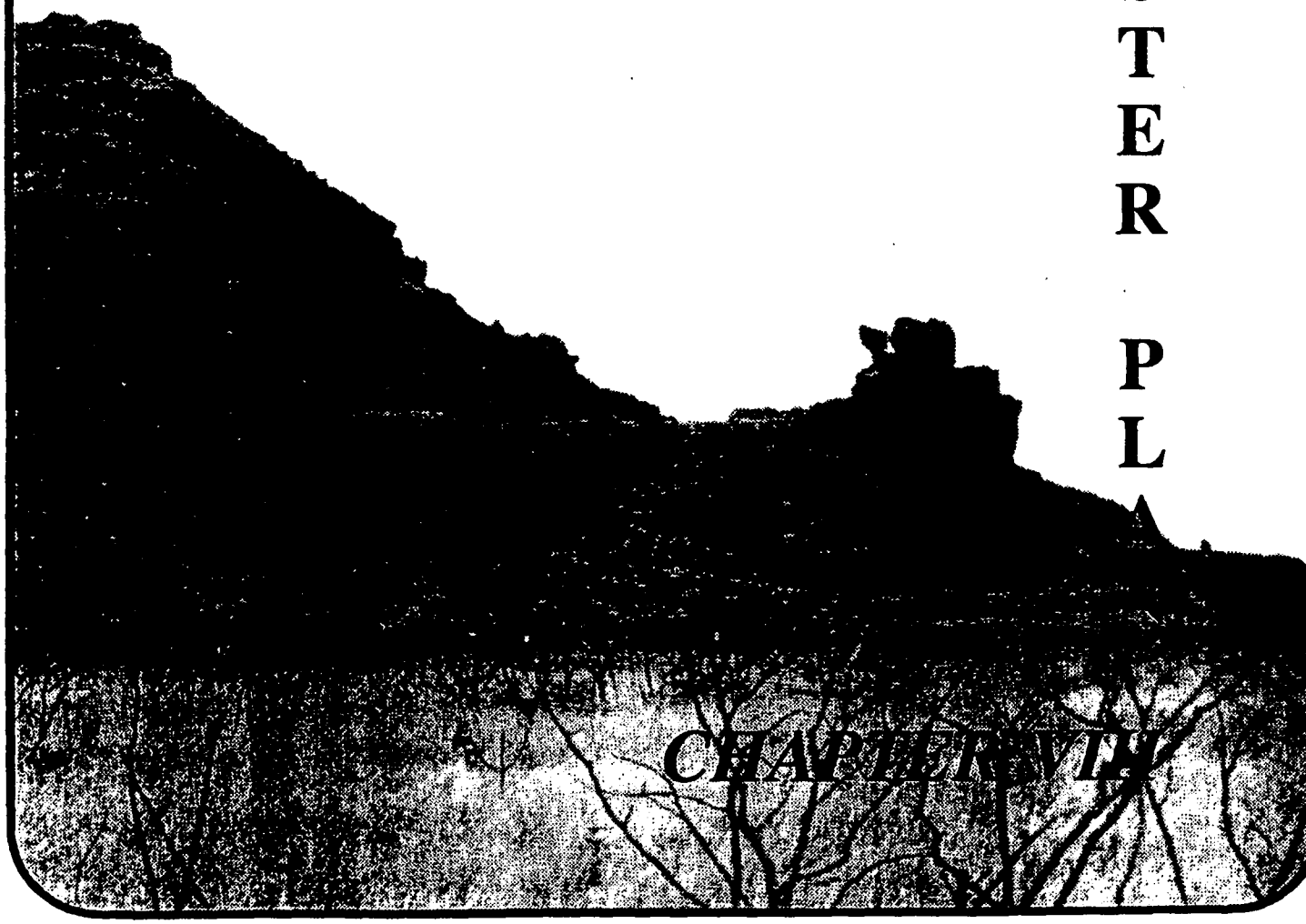


Filled lava tube along the Coastal Beach Trail



Remnants of the Davis Family saltwater swimming pool at Kaloko Inlet

KAIWI MASTER PLA



CHAPTER VII

VIII. LAND USE HISTORY OF THE KA IWI SITE

A. Background Information

The land use history of the study area spans from that of the traditional Hawaiian ahupua'a to ranching use, military use, and initial earthwork for resort development. Today, Oahu's eastern shoreline is one of only two stretches of coastline on Oahu which have not been urbanized, the other being Kaena Point. Many community members view this status as tentative, however, and have pressed to preserve the coastline as open space.

The following is a broad land use history of the study area with an emphasis on land use at the Ka Iwi site, from the pre-contact period to the present.

B. Pre-Contact Period

Before Western contact, there was a close association between the regions of Wawamalu and Waimanalo. In fact, the entire ahupua'a (traditional Hawaiian land division usually extending from the uplands to the sea) of Maunalua was considered an 'ili (land section) of Waimanalo and not really a true ahupua'a. Access between the two areas was by way of the road named Kealakipapa, which is now the route of Kalanianaole Highway. The road is thought to have been built by an ali'i who resided in Wawamalu. It has also been referred to as the old "King's Highway."

> *"Kealanuikipapa. An ali'i who lived at Wawamalu had the road built. He made the people who annoyed him build the road. (road may be pre-European)"*
>
> Mary Kawena Pukui. May 28, 1953. Sites of O'ahu. 1978 compiled by Elspeth P. Sterling and Catherine C. Summers. Bishop Museum.

Until the early part of the twentieth century, there was still controversy as to whether Maunalua should be considered an 'ili of Waimanalo and therefore in the district of Koolaupoko, or as a separate ahupua'a in the district of Honolulu. The issue was resolved in 1932 under an amendment to the Hawaii revised statutes of 1925.

> *"From Makapu'u Head in Maunalua to Moanalua inclusive and the islands not included in any other district, to be styled the Honolulu*

District; From Lae of ka Oio to Makapu'u Head in Waimanalo, to be styled the Koolaupoko district."

John Wesley Coulter. "A Gazetteer of the Territory of Hawaii." p. 223. 1935. Taken from Sites of O'ahu. p. 257 Sterling and Summers 1978.

1. 1930 Archaeological Survey

The number and variety of archaeological sites in the study area indicates long-term use of the region by Hawaiians in both pre- and post-contact times. The former presence of heiau, shrines, house sites, cultivation mounds, and a stone-paved road indicated permanent habitation of fishing hamlets scattered along the coastline, with crop cultivation inland.

Documentation from J. Gilbert McAllister's archaeological survey of the area in the early 1930's verified the area of Maunalua as being well used by the ancient Hawaiians. Archaeological sites reported along the coast within the study area by McAllister include house sites, old walls, rock enclosures, rock shelters, a cave habitation, possibly a heiau, and possibly a canoe house (halau). Remains of several fishing shrines (ko'a) were also documented. (see Figure VIII-1 and Table VIII-1). Other sites were documented in the surrounding areas of Kalama Valley which indicated use of the area for agricultural purposes (probably sweet potato cultivation).

McAllister's survey mentions thirteen sites within the Ka Iwi site, including two house sites, a large rock enclosure of unknown origin, a rock shelter, and a fishing shrine. The survey also revealed a thirty five-foot long canoe house closed on three sides and open to the sea on the fourth. Sites reported at the northern end of Kealakipapa Valley in 1930 included an artificial pile of stones and sections of a 15 to 16 foot-wide stone-paved road known as the old "King's Highway." This old stone road was probably built during the reign of King Kamehameha III, sometime after 1825, and originally extended from the eastern edge of Kalama Valley to the current Makapu'u Lookout. Remnants of this road were surveyed in May 1992 by State archaeologists, who found the road alignment to be still visible in the dry brush.

2. 1984 Archaeological Survey

In July and August 1984, a walk-through archaeological reconnaissance survey of the Ka Iwi site, including the Makapu'u shore bench but excluding Makapu'u Head and the cliffs makai of the Makapu'u Lookout, was conducted by Hiro Kurashina and Aki Sinoto.

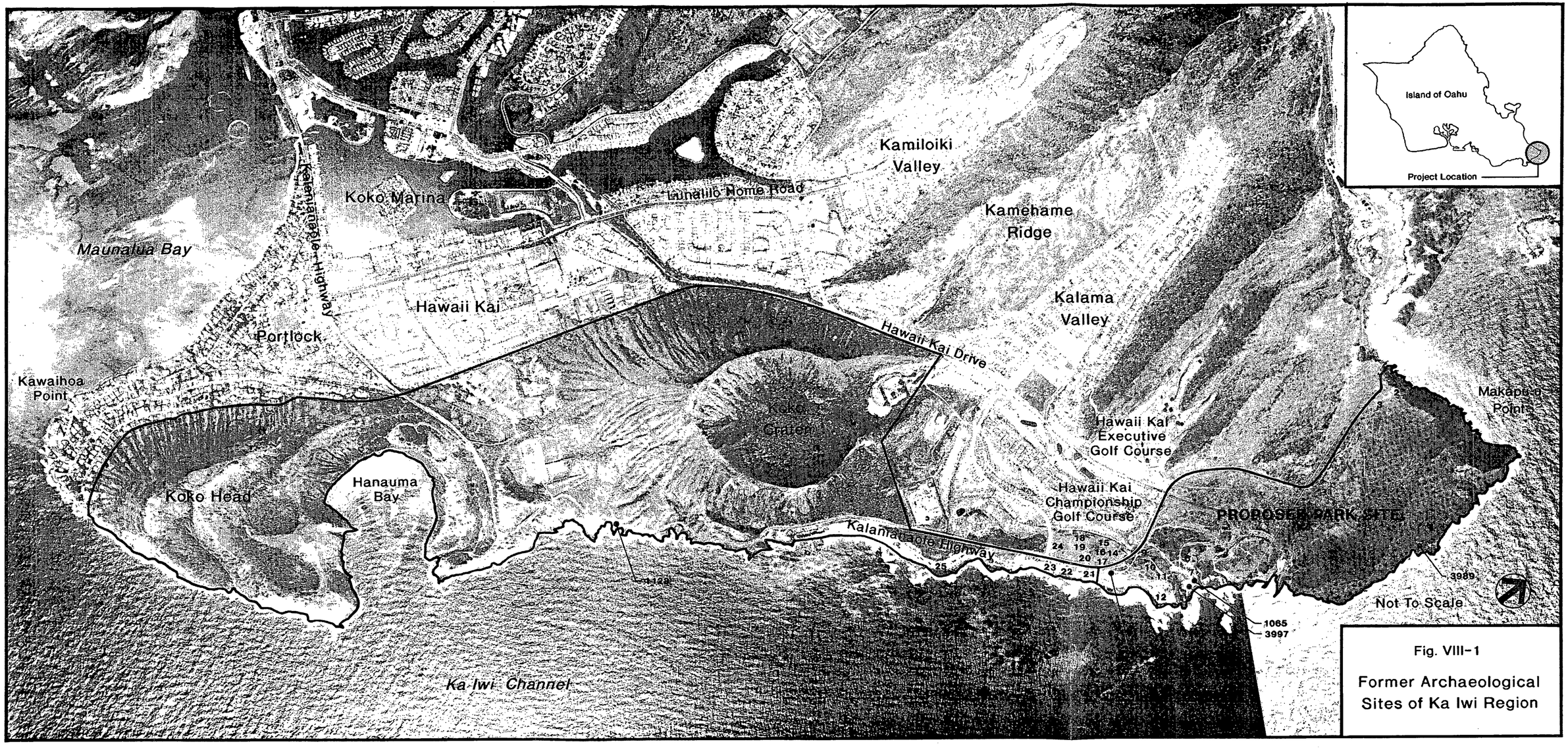


Fig. VIII-1

Former Archaeological Sites of Ka Iwi Region

TABLE VIII-1
FORMER ARCHAEOLOGICAL SITES OF THE KA IWI REGION
(see Figure VIII-1)

No.	McAllister Sites
1.	Stone form addressed by Hi'iaka as Malei, Makapu'u Point, lighthouse
2.	Artificial pile of stones
3.	Kealakipapa Valley road (also recorded in 1984, **still present**)
4.	Small crescent-shaped walls, Maunalua Beach
5.	House site, Maunalua
6.	Fishing shrine, ko'a, Maunalua
7.	House site, small shelter, Maunalua
8.	Walled structure, Maunalua
9.	Pile of stones, Maunalua
10.	House site, enclosure, Maunalua
11.	Enclosure, 30 X 25 feet, Maunalua
12.	Canoe house, halau, Maunalua
13.	Rock shelters or windbreaks, Maunalua
14.	Fishing shrine, ko'a, Maunalua
15.	House platform, Maunalua
16.	House platform, Maunalua
17.	Enclosure, Maunalua
18.	Enclosure, Maunalua
19.	Enclosure, Maunalua
20.	House site, Maunalua
21.	Cave habitation, Maunalua
22.	Possible heiau site, Maunalua
23.	Enclosure, Maunalua
24.	Pigpen, Maunalua
25.	Fishing shrine, ko'a, Maunalua

No.	State Historic Preservation Division Sites
50-80-15-01065	Napa'ia structure, Maunalua (probably destroyed)
50-80-15-03997	Kaloko dwelling site, Maunalua (recorded in 1966)
50-80-15-03990	Ka'ili'ili midden site, Maunalua (recorded in 1984)
50-80-15-01128	Koko Head petroglyphs, (recorded in early 1900's and in 1988)
50-80-15-03989	Makapu'u Head cave (recorded in 1984, **still present**)
50-80-15-03	Kealakipapa Valley Road Remnants (recorded in 1992, **still present**)

Except for remnants of the old "King's Highway," none of the archaeological sites reported in a 1930 survey by J. Gilbert McAllister could be found. It is likely that most of the surface sites along the coast were destroyed by the 1946 tsunami, and consequently are not visible today (B.P. Bishop Museum, 1984).

The reconnaissance study of 1984 did reveal two previously unrecorded archaeological sites. The first was a cave (State Site No. 3989) which was described as a rock shelter on the rugged cliff face of Makapu'u Head, about halfway between Kapaliokamoa and Makapu'u Point, located along the coastal shelf about eight meters above sea level. The cave contained remains of a trench three meters by one meter down to about fifty centimeters below the cave floor which had been excavated by an unknown party. Aside from a nondescript piece of lithified algal material and modern bottle fragments and aluminum cans, no formal artifacts were present on the cave floor (B.P. Bishop Museum, 1984).

The second site, a midden site (State Site No. 3990), was possibly concealed from view at the time of McAllister's study. This site was located about fifty meters north of the Wawamalu wall on the beach berm. A disturbed stone alignment and compacted gray sandy deposits, which may represent an occupational floor, were found within a 30 meter by 10 meter area. Two basalt flakes were collected from the midden site, and a fragment of what may have been a human ulna (bone of the forearm) was found further north along the beach berm (B.P. Bishop Museum, 1984).

C. Post-Contact Period: The Great Mahele

Ownership of Maunalua in the Western sense began with the Great Mahele in 1848. Initiated by Kauikeaouli (Kamehameha III), the Mahele was a culmination of reforms started in the early 1840's to liberalize the land holding and civil rights policies in Hawaii which had been subject to considerable criticism from foreign interests in the islands.

It was with the Great Mahele acts that ancient land-holding patterns were abolished. The lands of Maunalua were claimed by then Governor of O'ahu, Mataio Kekuanaoa who, having then designated Lot Kamehameha and Ruth Keelikolani as heirs, passed away two years later in 1868. Lot Kamehameha died in 1872 and subsequently all lands vested to his half sister Ruth.

Ruth Keelikolani and her cousin Bernice Pauahi Bishop were then the last descendants of the Kamehameha line. Since the two were very close, it was Ruth's wish that upon her death, the bulk of her lands be willed to Bernice Pauahi Bishop. Upon Ruth's

passing on May 24, 1883, approximately 350,000 acres of land came into the possession of Bernice Pauahi Bishop, among this the lands at Maunalua.

Bernice died only seventeen months after inheriting Ruth's lands, but her will was already in place at that time. Therefore, at the time of her passing, Kamehameha Schools and the Bernice Pauahi Bishop Estate were founded, of which Maunalua was a part.

D. Land Use Under Bishop Estate

In 1887, following the foundation of B.P. Bishop Estate, trustee Samuel M. Damon established the Maunalua Ranch Company, thus ushering in the era of the ranchers at Maunalua, including the area known as Queen's Beach. With the death of Samuel Damon in 1924, the ranch was gradually dissolved and the lease reverted back to the Bishop Estate.

In 1906, the grounding of the cargo liner Manchuria off Waimanalo prompted the construction of the lighthouse at Makapu'u Point. Several parcels of land from Damon's leased property were allocated to the lighthouse site and the access road. The lighthouse was subsequently constructed by the Lighthouse Service in 1909. The present Makapu'u Headland Road right-of-way across Bishop Estate property in Kealakipapa Valley was granted in 1916. Until 1974, when the lighthouse was automated, lighthouse keepers lived with their families in stone cottages on Makapu'u Head. The Makapu'u Lighthouse was listed in the National Register of Historic Places in 1977.

In 1928 the Bishop Estate Trustees sold to the City and County of Honolulu a large area of land in the ahupua'a of Maunalua (approximately 1,325.10 acres) for the amount of $1.00. The real gain for the Estate was the assurance that the City and County would extend and maintain the municipal water system through Maunalua. The deed to the City stipulated that the City would "maintain perpetually the water system by it installed . . . on and across the land of Maunalua to a place called 'Mouo' . . ." The place name Mouo appears near the southern end of Lunalilo Home Road on a 1921 map. In addition, it was anticipated that the City would eventually extend the water system east of Koko Crater to Wawamalu, so the Trustees included a stipulation that tenants in this area would also have use of the water.

To protect its business interests, the Estate Trustees also restricted use of the conveyed land to "public parks and/or rights of way . . ." Out of this deed came the establishment of the Koko Head District Park which includes most of the study area from Koko Head to Koko Crater and Sandy Beach. By 1929, the highway along the eastern coast of Oahu

was in the works. Hence, the Trustees could look forward to having Territorial and Federal funds provide them with highway access to their Wawamalu land, a potable water supply, and adjacent open park space, all positive conditions for future development of their retained lands.

The most recent and best known ranch in the study area was established in 1932 by Alan S. Davis, a well-known corporate official in the Islands and long-time head trustee of the Campbell Estate until his death in 1975. Davis took out a thirty-year lease for a ranch estate in and around Kaloko on a piece of land known as Napa'ia. Here he built his home, and the lands comprising his estate he named Wawamalu after the village that once existed in the area. Then, in April 1946, a tsunami severely damaged the Wawamalu Ranch. Fortunately, Davis and his family managed to escape the destruction. From higher ground, they watched as a series of waves destroyed their home.

> *"...Then, between the third and fourth waves, Mr. Davis returned alone to his home to make sure everyone had vacated the area, to try and save the family's pets, and to salvage his personal belongings. The interior of the house was already a shambles and, as he was picking his way through the interior, the next wave struck. He was so startled that he grabbed the object nearest him, a painting hanging on the wall, and ran for the road, wading knee-deep through turbulent water. Soon after this wave receded, Mr. Davis once again reached the safety of the gap (meaning the Makapu'u Gap). He and his family watched the next wave totally demolish their house and roll up almost the entire length of Kealakipapa Valley. Fearing that the succeeding waves might wash up the entire length of the valley and spill through the gap into Makapu'u Beach, the whole group drove up to the lighthouse at the very top of Makapu'u Bluff..."*
>
> Taken from Beaches of Oahu written by John R.K. Clark. University of Hawaii Press. 1977.

The tsunami "scoured" the area and very little remained intact except for the ruins of a stone wall which had bordered the ranch at Wawamalu beach, some barbed wire fencing, and remnants of the saltwater swimming pool that had been utilized by the Davis family. The tsunami also destroyed low-lying portions of Kalanianaole Highway but left intact the 1931 Wawamalu Bridge at Kaloko inlet. Portions of Kalanianaole Highway were realigned in 1947 and 1948, and a new bridge was built mauka of the old Wawamalu Bridge.

In 1956, the Hawaiian Telephone Company leased 2.782 acres from Bishop Estate on the southern end of Makapu'u Head for a telephone relay station. Between 1957 and 1962, under a sub-lease to the telephone company, the University of Hawaii used this relay station building to operate a solar observatory on the site. The observatory included an optical telescope, sub-atomic particle detectors, and a radio telescope. Today, the partially demolished building remains.

E. Military Use

In 1922, the U.S. Government leased a 3.93-acre area to erect a fire control station at the 647-foot summit of Makapu'u Head. This concrete structure still stands today at an optimal viewing site on the ridge. During its period of use, this observation station reportedly contained a pair of optical instruments. One was used to obtain target angles for transmission to the plotting rooms of distant gun batteries and the other was used to observe the fall of shot so that correction data could be transmitted.

In later years up to and after World War II, the U.S. Government acquired smaller parcels to construct pillboxes, gun positions and bomb-proof shelters for personnel and ammunition at Makapu'u Head. There are several concrete structures on the east-facing slopes of Makapu'u Head which remain intact. By 1948, the use of fixed coastal fortifications became obsolete and the fire control station was abandoned. The former Makapu'u Military Reservation was turned over to the State of Hawaii in 1960, for use by the Hawaii National Guard as a training area.

F. Modern Development Efforts

In 1959, a subsidiary of Kaiser Industries, the Hawaii Kai Development Corporation, obtained the development rights for Bishop Estate property at East Oahu including the Ka Iwi site. After the death of Henry Kaiser, the corporation was reorganized several times and today conducts business as Bedford Properties, Inc.

Between 1959 and 1964, the Hawaii Kai Development Corporation made a number of alterations to the Queen's Beach area. All the large kiawe and wiliwili trees were removed to make surveying easier. A massive rock groin on the north side of Kaho'ohaihai Inlet and a smaller rock groin and revetment were built on the south side of the inlet to provide protection for a proposed boat channel. A dirt road was bulldozed from Makapu'u Headland Road to Kapaliokamoa, and a rock outcrop next to Kapaliokamoa was removed to make a flat spot for a proposed restaurant. Kaho'ohaihai Inlet and Ka'ili'ili Bay were reportedly bulldozed inland at depths of 1 to 2 feet. The beginning of a proposed curved moat to connect Ka'ili'ili Bay to Kaho'ohaihai Inlet was

bulldozed but never completed. Offshore sand was reportedly taken from the area where the breakwater was built and stockpiled on the south side of Kaho'ohaihai inlet and mauka of Ka'ili'ili Bay. Kaloko Inlet was deepened and extended with shaped charges and dragline. Dredge spoil was stockpiled around Kaloko Inlet.

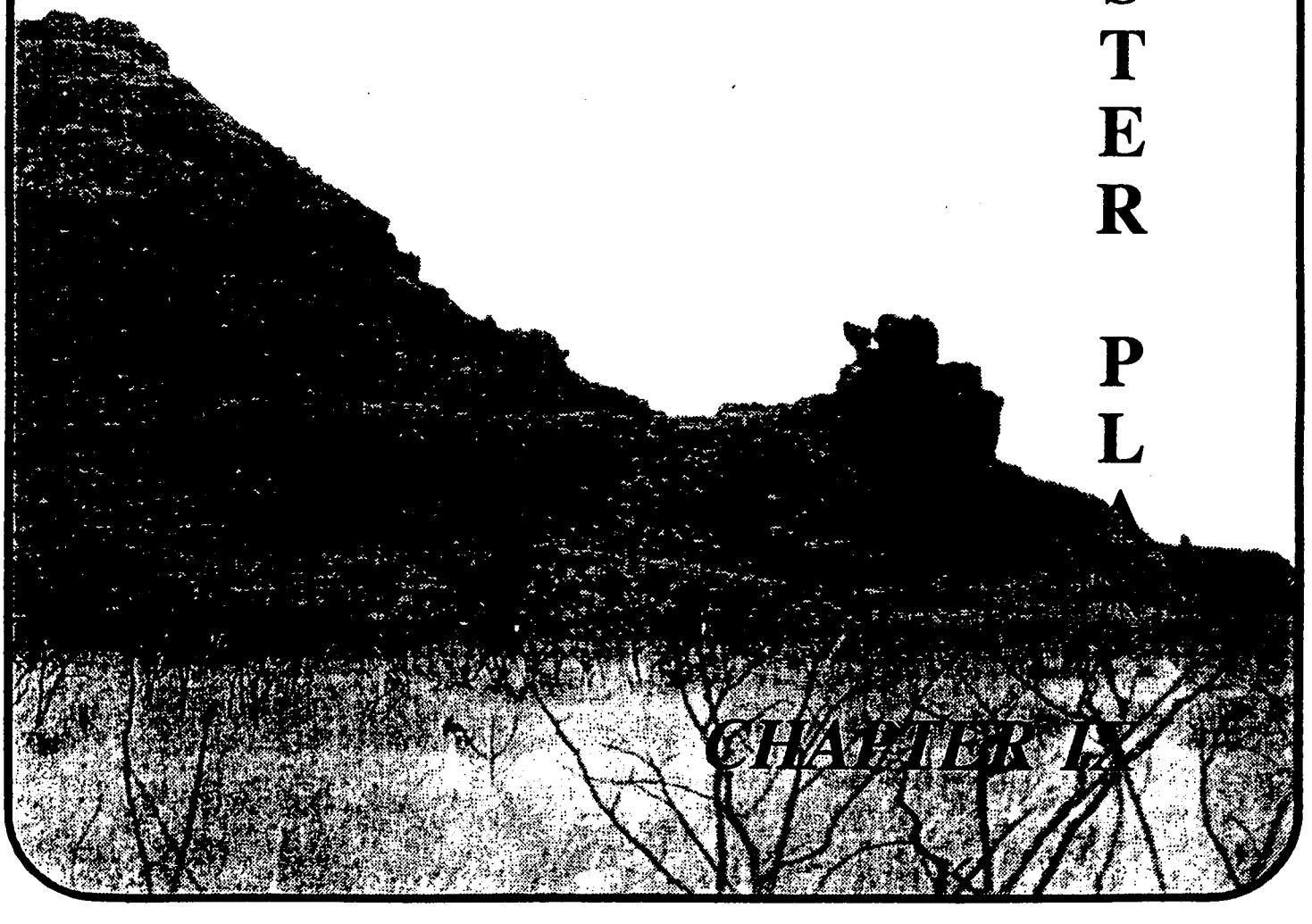
Between 1972 and 1975, the Kaiser-Aetna Corporation (a successor to the Hawaii Kai Development Corporation) stockpiled large boulders and dirt from subdivision sites in Kalama Valley on much of the Queen's Beach coastal plain. Drainage channels were also dredged across the coastal plain to carry storm runoff from the Hawaii Kai Golf Course to Ka'ili'ili Bay. Since then, apart from boulders and junked cars placed to block public vehicular access to the coastal plain, there has been little alteration of the area.

From 1964 through 1982, official land use plans of the City and County of Honolulu contained resort and commercial development designations for the Ka Iwi site. In December 1982, after a decade of political pressure from community groups including the Save Queen's Beach Association, Save Our Surf, Hawaii League of Conservation Voters, Sierra Club, and several neighborhood boards, the Honolulu City Council adopted a General Plan which deleted all policies allowing resort development at Queen's Beach. When the 1966 Detailed Land Use Map for Hawaii Kai, which had also designated resort development in the area, was replaced in May 1983 with the East Honolulu Development Plan Land Use Map, the Ka Iwi site was designated "park" and "preservation." The area's R-6 residential zoning, first enacted in 1969, was repealed and replaced with P-1 preservation zoning in March 1984.

Subsequently, Kaiser Aluminum and Chemical Corporation and The Kamehameha Schools/Bernice Pauahi Bishop Estate filed eight lawsuits, six in State Court and two in Federal Court asking that either R-6 zoning be restored or compensation paid for lost property value and investments. The State lawsuits included the areas known as Golf Courses 5 & 6 and Golf Course 21A, as well as Queen's Beach (Ka Iwi). The Federal lawsuits involved Queen's Beach. The trustees argued that the rezoning barred economically viable use of the land and was an attempt to freeze development indefinitely and drive down the land's value. However, in 1987 one of the suits was dismissed by the U.S. District Court Judge, and the ruling was upheld again in September 1990 by the 9th U.S. Circuit Court of Appeals. The appeals court's ruling was made on the basis that Bishop Estate failed to substantiate its claim. In March of 1991, the U.S. Supreme Court refused to hear an appeal by Bishop Estate, effectively ending further pursuit of this federal lawsuit. The federal lawsuit by Kaiser Aluminum and Chemical Corporation is still pending.

In October 1995, Bishop Estate unveiled a proposal for a negotiated settlement of its lawsuits with the City. In exchange for dropping the lawsuits and title to land parcels known as Golf Course 5 & 6, near Sandy Beach, the landowners would be allowed to develop various projects, including a 140-room hotel, 40 acres of commercial and industrial property, a golf course and up to 1,712 houses and apartments. A consent decree would allow the developer to bypass zoning, the environmental review process and other City approvals by using alternative project review procedures. The City Council approved the proposal, continuing further negotiations for the settlement. The portion of the settlement directly affecting the study area is a proposed golf course encompassing the Ka Iwi Area from Queen's Beach through Kalama Valley.

KA IWI MASTER PLAN



CHAPTER IX

IX. PHYSICAL SETTING

A. Climate

Inland temperatures on Oahu are moderated by tradewinds blowing off the surrounding ocean where the surface temperature of the water ranges between 73°F and 80°F. The National Oceanic and Atmospheric Administration, Environmental Data Center, has recorded temperature and rainfall at the Ka Iwi site in their publication, Climate of Makapu'u Point, Hawaii. According to this record, the warmest month at the Ka Iwi site is September, with average daily temperatures at sea level ranging between 83°F and 74°F. The coolest month is February, with average daily temperatures ranging between 76°F and 67°F. From 1951 through 1973, the maximum temperature at the Ka Iwi site was 97°F and the minimum temperature was 53°F (U.S. Dept of Commerce, 1978).

The Ka Iwi site is usually sunny and dry. Between 1951 and 1973, average annual rainfall was 31.8 inches. Rainfall is chiefly from a few heavy winter storms between October and April. Rainfall from tradewind showers is negligible. On the average, there are only 15 days a year when rainfall is 0.5 inches or more (U.S. Dept of Commerce, 1978).

Between May and October, tradewinds predominate with wind mostly from the northeast or east. Wind direction is more variable during the rest of the year. During tradewind conditions, seaward facing cliffs and the shoreline at Queen's Beach are exposed to strong, steady gusts while areas in the lee of Makapu'u Head receive very little or no breeze. The strength and constancy of the tradewinds is evident in plant life on the headland, which exhibits a form referred to as windshear. Tradewinds funneled through Kealakipapa Valley sometimes produce light offshore breezes at Kaho'ohaihai Inlet and Ka'ili'ili Bay (U.S. Dept of Commerce, 1978).

B. Topography

The Ka Iwi site can be divided into four topographic regions: a coastal zone (referred to in this report as Queen's Beach); a valley (Kealakipapa Valley); a rocky headland (Makapu'u Head); and a coastal bench. The coastal plain which makes up Queen's Beach and the lower portion of Kealakipapa Valley has gentle slopes of 5% or less, as shown in Figure IX-1. Maximum elevation is about 24 feet Mean Sea Level (MSL). Any variation in slope is mostly due to drainageways which feed Kaloko Inlet and Ka'ili'ili Bay, and to boulders deposited throughout the area. The mouth of Kealakipapa Valley, at Queen's Beach, is wide and narrows to its head near the Makapu'u Lookout at 160 feet MSL. Slopes in the valley range from 5 to 10%. Again, any other variation

in topography is mostly due to scattered boulders. From the lowest point of Kealakipapa Valley to the tip of the 669-foot summit, the west slope of Makapu'u Head ranges from 10 to 60% slope. The slope of Makapu'u Head's north facing cliffs ranges from 100 to 360%, and its east-facing cliffs range from 75 to 125% slope. The terrain is rugged and the cliffs are hazardous for climbing. A fairly level shore bench along the eastern side of Makapu'u extends for about 4,500 feet from the rock groin at Kaho'ohaihai Inlet (USGS, 1983). The knoll near the southern end of the headland is named Pu'u o Kipahulu. Rising abruptly from the southern foot of this headland is an unusual 30-foot high rock formation named Kapaliokamoa, which translates as "chicken cliff" (VTN Pacific, Inc, 1984).

C. Shoreline

The Ka Iwi shoreline begins at the Wawamalu Ranch Wall and extends towards Kapaliokamoa, then stretches for approximately 9,000 feet around the coastal rim of Makapu'u Head, as shown in Figure IX-2. This shoreline is characterized by beach and dune sand, three inlets, low lava shelves strewn with rock and gravel, mudflats, and a coastal lava bench, most of which is inaccessible (VTN Pacific, Inc, 1984).

From the Wawamalu Ranch wall to Kaloko Point, beach and dune sand has been deposited by storms behind the rocky shoreline to create what is known as Kaloko Beach. This is the only portion of shoreline at Queen's Beach where natural wave action and currents carry offshore sand to the shoreline. From Kaloko Point, Kaloko Inlet heads inland, becoming an estuary which has been artificially extended to reach a small gulch under Kalanianaole Highway. Parts of Kaloko Inlet, like all three inlets, are filled with poorly sorted rubble, gravel, and sand and are awash at low tide (VTN Pacific, Inc, 1984).

On the opposite side of the mouth of Kaloko Inlet, lava rock juts out at Ka'ili'ili Point. This is where the 1946 tsunami destroyed the Alan Davis Family Ranch. Remnants of the Davis' salt water swimming pool are still visible today. Fragments of the pool's grouted rock walls are now filled with sand and gravel. As for Ka'ili'ili Bay, stands of mangrove occupy mudflats in the furthest inland portion of the bay, while other areas of shoreline are covered in rubble and gravel. The bay is about 400 feet wide at its widest point. A drainage canal has been dredged from the Hawaii Kai Championship Golf Course to enter the bay from the north.

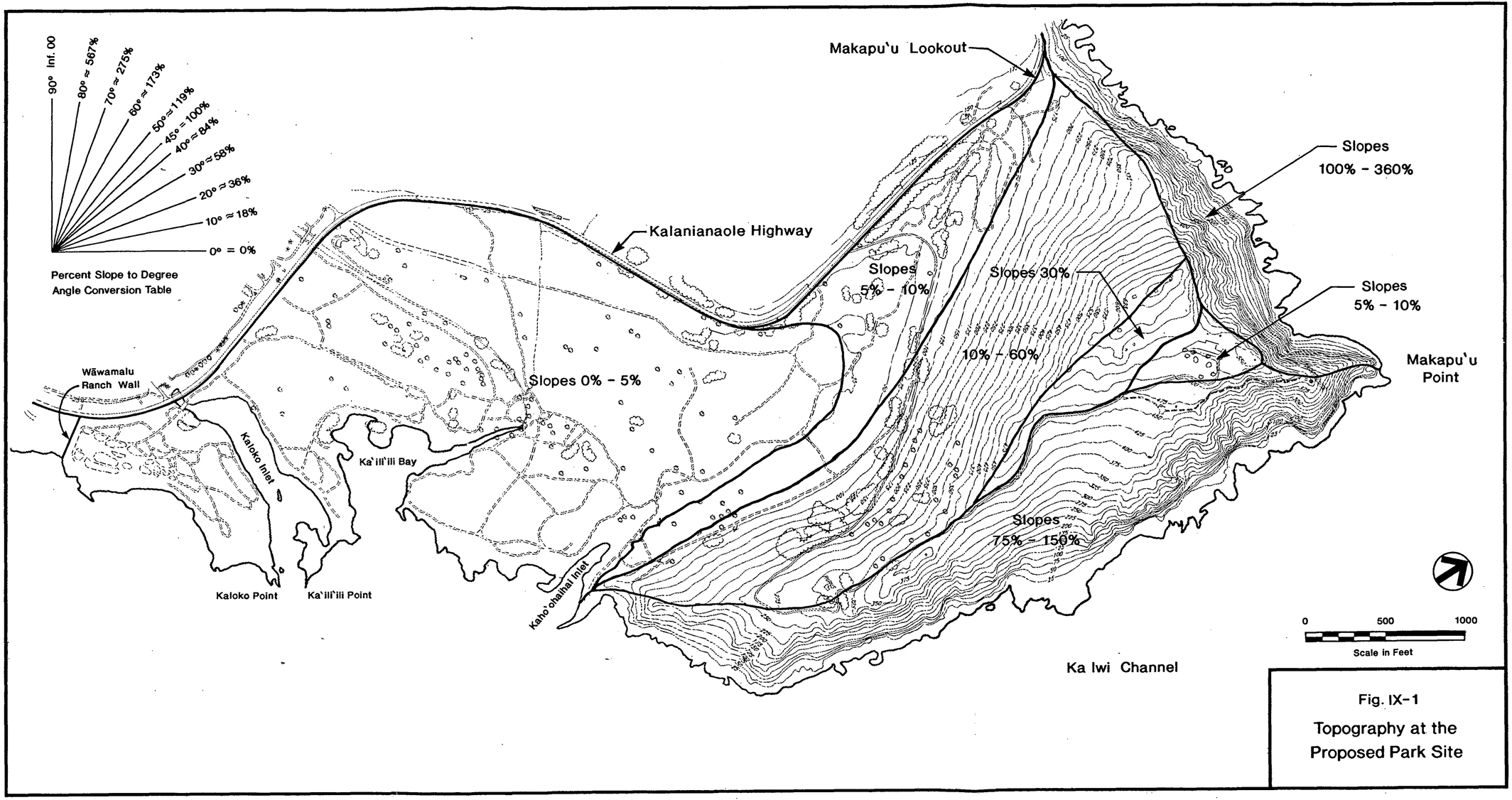


Fig. IX-1

Topography at the Proposed Park Site

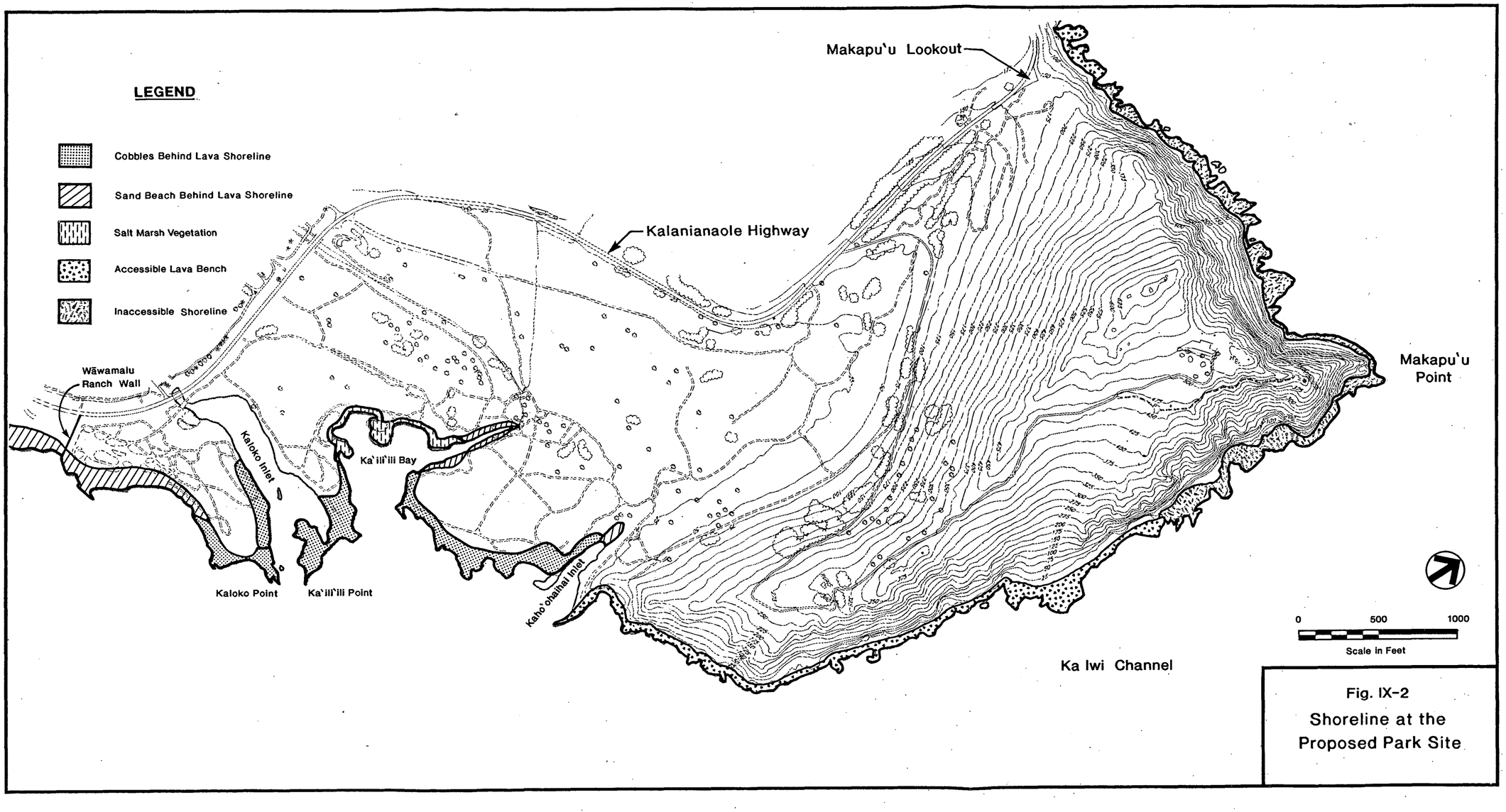


Fig. IX-2
Shoreline at the
Proposed Park Site

This channel has conveyed silt, forming mudflats in the bay's shallow water. Although there is sand within Kaloko Inlet and Ka'ili'ili Bay, it has a high debris/silt content (VTN Pacific, Inc, 1984).

North of Ka'ili'ili Bay, the shoreline becomes jagged lava again. A coral and lava cobble beach has been deposited behind this shoreline from Ka'ili'ili Bay to a third inlet, called Kaho'ohaihai. This inlet shelters a small sand beach which was artificially deposited at the mauka edge of the inlet by the Hawaii Kai Development Company during the early 1960s. A large man-made rock groin on the east side and a groin and revetment on the west side of Kaho'ohaihai Inlet at one time were intended to protect a boat channel. Under most conditions they shelter the mouth of the inlet from wave action. In contrast, during kona winds, there are usually breaking waves in the mouths of Kaloko Inlet and Ka'ili'ili Bay (VTN Pacific, Inc, 1984).

Beyond Kaho'ohaihai Inlet, the shoreline is a rough discontinuous lava bench, 3 to 10 feet above sea level, strewn with talus from the steep slopes of Makapu'u Head. During calm seas, it is possible, though still hazardous, to walk along the shore bench and over low sea cliffs toward the base of Makapu'u Point. A few of the tidal pools along the way are deep enough to swim in (VTN Pacific, Inc, 1984).

About halfway between Pu'u o Kipahulu and Makapu'u Point is a sea cave which extends a considerable distance inland beneath the widest portion of the coastal bench. Cracks in the roof of the sea cave noisily vent air, and occasionally water, as waves surge through the cave. One of the openings near the end of the cave is a blowhole which can spout a large fountain of water when conditions are right. There is also a rough discontinuous lava bench on the north face of Makapu'u Head similar to the shore bench on the east side of the headland. Steep sea cliffs between gaps in the bench make it impossible to walk all the way from Makapu'u Beach to the base of Makapu'u Point.

D. Geology and Soils

Makapu'u Head is the southeastern end of the Ko'olau Range. The Ko'olau Volcano was initially shield-shaped, like Mauna Loa on the Island of Hawaii, and extended several miles seaward of Makapu'u. When volcanic activity ended, about 2.5 million years ago, the highest part of the Ko'olau Range was northeast of the existing crest. Subsequently, fluvial erosion carved a series of valleys in the Ko'olau shield which may have reduced its height by as much as 1,000 feet (MacDonald, et al, 1986).

Coastal areas of Oahu also underwent a series of submergences and emergences resulting from changes in the ocean level during glacial and interglacial phases. Long ago, during much higher stands of the sea, ocean waves eroded away all ridgelines dividing windward valleys from Makapu'u through Waimanalo, cut a seacliff around Makapu'u Head, and scattered blocks of marine limestone between the Makapu'u Lookout and the summit of Makapu'u Head. The shore bench along the north and east sides of Makapu'u Head was probably cut by wave action in relatively recent times when sea level was slightly higher than at present. Wind, rain, and salt spray battering the face of Makapu'u Head have eroded the softer layers of exposed lava flows and left the harder layers standing in relief. There are several features of geologic interest on the shore bench east of Makapu'u Head including a blowhole, a filled lava tube, exposed dikes, and several small caves (Stearns, et al, 1985).

The Koko Rift is part of a landscape that was added to the Southeastern edge of the Ko'olau Range about 30,000 years ago. It is one of the last areas of volcanic activity on Oahu. From an aerial perspective, the Koko Rift is an easily discernible linear chain of tuff cones which extends from Koko Head to the offshore islands of Kaohikaipu and Manana, as shown in Figure IX-3. Consolidated ash from explosive eruptions formed huge tuff cones makai of the then-existing shoreline at Koko Head, Hanauma Bay, and Koko Crater (MacDonald, et al, 1986; Gramlich, et al, 1971).

Most of the coastal plain southwest of Pu'u o Kipahulu was also submerged until Kalama Crater erupted. Lava from Kalama Crater flowed to the sea and formed a rocky shoreline extending from Sandy Beach through Kapaliokamoa. Subsequent wave action reshaped this shoreline and deposited sand and cobble beaches. The Koko Head eruptions are dated at about 34,000 to 41,000 B.C., the Kalama flows at about 30,000 to 34,000 B.C., and the Kaupo flows (at Sea Life Park) at about 29,000 to 31,000 B.C. (MacDonald, et al, 1986; Gramlich, et al, 1971).

Most of the naturally formed soils in the Ka Iwi site are either extremely rocky or very sticky and very plastic clay. Neither of these characteristics is suitable for intensive agriculture or landscaping. Boulders, soil, and dredge spoil have been stockpiled over about half of the coastal plain east of Kalanianaole Highway.

Soil Conservation Service classification of soil types and a map of areas where boulders are stockpiled are shown in Figure IX-4 (Foote, et al, 1972).

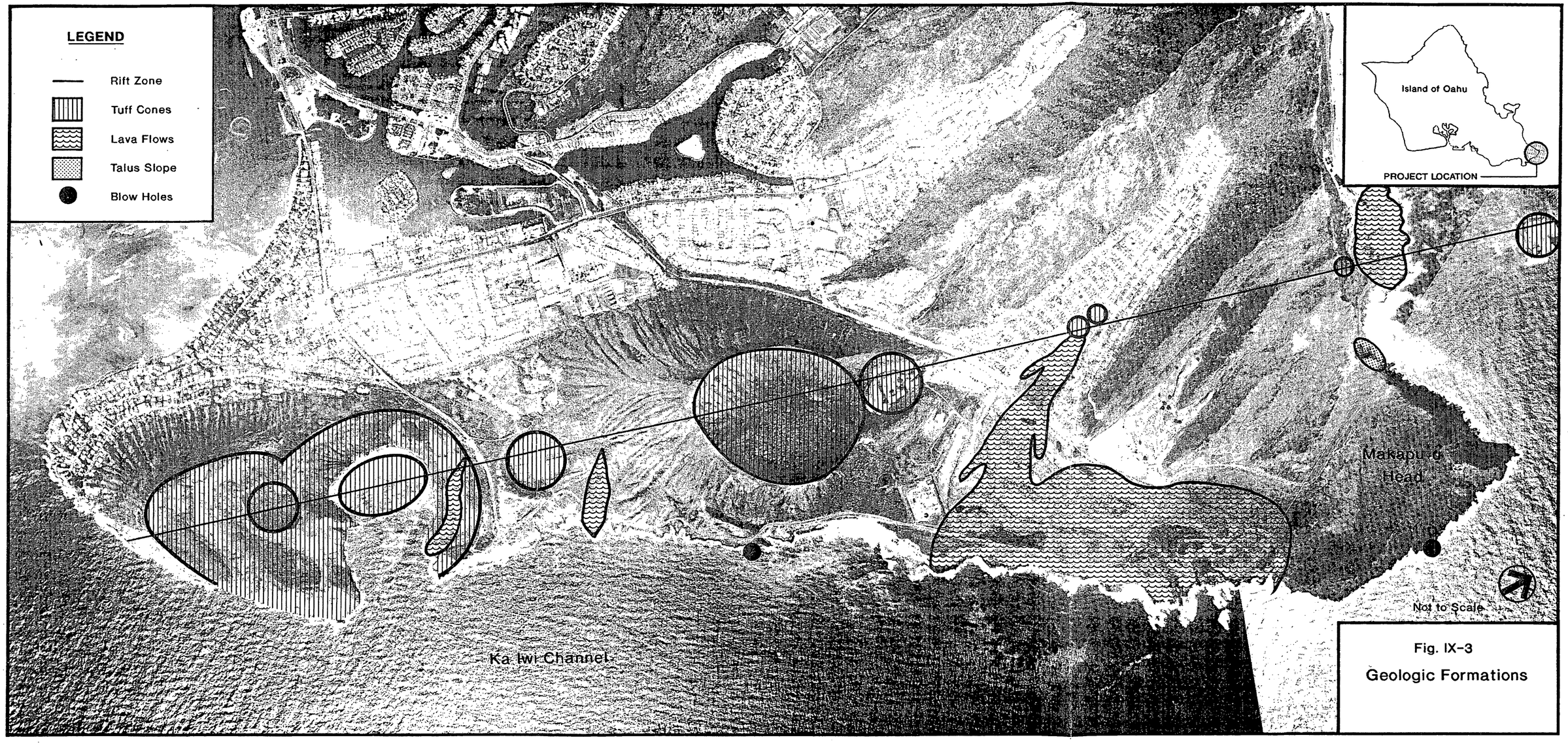


Fig. IX-3

Geologic Formations

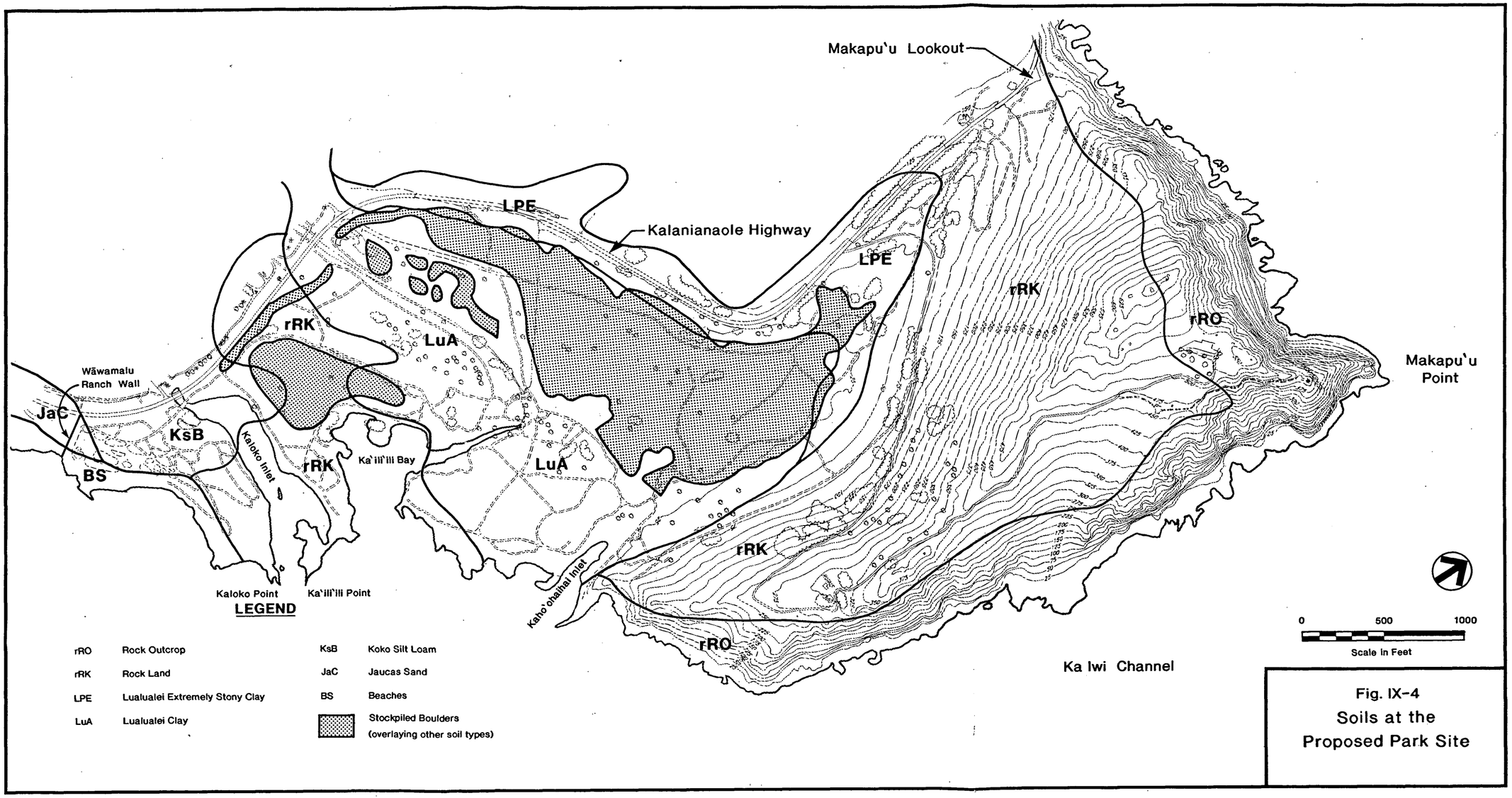


Fig. IX-4
Soils at the
Proposed Park Site

TABLE IX-1

SOIL CHARACTERISTICS AT THE KA IWI SITE

Characteristic	Rock Outcrop (rRO)	Rock Land (rRK)	Stony Clay (LPE)	Lua-lualei Clay (Lua)	Koko Silt Loam (Ksb)	Jaucas Sand (JaC)	Beach
Fertility	Low	Low	Low	Mod.	High	Low	Low
Permeability	Slow	Slow	Slow	Slow	Mod.	High	High
Shrink-Swell Potential	Low	High	High	High	Low	Low	Low
Shear Strength	High	Low	Low	Low	Mod.	Low	Low
Erosion Hazard	Low	High	Mod.	Low	Low	High	High
Corrosivity	Low	Low	Mod.	Mod.	Low	Low	High

Note: Mod. = Moderate

E. Drainage and Flood Hazard

Runoff from rainfall on the leeward side of the Ko'olau Range between Kamehame Ridge and the Hawaii Kai Golf Course, including all of Kalama Valley and the Queen's Gate subdivision, is directed toward a 40-foot wide trapezoidal concrete drainage channel which passes under Kalanianaole Highway and into a 15-foot wide dirt ditch which extends to Ka'ili'ili Bay. Since only a small portion of the peak storm flow can be carried by this earth ditch, a shallow 200-foot wide overflow channel parallels the ditch to handle larger flows, as shown in Figure IX-5 (U.S. Dept of Commerce, 1962).

Runoff from the mauka side of the highway between the Hawaii Kai Golf Course parking lot entrance and Makapu'u Lookout collects in swales on the mauka edge of the highway and is carried under the road through six inlets and two box culverts. Once makai of the highway, this water flows along natural depressions toward the ocean. South of the 40-foot wide trapezoidal concrete drainage channel, off-site runoff from the Hawaii Kai Golf Course is collected at two locations. Some runoff

flows toward collector inlets which divert the water to the 40-foot wide trapezoidal concrete drainage channel or a nearby pipe culvert. The remaining runoff flows toward a drainage system along Kealahou Road which crosses Kalanianaole Highway and exits at Sandy Beach. Storm flow from Kealakipapa Valley makai of the highway and the west side of Makapu'u Head discharges into the Kaho'ohaihai Inlet. During storms, intense downpours can occur at the Ka Iwi site. It is estimated that on the average, the worst storm in 100 years could produce 3 inches of rain in one hour and over 13 inches of rain in 24 hours (U.S. Dept of Commerce, 1962).

During storms, runoff from about 1,500 acres flows into Kaloko Inlet, Ka'ili'ili Bay, or Kaho'ohaihai Inlet. Estimated storm flows into these inlets are summarized in Table IX-2. The approximately 365 acres comprising the Ka Iwi site contributes relatively little of the runoff.

TABLE IX-2
STORM FLOWS AT THE KA IWI SITE

	Kaloko Inlet	Ka'ili'ili Bay	Kaho'ohaihai Inlet
Approximate Drainage Area	165 Acres	1,155 Acres	180 Acres
10-Year Storm	220 cfs	1,520 cfs	240 cfs
50-year Storm	280 cfs	1,940 cfs	300 cfs
100-year Storm	310 cfs	2,140 cfs	340 cfs
Note: cfs = cubic feet per second.			

Source: Queen's Beach Park Feasibility Study (p.II-18). VTN Pacific, Inc.

On-site drainage poses no problems for the proposed park because runoff discharges in sheetflows and does not accumulate in one overflow area, apart from the dirt drainage channels crossing Kealakipapa Valley. Improvements to these channels may be warranted to reduce erosion since they will continue to receive storm flows.

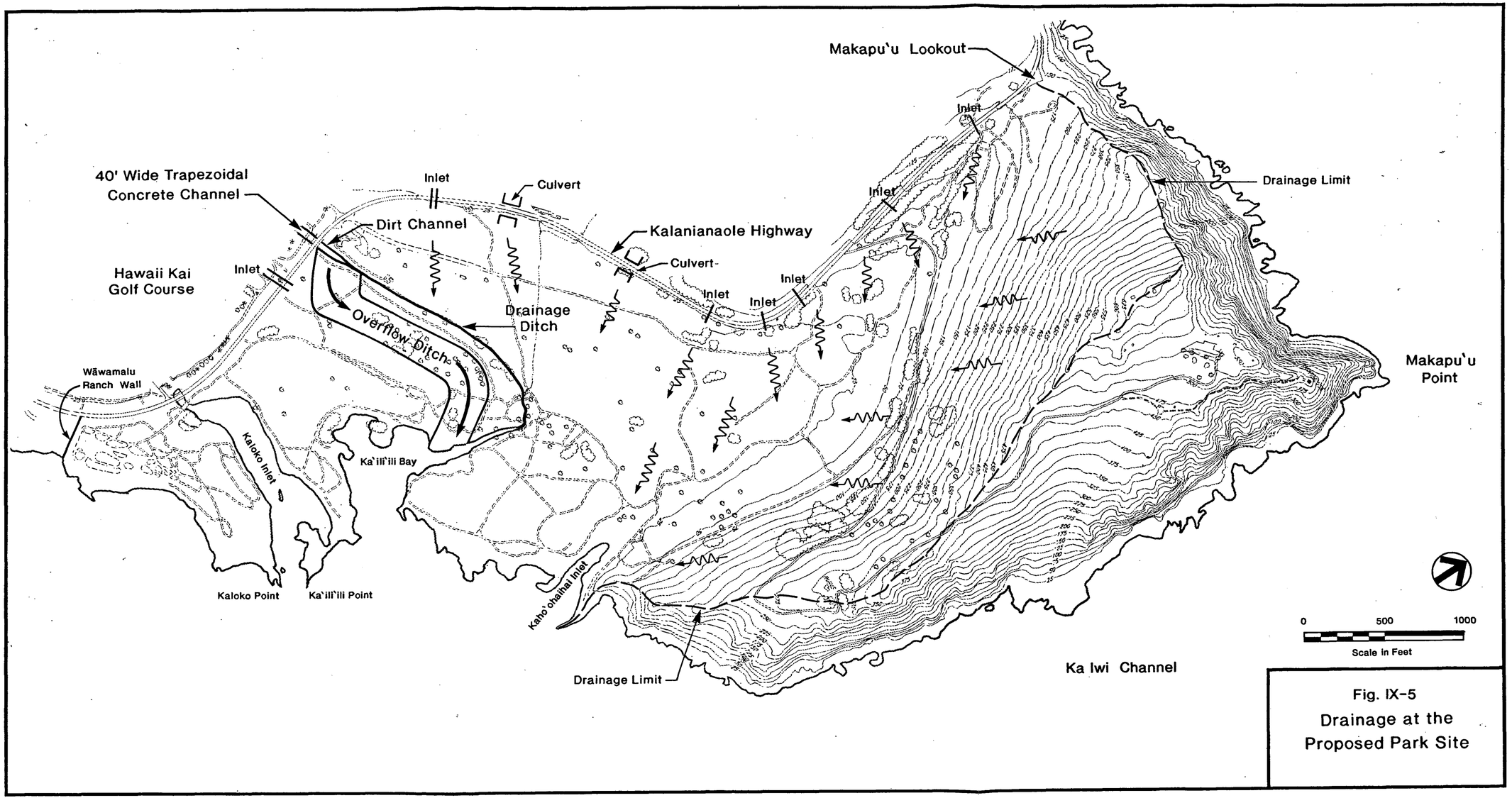


Fig. IX-5
Drainage at the
Proposed Park Site

F. Tsunami and Storm Wave Hazard

Tsunamis are waves generated by seismic activity such as earthquakes and volcanic eruptions. The great period and wave length of tsunami waves preclude their dissipating energy as a breaking surf; instead, they are apt to appear as bores (a tidal flood with a high abrupt front) or as rapidly rising water levels. Most of the destructive tsunamis in the Hawaiian Islands have been generated by earthquakes in South America, Japan, and Alaska. As with most natural phenomenon, the longer the waiting period between tsunami occurrences, the larger the expected event (U.S. Dept Army, 1978).

Once at the shoreline, tsunami move inland, gradually losing energy to friction and natural obstructions. Based on criteria developed for the Corps of Engineers, it is estimated that a 100-year tsunami could wash over 1,200 feet inland in parts of Queen's Beach (U.S. Dept Army, 1978). The estimated inundation limit for the 100-year tsunami and the State of Hawaii Office of Civil Defense Tsunami Evacuation Line are shown on Figure IX-6.

The 100-year tsunami inundation line is based on the National Flood Insurance Rate Maps, where areas designated "AE" and "VE" are subject to inundation. Zone VE has an added velocity hazard which is not present in Zone AE. Areas designated "D" are subject to "*undetermined, but possible, flood hazards*," meaning that additional flood studies may be needed to determine potential flood hazard. As an added precaution and for ease of reference, the State of Hawaii Office of Civil Defense has defined the Tsunami Evacuation Line for the area as encompassing all lands makai of Kalanianaole Highway, including the makai portion of the Hawaii Kai Championship Golf Course. This is the minimum area that should be evacuated in the event of a tsunami. Figure IX-7 shows selected tsunami run-up profiles which could be expected at Queen's Beach (VTN Pacific, Inc, 1984).

Ocean waves along East Oahu are primarily generated by northeast tradewinds, storms in the southern hemisphere, and local storm systems. Over a nearly horizontal bottom, the height of a wave breaking in shallow water will be roughly 3/4 the water depth. However, rapidly sloping bottoms can produce breaking wave heights in excess of depth. (Walker, 1974) Because of the gently sloping stone ocean bottom, breaking storm waves over 20-feet high will first break more than 1,000 feet offshore of the Ka Iwi site. By the time the "whitewater" reaches the shoreline, much of the wave energy is dissipated. Hence, storm waves have a much smaller potential inundation area than do tsunami (VTN Pacific, Inc, 1984).

G. Nearshore Oceanography

In deep water around the Hawaiian Islands, tradewinds generally drive surface currents westward at 0.4 to 0.6 knots. Nearshore currents are dominated by the tides. During flood tide, nearshore currents are usually to the south or southwest at 0.1 to 0.4 knots (Engineering-Science, Inc, 1971, 1972).

During ebbing tides, nearshore currents significantly slow down and sometimes reverse. The net southwesterly nearshore current flow is strongest during the winter. Southerly nearshore currents frequently exceed 2 knots and have been nicknamed the "Molokai Express." Figure IX-8 shows typical directions of nearshore currents at East Oahu (Engineering-Science, Inc, 1971, 1972).

H. Coastal Water Quality

Water quality is excellent offshore of Queen's Beach and Sandy Beach, except in the immediate vicinity of the Hawaii Kai Sewage Treatment Plant outfall which is located 3,000 feet offshore in 35 feet of water between Halona Point and Sandy Beach. The City and County of Honolulu has a permit declaring the waters surrounding the outfall a mixing zone.

Water quality standards have been established by the Department of Health and are defined in Title 11, Chapter 54 of the Hawaii Administrative Rules. According to these standards, the coastline from Makapu'u Point to Wawamalu Beach and beyond is designated as Class A (AECOS, Inc, 1979, 1981). The definition of Class A waters in Hawaii Administrative Rules §11-54-03 is as follows:

(2) *Class A.*
It is the objective of Class A waters that their use for recreational purposes and aesthetic enjoyment be protected. Any other use shall be permitted as long as it is compatible with the protection and propagation of fish, shellfish and wildlife, and with recreation in and on these waters. These waters shall not act as receiving waters for any discharge which has not received the best degree of treatment or control compatible with the criteria established for this class. No new sewage discharges shall be permitted within embayments . . .

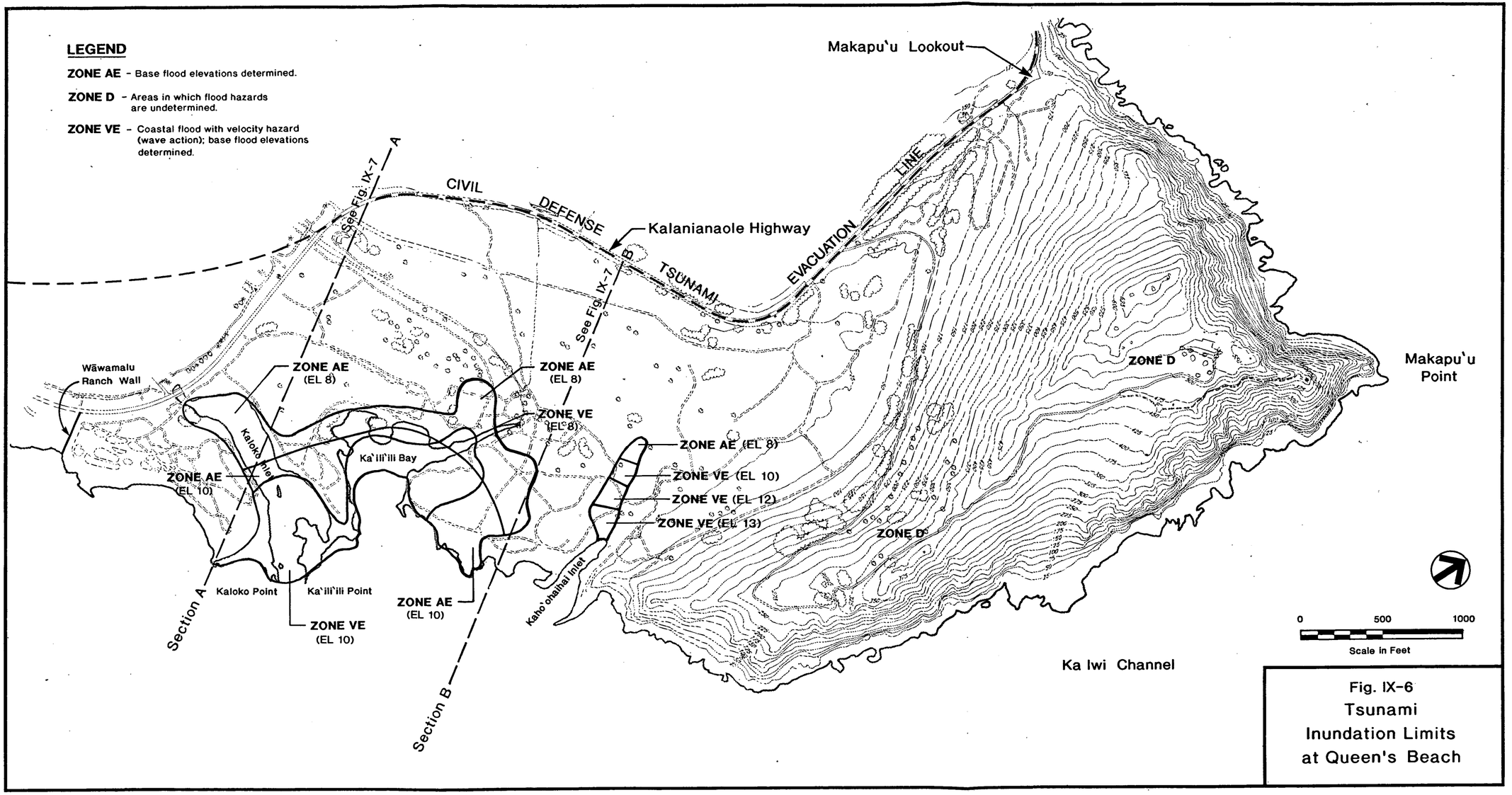
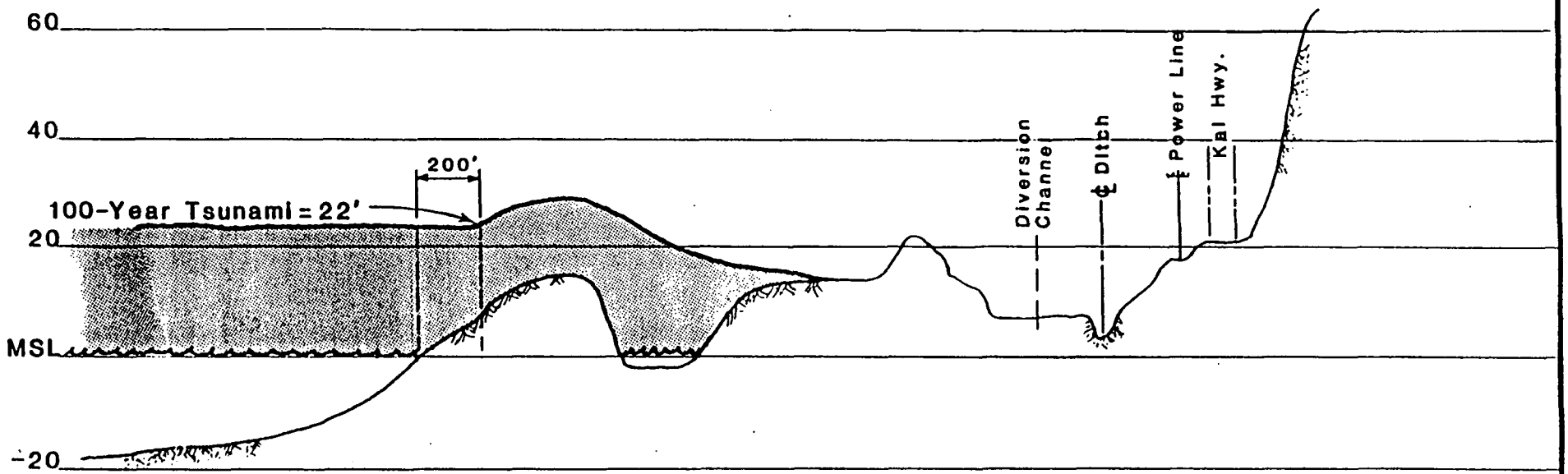
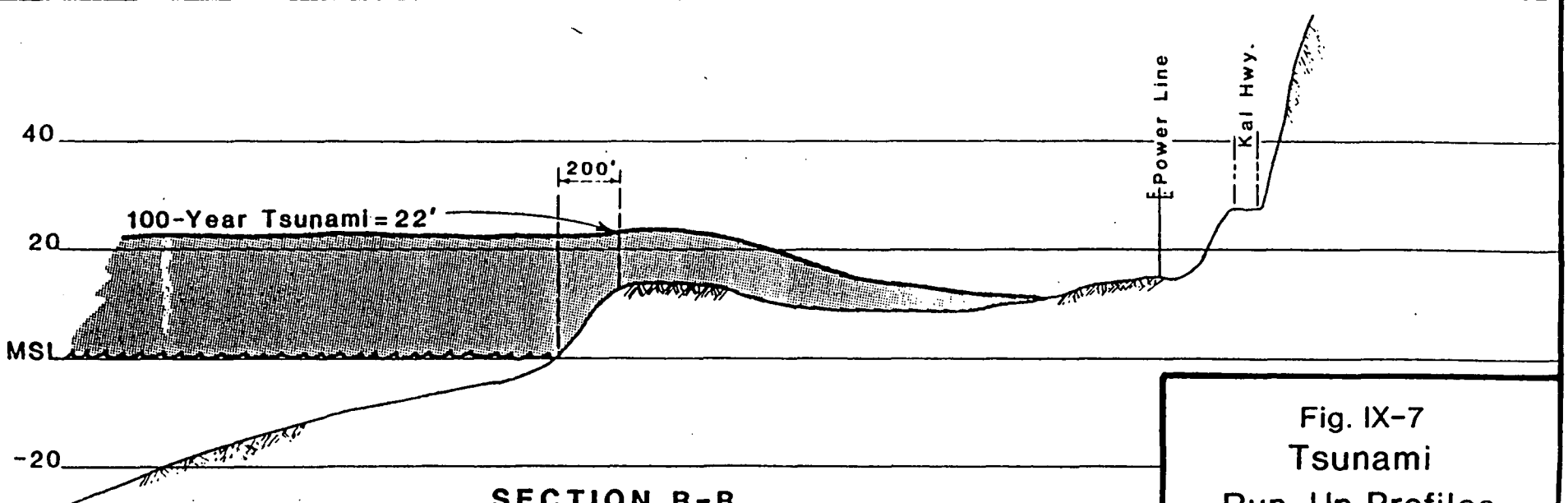


Fig. IX-6
Tsunami
Inundation Limits
at Queen's Beach



SECTION A-A



SECTION B-B

Hori. 1" = 500'
Vert. 1" = 30'

Fig. IX-7
Tsunami
Run-Up Profiles
at Queen's Beach

All sewage from the Hawaii Kai area is collected and treated at the Hawaii Kai Sewage Treatment Plant located mauka of Sandy Beach, across Kalanianaole Highway. Following secondary treatment, effluent is discharged through the ocean outfall. Four times a year, water quality samples are taken in the outfall area to verify compliance with Environmental Protection Agency (EPA) and State Department of Health requirements.

The treatment plant has experienced some technical failures and controversy in recent years. On occasion, sludge-contaminated sewage has been dumped through the outfall. Tests have occasionally shown unacceptably high fecal coliform bacteria levels. The Department of Health has issued enforcement orders requiring more personnel training and improvements to maintenance and operation procedures at the plant (Neil, 7 Jan 1990; "Sandy Beach...," 8 Jan 1990; Honolulu Star-Bulletin..., 4 May 1990; Memminger, 3 Oct 1991).

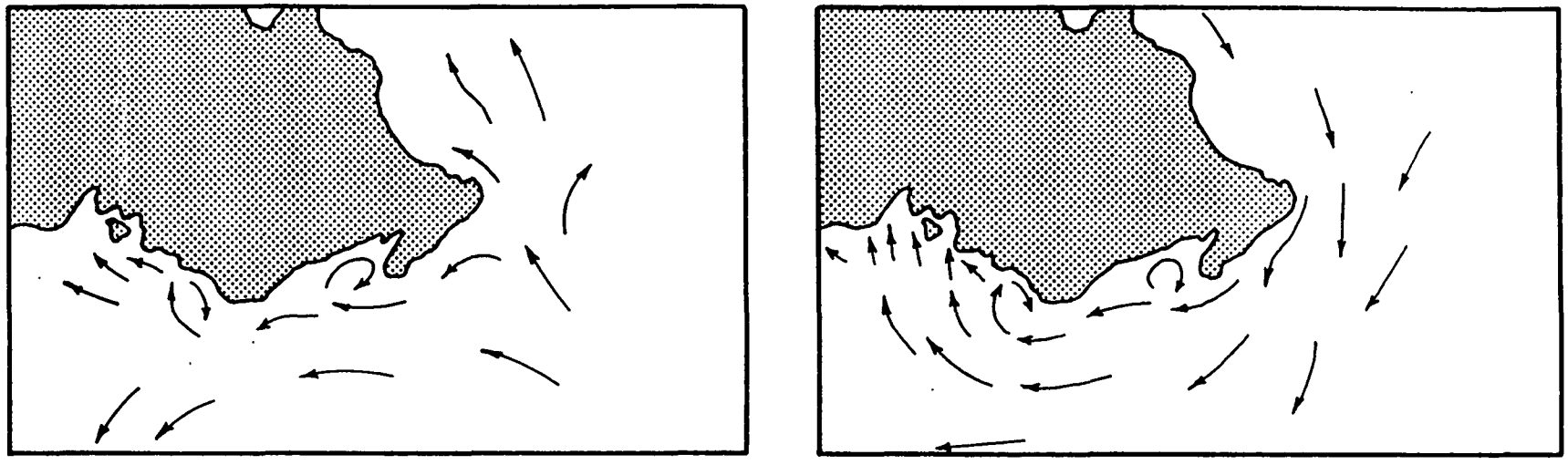
The waters of Waimanalo Bay from Makapu'u Point to the area north of Makapu'u, and including the waters surrounding Manana and Kaohikaipu Islands, are designated Class AA waters (AECOS, Inc, 1979, 1981). The definition of Class AA waters is as follows:

(1) Class AA.
It is the objective of class AA waters that these waters remain in their natural pristine state as nearly as possible with an absolute minimum of pollution or alteration of water quality from any human-caused source or actions. To the extent practicable, the wilderness character of these areas shall be protected. No zones of mixing shall be permitted in this class:

(A) Within a defined reef area, in waters of a depth less than ten fathoms; or

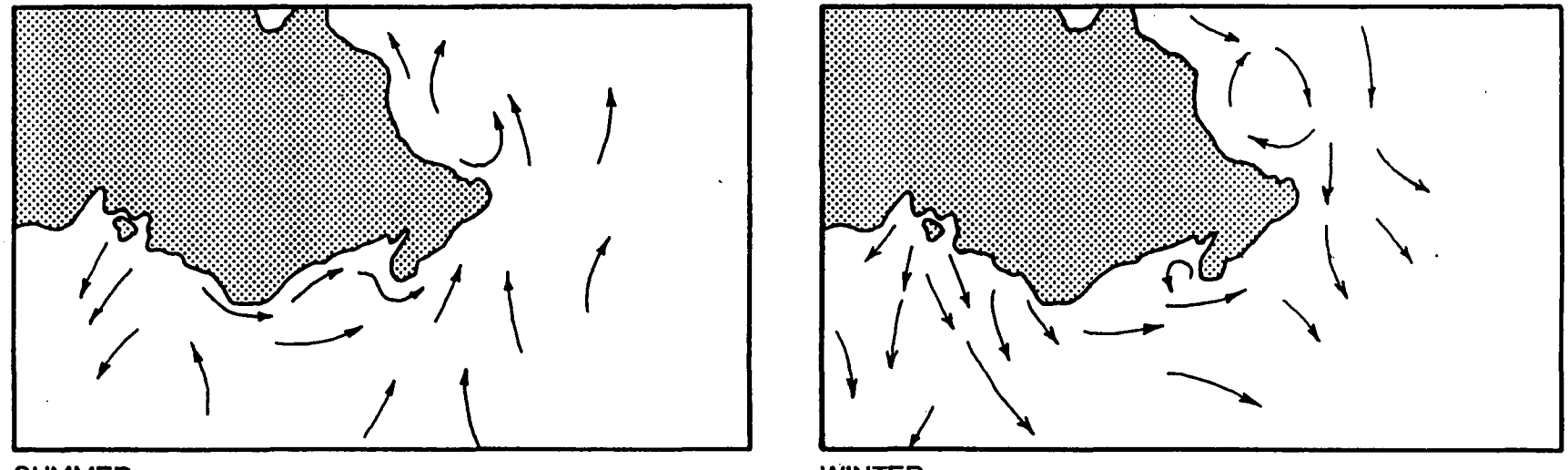
(B) In waters up to a distance of one thousand feet off shore if there is no defined reef area and if the depth is greater than ten fathoms.

The uses to be protected in this class of waters are oceanographic research, the support and propagation of shellfish and other marine life, conservation of coral reefs and wilderness areas, compatible recreation, and aesthetic enjoyment . . .



SUMMER WINTER

DURING FLOODING TIDE



SUMMER WINTER

DURING EBBING TIDE

Fig. IX-8

Major Current Flows at East Oahu

The waters offshore of Makapu'u are used for all of the above purposes. The Oceanic Institute at Makai Pier uses these waters for oceanographic research, and Sea Life Park collects marine specimens in these waters for their many sea life exhibits (AECOS, Inc, 1979, 1981).

Regarding the incidence of ciguatera, the Epidemiological Specialist at the State Department of Health reports that no cases of ciguatera were recorded along the area of coastline between Queen's Beach and Makapu'u Head since 1987. Most of the ciguatera poisoning cases on Oahu are linked to fish caught off of the reef runway at Honolulu International Airport and along the Waianae Coast (Sugi, Personal Communication, 1991).

Closer to shore, water quality is poor at the mauka extremes of Kaloko Inlet and Ka'ili'ili Bay where circulation is dependent on tidal flushing and wind. During storms, large quantities of fresh water laden with silt and debris drain into these inlets (VTN Pacific, Inc, 1984; Engineering-Science, Inc, 1971, 1972).

I. Ecosystems

1. Vegetation

In October 1991, Evangeline J. Funk Ph.D., Botanical Consultants, conducted a botanical reconnaissance survey of the Ka Iwi site. Of the 115 species of plants observed, 96 species probably are introduced (brought by man to Hawaii) and 19 species are native (occur naturally in Hawaii). Of the native plants seen at the Ka Iwi site, 10 species are indigenous (occurs naturally in Hawaii and elsewhere) and 9 species are endemic (occurs naturally only in Hawaii).

Notably, one of the 9 endemic species identified during the botanical survey was a large stand of the water fern *Marsilea villosa*, a recently listed endangered species. It was found in the northern end of what appeared to be a wetland at the base of Kealakipapa Valley more than three weeks after heavy rainfall. The stand occupied a line of deep, water-filled ruts made by off-road vehicles. The approximate area of the wetland conditions is about 30 feet wide by 600 feet long (Botanical Consultants, 1991).

While controversy continues about the definition of wetlands, the Federal Manual for Identifying and Delineating Jurisdictional Wetlands, set forth in 1989, outlines three specific criteria for a wetland:

- The presence of so-called "hydric" soils--meaning mucky or peat-based soils that are common in wet areas;

- The presence of plants found on the federal list of plant species that thrive in wet areas. The list includes plants that are considered *obligate*, or absolute indicators of wetlands because they only grow in water; and also *facultative* species, sometimes found in dry areas;

- The presence of water within 18 inches of the surface of the ground for at least seven consecutive days during the year.

A representative of the U.S. Army Corps of Engineers surveyed the subject wetland in October of 1991. Based on the survey, it was concluded the area met all of the above conditions. As previously noted, hydric soils were present, an obligate plant species, *Marsilea villosa* was found at the northern end of the area, and water was in fact present for at least 10 consecutive days at the surface of the ground.

The botanical reconnaissance survey was prepared in two parts; an inventory of plants at Queen's Beach and Kealakipapa Valley, and an inventory of plants on Makapu'u Head (Botanical Consultants, 1991). (see Figure IX-9). The findings of the survey are as follows:

a. Queen's Beach/Kealakipapa Valley (Coastal Plains) Botanical Inventory

The vegetation on the coastal plain is generally classed as xeric, which indicates it is adapted to a dry environment. The vegetation cover can be divided into three communities; the strand vegetation and wetlands zone, the open grassland zone, and the widely scattered kiawe with haole koa/cotton understory zone. The boundaries of these communities are most discernible from elevated vantage points on Makapu'u Head.

i. Strand Vegetation and Wetlands

The strand vegetation zone extends in a continuous line along the coast and around the edges of the inlets. The species composition of the strand vegetation has not changed since a botanical resource survey was conducted by VTN Pacific, Inc. in 1984, but stands appear to have been damaged considerably by the tires of off-road vehicles.

As for the mauka wetland, it is confined to a few deep ruts made by off-road vehicles.

At Queen's Beach, salt marsh plants, red mangrove (*Rhizophora mangle*), and pickleweed (*Batis maritima*) are flourishing along the inlets. Beach naupaka (*Scaevola sericea*) and 'aki'aki (*Sporobolus virginicus*) are present throughout Queen's Beach. Since the earlier survey, another mangrove-type tree called buttonweed (*Conocarpus erecta*) has become established.

ii. Open Grassland

Open grassland is found in two places on the site. The largest concentration is located inland from the coastal vegetation between Kaho'ohaihai Inlet and Ka'ili'ili Bay. Although many of the grasses had not flowered and were therefore unidentifiable, species of *Cenchrus* were by far the most common. Patches of haole koa and klu less than two feet high were frequent. There were also some scattered Hawaiian cotton plants (*Gossypium sandwicense*). The second open grassland enclave is located above the Makapu'u Headland Road in Kealakipapa Valley. This grassland is probably the result of wind, fires and off-road vehicles traveling through the flattened terrain. The scant ground cover is mostly buffelgrass (*Cenchrus ciliaris*) and guinea grass (*Panicum maximum*) interspersed with a variety of native plants including 'Ilima (*Sida fallax*) and Pa'uohi'iaka (*Jacquemontia ovalifolia*).

iii. Widely Scattered Kiawe with Haole Koa/Cotton Understory

This is the most common vegetation type. It extends from above the Makapu'u Headland Road to just below Pu'u O Kipahulu, and westward above the open grassland to Kalanianaole Highway. A small patch is also present on the high portion of the dunes behind Kaloko Beach. Kiawe trees vary from six to twenty feet in height and their location appears to be random. Both Hawaiian cotton and haole koa are summer deciduous and lose their leaves in the driest months. Neither species attains a height of more than eight to twelve feet.

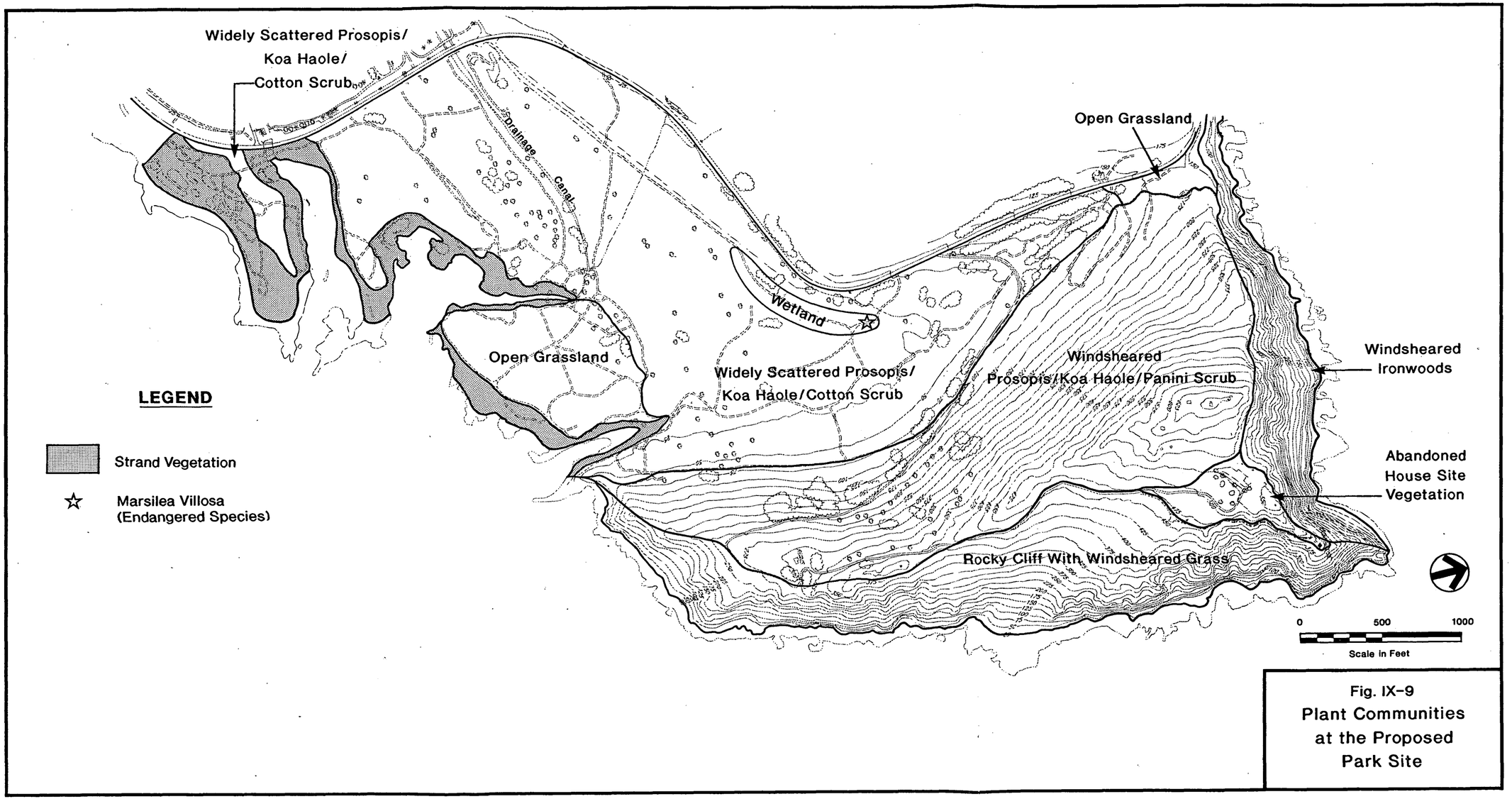


Fig. IX-9
Plant Communities
at the Proposed
Park Site

Because of human alteration and the introduction of aggressive weeds, large stands of native strand plants on Oahu have been decimated. The most prominent remaining stands are at the Ka Iwi site, Makapu'u Beach Park, Pounder's Beach, Kahuku, Kaena Point, and Barber's Point. Despite being impacted by human activities (especially off-road vehicles), the dunes at the Ka Iwi site are the only place on Oahu other than Barber's Point Naval Air Station where the endemic hinahina kahakai (*Nama sandwicensis*) can still be found.

The endemic Hawaiian cotton (ma'o) has become uncommon on Oahu, and relatively large populations can only be found at the Ka Iwi site, Kahe, and on the windward side of Kaena Point. In Kealakipapa Valley, stands of Hawaiian cotton are especially dense in the area where boulders are stockpiled and apparently offer protection from trampling by off-road vehicles. Notably, the Hawaiian cotton at the Ka Iwi site is unique because it supports a dependent host weevil (*Rhyncogonus simplex*) whose range is primarily limited to these stands. The limited range of the weevil suggests that it evolved in the Hawaiian cotton stands at the Ka Iwi site; therefore, it is suspected that these stands are the oldest on the island.

Hawaiian cotton is of special genetic importance because, other than for its evolved host, it does not attract insects. For over two decades, the U.S. Department of Agriculture has been crossbreeding Hawaiian cotton with commercial cotton to develop new commercial cultivars less susceptible to insect damage and disease.

While common introduced species predominate in this area, several other uncommon endemic species have also been recorded, including 'anaunau, beach sandalwood, and ma'oli'oli. Although rare on the main Hawaiian Islands, 'anaunau is common in the Northwestern Hawaiian Islands (a national wildlife refuge) and has been dropped from consideration as a candidate endangered species. Because of taxonomic similarity to more common varieties of sandalwood, beach sandalwood will also be dropped from consideration as a candidate endangered species. Ma'oli'oli, while not a candidate endangered species, is relatively rare on Oahu.

b. Makapu'u Head Botanical Inventory

Makapu'u Head is made up of rock outcrops, ledges, and scant soil deposits. The vegetation found here is also classified as xeric, and can be divided into four communities: the windsheared ironwoods zone, the abandoned house site vegetation zone, the windsheared prosopis/haole koa/panini scrub zone, and the rocky cliff/windsheared grass zone. Unlike the coastal plains inventory, the boundaries between categories are much more clearly delineated due to geographical and climatic conditions.

i. Windsheared Ironwoods

The very steep, north facing cliffs, from the Makapu'u Lookout to the Lighthouse are covered with stunted ironwood trees that grow close to the cliff face under continuous onslaught from the strong Northeasterly tradewinds. On the wider ledges, there are shrubs of Brazilian pepper and haole koa, along with scattered opuntia, Spanish needle, 'ilima, swollen finger grass, and a rare *Schiedea globosa* (no common name).

ii. Abandoned House Site Vegetation

In the small flat area west of the Makapu'u Point Lighthouse, where the Lighthouse Keepers' cottages once stood, plants that were part of the landscaped area have become feral and now form a unique vegetation type. The emergent trees are ironwoods (*Casuarina equisetifolia)*, but sea grape, tropical almond and golden rain tree are thriving. In addition, Mexican creeper, panini, night-blooming cereus, bougainvillea, pencil tree, Queen Emma's lily and various lawn grasses now cover large areas.

iii. Windsheared Prosopis/Haole Koa/Panini Scrub

This zone covers a range from approximately the one-hundred foot contour beginning at Makapu'u Lookout, southward to Pu'u O Kipahulu, northeastward along the ridge to the Makapu'u Headland Road, along the road to about the five-hundred foot contour, northward to the cliff, and then westward along the cliff back to the lookout. The scrub vegetation is made up of windsheared prosopis with intermittent stands of haole koa, scattered clumps of panini and

rock outcrops. In some places, weedy patches of garden plants which have escaped into the wild can be found. The carrion flower and mother-of-thousands are good examples. A few native plants still persist on Makapu'u Head. Within this particular community, two species of *Lipocheata* (no common name) and an occasional individual of *Schiedea globosa* were seen.

iv. Rocky Cliff/Windsheared Grass

The precipitous, east facing, rocky slopes of Makapu'u Head are vegetated by a scant cover of wind sheared grasses. Many species of introduced grasses as well as one endemic, Kawelu or 'Emoloa (*Eragrostis variabilis*) were found. Besides the grasscover, there are several woody plants in this community, however, their growth form is severely affected by the almost constant wind. Even ironwood trees are bent to conform to the rocky face. Haole koa, lantana, klu, opuntia and Brazilian pepper are among the plants distributed among the rock outcrops and ledges. None of this vegetation reaches a height of more than one meter.

2. Nearshore Marine Biota

Most of the nearshore marine biota at the Ka Iwi site are indigenous (occurs naturally in Hawaii and elsewhere) rather than endemic (occurs naturally only in Hawaii), and none are considered either threatened or endangered. Tidepools at the Ka Iwi site provide habitat for shallow water fishes. Among these are several species of blennies, such as *Istiblennius zebra*, and several species of gobies, the most abundant being *Bathygobius fuscus*. Juveniles of many reef species also inhabit the tidepools. The sheltered waters offer protection from larger predators and an abundance of food for the young fishes. Common in this area are convict tangs, *Acanthurus triostegus*; silver perch, *Kuhlia sandvicensis*; cardinal fishes, *Apogon* spp.; squirrel fishes, *Sargocentron* spp.; wrasses, especially *Stethojulis balteata*; and two common damselfishes, *Abudefduf abdominalis* and *Abudefduf sordidus* (UH/Waikiki Aquarium).

Common types of marine algae found in tidepools in the areas include *Sargassum polyphyllum*, *Dictyota acutiloba*, *Turbinaria ornata*, and *Spyridea filamentosa*, with *Padina japonica* the dominant substrate cover. Calcareous algal species include *Galaxaura rugosa*, *Mesophyllum mesomorphum*, *Jania* sp., and *Porolithon onkodes*. Although less common, over a dozen other species of algae colonize the area.

Kaloko Inlet and Ka'ili'ili Bay are excellent nursery areas for several species of Hawaiian reef fishes. In addition to the species previously mentioned, other species which occur in these shallow inlets include flatfishes, *Bothus* sp., soldierfish, *Myripristis* sp.; small jacks, *Caranx* sp.; wrasses of the genera *Thalassoma* and *Coris*; at least three genera of scorpionfishes, *Scorpaenopsis*, *Scorpaena* and *Dendrochirus*; stripeys, *Microcanthus strigatus*; cusk eels, *Brotula multibarbata*; mullet, *Mugil cephalus*; goatfishes of the genera *Mulloides* and *Parupeneus*; and moray eels, *Echidna nebulosa*, *Gymnothorax petelli*, *Gymnothoras flavimarginatus*, *Gymnomuraena zebra*, and *Gymnothorax meleagris*. Puffers, *Canthigaster* spp. and *Arothron* spp., are also common to the bay and inlets as are schools of nehu, *Stolephorus purpureous*. Near the makai points of both the bay and inlet, surgeonfish of the genus *Naso* are also observed (UH/Waikiki Aquarium).

Invertebrate life in the inlet and bay include numerous xanthid crabs; box crabs, *Calappa calappa* and *Calappa hepatica*; blue-pincher crabs, *Thalamita crenata*; Hawaiian swimming crabs, *Podophthalmus vigil*; mantis shrimp, family Squillidae; slipper lobsters, *Parribaccus antarcticus* and *Arctides regalis*; pistol shrimp, *Alpheus* spp.; glass shrimp, *Palaemon debilis*; spiny lobsters, *Panulirus marginatus*; and banded coral shrimp, *Stenopus hispidus*. The molluscs include octopus, *Octopus* spp.; cowries including *Cypraea moneta*, *C. caputserpentis*, *C. maculifera*, and *C. mauntiana*; triton snails, *Cymatium* spp.; drupe snails, *Morula granulata* and *Morula uva*; miter snails, *Mitra littorata*; *Conus* spp.; periwinkles, *Littorina* spp. and *Planaxis labiosa*; sea hares, *Aplysia dactylomela*, *Dolabella auricularia* and *Dolabrifera dolabrifera*; pleurobranchs, *Pleurobranchus peronii* and *Berthellina citrina*; Sacoglossans, *Plakobranchus ocellatus*; rock oysters, *Isonomen incisum*, and nerites, *Nerita picea* and *Nerita polita*. The echinoderms include sea cucumbers, *Actinopyga mauritiana*, *A. obesa*, *Holothuria atra*, *H. pervicax*, and *H. cinerescens*; brittlestars, *Ophiocoma pica*; sea urchins, *Echinometra mathaei*, *Echinometra oblonga*, and *Tripneustes gratilla* (UH/Waikiki Aquarium).

A fair number of coral species can be found in shallow water at the Ka Iwi moku. Common to the tide pools are the lobe coral, *Porites lobata*; the cauliflower coral, *Pocillopora meandrina*; and the lace coral, *Pocillopora damicornis*. Also found in the tidepools are the rice coral, *Montipora* sp., and small colonies of *Cyphastrea ocellina* and *Pavona* sp. Off the outer edge of the pools leading to deeper water, the dominant coral species are *Porites lobata* and *Pocillopora meandrina* with other species represented but not abundant (UH/Waikiki Aquarium).

The kinds of fish found in deeper Hawaiian waters reflect depth, bottom type, relief, and coral cover. No reef flats have developed offshore of the Ka Iwi site. From

Wawamalu Beach to Kapaliokamoa, in depths less than about 30 feet, there is a hard, gently sloping limestone bottom with patches of sand and rubble in depressions. In contrast, the limestone bottom drops away rapidly off Makapu'u Head. There are ledges and overhangs immediately offshore of Kapaliokamoa but only low bottom relief immediately makai of most of Makapu'u Head. Coral coverage is relatively sparse offshore of Makapu'u Head, except near Kapaliokamoa and Makapu'u Point. No data is available on coral coverage offshore of Ka'ili'ili Bay and the two inlets, but wave action probably prevents much coral from growing in unsheltered waters at depths less than about 20 feet. *Pocillopora meandrina* is the primary species of coral off East Oahu, and *Porites lobata* is also common (AECOS, Inc, 1979, 1981).

Of the 59 species of fish reported off the east side of Makapu'u Head, the most common species are manini, *Acanthurus sandvicensis*; surgeon fish, *Acathurus leucopareius*; surgeon fish, *Acanthurus nigrofuscus*; surgeon fish, *Naso lituratus*; wrasse, *Stethojulis balteata*; trigger fish, *Sufflamen bursa*; Moorish idol, *Zanclus cornutus*; saddle wrasse, *Thalassoma duperreyi*; trigger fish, *Melichthys niger*; parrot fish, *Scarus* sp.; and butterfly fish, *Chaetododn multicinctus*. The most conspicuous invertebrates are the sea urchins *Tripneustes gratilla* and *Diadema paucispinum* (AECOS, Inc, 1979, 1981).

The coast between Wawamalu Beach and Makapu'u Point is popular with recreational pole-and-line fishermen casting for papio (juvenile *Caranx* sp.), ulua (adult *Caranx* sp.), oio, and various goatfish (genera *Mulloides* and *Parupeneus*). Net fishermen catch baitfish, mullet, and crabs in Kaloko Inlet and Ka'ili'ili Bay. Humpback and Sperm whales can be seen offshore from Makapu'u Head during the winter. (AECOS, Inc, 1979, 1981) The Waikiki Aquarium periodically conducts field trips to the tidepools and inlets of Queen's Beach and considers them to be excellent for formal and informal education programs (Hopper, personal communication, 1991).

3. Wildlife

The Ka Iwi site does not provide suitable habitat for any rare wildlife. Introduced species predominate, and no threatened or endangered species were observed. Migratory species such as Ruddy Turnstone ('Akekeke), *Arnaria interpres*, and Wandering Tattler ('Ulili), *Heteroscelus incanus*, are usually present during the winter. Mice, rats, mongooses, and probably feral cats are also present on the coastal plain south of Makapu'u Head (VTN Pacific, Inc, 1984).

Although no pueo, or Hawaiian owl *(Asio flammeus sandwichensis)*, were observed at the site by the project biologist or others in preparing this plan, previous literature cites pueo occupying adjacent areas. It is possible that pueo's hunting range extends into the Ka Iwi site. Pueo (on Oahu only) is on the federal list of endangered species.

TABLE IX-3

BIRDS OBSERVED AT THE KA IWI SITE

Common Name	Scientific Name
Pacific Golden Plover (Kolea)	*Pluvialis fulva*
Zebra Dove	*Geopelia striata*
Spotted, Lace-Necked, or Chinese Dove	*Streptopelia chinensis*
Red-Whiskered Bulbul	*Pyncnonotus jocosus*
Northern Cardinal	*Cardinal cardinalis*
Brazilian Cardinal	*Paroaria coronata*
House Finch	*Carpodacus mexicanus*
Common Mynah	*Acridotheres tristis*
Spotted Munia	*Lonchura punctulata*

4. Insects

Over the eons, the descendants of less than 300 ancestral insect species in Hawaii evolved to become the more than 10,000 known endemic Hawaiian insects. In relatively recent times, human activities have introduced a multitude of insect species that would not otherwise be found in Hawaii. At the Ka Iwi site, the only known published daytime reconnaissance survey of the area was made in the winter of 1934 after a heavy rain had produced growth of vegetation attractive to insects. (Swezy, O.H., 1935) In addition to this survey, entomologists in late 1980 noted the presence of two endemic nocturnal species of littoral crickets (*Caconemobius* sp. and *Thetella* sp.) on shoreline cobbles at Queen's Beach. Another endemic species, an unidentified yellow-faced bee (*Nesoprosopis* sp.) which had not been previously observed at the Ka Iwi site was recorded in August 1954 on tree heliotrope. Of the 94 species of insects identified in the coastal plain, at least 16 are endemic and most, if not all, of the rest were introduced by man.

TABLE IX-4

INSECTS OBSERVED AT QUEEN'S BEACH
(primarily February 1934)

Common Name	Scientific Name	Order	Status
Termite	*Kalotermes immigrans* Snyder	Isoptera	Introduced
Littoral Cricket	*Caconemobius* sp.	Orthoptera	Endemic
Littoral Cricket	*Thetella* sp.	Orthoptera	Endemic
Narrowwinged Mantid	*Tenodera angustipennis* Sauss.	Orthoptera	Introduced
Black Scale	*Saissetia nigra* (Nietn.)	Homoptera	Introduced
Hibiscus Snow Scale	*Pinnaspis strachani* (Cooley)	Homoptera	Introduced
Cottony Cushion Scale	*Icerya purchasi* Mask.	Homoptera	Introduced
Cotton Aphid	*Aphis gossypii* Glover	Homoptera	Introduced
Hibiscus Mealybug	*Nipaecoccus vastator* (Maskell)	Homoptera	Introduced
Striped Mealybug	*Ferrisia virgata* (Ckll.)	Homoptera	Introduced
Wild Cotton Planthopper	*Oliarus discrepans* Giffard	Homoptera	Endemic
Little Green Leafhopper	*Balcultha hospes* (Kirkaldy)	Homoptera	Endemic
Leafhopper Assassin Bug	*Zelus renardii* Kol.	Heteroptera	Introduced
Hawaiian Rhopalid Bug	*Ithamar hawaiiensis* Kirkaldy	Heteroptera	Endemic
Seed Bug	*Nysius delectus* White	Heteroptera	Endemic
Seed Bug	*Nysius coenosulus* Stal.	Heteroptera	Endemic
Hyaline Grass Bug	*Liorhyssus hyalinus* (Fab.)	Heteroptera	Introduced
Hawaiian Grass Bug	*Trigonotylus hawaiiensis* (Kirk.)	Heteroptera	Endemic
Pale Damsel Bug	*Nabis capsiformis* (Germ.)	Heteroptera	Introduced
Mealywing	*Coniocompsa zimmermani* Kimmins	Neuroptera	Introduced
Comanche Lacewing	*Chrysopa comanche* Banks	Neuroptera	Introduced
Mexican Cutworm Tachinid	*Archytas cirphis* Curran	Diptera	Introduced
Lesser Armyworm Tachinid	*Lespesia archippivora* (Riley)	Diptera	Introduced
Tachinid Fly	*Chaetogaedia monticola* (Bigot)	Diptera	Introduced
Hover Fly	*Mesograpta marginata* (Say)	Diptera	Introduced
Melon Fly	*Dacus cucurbitae* (Coq.)	Diptera	Introduced
Pink Bollworm	*Pectinophora gossypiella* (saund.)	Lepidoptera	Introduced
Whitelined Sphinx	*Hyles lineata* (Fab.)	Lepidoptera	Introduced
Armyworm	*Pseudaletia unipuncta* (Haw.)	Lepidoptera	Introduced
Variegated Cutworm	*Peridroma porphyrea* (D. and S.)	Lepidoptera	Introduced
Lawn Armyworm	*Spodoptera mauritia* (Boisd.)	Lepidoptera	Introduced
Beet Armyworm	*Spodoptera exigua* (Hub.)	Lepidoptera	Introduced
Noctuid Moth	*Acrapex exanimis* (Meyr.)	Lepidoptera	?
Budworm	*Heliothis* sp.	Lepidoptera	?
Garden Looper	*Plusia chalcites* Esp.	Lepidoptera	Introduced

Common Name	Scientific Name	Order	Status
Hawaiian Beet Webworm	*Spoladea recurvalis* (Fab.)	Lepidoptera	Introduced
Plume Moth	*Stenoptilodes taprobanes brachymorpha* (Meyr.)	Lepidoptera	?
Hawaiian Casebearer	*Hyposmocoma* sp.	Lepidoptera	Endemic
Hawaiian Casebearer	*Hyposmocoma empedota* Meyr.	Lepidoptera	Endemic
Painted Lady	*Vanessa cardui* (Linn.)	Lepidoptera	Introduced
Smaller Lantana Butterfly	*Strymon bazochii gundlachianus* (Bates)	Lepidoptera	Introduced
Hawaiian Snout Beetle	*Rhyncogonus simplex* Perkins	Coleoptera	Endemic
False Snout Beetle	*Proterhinus deceptor* Perkins	Coleoptera	Endemic
Kiawe Scolytid	*Hypothenemus birmanús* (Eichoff)	Coleoptera	Introduced
Scolytid Beetle	*Hypothenemus eruditus* Westw.	Coleoptera	Introduced
Sharp's Anobid	*Tricorynus sharpi* Pic.	Coleoptera	?
Longhorned Beetle	*Prosoplus banki* (Fab.)	Coleoptera	Introduced
Longhorned Beetle	*Sybra alternans* Wied.	Coleoptera	Introduced
Bronze Leaf Beetle	*Diachus auratus* (Fab.)	Coleoptera	Introduced
Darkling Beetle	*Gonocephalum seriatum* (Boisd.)	Coleoptera	Introduced
Darkling Beetle	*Ammophorus insularis* Boh.	Coleoptera	Introduced
Ladybeetle	*Symnus loewii* Muls.	Coleoptera	Introduced
Ladybeetle	*Diomus notescens* (Blkb.)	Coleoptera	Introduced
Yellowshouldered Ladybeetle	*Scymnodes lividigaster* (Muls.)	Coleoptera	Introduced
Common Australian Ladybeetle	*Coelophora inequalis* (Fab.)	Coleoptera	Introduced
Ladybeetle	*Diomus debilis* (Lec.)	Coleoptera	Introduced
Ladybeetle	*Nephus* sp.	Coleoptera	Introduced
Mealybug Destroyer	*Cryptolaemus montrouzieri* Muls.	Coleoptera	Introduced
Ladybeetle	*Rhizobius ventralis* (Erich.)	Coleoptera	Introduced
Ladybeetle	*Curinus coeruleus* (Muls.)	Coleoptera	Introduced
Ladybeetle	*Lindorus lophanthae* (Blaisd.)	Coleoptera	Introduced
Ladybeetle	*Chilcorus circumdatus* Schon.	Coleoptera	Introduced
Ladybeetle	*Azya orbigera* Muls.	Coleoptera	Introduced
Vedalia Beetle	*Rodalia cardinalis* (Muls.)	Coleoptera	Introduced
Leafcutter Bee	*Lithurgus scabrosus* Smith	Hymenoptera	Introduced
Bee	*Megachile palmarum* Perkins	Hymenoptera	Introduced
Fire Ant	*Solenopsis germinata rufa* (Jerdon)	Hymenoptera	Introduced
Crazy Ant	*Paratrechina longicornis* (Lat.)	Hymenoptera	Introduced
Little Yellow Ant	*Plagiolepsis alluaudi* Emery	Hymenoptera	Introduced
Tiny Yellow House Ant	*Tapinoma melanocephalum* (Fab.)	Hymenoptera	Introduced
Big-Headed Ant	*Pheidole megacephala* (Fab.)	Hymenoptera	Introduced
Wasp	*Perisierola emigrata* Rohwer	Hymenoptera	Introduced

Common Name	Scientific Name	Order	Status
Wasp	*Glyptocolastes bruchivorus* Crawf.	Hymenoptera	Introduced
Wasp	*Anagyrus dactylopii* (How.)	Hymenoptera	Introduced
Wasp	*Apoanagyrus californicus*	Hymenoptera	Introduced
Wasp	*Bothriencyrtus insularis* (Cam.)	Hymenoptera	Introduced
Wasp	*Protaenasius* sp.	Hymenoptera	Introduced
Eupelmid Wasp	*Eupelmus niger* Ash.	Hymenoptera	Endemic
Yellow-Faced Bee	*Nesoprosopis* sp.	Hymenoptera	Endemic
Wasp	*Hyposoter exiguae* (Vier.)	Hymenoptera	Introduced
Wasp	*Litomastix floridana* (Ashm.)	Hymenoptera	Introduced
Wasp	*Ecthromorpha fuscator* (Fab.)	Hymenoptera	Endemic
Wasp	*Pristomerus hawaiiensis* Perkins	Hymenoptera	Introduced
Wasp	*Casinaria infesta* (Cress.)	Hymenoptera	Introduced
Wasp	*Chelonus blackburni* Cam.	Hymenoptera	Introduced
Wasp	*Secodella metallica* (Ashm.)	Hymenoptera	Introduced
Wasp	*Lepideupelmus setiger* (Perkins)	Hymenoptera	Endemic
Wasp	*Hermiteles tenellus* (Say)	Hymenoptera	Introduced
Wasp	*Allohrogas pallidiceps* (Perk.)	Hymenoptera	Introduced
Wasp	*Urosigalphus bruchi* Crawf.	Hymenoptera	Introduced
Wasp	*Orgillus* sp.	Hymenoptera	Introduced
Wasp	*Lysiphlebus testaceipes* Cress	Hymenoptera	Introduced
Wasp	*Habrolepis* sp.	Hymenoptera	Introduced
Wasp	*Telenomus rhopali* Perk.	Hymenoptera	?

Three of the endemic insects, the Hawaiian rhopalid bug, *Ithamar hawaiiensis* Kirkaldy; the Oliarus wild cotton planthopper, *Oliarus discrepans* Giffard; and a Hawaiian snout beetle (weevil), *Rhyncogonus simplex* Perkins; have been listed by the U.S. Fish and Wildlife Service as candidate

> *. . . taxa for which information now in the possession of the Service indicates that proposing to list the species as endangered or threatened is possibly appropriate, but for which conclusive data on biological vulnerability and threat(s) are not currently available to support proposed rules at this time.* (Federal Register, V. 49, No. 100, May 1984)

Most endemic *Nesoprosopis* species, probably including the unidentified yellow-faced bee observed in the coastal plain, are also listed by the U.S. Fish and Wildlife Service as candidate endangered or threatened species (Federal Register, V. 49, No. 100, May 1984).

Unlike the endemic rhopalid bug, wild cotton planthopper, and yellow-faced bee, the weevil *Rhyncogonus simplex* is flightless and apparently restricted to a single host plant, Hawaiian cotton. (Zimmerman, 1948 et seq) Moreover, unlike these flighted species, the range of *R. simplex* may be primarily or entirely limited to dense strands of Hawaiian cotton in Kealakipapa Valley (VTN Pacific, 1984).

R. simplex was originally recorded on the leeward side of Molokai at elevations between 700 and 1,000 feet. Bishop Museum also has specimens collected decades ago from Koko Head, Makapu'u Head, and Waianae. However, it is possible that lowland populations of *R. simplex* on Oahu are a different species because all other species of the weevil genus *Rhyncogonus* are limited to the island of Molokai. Although adult weevils are conspicuous, a search for *R. simplex* on cotton leaves at Kahe and Waianae on Oahu during the late 1970s was unsuccessful. No one has looked for *R. simplex* since then (VTN Pacific, 1984).

During the winter, when Hawaiian cotton has produced leaves and flowers, 1 cm. long adult *R. simplex* weevils are found feeding on cotton leaves both day and night. In contrast, most other *Rhyncogonus* species are nocturnal. Adult *R. simplex* lay their eggs on cotton leaves. Upon hatching, the young larvae burrow into the ground. The food source for *R. simplex* grubs is unknown, but may be the roots of Hawaiian cotton. Adult weevils are only seen for a month or two each year at Queen's Beach. It is possible that their life cycle is tied to seasonal droughts and could be disrupted by continuous irrigation of their host plants (VTN Pacific, 1984).

J. Roadways and Utilities

1. Roadway Access

There are three access routes to the Ka Iwi site: 1) Kalanianaole Highway from the Kailua direction, 2) Kealahou Street near Queen's Gate from Hawaii-Kai, and 3) Kalanianaole Highway from the Honolulu direction. Kalanianaole Highway is the main traffic arterial which serves East Honolulu. It is designated as a Federal Aid Primary Highway. Where it borders the proposed Ka Iwi site, it is a two-lane undivided road, one lane in each direction. Use of the highway is generally higher during weekends, holidays, and special events such as surf contests. The maximum capacity for each lane of Kalanianaole Highway in the vicinity of the Ka Iwi site is about 1,200 vehicles per hour.

Kealahou Street is a two-lane City and County of Honolulu residential street which feeds into Kalanianaole Highway across from Sandy Beach. It serves as an access into Kalama Valley and to Hawaii Kai via Hawaii Kai Drive which curves around Koko Crater.

The following table lists 24-hour traffic volumes which were recorded in 1994 and 1995 at points along or near these access routes.

TABLE IX-5
24-HOUR TRAFFIC VOLUMES AT THE KA IWI SITE ACCESS ROUTES
1994 TO 1995

Count Location	Vehicles		Total
	East-bound	West-bound	
Kalanianaole Hwy./Makapu'u Lkout.(5/3/95 Wed.)	4,433	5,011	**9,444**
Kalanianaole Hwy./Kealahou St.(9/2/94 Fri.)	2,720	2,700	**5,420**
Kalanianaole Hwy./Lunalilo Home Rd.(9/14/94 Wed.)	4,448	4,466	**8,914**
Total	**11,601**	**12,177**	**23,778**

Source: *Department of Transportation; State of Hawaii , 24-Hour Traffic Count -- Station Summary. 1994-1995.*

2. Water

A 36-inch transmission line runs along the mauka side of Kalanianaole Highway, interconnecting the Hawaii Kai and windward water systems. Within the Ka Iwi site, an abandoned water line crosses Kealakipapa Valley and Makapu'u Head and previously serviced the lighthouse, as shown in Figure IX-9. This line leads into a now abandoned water tank above the former caretaker's houses.

3. Drainage

As discussed earlier in Section E of this chapter (Drainage and Flood Hazard), a deep drainage ditch and a wide but shallow overflow channel cross the coastal plain from southwest to northeast and discharge flow from Kalama Drainage Channel into Ka'ili'ili Bay. Adjacent to Kalanianaole Highway, a 1,540 square

foot portion of this channel is concrete lined and has been dedicated to the City and County of Honolulu. However, no drainage easement has been dedicated across the coastal plain at Queen's Beach (see Figure IX-5).

4. Wastewater

All sewage from the Hawaii Kai area is collected and treated at the Hawaii Kai Sewage Treatment Plant located mauka of Sandy Beach, across Kalanianaole Highway. Following secondary treatment, effluent is discharged through an outfall extending 3,000 feet offshore in 35 feet of water.

An 18-inch sewer line runs along the mauka side of Kalanianaole Highway, from the vicinity of the drainage channel serving Hawaii Kai Golf Course into Sewage Pumping Station #6 located mauka of Kalanianaole Highway at the head of Kaloko Inlet, as shown in Figure IX-10. From the pump station, a 16" gravity force main conveys flows to the Hawaii Kai Sewage Treatment Plant. Although the sewage system is privately owned and operated by a subsidiary of Kaiser Development Company, the State Public Utilities Commission requires that the sewage treatment plant accept any sewage from private or public sources in the approved service area (including the Ka Iwi site) should any wastewater-generating uses be established there.

The Hawaii Kai Wastewater Treatment Plant has experienced some technical failures and controversy in recent years. On January 6, 1990, Sandy Beach was closed for four days as a visible brown plume of 400,000 gallons of sludge-contaminated sewage was dumped through the outfall. Tests showed fecal coliform bacteria levels at more than twice permitted levels. Since then, the Department of Health has issued an enforcement order requiring more personnel training and improvements to maintenance and operation procedures at the plant (Neil, 7 Jan 1990; "Sandy Beach...," 8 Jan 1990; Honolulu Star-Bulletin..., 4 May 1990; Memminger, 3 Oct 1991).

5. Electric and Telephone Easements

As shown in Figure IX-10 there are three separate 10-foot wide electrical transmission easements which run through the Ka Iwi site. Utility poles run from Kalanianaole Highway near the Makapu'u Lookout and over Makapu'u Head to provide electrical service to the lighthouse. Another 10-foot wide electrical transmission easement with utility poles and lines runs from the edge of Kalanianaole Highway through Kealakipapa Valley and crosses the Highway near

the Hawaii Kai Golf Course entrance. There is an abandoned 10-foot wide electrical transmission easement which runs from near the curve in Kalanianaole Highway to the former telephone relay station which housed the University of Hawaii solar observatory between 1957 and 1962. A 5-foot wide telephone easement crosses Kealakipapa Valley to reach Makapu'u Head. Other telephone lines run parallel with Kalanianaole Highway.

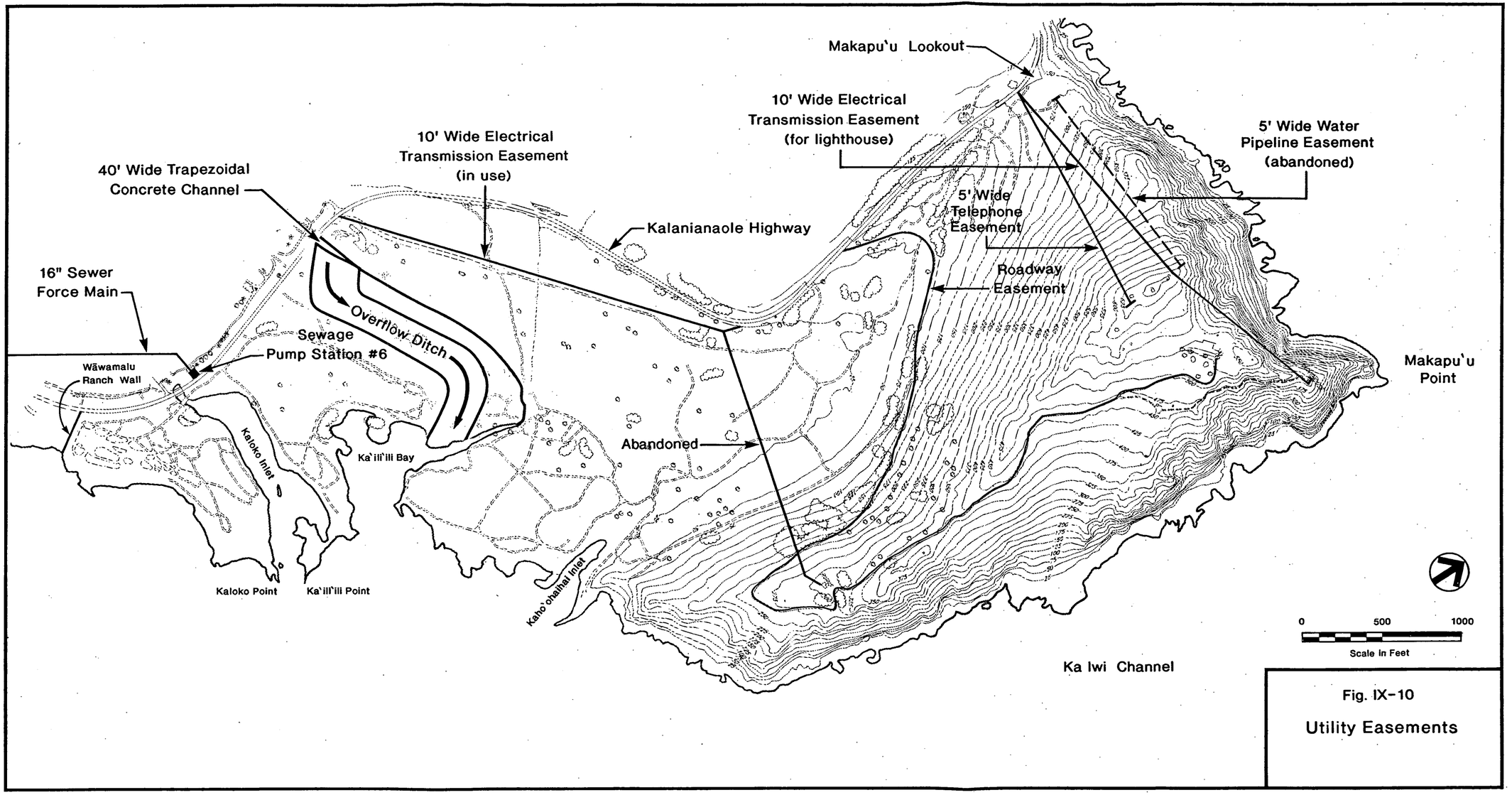
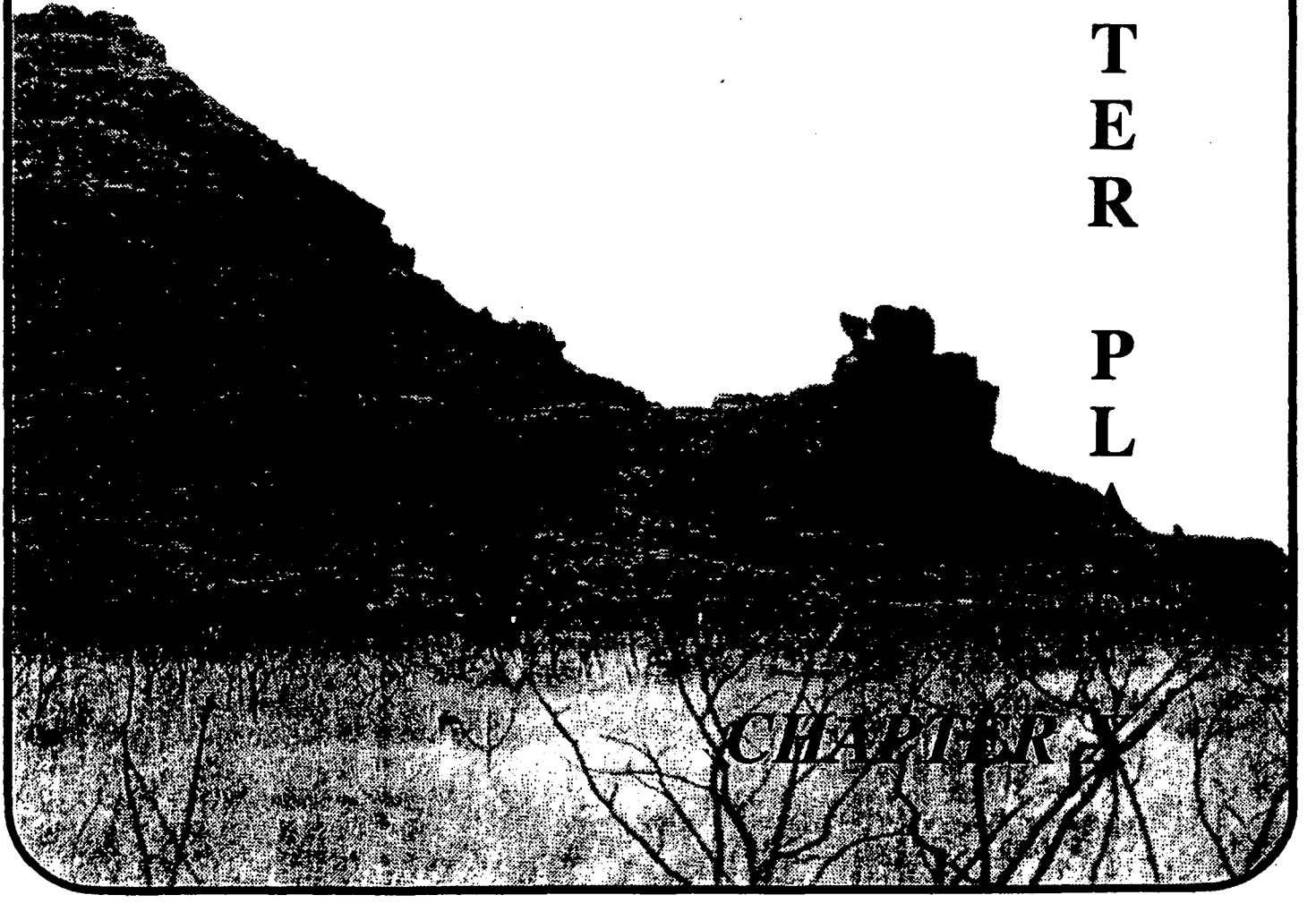


Fig. IX-10

Utility Easements

KA IWI MASTER PLA



CHAPTER X

X. PROPOSED PARK SITE RESOURCE ASSESSMENT

This **Resource Assessment** examines the various preservation, interpretive and recreational resources of four geographical areas which make up the Ka Iwi site: Makapu'u Head, Queen's Beach, the Coastal Bench Trail, and Kealakipapa Valley. Refer to Figure X-1. Following the resource assessment section for each area, a list of management considerations are given which will be used to formulate alternative objectives, policies and physical layouts for the master plan.

Preservation values are equated with preserving rare, unique or representative species and habitats or those which serve important functions, such as controlling erosion. Preservation values may be promoted by protecting important species and habitats from added or potential degradation and allowing them to restore themselves. In addition, efforts may go a step further to replant or recreate conditions of former species and habitats which may have been lost or severely degraded. In the **Preservation** section, important species and habitats existing within the park site are identified, as well as species and habitats that were known to have thrived there previously, and their potential role in park planning is discussed.

Interpretive value arises from the role which a feature within a site or visible from a site may have in helping people understand and appreciate an area's geological, ecological and cultural history. Establishment of a park would create an opportunity to gather and share the accumulated knowledge of the area with park users. Under the **Interpretation** sections, existing interpretive features, functions, and values of the Ka Iwi site as well as any current user groups involved in promoting interpretation at the proposed park site are identified.

Recreational values relate to the role of the site in meeting recreational demands of the public. Under the **Recreation** sections, existing recreational resources of the Ka Iwi site are identified based on the many groups, families and individuals already utilizing the area on a regular basis. Activities like fishing, biking, walking and sightseeing are only a few of the uses that are made of this area.

Potential recreational uses were determined by examining existing natural resources, present use of the area, and information about projected recreational needs on Oahu from SCORP (see Table III-2). Potential uses considered were limited to those within the appropriate jurisdiction of the State Park System, which generally revolve around cultural and natural resources. Thus, facilities such as tennis courts or ballfields which could conceivably be developed on the site were not considered.

Under the **Management Considerations** section, preservation, interpretive and recreational values within the Ka Iwi site are examined to determine how they may be compatible or how they may conflict. Specific problem areas are discussed along with potential tradeoffs. These management considerations will serve as the basis for formulating alternative park objectives, policies and physical layouts reflecting differences in priorities among these values.

A. Makapu'u Head

For the purpose of this Master Plan, Makapu'u Head encompasses approximately 200 acres of mountainous terrain from the Makapu'u Lookout at Kalanianaole Highway to the Kapaliokamoa rock formation. See Figure X-2. It includes the Makapu'u Headland Road and headland summit area where the Makapu'u State Wayside and Makapu'u Point Lighthouse are located, as well as the rugged trails up to the summit area and down to the eastern coastal bench. From the elevated portions of the headland, many spectacular views are available of the windward and leeward sides of the island, Ka Iwi Channel, and the Ka Iwi site itself.

Also included in the Makapu'u Head management area is the Makapu'u Lookout which is the most used part of the Ka Iwi site. The lookout provides panoramic views of the Windward coastline from Waimanalo to Mokapu Point, the sheer pali cliffs, Sea Life Park, Makapu'u Beach, and the offshore Kaohikaipu and Manana Islands. The lookout consists of a 0.65 acre parking area and a low rock wall. Observations of the lookout were conducted on a weekday and a weekend holiday. The weekday survey revealed that the peak traffic periods on that particular day were from 9:30 a.m. to 10:30 a.m. and from 3:30 p.m. to 4:30 p.m. The average number of vehicles per hour at the lookout over a seven-hour period on that day was 22. The weekend holiday survey revealed that the peak traffic periods on that particular holiday were from 11:30 a.m. to 12:30 p.m. and 2:30 p.m. to 3:30 p.m. The average number of vehicles per hour at the lookout over a seven-hour period on that day was 42. Very few buses can park in the small lookout parking lot, and it was theorized that many more vehicles which may have stopped at the lookout bypassed the lot. The lot was also occasionally used for several hours by hikers climbing to the peak of Makapu'u Head. In addition, it was observed that many users scrambled into the flat area adjacent to the lookout for better views and picture-taking.

The Makapu'u Headland Road is the primary access route to the summit of Makapu'u Head where most of the attractions are located. The access road is a paved, single-lane road which measures about one mile long. It is the only paved road on Ka Iwi site. A wide swing gate with a tamper-proof lock to keep out unauthorized vehicles is located

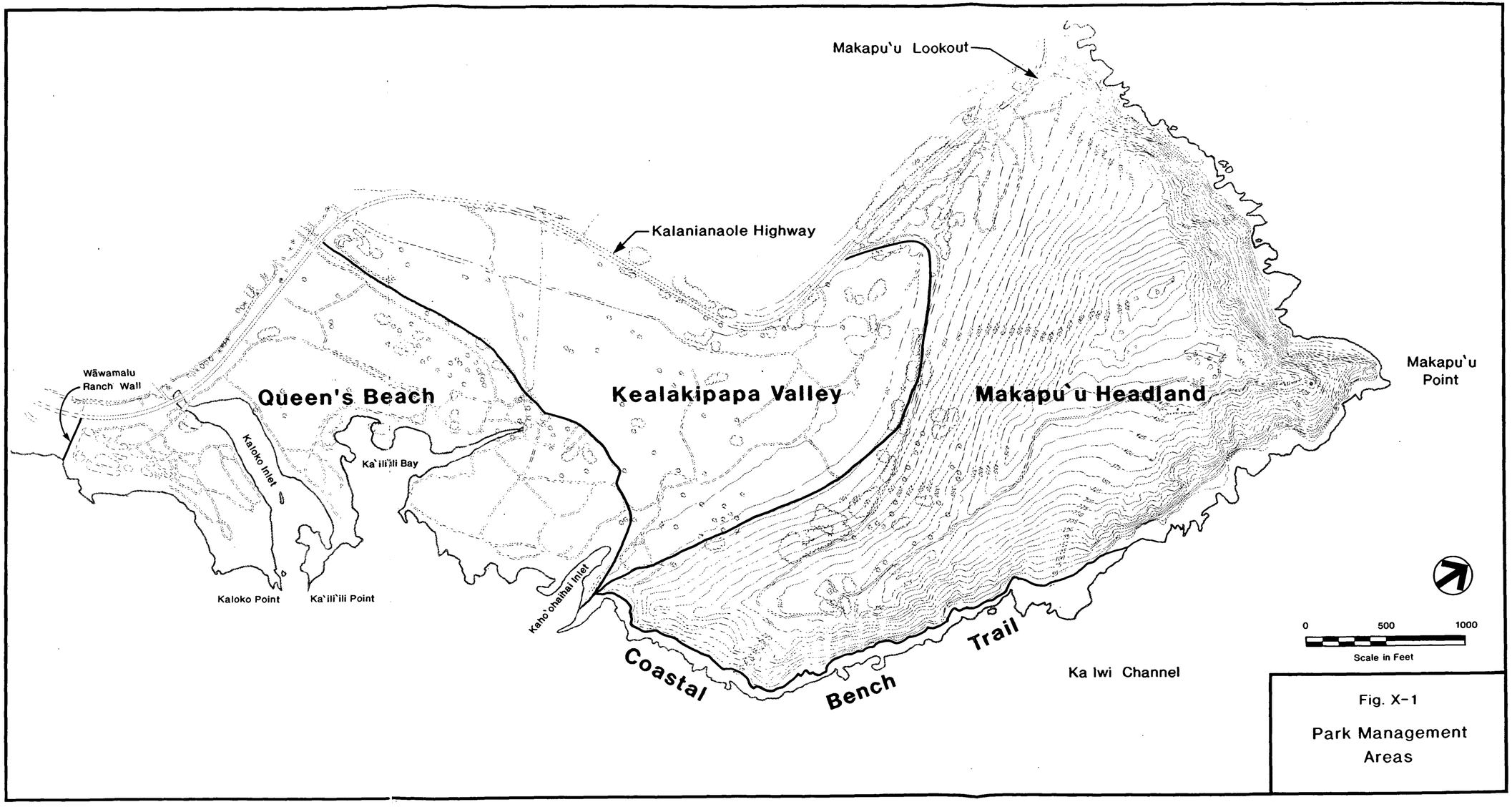


Fig. X-1

Park Management Areas

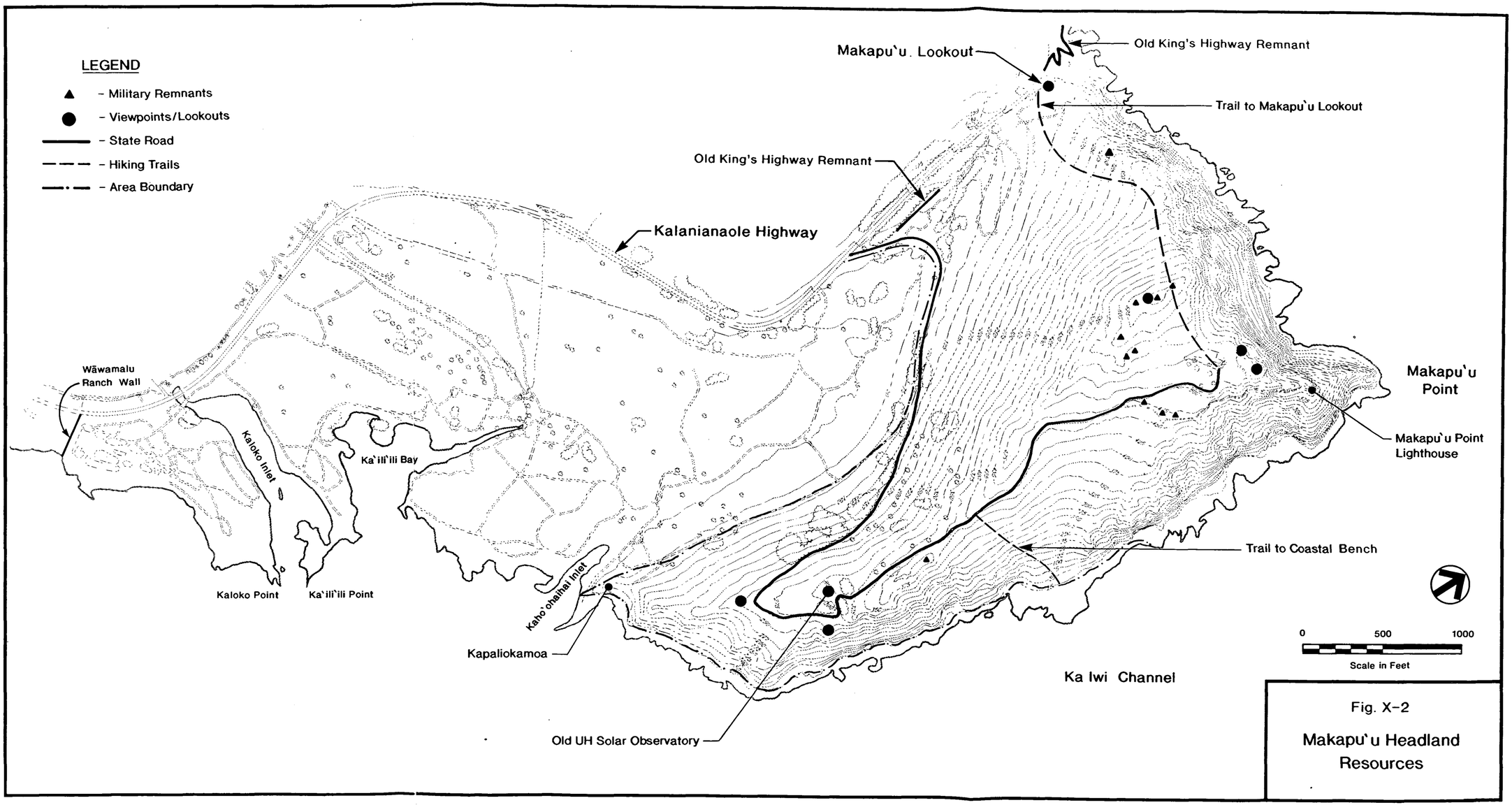


Fig. X-2

Makapu`u Headland Resources

just makai of Kalanianaole Highway. Another locked gate is located further in as the road climbs the western flank of the headland. Vehicular use of the access road is mainly limited to authorized State and Coast Guard personnel for the maintenance of the Makapu'u State Wayside and the Makapu'u Point Lighthouse, respectively. Pedestrians can walk around the gateposts to gain access.

From the highway entrance, Makapu'u Headland Road dips into Kealakipapa Valley, then climbs along the west side of the headland. It switches back at the ridgeline above Kapaliokamoa and then climbs the precipitous eastern flank toward Makapu'u State Wayside. Along its elevated length, the road offers spectacular views of Ka Iwi Channel, Molokai, Maui and Lanai, the community of Waimanalo, Ko'olau Range, Koko Crater, Queen's Beach and the shoreline to Koko Head.

There are other sites of interest off the road. Old military bunkers, some of which were sited to take advantage of expansive views, still stand on the headland ridge. Seasonally, whales can be viewed from the road in the deep blue Ka Iwi channel as they head toward or return from calving and nursing grounds near Maui. Several species of seabirds nest on the steep, rocky seacliffs and can be seen flying below the cliff edge. As the road approaches the Makapu'u State Wayside, there is a poorly defined trail that winds down the eastern flank of the headland to a wide portion of the coastal bench where the blowhole and large emerald tidepools are located. Further up, the road forks. The short right spur ends at a footpath which leads to the Makapu'u Point Lighthouse. The footpath is gated and locked to prevent unauthorized access to the Lighthouse.

The left fork terminates at the Makapu'u State Wayside which was opened in August 1991. From its lookout platforms are spectacular unobstructed views of the windward coast, including Sea Life Park, Waimanalo, Ko'olau Range, Mokapu Peninsula, and Manana and Kaohikaipu Islands. In a flat area near these lookouts is a large section of pavement and some stone foundations of cabins which were formerly inhabited by lighthouse caretakers. The hillside to the west contains more remnants of military facilities. A network of trails leads up to the ridge at the summit of Makapu'u Head, which offers panoramic views in every direction.

1. Resource Assessment

   a. Preservation

   Vegetation on the headland is dominated by exotic species that are well adapted to survival in relatively dry and very windy conditions. Most are common species which have been dwarfed by the harsh winds and survive in scant pockets

of soil. While they possess little intrinsic value because they are common species, they anchor what little soil there is and are important to the visual character of the area.

Although they are able to survive under extremely harsh conditions, the dwarfed species are susceptible to degradation from trampling. The many trails on the hillside which lead up to and over the ridge at the summit of the headland attest to the slow recovery of these plants. Trampling is also evident around the trail leading down to the coastal bench on the eastern side of the headland. Preservation of these plant communities and soil erosion control can be promoted by minimizing random trampling by hikers. To accomplish this, the most important trails should be selected and marked well. Hikers should be urged not to stray from those trails. An interpretive program about these tenacious but fragile plant communities could also promote their protection.

b. Interpretive

Because of its panoramic views, Makapu'u Head is well suited to serve as an interpretive platform for teaching island and regional geology as well as for displaying the Ka Iwi site's environmental and cultural history. The Makapu'u Lookout will continue to provide the most readily accessible views to commercial tour groups and the general public. In addition, a walking tour along Makapu'u Headland Road could provide ever-changing views of the surrounding area, while the Makapu'u State Wayside is a natural hub for interpretive displays.

Discussed below are the various interpretive opportunities at Makapu'u Head:

i. Geological

The Makapu'u Headland Road and Makapu'u State Wayside offer spectacular views with significant interpretive value. Three interpretive themes that can be seen from these vantage points are relevant to geological resources.

One such theme is the impact of volcanic forces on the geological evolution of the Koko Head region. At the point where the Headland Access turns back over the headland ridge above Kapaliokamoa, there is a view of the broad coastal plain from the base of the headland through Sandy Beach, and beyond that Koko Crater and Koko Head in the distance. These features were among the last to be formed on Oahu by

volcanic activity, approximately 30,000 to 40,000 years ago. The rift zone giving rise to these features extends to the Makapu'u side of the headland where other features of its activity are clearly visible from Makapu'u Lookout and Makapu'u State Wayside. These include the shoreline fronting Sea Life Park and the offshore islands of Manana (Rabbit Island) and Kaohikaipu.

A second interpretive theme relevant to geological resources is the contribution of the erosional process to geological formations in the region such as the Makapu'u seacliffs and offshore islands. Makapu'u Head is part of the southern end of the Ko'olau Range formed by the Ko'olau Volcano which ceased its activity about 2.5 millon years ago. At that time the shoreline extended several miles out to sea. Subsequent erosion formed the headland. The headland's north and east flank are seacliffs eroded by the ocean when sea level was much higher than at present. Limestone blocks on the western flank of the headland up to its summit were also deposited by the sea.

The effects of the higher sea level are also evidenced by the contrast between the flat-faced pali from Makapu'u to Waimanalo which are sea cliffs carved by ocean waves, and the fluted pali beyond which were cut by erosion.

The last interpretive theme is the asymmetrical island-shaping of Oahu due to tradewinds and orographic rainfall. During tradewind conditions, the difference in rainfall is evident in the formation of clouds on the wet Windward side which robs moisture from tradewinds as they pass to the drier Leeward side. This phenomenon is known in meteorological terms as orographic rainfall and it is largely responsible for the sharp contrast in topography between the highly eroded Windward pali and the gentler slopes on the Leeward side of Oahu. The Makapu'u Headland Road offers the unique opportunity to view both sides of the Ko'olau Range.

ii. Ecological

Vegetation in the headland area is dominated by exotics which are adapted for survival in the windy and arid climate. Several interpretive themes may be possible.

- The different vegetation groups that characterize the north, east and west faces of the headland reflect variations in soil, as well as exposure to sun, wind and rain. They also exhibit a kind of dwarfism resulting from the shearing effect of strong tradewinds.

- The dominance of non-native species in this area reinforces how native and endemic vegetation have succumbed to disturbance and the introduction of better-adapted species.

- Within the flatter portions of the Makapu'u State Wayside are the same species as those found on the steeper areas, but which are not stressed by the wind. They provide a comparison of forms. Also in this area are some surviving species of exotic vegetation formerly used for landscaping by the lighthouse caretakers.

Birdlife on the cliffs is more representative of land-based varieties of birds as opposed to shorebirds. Because the headlands tend to be the most windy part of the site, fewer birds are seen there. Doves and cardinals are most common.

Manana Island, visible from the headland, is a State Wildlife Sanctuary. This island, along with Moku Manu which is offshore of Mokapu Peninsula, is one of the larger and better known offshore nesting grounds in Hawaii for a variety of seabirds. The island is a common breeding ground for the Sooty Tern, Common Noddy, White-capped Noddy, Wedge-tailed Shearwater, Bulwer's Petrel, Common Mynah, and Red-tailed Tropicbird which had previously been sighted only in the Leeward Islands. Other avian visitors to and around the island include the White-tailed Tropicbird, Red-footed Booby, Brown Booby, Great Frigatebird, White Tern, Black-crowned Night Heron, and Hawaiian Owl. All of these birds are visible at certain times of the year from Makapu'u Head.

Humpback whales pass through Ka Iwi Channel along Penguin Bank, where the greatest density of whales around Oahu have been sighted. This location is considered to be the best whale viewing site on Oahu. Humpback whales travel in a southeasterly direction around Makapu'u Point on their way to breeding grounds near Maui, during the winter months. Of the three known breeding areas in the North Pacific (including the Hawaiian Islands, the islands off western Mexico and the islands of the western Pacific, including Mariana, Ryukyu, and Bonin),

Hawaii is generally believed to be the most popular breeding area to be visited in winter by humpbacks. Numbers of whales visiting Hawaiian waters generally range from 600 individuals to 1,500 individuals. In summer months, the whales return to the colder, higher-latitude areas where food resources are more abundant.

Dolphins can sometimes be seen frolicking in the waters offshore of Makapu'u Head. The most common species in Hawaiian waters are the Spinner, Hawaiian (Spotted), and Pacific Bottlenose Dolphin. From East Oahu, dolphins are generally seen two to three miles offshore, but have been known to approach the shoreline as close in as one half mile offshore. Because they are a non-migratory species, they can be found in Hawaiian waters year-round. The local dolphin population remains stable.

iii. Cultural/Historical

- **Pre-Contact**. The interpretive themes of Makapu'u Head's cultural and historical resources involve Hawaiian legends, and the role of the site in the islandwide circuit of the old "King's Highway."

  Hawaiian cultural significance associated with Makapu'u Head includes a reference to the Malei stone. The Malei stone stood in a spot on the Ko'olau side of Makapu'u Hill, where, according to legend, it attracted the parrot fish (uhu). Until it was lost during the 19th century, fishermen traditionally placed offerings at the stone. One version of Malei's disappearance refers to a lighthouse keeper who "removed the stone, throwing it into the sea, or burying it, or breaking it." (McAllister 1933:58). The lighthouse keeper alleged to have committed this offense was said to have died not long after.

  Although not directly associated with Makapu'u Head, the myth of Koko Crater, which dominates the view from the Headland Road above Kapaliokamoa, offers an alternative explanation for its formation. Tradition connects Pele (the volcano goddess) with this general area, which is the most recent area of volcanic activity on the island. According to legend, when Pele was once being attacked by Kamapua'a (the god of forests) near Kalapana on the Big Island, her sister, Kapo, saved her from being raped by

Kamapua'a by sending her flying vagina (kohe lele) as a lure. Kamapua'a followed this to Koko Head, Oahu, where it left an imprint. The place of the imprint is Koko Head Crater, and its name is Kohelepelepe, literally, vagina labia minor.

The old "King's Highway" is now a trail of moss-covered rocks which begins below Makapu'u Lookout and extends down Kealakipapa Valley, makai of Kalanianaole Highway. A study conducted by J. Gilbert McAllister in 1930 estimated the length of this particular section to be about 1,250 feet. In the 19th century, this historical travelway was known as the "road from Honolulu to Ko'olau." It has been postulated that the road was preceded by an ancient foot trail, but that it was widened and improved upon introduction of pack animals by Europeans.

A fieldcheck was conducted in May 1992 of the old "King's Highway" remnants by the State Historic Preservation Office of the Department of Land and Natural Resources. There are presently two recognizable sections of the old road in the project area. See Figure X-2.

One section closely parallels Kalanianaole Highway on the makai side between the entry to the Lighthouse Access Road and Makapu'u Lookout. The width of this section of road ranges between 4.4 and 5.5 meters, while the total recognizable length of this remnant is approximately 394 feet. It is conspicuously clear of large rocks and very level. The flat paving stones which apparently once were characteristic of much of its length are gone (McAllister, 1933). A more recent reference can be found attesting to the fact that "moss-rock" hunters have removed the paving stones of the road (Kelly, 1984). The mauka side of the road is roughly defined by a border of stones, while the makai side is flanked by a fragmented boulder alignment modifying a natural ledge. It may extend further northward, but the vegetation changes to dense kiawe in that area, making survey of the road extremely difficult without vegetation clearing (Yent, 1992).

The other section is a winding remnant located north of Makapu'u Lookout. The total length of this section is approximately 492 feet and it presently contains four switchbacks. It is assumed that the

other four of the original eight switchbacks were demolished during highway construction (Yent, 1992). At its makai end, the road is located approximately 15 feet above sea level, winding up the cliffs to an elevation of approximately 130 feet above sea level at the mauka end. This road presently consists of low (2 feet) to very high (14.8 feet) boulder facings built on the downslope side of the cliffs which support fill and flat boulder paving stones. This winding section averages 8.3 feet in width.

- **Post-Contact**. The interpretive themes of the site's post-contact cultural and historical resources include the history of the Makapu'u Lighthouse and its significance to Hawaii's maritime history, and the impact of the US Military on the region.

  The Makapu'u Lighthouse is a 46-foot tower, 18 feet in diameter, that was installed in 1909 at Makapu'u Point. It is accessible only along a pedestrian path from the Makapu'u Headland Road. For many ocean vessels, it represents the first visual contact with Oahu. It is passed by all ships sailing between Honolulu and the Mainland. The beacon is fitted with the largest Fresnel lens ever built. Only five such lenses were in operation nationally when production ceased.

  The Coast Guard is charged with the care and maintenance of the historical landmark. Hawaii Maritime Center, a non-profit agency, also has access to the lighthouse for interpretive and educational purposes. The Center envisioned conducting guided tours of the lighthouse complete with facts and anecdotes about its history. Visitors were to meet at Sea Life Park and then be shuttled to the Lighthouse where a docent would be waiting to greet them. These tours were in the planning stages, however, the plans were shelved when the Makapu'u State Wayside opened in August of 1991. The reasoning was that the increase in pedestrian traffic as a result of opening the facility would pose a safety hazard when the shuttle made regular pick-ups and drop-offs on the Headland Road.

  The lighthouse keepers' quarters were located on the flat area of land on the Makapu'u State Wayside, at the top of the Headland Road. From around 1939 to 1974, the lighthouse keepers lived in

cottages along with their families. The automation of the beacon in 1974 eliminated the need for the lighthouse keepers and, consequently, the cottages were vacated. Four years later, the cottages were vandalized and were subsequently occupied by squatters claiming ownership to the land. The squatters were eventually evicted and, in 1987, the barren structures were razed, leaving their concrete foundations.

As testimony to the notable presence of US military at the Ka Iwi site, several abandoned military facilities are located at Makapu'u Head. Known as Makapu'u Military Reservation, the headland was utilized by the U.S. Military to erect fixed coastal fortifications which served Honolulu through the 1920s, 1930s and 1940s.

In 1922, the first structure, a single level fire control station constructed of steel-reinforced concrete, was erected on the 647-foot summit. This fire control and observation station was used to obtain target angles for gun batteries and to observe the fall of shot and transmit correction data.

In 1934, a reinforced concrete machine-gun pillbox was built along Makapu'u Headland Road to further strengthen the position's fortifications, and a communication tunnel was set up underground along Kalanianaole Highway.

Several more machine gun positions were added to the north face of Makapu'u Head just before the outbreak of World War II. Each camouflaged emplacement was constructed of lava rocks and cement, and a mount for a hand-held .30 caliber Browning machine gun was provided. These emplacements had a steel reinforced concrete roof for protection against strafing aircraft.

During World War II, Makapu'u Military Reservation was also used as an anti-aircraft gun position. Several reinforced concrete, bomb proof shelters for personnel and ammunition were constructed on the reservation.

By 1948, the idea of fixed coastal fortifications became obsolete and the fire control station was abandoned. The role of the U.S.

military at the Ka Iwi site steadily diminished until 1960, when the former Makapu'u Military Reservation was turned over to the State of Hawaii.

The remaining bunkers are now bare concrete structures. Since they were strategically located for maximum viewing potential, the location of these fortifications offer some of the most spectacular panoramas in the area. In their present condition, however, they may pose a safety hazard and should be modified or demolished to minimize the risk to hikers.

c. Recreational Use

i. Existing Uses

Recreational opportunities at Makapu'u Head center on the Makapu'u Headland Road which is used by fishermen, walkers, hikers, joggers, and cyclists. In the lower section of the headland, the climate is usually dry, hot and windless, and the climb is relatively steep and taxing. At the bend above Kapaliokamoa, however, cool breezes and rewarding scenery ease the trek. More scenery unfolds on the climb up the precipitous eastern slope toward Makapu'u State Wayside. Cyclists are additionally rewarded for their strenuous climb by a speedy down-hill run.

Hikers may venture onto trails that lead to ruins of the military facilities, down the eastern hillside to the coastal bench where the blowhole and the largest tidepools are located, or over the summit of the headland down to Makapu'u Lookout. Fishermen occasionally use the trail down to the coastal bench in order to circumvent the more hazardous shoreline route. Additional trails lead from Makapu'u State Wayside, up to military and other ruins, and over the ridgeline and down to Makapu'u Lookout. From vantage points along this trail route, there are excellent views of windward Oahu. The trail is a challenging climb because of the steep incline, loose rock, and poor delineation.

Presently, parking for users of the Makapu'u Headland Road is unsafe and inconvenient. Hikers using this road park their cars on the shoulder of Kalanianaole Highway or in front of the access gate. There are no acceleration or deceleration lanes fronting this area.

At Makapu'u Lookout, the absence of traffic and parking control features such as striping and islands result in the inefficient use of the limited space. As a result, a few vehicles awkwardly parked there frequently prevent additional vehicles from pulling off of the highway. In addition, entry to the lookout is located on a bend in Kalanianaole Highway with limited sight distance. There are no deceleration or acceleration lanes on either side of the highway, and traffic conditions are sometimes heavy.

ii. Potential Opportunities

Potential recreational opportunities at the Makapu'u Headland are available at Makapu'u Headland Road, Makapu'u State Wayside, and Makapu'u Lookout. A key consideration is whether or not additional vehicular access to the one-way road will be allowed. Currently, the road is too narrow and hazardous for general public traffic. Road widening on the steep hillside could be accomplished but would be costly, entailing substantial cutting and filling which could degrade the aesthetics of the headland and would displace vegetation along its course. However, if the road were to be widened, pedestrians and shuttles could be accommodated. It would not be appropriate, however, to improve the road for use by general traffic, given the limited space for parking at the Wayside and the level of activity that can be accommodated. If some level of shuttle service is provided, issues of who shall provide the service and who will use the shuttle will need to be resolved.

Another consideration is parking. Currently, visitors to the headland park their cars along Kalanianaole Highway or at Makapu'u Lookout. Additional parking for those using the Headland Road would facilitate park usage. At the same time, overuse of the headland area could degrade sensitive habitats and adversely affect the quality of solitude in the area. A balance between park usage and preservation of sensitive habitats and the area's ambiance should be monitored. Usage of the headlands can be controlled by providing a limited number of parking spaces for longer-term use than sightseeing and enforcing the prohibition of parking on the shoulder of the Highway. While parking along the highway shoulder is illegal, police will not generally enforce the restriction unless the State Department of Transportation, which has jurisdiction over the highway, posts no parking signs.

Access by emergency vehicles to the Headland Road must be provided at all times. A system for opening the gates or providing proper agencies with keys should be established and the road should be improved, if necessary, to accommodate such vehicles.

Amenities for Makapu'u State Wayside should also be considered, including trash receptacles, landscaping, a comfort station, picnicking facilities, and tent camping. At minimum, trash receptacles would be needed, even at current levels of usage. The receptacles should be designed to contain litter in extremely windy conditions. The Headland Road provides sufficient access for maintenance.

Landscaping at Makapu'u State Wayside would enhance the visual appeal of the flatter areas which are currently dominated by the concrete foundations of the former lighthouse keepers' cottages. Additional shade trees and groundcover suited for the environment would be appropriate to minimize the need for irrigation, fertilizer and pesticide use.

A comfort station should be considered at Makapu'u State Wayside, particularly if picnic sites, camp sites, or shuttle service is provided. The idea of installing composting toilets could be explored. Even at current minimal levels of park usage, a comfort station may be needed. An alternative or additional location could be near a parking area at the beginning of Makapu'u Headland Road.

Although providing a landscaped area could sufficiently accommodate picnicking, picnic tables could be considered. Due to the seasonally arid conditions of the area, barbecue grills should not be provided as they may pose a fire hazard.

Tent camping in a designated area should only be considered in the high intensity use scenario for the Makapu'u State Wayside. Camping would require a comfort station and, possibly, showers. While it may be possible to tap into a water line at Sea Life Park, procuring a connection to the campsite would be difficult. Camping should only be allowed by permit and perhaps only in organized groups such as scouts. To minimize the risk of fire, open fires should not be allowed.

The recreational experience at Makapu'u Lookout could be substantially improved by better meeting the demand for viewing space. This could be

accomplished by extending the viewing platform of the lookout. The parking area should be modified so traffic can move through the lookout area more efficiently.

2. Management Considerations

a. Preservation

The most significant preservation concerns for Makapu'u Head are to discourage further trampling of vegetation and to maintain levels of usage which would preserve the isolated ambiance of Makapu'u State Wayside. The former could be addressed by defining trails with appropriate destinations and encouraging hikers to stay on those trails through signage and through an interpretive program theme on the importance of the vegetation and their susceptibility to trampling. The latter needs to be addressed through consideration of appropriate use levels and controlled through the availability of access. Excessive use of the Headland Road can be controlled by providing limited parking at the base of the Headland Road near Kalanianaole Highway, limited parking at the Makapu'u Lookout to a maximum of 20 minutes and enforcing the prohibition of parking on the highway shoulder.

b. Interpretive

Interpretive programs at Makapu'u Head would be centered on the Headland Road, Makapu'u Lighthouse and Makapu'u State Wayside. They may include signage, displays, or guided tours. Shuttle service would promote interpretation but should not be so frequent or involve so many people as to detract from the sense of isolation and wilderness at the Makapu'u State Wayside. The type of shuttle service provided at Hanauma Bay Nature Park would be far too excessive for Makapu'u Head. Perhaps a few shuttle trips per day would be appropriate. These could be linked to specific programs such as tours of the lighthouse.

Vandalism, which is generally the most serious threat to interpretive displays, can be controlled at Makapu'u Head through restrictions on access. The single vehicular access point allows control over vehicular access. The long walk up the Headland Road should discourage would-be vandals.

c. -Recreational Use

Recreational use of the upper headland area by those walking, hiking, or jogging up the Headland Road is mainly limited by the availability of parking near the entrance to the road. Since these uses are generally consistent with preservation and interpretation values, they should be accommodated to the extent that levels of usage do not adversely affect the ambiance of Makapu'u State Wayside. Hours of access should be typical of other State Parks, and should be controlled by a gated parking entrance which posts the park's hours of operation. In this way, the park can be closed during nighttime hours for security.

Bicyclists would generally not be a problem on the uphill leg if they stay on the road but could be a traffic hazard on a speedy downhill run. If reckless behavior cannot be controlled through signage and speed-bumps, they may need to be prohibited from using the road. Fishermen and hikers should continue to be allowed access to the coastal bench via the Headland Road.

B. Queen's Beach

The Queen's Beach area extends from Wawamalu Beach to Kapaliokamoa, encompassing all lands makai of the golf course drainage swale and curved gulch behind the grassland between Kaho'ohaihai inlet and Ka'ili'ili Bay. Refer to Figure X-3. A detailed physical description is provided as follows:

<u>From Wawamalu Ranch Wall to Kaloko Point:</u>

This area has long been used by shorecasters, divers and fishermen. Cars are frequently parked southwest of the wall on county land, presumably by recreational users. It is a short, rough stretch of shore with strong currents and scenic seaward vistas. Low shrub vegetation is dominated by stands of naupaka which have been reduced by off-road vehicles (ORVs). Closer to Kaloko Point, several tidal pools are exposed at low tide. Generally, ORVs gain access to this region by way of Kaloko Beach. This area is part of the strand vegetation zone.

<u>From Kaloko Point along coastline to Ka'ili'ili Point:</u>

The coastline between these two points forms Kaloko Inlet which collects runoff from the Hawaii Kai Golf Course across Kalanianaole Highway. At the mouth of the inlet, the shoreline is rocky, sparsely vegetated, and contains several tidal pools. Wave conditions are much rougher here. The left and right banks of the inlet are steep with

numerous links to foot trails on both sides. From most points along these banks, views are available of the brisk wave activity at the mouth of the inlet. This area is also part of the strand vegetation zone.

From Ka'ili'ili Point along shoreline of Ka'ili'ili Bay:

At the mouth of Ka'ili'ili Bay, ocean conditions are typically rough but diminish greatly over the shallow interior. The mauka portion of the Bay contains a 2-acre mangrove forest which is regarded as a breeding ground and protected habitat for several species of fish. Vegetation is predominantly naio, naupaka and ma'o (Hawaiian cotton). Some tidepools are also located at the Bay's mouth. A foot trail curves around the mangroves. Makai of this trail, between the bay and the makai golf course drainage ditch, there is a high finger of land which overlooks Ka'ili'ili Bay. Ka'ili'ili Bay receives drainage from the Kealakipapa Valley, as well as diverted drainage from Kalama Valley.

From Ka'ili'ili Bay to Kaho'ohaihai Inlet and Kapaliokamoa:

The flat rocky coast of this area has many tidal pools. Behind the rocky shoreline is a cobble beach deposited by high wave action. Vegetation behind this beach is mostly strand vegetation, haole koa, and wild basil, and above this, open grassland. The Kaho'ohaihai Inlet has a man-made breakwater extending into the water which has allowed a small, artificially deposited sand beach to be retained near the shoreline. This sand beach is not part of a littoral cell that regularly exchanges sands with those in deposits offshore, and is therefore rather dirty-looking. Above this inlet at the southern foot of Makapu'u Head stands Kapaliokamoa, an unusual rock formation. Several trails radiate outward and over Makapu'u Head from this point.

1. Resource Assessment

   a. Preservation

      i. Vegetation

      Vegetation at Queen's Beach is dominated by naupaka stands which extend along the coast and around the edges of the inlets. Naupaka is a common coastal plant species in Hawaii. It is of particular value in the area because it is attractive and prevents beach and dune erosion. Other native vegetation found here includes akoko (*Euphorbia degeneri*), alena (*Boerhavia diffusa*), akulikuli (*Sesuvium portulacastrum*), hinahina kahakai

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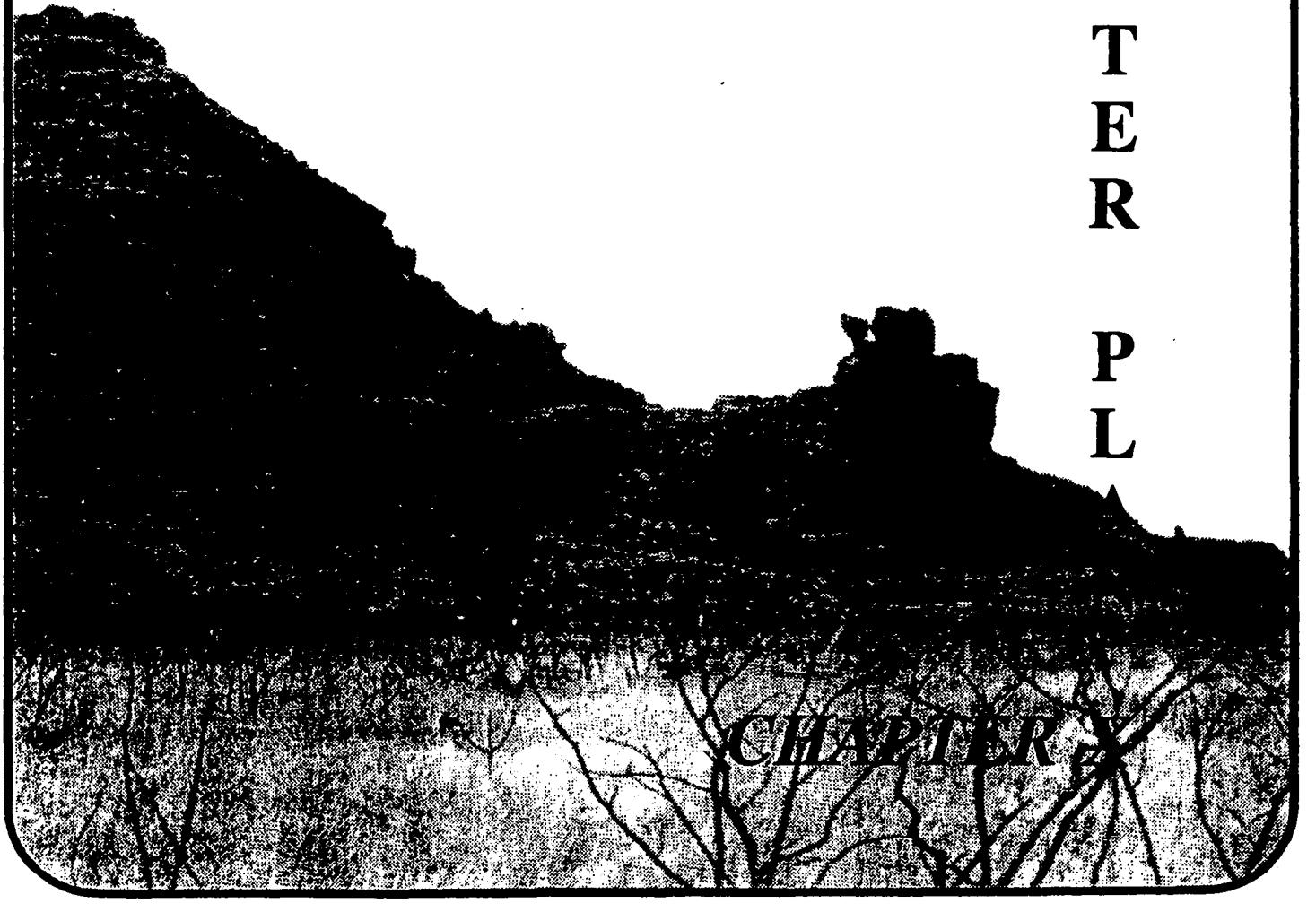


CHAPTER X

X. PROPOSED PARK SITE RESOURCE ASSESSMENT

This **Resource Assessment** examines the various preservation, interpretive and recreational resources of four geographical areas which make up the Ka Iwi site: Makapu'u Head, Queen's Beach, the Coastal Bench Trail, and Kealakipapa Valley. Refer to Figure X-1. Following the resource assessment section for each area, a list of management considerations are given which will be used to formulate alternative objectives, policies and physical layouts for the master plan.

Preservation values are equated with preserving rare, unique or representative species and habitats or those which serve important functions, such as controlling erosion. Preservation values may be promoted by protecting important species and habitats from added or potential degradation and allowing them to restore themselves. In addition, efforts may go a step further to replant or recreate conditions of former species and habitats which may have been lost or severely degraded. In the **Preservation** section, important species and habitats existing within the park site are identified, as well as species and habitats that were known to have thrived there previously, and their potential role in park planning is discussed.

Interpretive value arises from the role which a feature within a site or visible from a site may have in helping people understand and appreciate an area's geological, ecological and cultural history. Establishment of a park would create an opportunity to gather and share the accumulated knowledge of the area with park users. Under the **Interpretation** sections, existing interpretive features, functions, and values of the Ka Iwi site as well as any current user groups involved in promoting interpretation at the proposed park site are identified.

Recreational values relate to the role of the site in meeting recreational demands of the public. Under the **Recreation** sections, existing recreational resources of the Ka Iwi site are identified based on the many groups, families and individuals already utilizing the area on a regular basis. Activities like fishing, biking, walking and sightseeing are only a few of the uses that are made of this area.

Potential recreational uses were determined by examining existing natural resources, present use of the area, and information about projected recreational needs on Oahu from SCORP (see Table III-2). Potential uses considered were limited to those within the appropriate jurisdiction of the State Park System, which generally revolve around cultural and natural resources. Thus, facilities such as tennis courts or ballfields which could conceivably be developed on the site were not considered.

Under the **Management Considerations** section, preservation, interpretive and recreational values within the Ka Iwi site are examined to determine how they may be compatible or how they may conflict. Specific problem areas are discussed along with potential tradeoffs. These management considerations will serve as the basis for formulating alternative park objectives, policies and physical layouts reflecting differences in priorities among these values.

A. Makapu'u Head

For the purpose of this Master Plan, Makapu'u Head encompasses approximately 200 acres of mountainous terrain from the Makapu'u Lookout at Kalanianaole Highway to the Kapaliokamoa rock formation. See Figure X-2. It includes the Makapu'u Headland Road and headland summit area where the Makapu'u State Wayside and Makapu'u Point Lighthouse are located, as well as the rugged trails up to the summit area and down to the eastern coastal bench. From the elevated portions of the headland, many spectacular views are available of the windward and leeward sides of the island, Ka Iwi Channel, and the Ka Iwi site itself.

Also included in the Makapu'u Head management area is the Makapu'u Lookout which is the most used part of the Ka Iwi site. The lookout provides panoramic views of the Windward coastline from Waimanalo to Mokapu Point, the sheer pali cliffs, Sea Life Park, Makapu'u Beach, and the offshore Kaohikaipu and Manana Islands. The lookout consists of a 0.65 acre parking area and a low rock wall. Observations of the lookout were conducted on a weekday and a weekend holiday. The weekday survey revealed that the peak traffic periods on that particular day were from 9:30 a.m. to 10:30 a.m. and from 3:30 p.m. to 4:30 p.m. The average number of vehicles per hour at the lookout over a seven-hour period on that day was 22. The weekend holiday survey revealed that the peak traffic periods on that particular holiday were from 11:30 a.m. to 12:30 p.m. and 2:30 p.m. to 3:30 p.m. The average number of vehicles per hour at the lookout over a seven-hour period on that day was 42. Very few buses can park in the small lookout parking lot, and it was theorized that many more vehicles which may have stopped at the lookout bypassed the lot. The lot was also occasionally used for several hours by hikers climbing to the peak of Makapu'u Head. In addition, it was observed that many users scrambled into the flat area adjacent to the lookout for better views and picture-taking.

The Makapu'u Headland Road is the primary access route to the summit of Makapu'u Head where most of the attractions are located. The access road is a paved, single-lane road which measures about one mile long. It is the only paved road on Ka Iwi site. A wide swing gate with a tamper-proof lock to keep out unauthorized vehicles is located

just makai of Kalanianaole Highway. Another locked gate is located further in as the road climbs the western flank of the headland. Vehicular use of the access road is mainly limited to authorized State and Coast Guard personnel for the maintenance of the Makapu'u State Wayside and the Makapu'u Point Lighthouse, respectively. Pedestrians can walk around the gateposts to gain access.

From the highway entrance, Makapu'u Headland Road dips into Kealakipapa Valley, then climbs along the west side of the headland. It switches back at the ridgeline above Kapaliokamoa and then climbs the precipitous eastern flank toward Makapu'u State Wayside. Along its elevated length, the road offers spectacular views of Ka Iwi Channel, Molokai, Maui and Lanai, the community of Waimanalo, Ko'olau Range, Koko Crater, Queen's Beach and the shoreline to Koko Head.

There are other sites of interest off the road. Old military bunkers, some of which were sited to take advantage of expansive views, still stand on the headland ridge. Seasonally, whales can be viewed from the road in the deep blue Ka Iwi channel as they head toward or return from calving and nursing grounds near Maui. Several species of seabirds nest on the steep, rocky seacliffs and can be seen flying below the cliff edge. As the road approaches the Makapu'u State Wayside, there is a poorly defined trail that winds down the eastern flank of the headland to a wide portion of the coastal bench where the blowhole and large emerald tidepools are located. Further up, the road forks. The short right spur ends at a footpath which leads to the Makapu'u Point Lighthouse. The footpath is gated and locked to prevent unauthorized access to the Lighthouse.

The left fork terminates at the Makapu'u State Wayside which was opened in August 1991. From its lookout platforms are spectacular unobstructed views of the windward coast, including Sea Life Park, Waimanalo, Ko'olau Range, Mokapu Peninsula, and Manana and Kaohikaipu Islands. In a flat area near these lookouts is a large section of pavement and some stone foundations of cabins which were formerly inhabited by lighthouse caretakers. The hillside to the west contains more remnants of military facilities. A network of trails leads up to the ridge at the summit of Makapu'u Head, which offers panoramic views in every direction.

1. Resource Assessment

   a. Preservation

   Vegetation on the headland is dominated by exotic species that are well adapted to survival in relatively dry and very windy conditions. Most are common species which have been dwarfed by the harsh winds and survive in scant pockets

of soil. While they possess little intrinsic value because they are common species, they anchor what little soil there is and are important to the visual character of the area.

Although they are able to survive under extremely harsh conditions, the dwarfed species are susceptible to degradation from trampling. The many trails on the hillside which lead up to and over the ridge at the summit of the headland attest to the slow recovery of these plants. Trampling is also evident around the trail leading down to the coastal bench on the eastern side of the headland. Preservation of these plant communities and soil erosion control can be promoted by minimizing random trampling by hikers. To accomplish this, the most important trails should be selected and marked well. Hikers should be urged not to stray from those trails. An interpretive program about these tenacious but fragile plant communities could also promote their protection.

b. Interpretive

Because of its panoramic views, Makapu'u Head is well suited to serve as an interpretive platform for teaching island and regional geology as well as for displaying the Ka Iwi site's environmental and cultural history. The Makapu'u Lookout will continue to provide the most readily accessible views to commercial tour groups and the general public. In addition, a walking tour along Makapu'u Headland Road could provide ever-changing views of the surrounding area, while the Makapu'u State Wayside is a natural hub for interpretive displays.

Discussed below are the various interpretive opportunities at Makapu'u Head:

i. Geological

The Makapu'u Headland Road and Makapu'u State Wayside offer spectacular views with significant interpretive value. Three interpretive themes that can be seen from these vantage points are relevant to geological resources.

One such theme is the impact of volcanic forces on the geological evolution of the Koko Head region. At the point where the Headland Access turns back over the headland ridge above Kapaliokamoa, there is a view of the broad coastal plain from the base of the headland through Sandy Beach, and beyond that Koko Crater and Koko Head in the distance. These features were among the last to be formed on Oahu by

volcanic activity, approximately 30,000 to 40,000 years ago. The rift zone giving rise to these features extends to the Makapu'u side of the headland where other features of its activity are clearly visible from Makapu'u Lookout and Makapu'u State Wayside. These include the shoreline fronting Sea Life Park and the offshore islands of Manana (Rabbit Island) and Kaohikaipu.

A second interpretive theme relevant to geological resources is the contribution of the erosional process to geological formations in the region such as the Makapu'u seacliffs and offshore islands. Makapu'u Head is part of the southern end of the Ko'olau Range formed by the Ko'olau Volcano which ceased its activity about 2.5 millon years ago. At that time the shoreline extended several miles out to sea. Subsequent erosion formed the headland. The headland's north and east flank are seacliffs eroded by the ocean when sea level was much higher than at present. Limestone blocks on the western flank of the headland up to its summit were also deposited by the sea.

The effects of the higher sea level are also evidenced by the contrast between the flat-faced pali from Makapu'u to Waimanalo which are sea cliffs carved by ocean waves, and the fluted pali beyond which were cut by erosion.

The last interpretive theme is the asymmetrical island-shaping of Oahu due to tradewinds and orographic rainfall. During tradewind conditions, the difference in rainfall is evident in the formation of clouds on the wet Windward side which robs moisture from tradewinds as they pass to the drier Leeward side. This phenomenon is known in meteorological terms as orographic rainfall and it is largely responsible for the sharp contrast in topography between the highly eroded Windward pali and the gentler slopes on the Leeward side of Oahu. The Makapu'u Headland Road offers the unique opportunity to view both sides of the Ko'olau Range.

ii. Ecological

Vegetation in the headland area is dominated by exotics which are adapted for survival in the windy and arid climate. Several interpretive themes may be possible.

- The different vegetation groups that characterize the north, east and west faces of the headland reflect variations in soil, as well as exposure to sun, wind and rain. They also exhibit a kind of dwarfism resulting from the shearing effect of strong tradewinds.

- The dominance of non-native species in this area reinforces how native and endemic vegetation have succumbed to disturbance and the introduction of better-adapted species.

- Within the flatter portions of the Makapu'u State Wayside are the same species as those found on the steeper areas, but which are not stressed by the wind. They provide a comparison of forms. Also in this area are some surviving species of exotic vegetation formerly used for landscaping by the lighthouse caretakers.

Birdlife on the cliffs is more representative of land-based varieties of birds as opposed to shorebirds. Because the headlands tend to be the most windy part of the site, fewer birds are seen there. Doves and cardinals are most common.

Manana Island, visible from the headland, is a State Wildlife Sanctuary. This island, along with Moku Manu which is offshore of Mokapu Peninsula, is one of the larger and better known offshore nesting grounds in Hawaii for a variety of seabirds. The island is a common breeding ground for the Sooty Tern, Common Noddy, White-capped Noddy, Wedge-tailed Shearwater, Bulwer's Petrel, Common Mynah, and Red-tailed Tropicbird which had previously been sighted only in the Leeward Islands. Other avian visitors to and around the island include the White-tailed Tropicbird, Red-footed Booby, Brown Booby, Great Frigatebird, White Tern, Black-crowned Night Heron, and Hawaiian Owl. All of these birds are visible at certain times of the year from Makapu'u Head.

Humpback whales pass through Ka Iwi Channel along Penguin Bank, where the greatest density of whales around Oahu have been sighted. This location is considered to be the best whale viewing site on Oahu. Humpback whales travel in a southeasterly direction around Makapu'u Point on their way to breeding grounds near Maui, during the winter months. Of the three known breeding areas in the North Pacific (including the Hawaiian Islands, the islands off western Mexico and the islands of the western Pacific, including Mariana, Ryukyu, and Bonin),

Hawaii is generally believed to be the most popular breeding area to be visited in winter by humpbacks. Numbers of whales visiting Hawaiian waters generally range from 600 individuals to 1,500 individuals. In summer months, the whales return to the colder, higher-latitude areas where food resources are more abundant.

Dolphins can sometimes be seen frolicking in the waters offshore of Makapu'u Head. The most common species in Hawaiian waters are the Spinner, Hawaiian (Spotted), and Pacific Bottlenose Dolphin. From East Oahu, dolphins are generally seen two to three miles offshore, but have been known to approach the shoreline as close in as one half mile offshore. Because they are a non-migratory species, they can be found in Hawaiian waters year-round. The local dolphin population remains stable.

iii. Cultural/Historical

- **Pre-Contact**. The interpretive themes of Makapu'u Head's cultural and historical resources involve Hawaiian legends, and the role of the site in the islandwide circuit of the old "King's Highway."

  Hawaiian cultural significance associated with Makapu'u Head includes a reference to the Malei stone. The Malei stone stood in a spot on the Ko'olau side of Makapu'u Hill, where, according to legend, it attracted the parrot fish (uhu). Until it was lost during the 19th century, fishermen traditionally placed offerings at the stone. One version of Malei's disappearance refers to a lighthouse keeper who "removed the stone, throwing it into the sea, or burying it, or breaking it." (McAllister 1933:58). The lighthouse keeper alleged to have committed this offense was said to have died not long after.

  Although not directly associated with Makapu'u Head, the myth of Koko Crater, which dominates the view from the Headland Road above Kapaliokamoa, offers an alternative explanation for its formation. Tradition connects Pele (the volcano goddess) with this general area, which is the most recent area of volcanic activity on the island. According to legend, when Pele was once being attacked by Kamapua'a (the god of forests) near Kalapana on the Big Island, her sister, Kapo, saved her from being raped by

Kamapua'a by sending her flying vagina (kohe lele) as a lure. Kamapua'a followed this to Koko Head, Oahu, where it left an imprint. The place of the imprint is Koko Head Crater, and its name is Kohelepelepe, literally, vagina labia minor.

The old "King's Highway" is now a trail of moss-covered rocks which begins below Makapu'u Lookout and extends down Kealakipapa Valley, makai of Kalanianaole Highway. A study conducted by J. Gilbert McAllister in 1930 estimated the length of this particular section to be about 1,250 feet. In the 19th century, this historical travelway was known as the "road from Honolulu to Ko'olau." It has been postulated that the road was preceded by an ancient foot trail, but that it was widened and improved upon introduction of pack animals by Europeans.

A fieldcheck was conducted in May 1992 of the old "King's Highway" remnants by the State Historic Preservation Office of the Department of Land and Natural Resources. There are presently two recognizable sections of the old road in the project area. See Figure X-2.

One section closely parallels Kalanianaole Highway on the makai side between the entry to the Lighthouse Access Road and Makapu'u Lookout. The width of this section of road ranges between 4.4 and 5.5 meters, while the total recognizable length of this remnant is approximately 394 feet. It is conspicuously clear of large rocks and very level. The flat paving stones which apparently once were characteristic of much of its length are gone (McAllister, 1933). A more recent reference can be found attesting to the fact that "moss-rock" hunters have removed the paving stones of the road (Kelly, 1984). The mauka side of the road is roughly defined by a border of stones, while the makai side is flanked by a fragmented boulder alignment modifying a natural ledge. It may extend further northward, but the vegetation changes to dense kiawe in that area, making survey of the road extremely difficult without vegetation clearing (Yent, 1992).

The other section is a winding remnant located north of Makapu'u Lookout. The total length of this section is approximately 492 feet and it presently contains four switchbacks. It is assumed that the

other four of the original eight switchbacks were demolished during highway construction (Yent, 1992). At its makai end, the road is located approximately 15 feet above sea level, winding up the cliffs to an elevation of approximately 130 feet above sea level at the mauka end. This road presently consists of low (2 feet) to very high (14.8 feet) boulder facings built on the downslope side of the cliffs which support fill and flat boulder paving stones. This winding section averages 8.3 feet in width.

- **Post-Contact**. The interpretive themes of the site's post-contact cultural and historical resources include the history of the Makapu'u Lighthouse and its significance to Hawaii's maritime history, and the impact of the US Military on the region.

  The Makapu'u Lighthouse is a 46-foot tower, 18 feet in diameter, that was installed in 1909 at Makapu'u Point. It is accessible only along a pedestrian path from the Makapu'u Headland Road. For many ocean vessels, it represents the first visual contact with Oahu. It is passed by all ships sailing between Honolulu and the Mainland. The beacon is fitted with the largest Fresnel lens ever built. Only five such lenses were in operation nationally when production ceased.

  The Coast Guard is charged with the care and maintenance of the historical landmark. Hawaii Maritime Center, a non-profit agency, also has access to the lighthouse for interpretive and educational purposes. The Center envisioned conducting guided tours of the lighthouse complete with facts and anecdotes about its history. Visitors were to meet at Sea Life Park and then be shuttled to the Lighthouse where a docent would be waiting to greet them. These tours were in the planning stages, however, the plans were shelved when the Makapu'u State Wayside opened in August of 1991. The reasoning was that the increase in pedestrian traffic as a result of opening the facility would pose a safety hazard when the shuttle made regular pick-ups and drop-offs on the Headland Road.

  The lighthouse keepers' quarters were located on the flat area of land on the Makapu'u State Wayside, at the top of the Headland Road. From around 1939 to 1974, the lighthouse keepers lived in

cottages along with their families. The automation of the beacon in 1974 eliminated the need for the lighthouse keepers and, consequently, the cottages were vacated. Four years later, the cottages were vandalized and were subsequently occupied by squatters claiming ownership to the land. The squatters were eventually evicted and, in 1987, the barren structures were razed, leaving their concrete foundations.

As testimony to the notable presence of US military at the Ka Iwi site, several abandoned military facilities are located at Makapu'u Head. Known as Makapu'u Military Reservation, the headland was utilized by the U.S. Military to erect fixed coastal fortifications which served Honolulu through the 1920s, 1930s and 1940s.

In 1922, the first structure, a single level fire control station constructed of steel-reinforced concrete, was erected on the 647-foot summit. This fire control and observation station was used to obtain target angles for gun batteries and to observe the fall of shot and transmit correction data.

In 1934, a reinforced concrete machine-gun pillbox was built along Makapu'u Headland Road to further strengthen the position's fortifications, and a communication tunnel was set up underground along Kalanianaole Highway.

Several more machine gun positions were added to the north face of Makapu'u Head just before the outbreak of World War II. Each camouflaged emplacement was constructed of lava rocks and cement, and a mount for a hand-held .30 caliber Browning machine gun was provided. These emplacements had a steel reinforced concrete roof for protection against strafing aircraft.

During World War II, Makapu'u Military Reservation was also used as an anti-aircraft gun position. Several reinforced concrete, bomb proof shelters for personnel and ammunition were constructed on the reservation.

By 1948, the idea of fixed coastal fortifications became obsolete and the fire control station was abandoned. The role of the U.S.

military at the Ka Iwi site steadily diminished until 1960, when the former Makapu'u Military Reservation was turned over to the State of Hawaii.

The remaining bunkers are now bare concrete structures. Since they were strategically located for maximum viewing potential, the location of these fortifications offer some of the most spectacular panoramas in the area. In their present condition, however, they may pose a safety hazard and should be modified or demolished to minimize the risk to hikers.

c. Recreational Use

i. Existing Uses

Recreational opportunities at Makapu'u Head center on the Makapu'u Headland Road which is used by fishermen, walkers, hikers, joggers, and cyclists. In the lower section of the headland, the climate is usually dry, hot and windless, and the climb is relatively steep and taxing. At the bend above Kapaliokamoa, however, cool breezes and rewarding scenery ease the trek. More scenery unfolds on the climb up the precipitous eastern slope toward Makapu'u State Wayside. Cyclists are additionally rewarded for their strenuous climb by a speedy down-hill run.

Hikers may venture onto trails that lead to ruins of the military facilities, down the eastern hillside to the coastal bench where the blowhole and the largest tidepools are located, or over the summit of the headland down to Makapu'u Lookout. Fishermen occasionally use the trail down to the coastal bench in order to circumvent the more hazardous shoreline route. Additional trails lead from Makapu'u State Wayside, up to military and other ruins, and over the ridgeline and down to Makapu'u Lookout. From vantage points along this trail route, there are excellent views of windward Oahu. The trail is a challenging climb because of the steep incline, loose rock, and poor delineation.

Presently, parking for users of the Makapu'u Headland Road is unsafe and inconvenient. Hikers using this road park their cars on the shoulder of Kalanianaole Highway or in front of the access gate. There are no acceleration or deceleration lanes fronting this area.

At Makapu'u Lookout, the absence of traffic and parking control features such as striping and islands result in the inefficient use of the limited space. As a result, a few vehicles awkwardly parked there frequently prevent additional vehicles from pulling off of the highway. In addition, entry to the lookout is located on a bend in Kalanianaole Highway with limited sight distance. There are no deceleration or acceleration lanes on either side of the highway, and traffic conditions are sometimes heavy.

ii. Potential Opportunities

Potential recreational opportunities at the Makapu'u Headland are available at Makapu'u Headland Road, Makapu'u State Wayside, and Makapu'u Lookout. A key consideration is whether or not additional vehicular access to the one-way road will be allowed. Currently, the road is too narrow and hazardous for general public traffic. Road widening on the steep hillside could be accomplished but would be costly, entailing substantial cutting and filling which could degrade the aesthetics of the headland and would displace vegetation along its course. However, if the road were to be widened, pedestrians and shuttles could be accommodated. It would not be appropriate, however, to improve the road for use by general traffic, given the limited space for parking at the Wayside and the level of activity that can be accommodated. If some level of shuttle service is provided, issues of who shall provide the service and who will use the shuttle will need to be resolved.

Another consideration is parking. Currently, visitors to the headland park their cars along Kalanianaole Highway or at Makapu'u Lookout. Additional parking for those using the Headland Road would facilitate park usage. At the same time, overuse of the headland area could degrade sensitive habitats and adversely affect the quality of solitude in the area. A balance between park usage and preservation of sensitive habitats and the area's ambiance should be monitored. Usage of the headlands can be controlled by providing a limited number of parking spaces for longer-term use than sightseeing and enforcing the prohibition of parking on the shoulder of the Highway. While parking along the highway shoulder is illegal, police will not generally enforce the restriction unless the State Department of Transportation, which has jurisdiction over the highway, posts no parking signs.

Access by emergency vehicles to the Headland Road must be provided at all times. A system for opening the gates or providing proper agencies with keys should be established and the road should be improved, if necessary, to accommodate such vehicles.

Amenities for Makapu'u State Wayside should also be considered, including trash receptacles, landscaping, a comfort station, picnicking facilities, and tent camping. At minimum, trash receptacles would be needed, even at current levels of usage. The receptacles should be designed to contain litter in extremely windy conditions. The Headland Road provides sufficient access for maintenance.

Landscaping at Makapu'u State Wayside would enhance the visual appeal of the flatter areas which are currently dominated by the concrete foundations of the former lighthouse keepers' cottages. Additional shade trees and groundcover suited for the environment would be appropriate to minimize the need for irrigation, fertilizer and pesticide use.

A comfort station should be considered at Makapu'u State Wayside, particularly if picnic sites, camp sites, or shuttle service is provided. The idea of installing composting toilets could be explored. Even at current minimal levels of park usage, a comfort station may be needed. An alternative or additional location could be near a parking area at the beginning of Makapu'u Headland Road.

Although providing a landscaped area could sufficiently accommodate picnicking, picnic tables could be considered. Due to the seasonally arid conditions of the area, barbecue grills should not be provided as they may pose a fire hazard.

Tent camping in a designated area should only be considered in the high intensity use scenario for the Makapu'u State Wayside. Camping would require a comfort station and, possibly, showers. While it may be possible to tap into a water line at Sea Life Park, procuring a connection to the campsite would be difficult. Camping should only be allowed by permit and perhaps only in organized groups such as scouts. To minimize the risk of fire, open fires should not be allowed.

The recreational experience at Makapu'u Lookout could be substantially improved by better meeting the demand for viewing space. This could be

accomplished by extending the viewing platform of the lookout. The parking area should be modified so traffic can move through the lookout area more efficiently.

2. Management Considerations

a. Preservation

The most significant preservation concerns for Makapu'u Head are to discourage further trampling of vegetation and to maintain levels of usage which would preserve the isolated ambiance of Makapu'u State Wayside. The former could be addressed by defining trails with appropriate destinations and encouraging hikers to stay on those trails through signage and through an interpretive program theme on the importance of the vegetation and their susceptibility to trampling. The latter needs to be addressed through consideration of appropriate use levels and controlled through the availability of access. Excessive use of the Headland Road can be controlled by providing limited parking at the base of the Headland Road near Kalanianaole Highway, limited parking at the Makapu'u Lookout to a maximum of 20 minutes and enforcing the prohibition of parking on the highway shoulder.

b. Interpretive

Interpretive programs at Makapu'u Head would be centered on the Headland Road, Makapu'u Lighthouse and Makapu'u State Wayside. They may include signage, displays, or guided tours. Shuttle service would promote interpretation but should not be so frequent or involve so many people as to detract from the sense of isolation and wilderness at the Makapu'u State Wayside. The type of shuttle service provided at Hanauma Bay Nature Park would be far too excessive for Makapu'u Head. Perhaps a few shuttle trips per day would be appropriate. These could be linked to specific programs such as tours of the lighthouse.

Vandalism, which is generally the most serious threat to interpretive displays, can be controlled at Makapu'u Head through restrictions on access. The single vehicular access point allows control over vehicular access. The long walk up the Headland Road should discourage would-be vandals.

c. -Recreational Use

Recreational use of the upper headland area by those walking, hiking, or jogging up the Headland Road is mainly limited by the availability of parking near the entrance to the road. Since these uses are generally consistent with preservation and interpretation values, they should be accommodated to the extent that levels of usage do not adversely affect the ambiance of Makapu'u State Wayside. Hours of access should be typical of other State Parks, and should be controlled by a gated parking entrance which posts the park's hours of operation. In this way, the park can be closed during nighttime hours for security.

Bicyclists would generally not be a problem on the uphill leg if they stay on the road but could be a traffic hazard on a speedy downhill run. If reckless behavior cannot be controlled through signage and speed-bumps, they may need to be prohibited from using the road. Fishermen and hikers should continue to be allowed access to the coastal bench via the Headland Road.

B. Queen's Beach

The Queen's Beach area extends from Wawamalu Beach to Kapaliokamoa, encompassing all lands makai of the golf course drainage swale and curved gulch behind the grassland between Kaho'ohaihai inlet and Ka'ili'ili Bay. Refer to Figure X-3. A detailed physical description is provided as follows:

<u>From Wawamalu Ranch Wall to Kaloko Point:</u>

This area has long been used by shorecasters, divers and fishermen. Cars are frequently parked southwest of the wall on county land, presumably by recreational users. It is a short, rough stretch of shore with strong currents and scenic seaward vistas. Low shrub vegetation is dominated by stands of naupaka which have been reduced by off-road vehicles (ORVs). Closer to Kaloko Point, several tidal pools are exposed at low tide. Generally, ORVs gain access to this region by way of Kaloko Beach. This area is part of the strand vegetation zone.

<u>From Kaloko Point along coastline to Ka'ili'ili Point:</u>

The coastline between these two points forms Kaloko Inlet which collects runoff from the Hawaii Kai Golf Course across Kalanianaole Highway. At the mouth of the inlet, the shoreline is rocky, sparsely vegetated, and contains several tidal pools. Wave conditions are much rougher here. The left and right banks of the inlet are steep with

numerous links to foot trails on both sides. From most points along these banks, views are available of the brisk wave activity at the mouth of the inlet. This area is also part of the strand vegetation zone.

From Ka'ili'ili Point along shoreline of Ka'ili'ili Bay:

At the mouth of Ka'ili'ili Bay, ocean conditions are typically rough but diminish greatly over the shallow interior. The mauka portion of the Bay contains a 2-acre mangrove forest which is regarded as a breeding ground and protected habitat for several species of fish. Vegetation is predominantly naio, naupaka and ma'o (Hawaiian cotton). Some tidepools are also located at the Bay's mouth. A foot trail curves around the mangroves. Makai of this trail, between the bay and the makai golf course drainage ditch, there is a high finger of land which overlooks Ka'ili'ili Bay. Ka'ili'ili Bay receives drainage from the Kealakipapa Valley, as well as diverted drainage from Kalama Valley.

From Ka'ili'ili Bay to Kaho'ohaihai Inlet and Kapaliokamoa:

The flat rocky coast of this area has many tidal pools. Behind the rocky shoreline is a cobble beach deposited by high wave action. Vegetation behind this beach is mostly strand vegetation, haole koa, and wild basil, and above this, open grassland. The Kaho'ohaihai Inlet has a man-made breakwater extending into the water which has allowed a small, artificially deposited sand beach to be retained near the shoreline. This sand beach is not part of a littoral cell that regularly exchanges sands with those in deposits offshore, and is therefore rather dirty-looking. Above this inlet at the southern foot of Makapu'u Head stands Kapaliokamoa, an unusual rock formation. Several trails radiate outward and over Makapu'u Head from this point.

1. Resource Assessment

   a. Preservation

      i. Vegetation

      Vegetation at Queen's Beach is dominated by naupaka stands which extend along the coast and around the edges of the inlets. Naupaka is a common coastal plant species in Hawaii. It is of particular value in the area because it is attractive and prevents beach and dune erosion. Other native vegetation found here includes akoko (*Euphorbia degeneri*), alena (*Boerhavia diffusa*), akulikuli (*Sesuvium portulacastrum*), hinahina kahakai

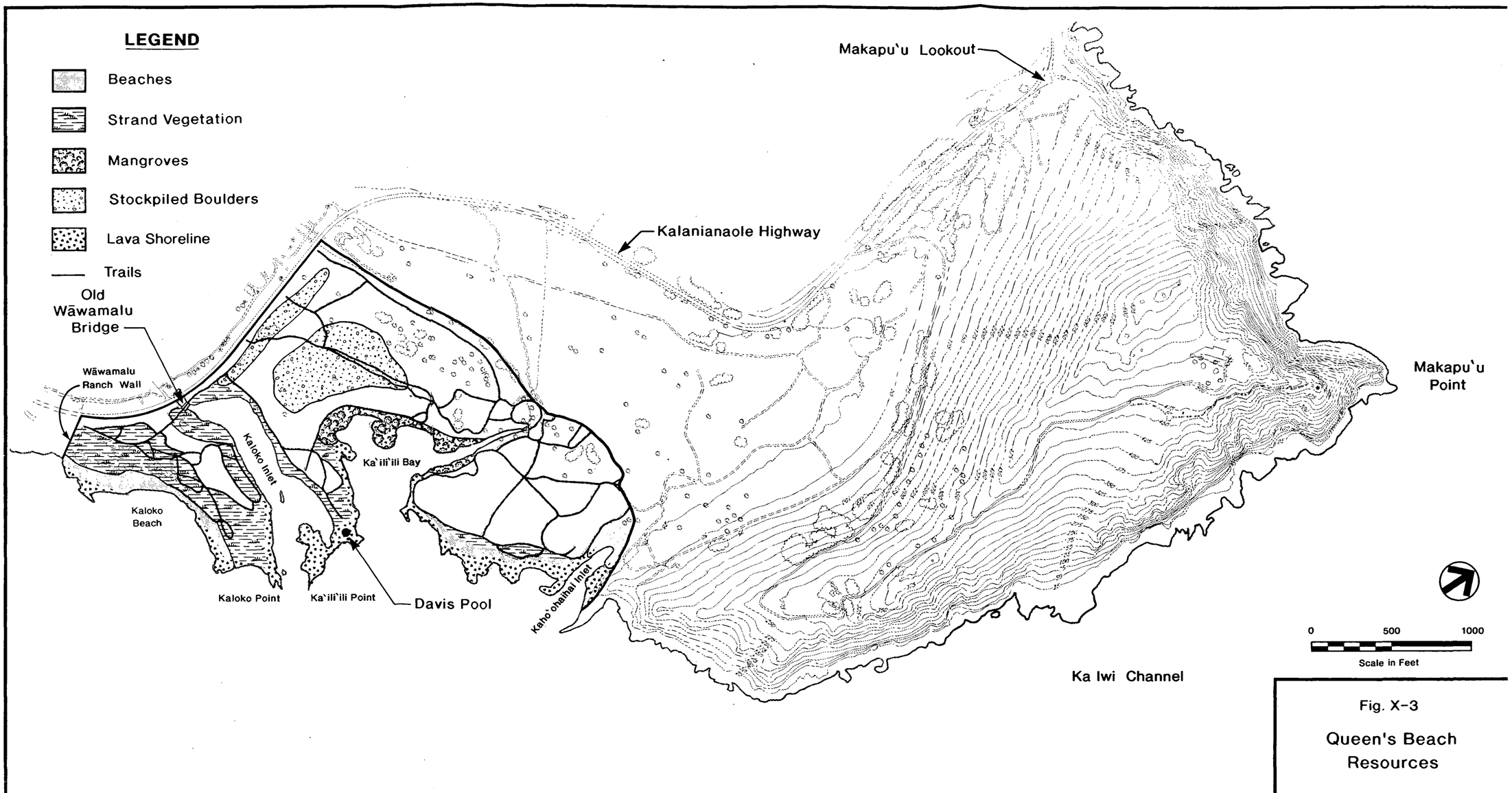


Fig. X-3

Queen's Beach Resources

(*Nama Hawaiiensis*), 'ilima (*Sida fallax*), pohuehue (*Ipomoea pes-caprae*), and nohu (*Tribulus cistoides*).

The naupaka stands at Queen's Beach have been seriously reduced by off-road vehicles (ORVs) to the point that wide swaths of dune have overtaken plant growth. The species composition of the strand vegetation has not changed since the 1984 study, but existing stands have suffered damage from ORVs. The only way to ensure that these stands are protected and further dune erosion halted is to keep all ORVs out of the area.

In 1913, botanist Joseph Rock described the strand vegetation as "scanty" and said it consisted of a "few herbaceous plants and three or four species of trees, which are scattered, single ones here and there on the beaches." Many of the plants that Rock listed as beach inhabitants are found today at the study site.

Wiliwili trees and naio were once common to the area before they were removed in conjunction with modern development efforts. In fact, at one time the area was reported to be a favorite stopping place because of the shade provided by the trees which grew there. Old photos of the area show a much more heavily vegetated landscape. It should be possible to recreate such a landscape at Queen's Beach as well as in Kealakipapa Valley.

ii. Marine Biota

The coast is most susceptible to abuse by over-fishing, trash dumping, and water quality degradation by contaminants and siltation. The Waikiki Aquarium has led classes into the nearshore waters of the mangrove and tidepools to look for juvenile fishes, algaes, invertebrates, and other marine life. There is some record that since beginning these trips, the marine life in the shallow waters has declined. Tour leaders speculate that excessive drainage from residential areas and the golf course may be partly responsible. Fertilizer and pesticide contaminants from these areas could have deleterious effects all the way to the ocean. The offshore zone may not be as seriously or imminently threatened as the intertidal and shoreward habitats. If fisheries are conserved, this zone should retain its natural values indefinitely.

The following descriptions of marine life pertain to species previously recorded in the area. Some of these species may no longer be apparent, or may have been displaced by other species.

- **Estuarine Zone**. This zone includes the 2-acre mangrove stand at Ka'ili'ili Bay and the waters of Kaloko Inlet which are home to several varieties of plant and animal life. Species of green algae (limu) such as *Enteromorpha* and *Ulva*, and brown algae such as *Dictyopteris* and *Padina*, can be found in this zone from backwaters to ocean inlets. Salt marsh plants, red mangrove, and pickleweed are flourishing along the inlets. Another mangrove-type tree called buttonwood has also become established.

  In Ka'ili'ili Bay, many kinds of invertebrates are present. Most are small and live attached to or underneath rocks on the bottom, or burrowed into the sediment of the seafloor. They include sponges, anemones, hydroids, bryzoans, snails, clams, echinoderms, tunicates, and a large variety of worms and arthropods.

  Fish species that have been known to live in or visit this zone include mullet, aholehole, and papio. Introduced species such as mosquitofish and tilapia may also be established in the shallow brackish water.

  Birds known to appear at the site include the native night heron and the migrant wandering tattler. The low marshy habitat of these backwaters may also be suitable for the endangered Hawaiian Stilt, Koloa, Laysan Duck, and others if they are provided with appropriate and adequate protection.

  A rock causeway has been built from one side of Ka'ili'ili Bay to the other. It is speculated that the causeway was built to allow ORVs to cross the bay rather than drive around it. This may be reducing the bay's water circulation, resulting in lower water quality.

- **Tidal Zone**. There are numerous interesting species of green, brown, red, and blue-green algae found in this zone. Conspicuous green algae include *Ulva* (sea lettuce) and delicate forms such as

- *Caulerpa*, which often have tiny fernlike fronds, and are typically found in deeper or more sheltered rock pools. Red algae in particular become abundant and diverse in the lower intertidal zone, especially on open rock ledges washed by the surf. They include forms that are hardly recognizable as living plants. These are the thin calcareous crusts typified by the genus *Lithothamnion* that grow as a pink to purple coating over the rocks, even in holes and caves where the light intensity is often too low for other kinds of algae. They offer a unique springboard for interpretive education.

  Invertebrates of virtually every phylum are also present in the tidal zone. Most are small and shelter in nooks and crannies of the rocky terrain, within the algal turf, or in pockets of sediment trapped in troughs and pools. Common examples include sponges, cnidarians, a variety of worms, molluscs, arthropods, echinoderms, and tunicates. Big sea cucumbers, spiky sea urchins, and the opihi limpet, though heavily fished, are easily observed.

  Although the tidepools contain fewer kinds of fish than are found just offshore, they are easily visible here. In the pools, sluices, and channels among the rocks are many juvenile fishes that shelter here before moving to different habitats as they mature. These juveniles include the estuarine mullet and aholehole. Permanent inhabitants of the tidepools include several damsels, most commonly the kupipi, as well as gobies and the rock-hopping blennies.

- **Marine Zone**. Algae are less densely distributed and probably less diverse than in the intertidal zone. Invertebrates are generally inconspicuous, although abundant and diverse in protected situations. Large spectacular forms such as spiny lobsters, slipper lobsters, and octopus are not uncommon. Fishes are generally abundant and diverse. Species such as the yellow tang, rarely seen off windward shores, have been sighted off Queen's Beach. The marine life of this area is further enriched by a variety of sea birds, occasional sea turtles, and during the winter season, humpback whales may be visible offshore.

b. Interpretation

i. Geological

Whereas the views from Makapu'u Head are valuable for sharing an overview of East Oahu's geology, geologic formations at Queen's Beach can be seen closehand. The rock shoreline consists of a'a, which is of rough consistency, and has become pocked with tidepools. This rock came from a lava flow which extended from a former cone at Kalama Valley along the entire shoreline east of Sandy Beach. The flow is partly covered by alluvium.

A good example of sedimentation, termed lithified cemented sand, can be observed near the high tide line along the shore of Kaloko. Similar in appearance to a rough concrete slab, this feature is formed over time by loose sand which is gradually hardened together.

ii. Ecological

- **Vegetation**. The dominant theme regarding the flora at Queen's Beach is the increasing scarcity of native coastal strand vegetation. For most visitors, the value of the coastal strand vegetation is primarily aesthetic. However, there are several native species to be found here including akoko, alena, akulikuli, 'ilima, pohuehue, and nohu. Today, strand communities on Oahu are mere remnants of their former selves, primarily because of intensive development of the shoreline. In addition, many shoreline areas, including that of Queen's Beach, have been overtaken by mangrove and other trees.

  Because of the declining coastal strand vegetation on Oahu, protection and enhancement of native species at the proposed park site represents an opportunity to raise awareness of the impact human development can have on natural areas. Much of the shoreline at Queen's Beach is a textbook example of the effects of erosion and indiscriminate trampling of coastal vegetation. It should be possible to reestablish native plant species which would normally do well in the area.

- **Marine Biota**. Another interpretive theme at Queen's Beach is the tidepool and marine ecosystem. The intertidal zone offers excellent opportunities for school group field trips, family outings or tourists seeking unique activities. Many organisms and ecological principles are worth studying here. For example, many of the limu found in the tidal zone are edible and were and still are consumed by the Hawaiians. The Waikiki Aquarium has led classes to Queen's Beach for the sole purpose of studying the various limu to be found there. The rocky intertidal habitat is better represented here than in any nearby park or preserve.

  Safety is a consideration for interpretation of tidepools. Footing along the tidal zone is often slippery and the ocean turbulence may sweep waders off their feet. Injuries can also be caused by sharp-edged rocks.

iii. Cultural/Historical

- **Pre-Contact**. Several references to the Ka Iwi site are present in Hawaiian legends. In addition, there are opportunities to interpret methods of traditional Hawaiian fishing and agriculture.

  There is a tale about Kapaliokamoa, the rock formation above Kaho'ohaihai Inlet which is said to resemble the profile of a bird. One of the names given in relation to this feature was "kapaliokamoa," meaning the cliff of the chicken. Others call it "King's chair," supposedly because the King used to sit there overlooking the fishermen in the area, while others know it as "Queen's chair," probably in reference to Queen's Beach.

  Legends also provide some insight concerning pre-contact Hawaiian use of the area from Makapu'u to Koko Head. According to one legend, the area was visited by Pele's sister, Hi'iaka, who encouraged two female Kupua (supernatural beings) named Makapu'u and Malei to cultivate sweet potatoes on the coastal plain to relieve their hunger.

  There is also an engaging legend about a stone referred to as Pele's Canoe which is located on the Honolulu side of the Davis Ranch House within the City and County's Sandy Beach Park.

The stone was said to have been the mark left from her canoe after she departed from Oahu in search of a suitable home. This account would suggest that the ancient Hawaiians recognized the Kaloko area was one of the last areas of volcanic activity (meaning Pele's presence) on Oahu.

This zone could be of great importance to the proposed park site for demonstrating native Hawaiian uses of marine and natural resources. A living interpretive exhibit of Hawaiian fish farming featuring the cultivation of mullet could be established in the inlet areas (particularly Kaloko or Ka'ili'ili) as an educational resource. Hawaiian waterbirds noted previously could also be attracted to the estuarine waters by reestablishing appropriate habitats.

- **Post-Contact**. Very little of the Queen's Beach area displays any significant signs of post-contact history. Evidence of agriculture and ranching use were virtually destroyed by the 1946 tsunami and by subsequent boulder stockpiling and drainage channels cut through the area. Potential interpretive themes include the impact of tsunami on the area and the cycles of change and development at the proposed park site.

  Remnants of the Wawamalu Wall are still visible. This wall is presently the dividing line between Wawamalu Beach and Queen's Beach. It runs perpendicular to the surf and is partially submerged at high tide. The standing wall is built right on the beach rock at its seaside end and extends 17 meters inland. Presumably, it was erected for the purpose of marking the southern boundary of the Davis Ranch. It is accessible by foot and by car.

  Another historical feature of significance is the old Wawamalu Bridge, located close to Wawamalu Beach adjacent to Kalanianaole Highway. The bridge is only accessible to those traveling on foot. It was constructed in 1931 as part of the 1931-32 Kalanianaole Highway construction project, under Federal Aid Project No. 6G. After the tsunami of 1946 destroyed major portions of the highway, the road was reconstructed along its present alignment, complete with a new bridge. Therefore, the old Wawamalu Bridge is no longer part of Kalanianaole Highway.

- On the north side of Kaloko Inlet, the remnants of the Davis Ranch Swimming Pool attest to the destructive power of tsunami. The low masonry walls are all that remain of the pool which was originally built sometime after 1932. It had been a saltwater pond which formed a swimming pool approximately 12 meters by 18 meters in size.

  Perhaps the most obvious evidence of post-contact alteration is Kaiser's modifications of the site. In the late 1950's, Henry Kaiser envisioned a large hotel-resort with a marina and a small-boat harbor at Queen's Beach. When the dredging work was done for the breakwater, offshore sand was stockpiled on the south side of Kaho'ohaihai Inlet, and also mauka of Ka'ili'ili Inlet. The beginning of a curved moat to connect Ka'ili'ili Bay to Kaho'ohaihai Inlet was also bulldozed. The intent was to create water about 4 to 5 feet deep around the island. However, the entire coastal plain turned out to be very hard "blue rock" lava flow and Henry Kaiser stopped the project. The unfinished moat can still be seen today.

c. Recreational Use

i. Existing

Most recreational users of Queen's Beach access the area from the shoreline near the Wawamalu Ranch wall. However, ORV's also enter the area from along Kalanianaole Highway across from the Hawaii Kai Golf Course.

Most recreational use of Queen's Beach takes place at the shoreline or in the water. Pole-and-line fishermen fish the entire shoreline from Wawamalu Beach to Kaho'ohaihai Inlet and beyond. Fish and crabs are caught by net fishermen in Kaloko Inlet and Ka'ili'ili Bay. Spear-fishermen dive off Kaloko Beach, in the mouth of Kaloko Inlet, and around the groin at Kapaliokamoa. Camping and picnicking is apparent at Kaloko Beach and around Kaho'ohaihai Inlet, and to a lesser extent on the cobble beach between Ka'ili'ili Bay and Kaho'ohaihai Inlet. Surfers ride breaking waves offshore of the eastern half of Kaloko Beach and to a lesser extent the northeast side of Ka'ili'ili Bay.

Existing recreational use of Queen's Beach is discussed below in more detail.

- **Walking/Hiking**. Walking occurs primarily near the shoreline where access from the parking area at Wawamalu is easy, and where the bay and inlets provide appealing, natural scenery. It is also cooler close to the shoreline.

  Hikers use the network of trails and roads both along the coast and further inland. In general, hiking is an environmentally non-degrading form of recreation if restricted to well-defined trails. Many of the existing trails at Queen's Beach have been created and dominated by Off-Road Vehicles (ORVs). Because of their indiscriminate use of the area, there are few well-defined trails for hikers near the shoreline. In addition, there is little shade in the area which is already hot and dry, and abandoned vehicles and trash are abundant.

- **Jogging**. Joggers appear to seek out the trails further inland at Queen's Beach where terrain is more level and there are fewer obstructions. Like walking, jogging offers similar attractions but most practitioners place less emphasis on exploration and more emphasis on a general appreciation of the outdoors.

- **Bicycling**. Mountain bicyclists use the inland trails at Queen's Beach. Non-motorized mountain bicycling has the advantage over motorized ORVs in that it is quiet, causes little erosion or damage to vegetation if relegated to an established trail system, and is less of a hazard to people on foot.

- **Sunbathing**. Sunbathing at Kaloko Beach is common and appears to receive some spill-over from nearby Sandy's and Wawamalu Beaches. In fact, because it is more isolated, a regular contingent of nude sunbathers use the beach or Kaloko point for sunbathing. While they are not a problem, they may deter some visitors in the area from exploring the shoreline in this location.

  While it is not necessary that sand beach be available to sunbathe, in practice on Oahu this appears to be the case. It is presumed, therefore, that sunbathers also use the sand area at the mauka end

– of Kaho'ohaihai Inlet although its distance from the road is a deterrence.

- **Swimming**. While the coastal beaches along the shoreline are picturesque, without desirable swimming areas, they do not appeal to the average beach-goer. Because of the rocky and unprotected shoreline, little swimming is available at Queen's Beach. Only the inlet at Kaho'ohaihai which is protected by a man-made breakwater offers any reasonable swimming, but this spot is small, the sand is rather dirty and it is too far from the road to be popular.

- **Fishing**. The coast between Wawamalu Beach and Makapu'u Point is popular with recreational pole-and-line fishermen casting for papio, ulua, oio, and various goat fish. Net fishermen catch baitfish, mullet, and crabs in Kaloko Inlet and Ka'ili'ili Bay. Because these sheltered waters offer protection from larger predators and an abundance of food for juveniles of many species, controls to prevent over-fishing may be necessary if greater public access to this resource is provided. Presently, the only hindrance to fishing along this coastline appears to be the difficult access, which some fishermen may wish to preserve to minimize the number of competing fishermen. Rubbish may also become a problem since fishermen often bring their trash-generating amenities with them.

- **Diving**. Diving by spear-fishermen takes place off Kaloko Beach, in the mouth of Kaloko Inlet, and around the groin at Kapaliokamoa during calm conditions. The shoreline is quite favorable for catching octopus. The artificially formed Kaho'ohaihai Inlet is visited by fish from the offshore zone. The outer portion of the inlet can provide a rewarding experience for novice snorkelers when conditions are not too rough. During periods of high surf, because the coastline is not protected by a fringing reef, skin or SCUBA diving is difficult and potentially hazardous. No commercial dive groups on Oahu offer instruction in the Ka Iwi site.

- **Surfing**. Ocean waves along East Oahu are primarily generated by northeast tradewinds, storms in the southern hemisphere, and local storm systems. Because the shoreline at Queen's Beach is

north facing, the quality of the surf here is primarily derived from wrap-around swells out of the northeast. In general, surf action decreases as one progresses from Sandy Beach towards Kaho'ohaihai Inlet. Occasionally, during south summer swells, Queen's Beach may receive very good surf, but because no reef flats have developed offshore of the subject area, waves tend to break much more gradually and without the suddenness which makes for exciting surfing.

There is good surf on occasion, however, primarily at Kaloko Beach. This area is accessible by walking along the coastline from Wawamalu Beach. Smaller beginners' surf is also available at the mouth of Ka'ili'ili Bay. This area appears to be less used, however, due to the distance from the parking area.

- **Camping**. Most camping in the area is probably associated with overnight fishing trips. On one particular weekend, four-wheel drive vehicles were seen parked at the shoreline where tents had been set up, particularly at the Kaho'ohaihai Inlet end. Although never surveyed, it is assumed most camping is vehicle-based.

- **Off-road Vehicles (ORVs)**. Off-road vehicle drivers frequently enter the park site to access the shoreline and joy-ride through the rough terrain. They gain entry either from Kalanianaole Highway by way of Wawamalu Beach, or up a bank along the highway, about 200 feet north of the old Wawamalu Bridge. Their range of access is extensive, but they generally stay near the shoreline. Their impact on the Queen's Beach area is evidenced by the numerous wheel rutted trails and the high level of erosion throughout the area.

  The types of recreational ORVs that are brought in include four-wheel drive trucks, and four-wheel, three-wheel, and 2-wheel motocross motorcycles. In order to duplicate competition-style riding, enthusiasts have created a straightaway over a series of earth berms in one location behind Ka'ili'ili Bay. Many attempts have been made to keep ORVs out by placing large boulders at entry points, but such barriers have quickly been circumvented.

ii. Potential

- **Picnicking**. Picnicking opportunities with desirable scenery are available near the shoreline and around the inlets throughout the area. Rudimentary requirements of picnic sites include appropriate groundcover, shade trees, and trash receptacles accessible by a maintenance path. Picnic tables and restroom facilities would be an added amenity. BBQ grills, while typically popular, would be a fire hazard in this characteristically arid area.

  A particularly attractive picnic area would be on the north bank of Kaloko Inlet. This area is outside the strand vegetation zone, yet it is still close to the shoreline and has views of the ocean. The banks of the inlet provide a peaceful haven. The area is also readily accessible from the parking area at Wawamalu Beach.

  Another desirable location for picnicking at Queen's Beach is in the open grassland between Ka'ili'ili Bay and Kaho'ohaihai Inlet. Again, suitable groundcover, shade trees, and trash bins would be necessary to establish the area for picnicking. Picnic areas should be specifically delineated in order to keep the rest of the grassland in open space.

- **Camping**. Desirable camping areas at Queen's Beach include the open, grassy area near Kaho'ohaihai Inlet. This area is more typical of beach park camping sites on Oahu since it offers fishing, sunbathing and some swimming. Camping areas would generally coincide with picnic areas with similar landscaping and trash removal requirements. In addition, camping would require restroom facilities and showers.

  Camping on a larger scale may also be possible. This would entail larger, more extensive facilities, possibly even kitchen facilities as provided at Ho'omaluhia Park. This may not be compatible with the proposed park site which will probably be more public and have competing uses from other visitors. However, it could remain an option in a highest intensity use alternative. Such organized camping would have to be by permit only with assurances that the camp ground is well-maintained.

2. Management Considerations

a. Preservation

i. Restrict ORVs

The most important measure to ensure preservation of coastal vegetation is to eliminate ORV use in this area. Similarly, any future vehicular access and parking should be strictly controlled to prevent degradation of vegetation.

To accomplish this, effective, permanent barriers at existing and potential ORV access points must be installed. Prior experience at Kaena Point State Park indicates that very large, partially buried boulders are effective in controlling 4-wheel drive and most all-terrain vehicles. Physical barriers will also have to be accompanied by strict enforcement.

ii. Reduce Trampling

Pedestrian trampling of beach strand vegetation, albeit unintentional, must also be prevented. Again, temporary fencing supplemented by careful monitoring and enforcement will be needed until natural barriers can be grown or until trails are established. Temporary fences should help foster public awareness of the extent of the damage to coastal plants.

iii. Clean Up Trash

The trash problem is chronic in this area and a major undertaking must be made to clean it up. The type of trash ranges from ordinary garbage to stripped cars and discarded appliances.

iv. Restore Former Vegetation

Landscaping should incorporate native vegetation, such as wiliwili. Use of vegetation compatible to the climate will minimize irrigation and pesticide/fertilizer needs which could adversely affect aquatic environments and native plants. Fencing maybe needed to prevent trampling until natural and installed landscaping is established.

-v. Create Trail System

Once vegetation has recovered, designated trails should be marked and established to connect interpretive features and recreational resources.

vi. Examine Drainage System

Drainage facilities divert runoff from Kalama Valley, Queen's Gate subdivision, and the area between Kamehame Ridge and the Hawaii Kai Golf Course is directed under Kalanianaole Highway and into a 15-foot wide dirt ditch which extends to Ka'ili'ili Bay. A shallow 200-foot wide overflow channel parallels the ditch to handle larger flows. The impact of this drainage ditch and overflow channel on park use should be examined, especially in regard to access across the ditch into the open grassland. Also, the possibility of excavating a detention basin should be explored. Such a detention basin would hold storm flows to allow sediments to settle out and at least a portion of the flow to infiltrate into the ground. This will improve the quality of any remaining discharge that may reach the shoreline.

vii. Examine Water Quality

Although such impacts have yet to be substantiated, fertilizers used on the neighboring golf course and residential areas, as well as petrochemicals on runoff from roadways has the potential to cause adverse impacts on nearshore waters. An examination of the existing impacts an potential remedies may be needed to ensure high water quality in the future.

viii. Examine Fishing Impact

Fishing and other shoreline activities may also have an impact which should be monitored. Overfishing could cause depletion of the fish supply in the inlets.

b. Interpretation

i. Establish Visitor Center

With improved access and provision of parking, a nearby visitor center would be appropriate to orient visitors regarding available interpretive

displays and recreational opportunities, restrictions, and hazards. The visitor center would serve as a focal point for the whole park.

ii. Connect Interpretive Features

Interpretive programs should be tied in with the trail system for walkers and hikers as these are compatible activities. Jogging and bicycling may not be fully compatible. With controlled vehicular access, potential vandalism can be minimized. All interpretive displays should be constructed to withstand some degree of vandalism with minimal maintenance.

c. Recreational Use

i. Establish Extent of Parking and Access

In general, the more access and parking made available, the greater the use. Thus, limiting available parking will be important to achieve balance between preservation and recreational usage, which are mutually exclusive in some respects.

ii. Camping

If camping is permitted at Queen's Beach, the area will require restroom/showers, trash removal, and access road (at least for maintenance). There are several problems with providing camping grounds. Campers tend to generate trash which may become a maintenance concern. Also, because the proposed park site is extremely dry during the summer months, there is a potential danger for brush fires. Because the area is isolated, small group camping can also present safety and security worries for the police and emergency crews. Sites, if provided, should only be available by permit.

iii. Picnicking

To make the area attractive to picnickers, shade trees and groundcover suitable for sitting should be planted which are adaptable to the hot, dry climate (preferably native plants or xeric plants to minimize care and landscaping requirements). The makai side of Kaloko Inlet would be an ideal spot for a picnic area, affording users a view of the inlet mouth out

-to the ocean. If such picnic spots were implemented, a caretaker would probably need to be assigned to collect trash and maintain the sites. In the more passive settings, handicapped and elderly visitors could easily be accommodated as long as certain trails are paved from the parking area to the picnic spots.

iv. Define Walking/Hiking Trails

If interpretive/educational programs are implemented in the park, a well-defined system of hiking trails for recreation will provide access to and complement potential exhibits. Similarly, interpretive features, shade trees, and interesting plants will be needed to make the area attractive to hikers. It will be important to allow time for vegetation to reestablish to create barriers to discourage hikers from wandering off trails.

The 15-foot wide drainage ditch which passes under Kalanianaole Highway and extends to the north side of Ka'ili'ili Bay, and the 200-foot wide overflow ditch which parallels it, presently act as barriers to hikers along the shoreline between Kaho'ohaihai Inlet and Ka'ili'ili Bay during and after rainstorms. A pedestrian footbridge at this location should be considered to maintain access between the north and south portions of the shoreline. This would minimize wading through the silt laden ditch which could stir up sediments, sending them toward the sea. Also, by directing foot traffic, the bridge would keep hikers on specific trails. It should be designed to allow drainage from the site to enter the bay with a minimum of negative impact to the marine and park ecosystems, and it could be made of wood, stone or stone facing to blend in aesthetically.

v. Define Bicycle Paths

Mountain bicycling, if allowed, must be restricted to walking/hiking paths to prevent further degradation to vegetation. Alternatively, a separate, well-defined and maintained course for such activity could be provided in the area behind Queen's Beach. Their continued presence should only be considered since they are less noisy and destructive than motorized ORVs. On the other hand, bicycling can interfere with walkers and hikers. Unless it can be accommodated without disruption to other park users or to the environment, bicycling may not be a recreational option for the Queen's Beach area except in the highest intensity of use alternative.

vi. Control Fishing

Since the difficulty of access currently limits the popularity of fishing sites at Queen's Beach, the convenience of future access will be critical in controlling demands on fishing resources. It may be preferable to continue to force fishermen to walk a considerable but reasonable distance in order to reach the shoreline, unless other management techniques such as restrictions on gear are utilized.

viii. Enhance Swimming Area

Except for the sand beach at Kaloko, the proposed park site does not have the features of a good swimming/sunbathing beach. It is doubtful whether the area should be promoted as such. However, at least one swimming area could be created by reconstructing the Alan Davis pool which would also be an interesting historical project. However, it may become a liability concern as well.

C. Coastal Bench Trail

The Coastal Bench Trail on the east shore of Makapu'u Head is a rough, discontinuous lava shelf, 3 to 10 feet above sea level, which stretches north from Kapaliokamoa at Kaho'ohaihai Inlet for approximately 3,500 feet. See Figure X-4. In places, it is strewn with talus from the slopes of Makapu'u Head. Along its length are several large tidal pools, a cave, and a blowhole near the trail end. Also toward the end of the trail, Makapu'u Lighthouse comes into full view.

The coastal bench is also accessible via a rather steep trail from Makapu'u Headland Road down to the broadest portion of the shelf where the blowhole and several of the most significant tidepools are located. The pools at this location are mesmerizing to watch as they fill, spill over into neighboring pools, and gradually recede until they are filled again. The marine life in these pools is diverse and abundant.

1. Resource Assessment

a. Preservation

Along the coastal bench trail, the most vital preservation need is trash collection. In order to preserve the rugged pristine quality of this area of the park, trail

modifieation is not recommended. The trail should, however, be designated as hazardous.

b. Interpretive

i. Geological

- **Shore Bench Features**. The shore bench along the north and east sides of Makapu'u Head was cut by wave action in relatively recent times when the sea level was slightly higher than at present. Wind, rain, and salt spray battering the face of Makapu'u Head have eroded the softer layers of exposed lava flows and left the harder layers standing in relief. The gradual cutting away of the sea cliff provides an excellent cross section of the Ko'olau Volcano and is a good example of the contribution of the erosional process to geological formations.

  There are several features of both geologic and scenic interest on the shore bench east of Makapu'u Head, demonstrating the impact of volcanic forces on geological evolution. A filled lava tube 1,100 feet along the Coastal Bench Trail displays an unusual circular pattern of weathered cooling cracks. Several dikes are visible which reveal the solidification of molten lava in fissures of the Ko'olau Volcano. As for the blowhole, under good conditions, its spout of sea spray rivals the Halona blowhole. When large waves wash into the undersea cave, compressed air blows spray and water through holes in the cave. The implied length of the sea cave, as indicated by the distance of the blowhole from the sea, is impressive.

- **Cave Formation**. A shallow cave (which is the remnant of a lava) tube faces the shoreline, about halfway between Kapaliokamoa and Makapu'u Point along the coastal shelf about eight meters above sea level. The natural formation was probably used as an ancient Hawaiian shelter, as evidenced during a reconnaissance study undertaken by Hiro Kurashina and Aki Sinoto in 1984. Its formation is also indicative of the period when higher sea level stands cut the cave, as well as the sea cliffs around Makapu'u Head.

ii. Ecological

The tidepools along the Coastal Bench Trail have significant value for interpretation of the marine ecosystem. Marine life includes species of algae, and invertebrates such as molluscs and arthropods, spiky sea urchins, and the opihi limpet. The rockpools also contain juvenile species of reef fish. Permanent inhabitants of the tidepools include several varieties of damsels, as well as gobies and rock-hopping blennies.

The coastal bench tidepools are ideal for study of certain marine life because snorkeling equipment is not necessary. However, caution should be taken at all times since portions of the trail are extremely steep and treacherous, requiring a certain amount of climbing. Footing along the tidal zone is often slippery. Wind and wave conditions are also unpredictable and subject to extreme fluctuations. The trail is certainly not suitable for elementary, intermediate, or even most high school groups. However, serious hiking groups and college level classroom field trips could certainly benefit from the physical challenge and natural setting of the coastal bench.

iii. Cultural/Historical

Any evidence of cultural significance of the Coastal Bench Trail to the ancient Hawaiians has disappeared over time. Except for probable use of the sea cave as a shelter, there is no documentation or mention of use of the coastal bench trail by ancient Hawaiians.

c. Existing and Potential Recreational Use

i. Fishing

In locations where casting and retrieval can be done in relative safety, shorecasting fishermen have installed carved rod holders in the lava rock. Their fortitude in doing this suggests that fishing along this bench can be very rewarding. This is probably due to the fact that the limestone bottom drops away rapidly into deep water around Makapu'u Head. Overnight fishing for ulua is probably the most significant fishing activity. Night time fishing for menpachi (big scale soldierfish) probably also occurs. Day-time casting would yield a variety of species.

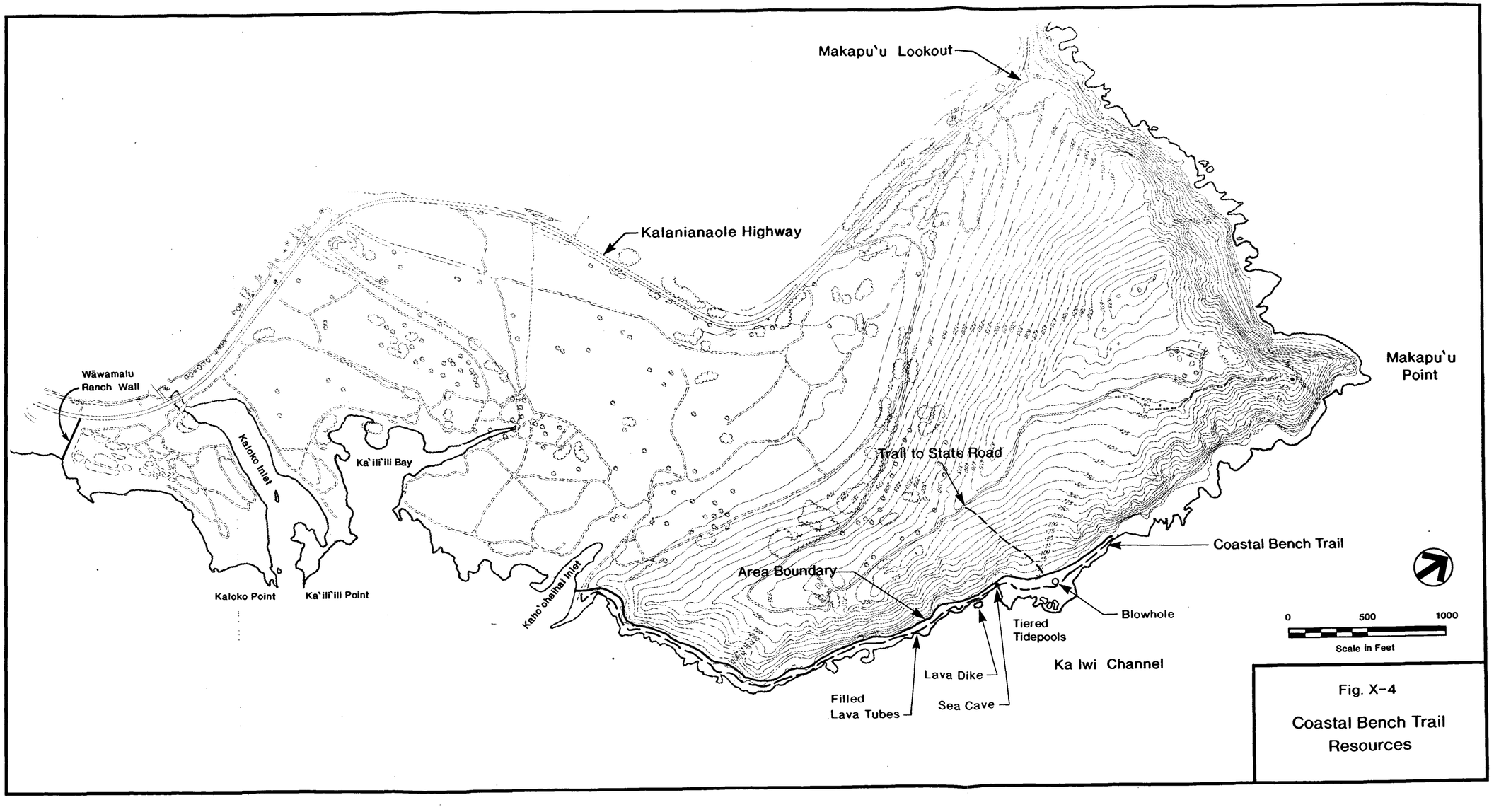


Fig. X-4

Coastal Bench Trail
Resources

ii. Hiking

For hikers, the coastal bench trail is challenging and even dangerous in some portions. Large waves frequently batter some sections and require rock climbing. A circuit can be made by walking north to the widest portion of the coastal bench, then taking the trail up the cliff to Makapu'u Headland Road. This circuit provides hikers with diverse panoramic views and terrains.

2. Management Considerations

a. Preservation

The difficulty of traversing the coastal bench trail should continue to provide a measure of protection. Other than completely restricting access to the Coastal Bench Trail, there are few practical steps which can be taken to preserve the tidepools along coastal bench habitats.

Hikers and other users of the bench trail should be apprised of what constitutes appropriate usage. Notices at the visitor center to remind park users to remove all trash and respect natural habitats may be appropriate.

b. Interpretive

To preserve the rugged quality of the coastal bench trail, no interpretive displays should be provided. Such information should be provided at the visitor center or at a location near the beginning of the trail.

c. Recreational Use

Hiking and fishing would be the only activities accommodated along the coastal bench trail. Park user safety should be stressed. Signs pointing out hazards and advising caution will be very important in this area because it is anticipated that there will be a lack of personnel available to manage the park and because the location is relatively isolated. Also, since many of the fishing opportunities would involve nighttime fishing, the issue of park access and camping needs to be resolved. Providing camping near Kaho'ohaihai Inlet would raise the level of use of the trail. Any assessment of the extent of camping should also consider potential safety and ecological impact on the coastal bench trail.

D. Kealakipapa Valley

Kealakipapa Valley is comprised of approximately 200 acres from the Makapu'u Saddle down to Queen's Beach, mauka of the Hawaii Kai Golf Course drainage swale. Refer to Figure X-5. This area is characterized by scattered boulders, low-lying haole koa/Hawaiian cotton vegetation, and a network of trails made by ORV's. One of these trails is an electrical utility easement which runs overhead lines through the valley to the Hawaii Kai Golf Course entrance. Standing water in the golf course drainage channel has a strong odor and is littered with golf balls. Litter and abandoned cars are scattered throughout the area.

Because Makapu'u Head blocks the prevailing tradewinds, this is the warmest section of the Ka Iwi site. During summer months, brush fires sometimes burn through the area. During the winter rainy season, there is an emphemeral wetland located at the bend of Kalanianaole Highway.

Thousands of large boulders were stockpiled on the Kealakipapa Valley plain over the years in the process of developing roads, residential lots, water reservoir sites and redirecting and channelizing stream beds in Hawaii Kai. At present, boulders are strewn throughout the coastal plain north of Kaloko Inlet and makai of the bend of Kalanianaole Highway across from Hawaii Kai Golf Course.

Some of the stockpiled rocks were used in the construction of the seaward wall of the airport reef runway that was built beginning in May 1973 and finally opened for use in October 1977. A large portion of the stockpiled rock remains at the Ka Iwi site and impedes the growth of Hawaiian cotton. However, it is theorized that in the presence of heavy ORV use, the boulders do serve a beneficial purpose. Their presence created a refuge for cotton in those areas that were rendered impassable to ORVs. This allowed Hawaiian cotton to thrive in areas where they otherwise might have been damaged.

1. Resource Assessment

a. Preservation

i. Ephemeral Wetland

An ephemeral wetland area exists just makai of where Kalanianaole Highway bends and heads towards the Hawaii Kai Championship Golf Course (see Figure X-5). This area is characterized by mucky or peat-

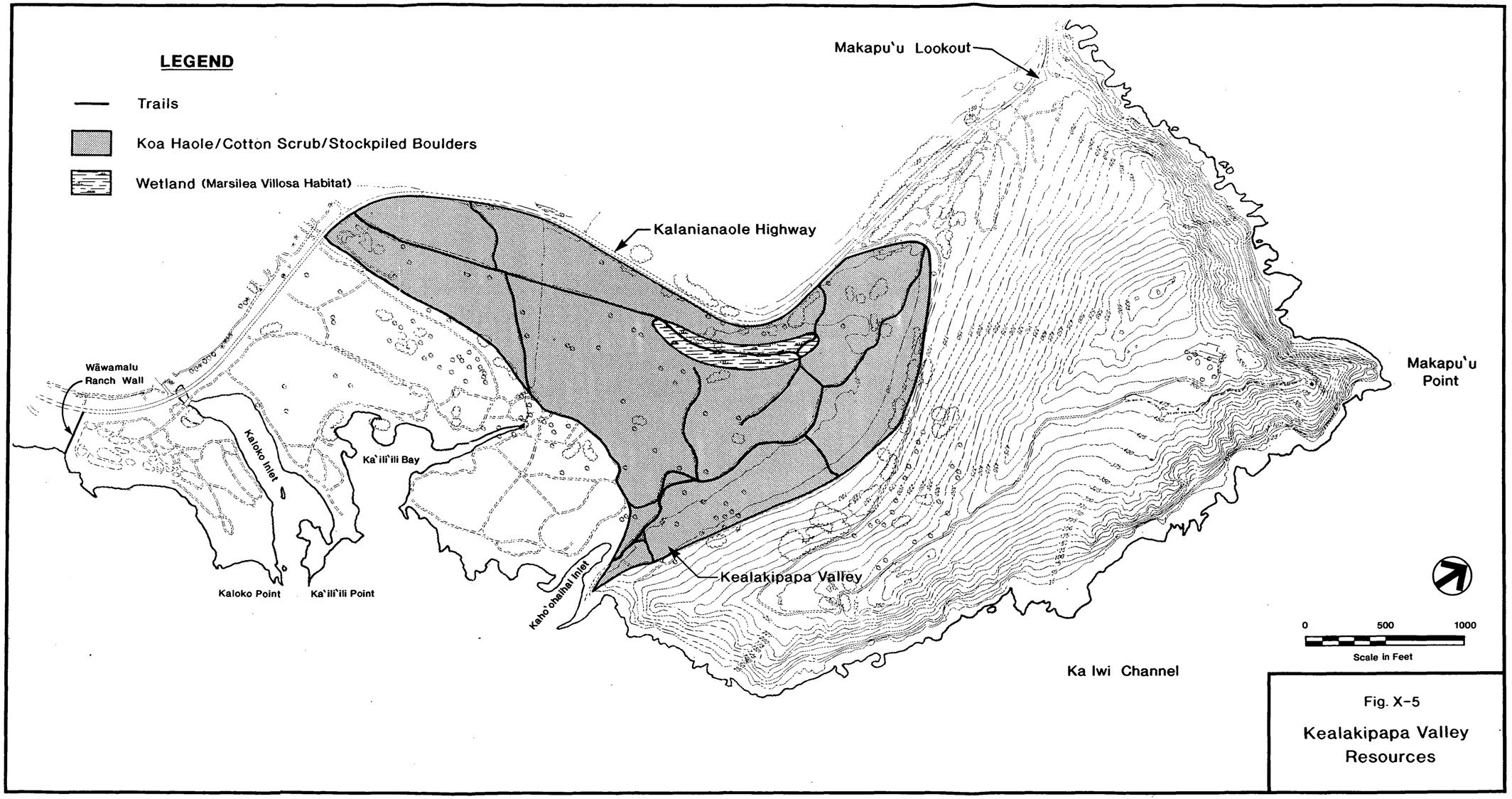


Fig. X-5

Kealakipapa Valley
Resources

-based soils called hydric soils. They trap moisture like a sponge, creating wetland habitat. During dry periods, the soils become very porous and cracked.

Within a portion of this ephemeral wetland, three stands of *Marsilea villosa*, an endemic water fern, were found in October 1991 after a heavy rain. This endangered species, which resembles a four-leaf clover, requires standing water to thrive and otherwise goes dormant until conditions improve. It is presently found in its natural state in only two other locations in the world; one on Koko Head behind Hanauma Bay, in an area which is maintained by the Nature Conservancy, and one at Lualualei.

ii. Former Vegetation

There is no way of knowing exactly what grew in the Kealakipapa Valley area before the Hawaiians arrived. In 1888, William Hillebrand, the first botanist to spend an extended period of time studying Hawaiian flora, wrote, "the lowland zone is open country, grass-covered after the rains, with isolated trees or clumps of trees represented by Hau, Wiliwili, Reynoldsia, Hala, Capparis, cotton and Abutilon and some shore line species."

b. Interpretive

i. Geological

The geological interpretive theme that pertains specifically to Kealakipapa Valley is the impact of the Kalama Crater eruptions (about 30,000 to 34,000 B.C.). While the coastal plain of the Ka Iwi site is underlain by lava from the Ko'olau Volcanic Series, these lavas were submerged by the rising sea level until Kalama Crater erupted and flowed to the sea to form the rocky shoreline from Sandy Beach to Kapaliokamoa. Flows of a'a lava from the cinder cone in Kalama Valley extend over part of the Kealakipapa Valley floor, which is also partly covered with alluvium. The hydric soils associated with the wetland have developed on this alluvial fan. Hydric refers to mucky or peat-based soils which commonly are very sticky and very clay-like in texture.

ii. Ecological

- **Hawaiian Cotton**. Hawaiian cotton is useful for interpretation because of its endemism, the significance of its adapted host weevil, and its potential commercial uses.

  In Kealakipapa Valley, stands of the endemic Hawaiian cotton, *Gossypium sandwicense*, may be seen in the area where boulders are stockpiled. While it is commonly found on neighbor islands, the cotton (ma'o) has become uncommon on Oahu. Relatively large populations can only be found at the proposed park site, the windward side of Kaena Point, and at Kahe on the leeward coast.

  Hawaiian cotton is the exclusive host plant of a rare flightless weevil, *Rhyncogonus simplex*, whose range is now primarily or entirely limited to dense stands of Hawaiian cotton at the Ka Iwi site. The evolution of this weevil around this single host plant suggests that this stand of Hawaiian cotton may be the oldest known population. (see Chapter IV for discussion of *R. simplex*).

  Hawaiian cotton is of special genetic importance because its leaves lack nectaries and do not produce nectar which attracts insects. For over two decades, the U.S. Department of Agriculture has been crossbreeding Hawaiian cotton with commercial cotton to develop new commercial hybrids less susceptible to insect damage and disease.

  This genetic peculiarity is a natural lead into a discussion of Hawaiian cotton populations, the *R. Simplex* weevil and evolution, and the evolution of other native coastal Hawaiian plant species in general.

  Other native species which may also be present in Kealakipapa Valley include akoko (*Euphorbia degeneri*), alena (*Boerhavia diffusa*), akulikuli (*Sesuvium portulacastrum*), hinahina kahakai (*Nama Hawaiiensis*), 'ilima (*Sida fallax*), pohuehue (*Ipomoea pes-caprae*), and nohu (*Tribulus cistoides*).

- **Ephemeral Wetland**. The ephemeral wetland is significant for the presence of the endemic water fern, *Marsilea villosa*, which has previously been found in only two other locations on Oahu. The lifecycle of *Marsilea villosa* in this area demonstrates the survival

- of an ephemeral wetland plant in a specialized environment; a lifecycle which is very seasonal because it requires standing water to thrive. Lacking these conditions, the water fern goes dormant until conditions improve.

iii. Cultural/Historical

The area is believed to once have been used to cultivate sweet potatoes by early Hawaiians. According to McAllister's 1930 survey, nearby areas mauka of Kalanianaole Highway where the golf course now sits contained traces of old Hawaiian sweet potato (mahiai) patches. This is reinforced by the legend of Hi'iaka, Pele's sister, who according to legend encouraged two female Kupua (supernatural beings) named Makapu'u and Malei to cultivate sweet potatoes on the coastal plain to relieve their hunger.

Another potential cultural/historical interpretive theme for Kealakipapa Valley is modern development efforts by the Kaiser Corporation. This area witnessed significant modification as a result of Kaiser's plans. Numerous areas were filled in with soil and dredge material to raise lower elevations above flood heights. Some of the higher plateaus were excavated in order to level out the coastal plain.

c. Recreational Use

Generally, there is no significant recreational attraction at this location. It is too hot for hiking or walking, is far from the shoreline, has no shaded areas for picnicking, and holds little of interest for the average park user. Abandoned vehicles and trash are abundant. ORVs use the area for riding or to gain access to the coastline.

i. Existing

- **Off-Road Vehicles.** Many of the existing trails through Kealakipapa Valley have been created and dominated by ORVs. Except for a few well-defined trails to destinations along the coast or to access and egress points, the trails in this area are fairly random. Erosional processes have created deep, wide ruts in the soil.

As discussed in the section on Queen's Beach, the types of ORVs that are brought in are four-wheel drive trucks and four, three, and two-wheel motocross cycles. Non-motorized bikes include motocross and standard trail bikes. Many attempts have been made to keep ORVs out by placing large boulders at entry points, but such efforts have been only temporarily effective.

ii. Potential

- **Walking/Hiking/Jogging**. Although not generally used at present by walkers or hikers, the area is open space which could be replanted and made attractive. Reestablishment of native xeric trees and plants could create shaded areas and features of interest in the Kealakipapa Valley area. Once established, such an area could appeal to walkers, hikers, and even joggers.

- **Bicycling**. Mountain bicycling is quiet, causes little erosion in dry conditions or damage to vegetation if relegated to an established trail system, where it would also be less of a hazard to people on foot. Due to the vast area, trails for biking may be a more practical way to use the site for recreation under an intensive use scenario.

2. Management Considerations

a. Preservation

Due to the absence of any significant recreational resources in this area and the significance of vegetation, the primary emphasis should be on preservation of open space and, in particular, restoration of habitats. Such a use would be of great value as a refuge for migrating and resident birds, and as scenery for hikers on the headland and passing travelers on the highway. Some portions of the area could be designated off limits to park visitors for restoration purposes and to maintain a quiet, contemplative atmosphere within the park. This could be accomplished by eliminating ORV access into the area, excavating the wetland area to increase the habitat, initiating a program to remove boulders and trash, and replanting the wiliwili and other native trees in appropriate locations.

To better facilitate wetland recovery, drainage flow could be modified and redirected into the wetland area. Heavy rainflow from the mauka side of

Kalanianaole Highway currently poses a hazard to motorists and could be better utilized if it were channeled beneath the highway and into the wetland. Such an action should take into account the potential for increasing the pollutant load (petrochemical) from the highway.

b. Interpretive

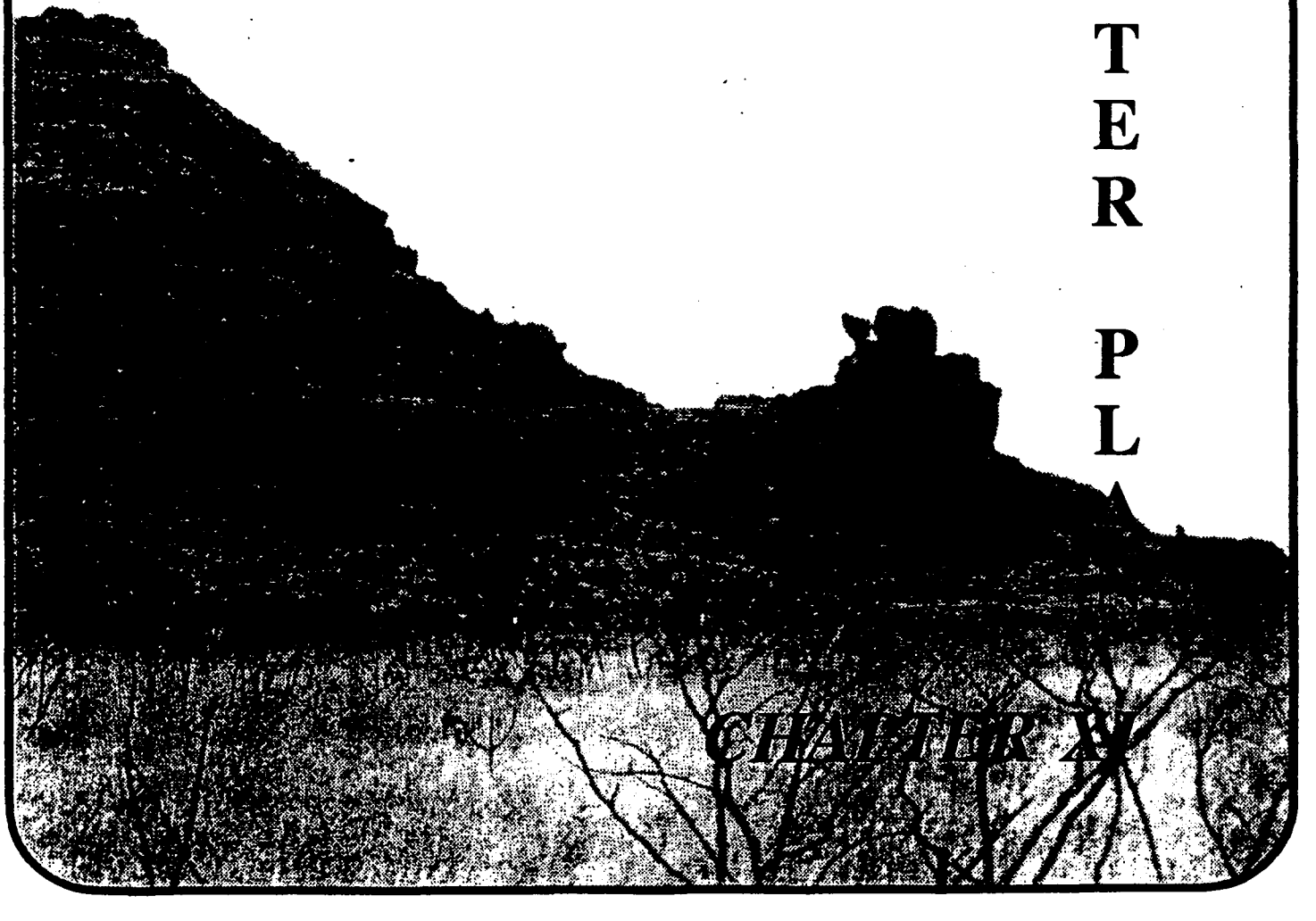
For the time being, interpretive programs should not extend into this area since there are no attractions for hikers or walkers. Instead, interpretation should be from the mauka edge of the Queen's Beach area looking towards Kealakipapa Valley. The edge of the Hawaiian cotton habitat will provide representative contact. The wetland can be viewed at a distance from higher vantage points.

c. Recreational Use

Initially, no recreational usage should be made of the area. Trash removal, stripped car removal, erosion control measures, shade trees, and interesting plants will be needed to make the area attractive to walkers and joggers. Once shade trees are established and other preservation measures have been taken, recreational uses may then be considered. It will be important to include in the landscape design certain species of vegetation which could serve to obstruct hikers from wandering off trails.

Similar to the Queen's Beach location, any kind of biking, if allowed, must be restricted to existing trails to prevent further degradation to vegetation. Unless it can be accommodated without disruption to other park users or to the environment, bicycling may not be a recreational option for the Kealakipapa Valley area except in the high intensity alternative.

KA IWI MASTER PL



CHAPTER X

XI. RECOMMENDATIONS

A. Park Goals, Objectives and Policies

Background information and analysis of the proposed park site has shown that the area has the following significant resources and values:

- tranquil, natural shoreline setting in a sunny climate,
- panoramic views from Makapu'u Head of windward, leeward, and eastern Oahu shoreline, and offshore islands of Kaohikaipu and Manana, as well as the islands of Maui, Lanai, and Molokai in the distance,
- habitat and aquatic nursery for a wide variety of marine life,
- ecosystem of native shoreline and coastal plants which have become rare on Oahu,
- remnants of the old "King's Highway," Wawamalu Ranch Wall, and Wawamalu Bridge historic features,
- geologic forms of interest, including a blowhole, sea cave, exposed volcanic dikes, unusual rock formations,
- offshore pole, net, and spear-fishing opportunities,
- Makapu'u Lighthouse landmark with a rich history,
- ephemeral wetland environment featuring the endangered species *Marsilea villosa* water fern.

Based on the Chapter X resource assessment, it was determined that as a State Park, the area is most suited for natural resource preservation, accommodating interpretive opportunities and, secondarily, recreation where it does not significantly impact upon the area's ecology. Therefore, the goals of the proposed park are as follows:

PRESERVE AND ENHANCE THE NATURAL, CULTURAL, AND SCENIC QUALITIES OF THE KA IWI SITE.

PROMOTE PUBLIC EDUCATION AND APPRECIATION OF THE KA IWI SITE'S NATURAL, CULTURAL, AND SCENIC QUALITIES IN A MANNER CONSISTENT WITH THE PRESERVATION AND ENHANCEMENT OF THOSE QUALITIES.

MANAGE RECREATIONAL ACTIVITIES IN A MANNER CONSISTENT WITH THE PRESERVATION AND ENHANCEMENT OF THE KA IWI SITE'S NATURAL, CULTURAL AND SCENIC QUALITIES, AND TO PROMOTE PUBLIC SAFETY.

Toward fulfilling these goals, the objectives and policies articulated below provide guidance as to how the aforementioned goals should be achieved. The objectives recommend the management approach to achieve these goals, and the policies provide specific guidance to achieve the objectives.

OBJECTIVES:

Objective 1: Control park user volumes as a means of managing impacts on natural resources and park facilities.

Policies: *Design park access and support facilities to accommodate appropriate levels of usage in various parts of the park.*

Establish park visitor carrying capacities.

Objective 2: Ensure safe participation in park activities.

Policies: *Establish a public information program with a broad coverage to inform park users of park hazards and safety tips.*

Provide a sign warning system to dissuade park users from engaging in potentially hazardous activities.

Provide barriers along the edge of cliffs in public use areas.

Indicate the degree of difficulty of various trails.

Objective 3: Foster park user respect for natural resources and park facilities.

Policies: *Establish a public information program with a broad coverage to inform park users of sound conservation practices in park usage.*

Develop and enforce park rules governing activities with potentially adverse impacts on the park's natural resources.

Objective 4: Develop informational bases on which to formulate future park policy.

Policies: *Monitor park use, services, facilities and resources to determine what effect recreational usage has on the park ecosystem.*

Establish an inventory of heritage features, facilities and ecosystems.

Objective 5: Establish public education and awareness as a primary purpose of park usage.

Policies: *Provide facilities and supporting services for public awareness and education-related activities uniquely suited to the resources of the Ka Iwi site, including its terrestrial and marine biology, geology, and cultural history and landmarks.*

Develop interpretive programs.

B. Park Development Concept

To incorporate the Ka Iwi site's resources and features into a State Park which can be enjoyed by the public, three park development schemes were formulated. Tables XI-1 to XI-4 summarize park development recommendations discussed in this chapter. They are grouped into three intensity levels (low, medium, and high) which correspond with the categories of preservation, interpretive/passive recreation, and expanded interpretation/recreation. Where possible, these recommendations were grouped such that park development can progress in stages from low to high intensity. This approach would allow park development to be suspended if it is deemed that the level or manner of park usage conflicts with the goal of preserving the park's natural, cultural and scenic resources. All suggested improvements were derived from the management considerations in Chapter X for each of the four management sub areas: Queen's Beach, Kealakipapa Valley, Makapu'u Head and Coastal Bench Trail. The recommended park master plan presented in Chapter XII was derived from following public review of the alternative schemes. The Master Plan represents the recommended maximum level of development.

DEVELOPMENT ALTERNATIVES BY MANAGEMENT AREA

			Queen's Beach	Kealakipapa Valley	Makapu'u Head	Coastal Bench Trail
HIGH INTENSITY / MEDIUM INTENSITY / LOW INTENSITY	Preservation	a. Install ORV Barriers at Wawamalu Ranch Wall/Kalanianaole	✓	✓		
		b. Clean up Trash, Boulders, and Headland Building Debris	✓	✓	✓	
		c. Restore Shoreline Vegetation	✓			
		d. Implement Tree Reforestation		✓		
		e. Restore Wetland		✓		
		f. Restore Inlet Circulation and Water Quality	✓			
		g. Restore Remnant of Old King's Highway		✓	✓	
		h. Establish Interconnected Trail System throughout Ka Iwi	✓	✓	✓	✓
		i. Construct Footbridge across Drainage Channel	✓			
		j. Extend Makapu'u Lookout			✓	
		k. Establish Parking and Access at Queen's Beach and Headland	✓		✓	
		l. Construct Queen's Beach Comfort Station	✓			
	Interpretive/ Passive Recreation	m. Establish Visitor's Center	✓			
		n. Create Botanical Garden	✓			
		o. Recreate Kaloko Fishpond	✓			
		p. Create Landscaped Rest Areas	✓		✓	
		q. Establish Scenic Interpretive Venues	✓	✓	✓	
		r. Construct Headland Comfort Station at Lower Parking Area			✓	
		s. Improve Lighthouse Access Road		✓	✓	
	Interpretive/ Expanded Recreation	t. Expand Queen's Beach Parking to 100 Stalls	✓			
		u. Construct Outdoor Pavilion/Comfort Station in Open Grassland	✓			
		v. Establish Campgrounds at Queen's Beach, Wayside	✓		✓	
		w. Construct Comfort Station at Wayside			✓	
		x. Convert Selected Rest Areas into Picnic Sites	✓	✓	✓	
		y. Establish Shuttle Staging Area; Widen Makapu'u Headland Road		✓	✓	
		z. Add Bicycle Trails in Kealakipapa Valley		✓		

1. Low Intensity Alternative 1 - Preservation

TABLE XI-2 LOW INTENSITY ALTERNATIVE #1 - PRESERVATION	Queen's Beach	Kealakipapa Valley	Makapu'u Head	Coastal Bench Trail
a. Install ORV Barriers at Wawamalu Ranch Wall/Kalanianaole Highway	✓	✓		
b. Clean up Trash, Boulders, and Headland Building Debris	✓	✓	✓	
c. Restore Shoreline Vegetation	✓			
d. Implement Tree Reforestation		✓		
e. Restore Wetland		✓		
f. Restore Inlet Circulation and Water Quality	✓			
g. Restore Remnant of Old King's Highway		✓	✓	
h. Establish Interconnected Trail System throughout Ka Iwi	✓	✓	✓	✓
i. Construct Footbridge across Drainage Channel	✓			
j. Extend Makapu'u Lookout			✓	
k. Establish Parking and Access at Queen's Beach and Makapú'u Head	✓		✓	
l. Construct Queen's Beach Comfort Station	✓			

a. Install ORV Barriers at Wawamalu Ranch Wall/Kalanianaole Highway

ORV access into the Queen's Beach area is a significant contributor to ecological damage at the Ka Iwi site. Currently, ORV enthusiasts access Queen's Beach in two ways. Pick-up trucks carrying motocross motorcycles or three and four wheel ORV's park at the Wawamalu Ranch Wall. Barriers at this point presently consist of horizontally placed concrete piles. These are sufficient to restrict most 4-wheel drive trucks but do not deter motorcycles and other small ORV's from accessing the sand dunes. Four wheel drive trucks access Queen's Beach from a point along Kalanianaole Highway where lengths of guardrail are interrupted by an earthen berm. Trucks are able to turn off the highway and climb over this low berm, located about 200 feet north of the Old Wawamalu Bridge.

To restrict access into Queen's Beach from Kalanianaole Highway, guardrails along the highway could be extended to front the existing earth berms. This may require cutting some of the earth berm. It is not recommended that the berm be removed completely since it acts as a noise and visual barrier.

Restricting smaller, more maneuverable ORV's cannot be accomplished without some enforcement by park management personnel. While the use of very large, partially buried boulders at Wawamalu Beach may be an effective deterrent, this option may also be unsightly and inappropriate at the entrance to Queen's Beach. Warning signs, enforcement, and gradual user awareness should prevent access by motorcycles and small ORV's.

b. Clean-up Trash, Boulders, and Headland Building Debris

Trash is present throughout the Ka Iwi site, and is especially prevalent in the more remote areas at Queen's Beach. Large items such as stripped cars sit as rusting hulks. Their removal, and the clean up of other miscellaneous litter, is an essential first step toward enhancing the natural features of the area. Boulder removal at Queen's Beach, while recommended, is not immediately necessary to create a usable park environment.

Because of the drainage channel which discourages access between Queen's Beach and the Kealakipapa Valley plain, there is less large item trash in the lowland area. The drainage channel may often hold standing water and appears to act as a physical barrier. However, the unsightliness of boulders and the lack of shade trees or rest areas detract from the resource quality of the area. In order to enhance the visual appeal of the area and to create better opportunities for walking, hiking and even biking, boulders should be removed. As they are removed, the trees, shrubs, and groundcover will be easier to reestablish. If the boulders have some commercial value, they could possibly be removed by private interests if it can be done in an environmentally sensitive manner.

At Makapu'u Head, there are currently the remains of two military bunkers, several pillboxes, a water tank, and other makeshift storage structures on the headland which, though not a specific hazard, detract from the natural setting. The former UH Solar Observatory site, which could be made an attractive viewing location, also occupies a lower portion of the headland. The collapsed observatory facility is a potential safety hazard. Clean up of these and any other unsafe or unsightly debris is the recommended first step to enhance the upper park area.

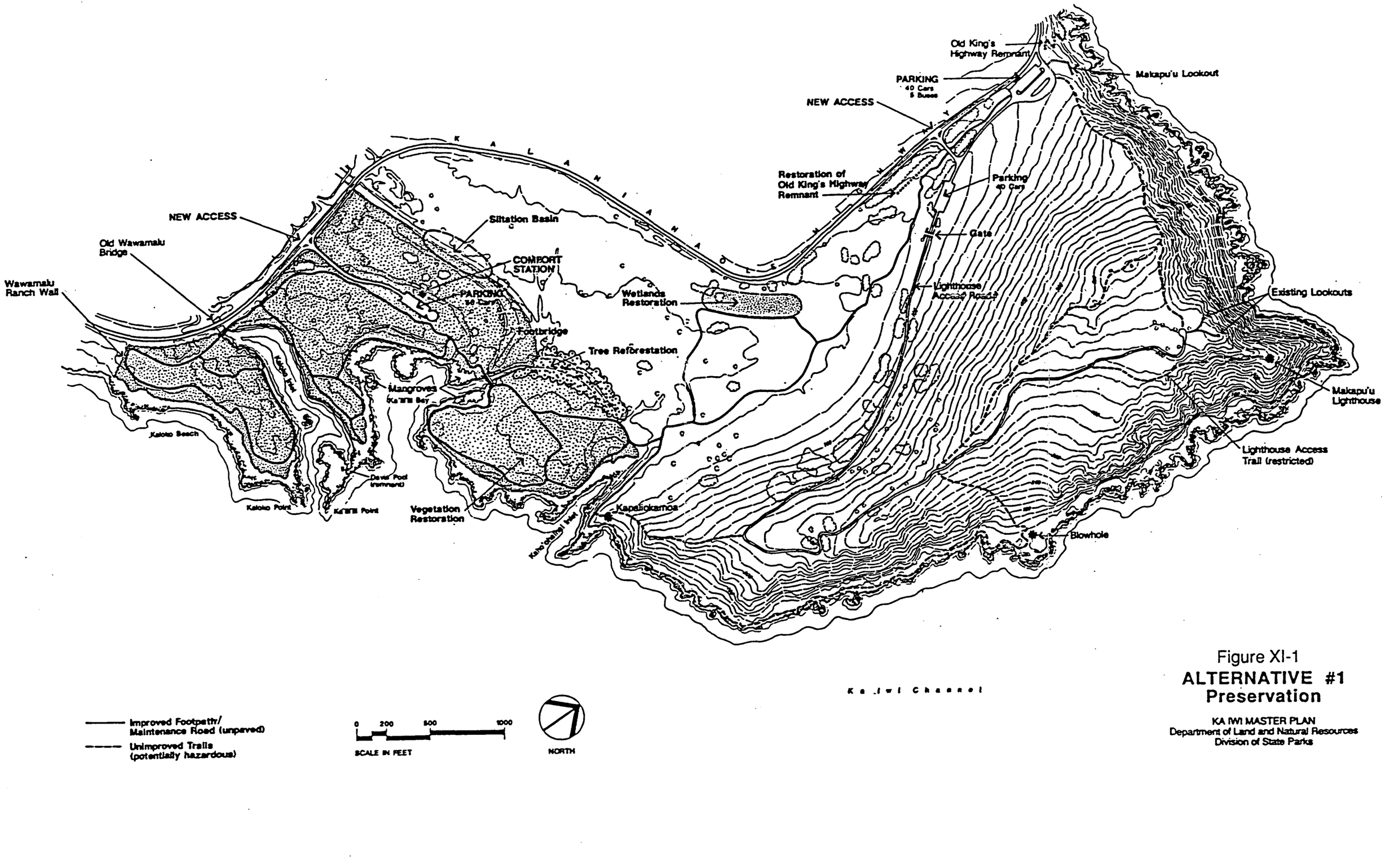


Figure XI-1

ALTERNATIVE #1
Preservation

KA IWI MASTER PLAN
Department of Land and Natural Resources
Division of State Parks

c. Restore Shoreline Vegetation

Keeping ORV's out of the Queen's Beach area will be a significant step in allowing vegetation to reestablish itself. The shoreline naupaka and native wiliwili trees are especially well-suited to this area for erosion control, shade, and overall aesthetic improvement. In addition to vehicular barriers, the shoreline areas should be fenced for an extended period to prevent trampling and to allow vegetation to fill in superfluous trails. Because the climatic conditions are harsh, the length of time for naupaka restoration may vary from 2-5 years, depending on rainfall. Temporary irrigation may be considered to expedite re-vegetation. In inland areas, native vegetation should be planted, including wiliwili, which can provide shade. Exotic species, such as kiawe, may also be appropriate to control erosion and to help restore conditions which would nurture native species.

Since brush fires are a frequent occurrence at Queen's Beach, it is anticipated that landscaping will reduce the risk of fire by minimizing hazardous conditions and maintaining adequate moisture levels. As a result of planting native trees, shrubs, and perennial groundcover, fire-evolved grasses and weeds (annuals) will be crowded out. As this occurs, the fuel load (amount of dead vegetable matter) created by annual grasses will decrease, thereby decreasing potential fire threat. Seasonal irrigation may be needed to get desired vegetation through the dry season.

d. Implement Tree Reforestation

The low ditch behind the open grassland at Queen's Beach is the remains of a man-made drainage canal which leads towards Ka'ili'ili Bay. As it may potentially serve as a back-up drainage basin, the area should be reforested to form a pleasing backdrop and buffer between the open grassland and Kealakipapa Valley. Existing trees in the low area are mostly kiawe. Recommended trees for reforestation include the existing kiawe, plus hala, loulu palm, naio, milo, and wiliwili.

e. Restore Wetland

Presently, standing water in the existing wetland is defined by the wheel-ruts which hold water after heavy rains. Once vehicular access is eliminated, the wetland could be shaped to create a permanent boundary. Native vegetation along its banks may be added to deter hikers from trampling the clay soil.

Also, measures should be considered to lengthen the period when the wetland contains standing water. There is reportedly a natural drainageway at the foot of the Koolaus which floods Kalanianaole Highway during heavy rains. If the topography allows, drainage could be directed under the road and into the wetland. This could also alleviate intermittent flooding of Kalanianaole Highway.

f. Restore Inlet Circulation and Water Quality

In order to better protect the ocean inlets at Queen's Beach as a marine resource, an informational base is needed on which to formulate park policy and appropriate action. This is important since the tidal zone at Queen's Beach represents one of the most accessible and best opportunities for interpretation of its kind on Oahu. It has been speculated by those familiar with the area that the water quality of Kaloko Inlet and Ka'ili'ili Bay may be compromised by runoff from the nearby residential areas and golf course although this has not been substantiated. The introduction of large amounts of diverted runoff into these inlets is not a natural condition. In order to protect these ocean inlets, the following actions should be taken:

- Establish a water quality monitoring program,
- Assess the value of the inlet as an aquatic nursery,
- Create siltation basin(s) within the drainage ditch into Ka'ili'ili Bay (see recommended plan). Although this will not prevent silt from running into the bay during very large storms, it should lessen the amount of silt and runoff entering the bay on a regular basis.
- Remove an artificial rock causeway through Kaloko Inlet to facilitate water circulation.

g. Restore Remnant of old "King's Highway"

A survey conducted in May of 1992 by State archaeologists identified two recognizable road sections of the old "King's Highway." The first section closely parallels the east side of Kalanianaole Highway between the lighthouse access road and the Makapu'u Lookout. The second section begins just north of the lookout and winds its way down the cliffs in a series of switchbacks.

It should be possible to clear and restore the first section of this old road and incorporate the remnant into the regional trail system as an interpretive feature. As for the second section, it is located on steep slopes which would present a

hazard to hikers and helps to protect the feature by limiting access. Therefore, restoration and/or incorporation of this section is not recommended.

h. Establish Interconnected Trail System throughout the Ka Iwi site

Presently, the dunes between Wawamalu Beach and Kaloko Point are cut by numerous trails. As shown on the recommended plan, a shoreline trail and several additional trails in the interior have been selected as pedestrian routes through the coastal strand. The rest should be fenced off to allow the shoreline vegetation to grow back. Other trails have been preserved along the banks of Kaloko Inlet, behind Ka'ili'ili Bay, and along the rest of the Queen's Beach shoreline. All of the trails are designated as unpaved, but would be accessible by a low impact park maintenance vehicle such as a golf cart.

Most of the existing trails in Kealakipapa Valley have been created by 4-wheel drive vehicles and range through a large area which is not likely to be frequented by hikers. These should be narrowed to footpaths or eliminated. Trails which link the wetland with Queen's Beach and the Makapu'u Headland Road should be preserved.

Hikers who trek to the summit of Makapu'u Head make use of numerous trails which criss-cross along the ridge. For the sake of preserving vegetation and thereby controlling erosion, a network of improved trails should be designated along the most scenic and safely accessible portions of the ridge to go up to, along, and down the headland to the current Makapu'u State Wayside lookouts. Initially, until they become better established, trails should be marked. Through the use of warning signs, users should be encouraged to stay off undesignated trails.

Particular attention should be paid to the foot trail(s) which presently meander down the east cliff face from the Makapu'u Headland Road to the coastal bench. This route appears to be popular with hikers who want to avoid trekking the lengthy and sometimes hazardous coastal bench trail from Kaho'ohaihai Inlet in order to get to the blowhole and tidepools. While someone has tagged a direct route down the cliff, it is difficult to follow and alternative trails have been created. A route optimizing safety, directness of access, and minimizing loss of vegetation should be selected, established and marked.

i. Construct Footbridge across Drainage Channel

A walkway/maintenance path has been designated over the drainage channel entering Ka'ili'ili Bay. During high-tide and after heavy rains, standing water in this area impedes pedestrian access to the open grassland and shoreline towards Kaho'ohaihai Inlet. A footbridge consisting of an elevated wooden boardwalk or stone or concrete walkway which would let high water flow beneath it would provide pedestrian access. It should also be built wide and strong enough to support maintenance and emergency vehicles.

j. Extend Makapu'u Lookout

As evidenced by trails along the cliff edge, many visitors to Makapu'u Lookout have discovered that better viewing points are available further out toward Makapu'u Head than from the cliff fronting the parking area. This area should be improved to safely accommodate sightseers seeking better views. This would involve extending the viewing areas further east, perhaps using a split-level or tiered design like that at Halona Blowhole or the Nuuanu Pali Lookout. A conceptual design is depicted on the recommended plan.

k. Establish Parking and Access at Queen's Beach and Makapu'u Lookout

i. Queen's Beach

Parking is perhaps the single most important control mechanism over access into the park. It is suggested that the amount of parking provided at Queen's Beach begin with a nominal count similar to what is currently available, with options to enlarge the parking area if park usage proves compatible with resource management. Based on observations of park usage taken on June 24 and July 4, 1992 at the Wawamalu Beach parking lot, maximum counts of 13 and 34 cars were present during these days, respectively. Users also parked on the mauka side of Kalanianaole Highway, near the golf course, in order to get closer to Ka'ili'ili Bay. In total, it was estimated that a maximum of 40 cars parked at the Wawamalu Beach parking area and surrounding locations to access Queen's Beach.

Parking along the shoulders of Kalanianaole Highway is currently prohibited. However, City and County Police do not enforce this parking ban because there are no signs posted. Once the parking area is established, the

Department of Transportation can be petitioned to post "no parking" signs along the highway shoulders.

In January 1992, the City and County of Honolulu released the Koko Head Master Plan which describes plans for restoring Wawamalu Beach by eliminating the informal parking area and expanding Sandy Beach Park. Should this recommendation be approved, the Wawamalu Beach parking area would be eliminated.

Therefore, a single parking lot of 50 stalls is designated at Queen's Beach in the area behind Ka'ili'ili Bay. This site was selected because it is a flat area located midway along Queen's Beach, providing visitors with the option of going to Kaloko or Kaho'ohaihai. Storage lanes would be provided along Kalanianaole Highway at the parking lot intersection so as not to impede traffic flow by cars turning into the parking lot. Access to the interior is by foot. This will limit park use volumes to those willing to walk, and discourage them from carrying in food, beverages or other items that may end up as litter. It is envisioned that a gate at the entrance to the parking area will control access based on standard operating hours of other State Parks.

ii. Makapu'u Lookout

In order to provide parking for sightseers at the new lookout and for hikers trekking up the Makapu'u Headland Road, a new access road entrance will be provided from a straighter portion of Kalanianaole Highway leading to two separate parking areas. The access point will provide a longer sight distance along the highway for drivers to see vehicles and be seen while negotiating turns at the new access road. As can be seen in the recommended plan, the upper parking area near the new lookout is designated for 20 minute parking for 40 cars and 5 buses, and the lower area is designated for all-day parking for 40 cars. This lower parking area will serve hikers who wish to spend more time in the park, either walking up the Makapu'u Headland Road, visiting the wetland, or walking and jogging through Kealakipapa Valley and even accessing Queen's Beach.

Because of the significant turning radius of tour buses, the upper lot is designed to accommodate bus turnaround. In addition, a right-turn, exit-only lane has also been added from this lot to the highway to make it easier for Waimanalo-bound traffic to exit. In general, tour bus traffic travels in this direction as part of their standard around-the-island tours.

Upon construction of the new access road and parking lots, the existing gate and access to Makapu'u Headland Road from Kalanianaole Highway should be closed. A new gate which controls access to the Headland Road should be placed at the end of the lower parking lot. Entry from the highway to the new parking lots should also be gated and locked during off-hours. Authorized personnel requiring access to the Lighthouse Access Road may be supplied with keys to both gates.

Kalanianaole Highway improvements consist of acceleration and deceleration lanes which provide a safe sight distance. Because there will be only one entrance, the existing entry into the current Makapu'u Lookout should be obstructed by guardrails. As for the lookout itself, it could be incorporated into the new lookout or it could be used as part of the right-turn, exit-only, Waimanalo-bound lane. Landscaping should be provided along the highway.

l. Construct Queen's Beach Comfort Station

A comfort station has been designated near the parking area to serve park users. The building may be of stone construction similar to those found in other State parks.

2. Medium Intensity Alternative 2 - Interpretive/Passive Recreation

In addition to all low intensity improvements, the following improvements are recommended:

m. Establish Visitor's Center

A Visitor Center on the high spot adjacent to the parking lot behind Ka'ili'ili Bay has been designated on the recommended plan. This location was selected because it provides views of the shoreline which will help to orient visitors. The center would serve multiple functions:

- familiarize and inform visitors of the resources and activities available within the park,
- provide safety tips and warnings about daily ocean conditions, especially as they affect the coastal bench trail,
- promote public education and conservation of the Ka Iwi site's natural resources, and
- serve as a meeting point for field trip attendees and interpretive guides.

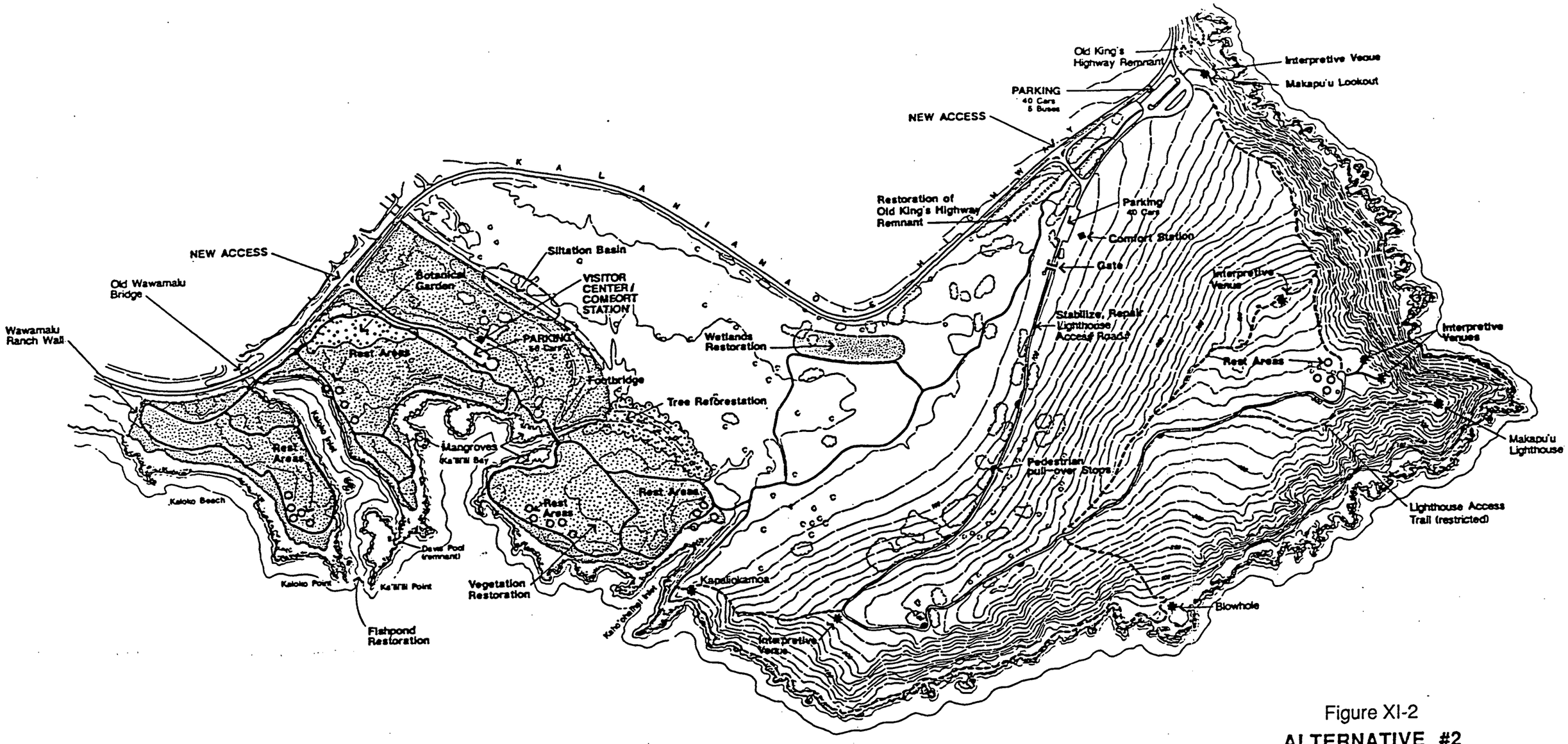


Figure XI-2

ALTERNATIVE #2
Interpretive/Passive Recreation

KA IWI MASTER PLAN
Department of Land and Natural Resources
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The Visitor Center may be constructed as an open air pavilion which would initially contain passive displays such as maps of the park showing features of interest, natural history, and things to look for while hiking. At a later stage, the center could be expanded and the structure enclosed to include interactive displays in a manned facility. If a manned facility were developed, handouts with educational information highlighting points of interest may be appropriate.

	TABLE XI-3 **MEDIUM INTENSITY ALTERNATIVE #2** **INTERPRETIVE/PASSIVE RECREATION**	Queen's Beach	Kealakipapa Valley	Makapu'u Head	Coastal Bench Trail
	a. Install ORV Barriers at Wawamalu Ranch Wall/Kalanianaole	✓	✓		
	b. Clean up Trash, Boulders, and Headland Building Debris	✓	✓	✓	
	c. Restore Shoreline Vegetation	✓			
	d. Implement Tree Reforestation		✓		
	e. Restore Wetland		✓		
	f. Restore Inlet Circulation and Water Quality	✓			
	g. Restore Remnant of Old King's Highway		✓	✓	
	h. Establish Interconnected Trail System throughout the Ka Iwi site	✓	✓	✓	✓
	i. Construct Footbridge across Drainage Channel	✓			
	j. Extend Makapu'u Lookout			✓	
	k. Establish Parking and Access at Queen's Beach and Headland	✓		✓	
	l. Construct Queen's Beach Comfort Station	✓			
	m. Establish Visitor's Center	✓			
	n. Create Botanical Garden	✓			
	o. Replicate Kaloko Fishpond	✓			
	p. Create Landscaped Rest Areas	✓		✓	
	q. Establish Scenic Interpretive Venues	✓	✓	✓	
	r. Construct Headland Comfort Station at Lower Parking Area			✓	
	s. Improve Lighthouse Access Road		✓	✓	

To avoid potential litter problems, handouts could even be purchased for a fee at the Visitor Center with the option of obtaining a full or partial refund if returned.

Any interpretive displays which are presented at the park should be broad in scope, inclusive of all park resources. Potential categories of interpretive resources include the following:

GEOLOGICAL	o Impact of volcanic forces on the geological evolution of the Koko Head region o Asymmetrical island-shaping of Oahu due to tradewinds and orographic rainfall o Contribution of erosional process to geological formations
ECOLOGICAL	o Hawaiian cotton, its potential commercial uses, and the significance of its adapted host weevil o Lifecycle of coastal strand vegetation and coastal wetlands o Tidepools and the marine ecosystem o Native seabirds and the coastal ecosystem o Formation of the fringing reef o Whales and the history of whaling in Hawaii
CULTURAL/ HISTORICAL	o Native Hawaiian uses of marine and natural resources o Cultural significance of the area as reflected in Hawaiian legends o Impact of tsunami on the area o History of Makapu'u Lighthouse and its significance to Hawaii's maritime history o Impact of US Military on region o Role of site in the islandwide circuit of the old "King's Highway"

It should be noted that interpretive displays along the shoreline for the interpretation of marine life, ecology, and other subjects, may be neither feasible or desirable. Apart from spoiling the natural ambience, attaching signs along the shoreline or other remote areas is impractical and would likely be subject to vandalism.

n. Create Botanical Garden

A short trail between the Visitor Center and Kaloko Inlet has been set aside for a botanical interpretive display of native Hawaiian coastal plants. Locating such a feature along a short trail will serve several functions. First, it will be seen by all visitors walking through the park towards Kaloko Inlet. Second, centralizing a botanical garden of plants native to the area will make maintenance of the

garden easier. Third, the short walk between features will make viewing more enjoyable and keep visitors from losing interest. Fourth, for those park visitors who are seeking an unspoiled natural setting, the remainder of the Queen's Beach area will not be intruded upon by signs identifying plants. The State may consider contracting such a program out to the City and County, which already has a botanical gardens program, or making a space available to volunteers.

o. Replicate Kaloko Fishpond

It may be possible, as a cultural and educational project, to build and maintain some form of traditional Hawaiian fishpond in Kaloko Inlet, as designated on the recommended plan. The project could be offered for undertaking by an interested non-profit organization for promoting culture and education. Maintenance of a fishpond could also help to ensure that water quality is preserved in the nearshore waters.

p. Create Landscaped Rest Areas

Rest areas which take advantage of especially picturesque or peaceful and remote areas at the Ka Iwi site are designated in several locations at Queen's Beach and up on the headland. These rest areas would consist of landscaped, shaded spots which would offer respite for walkers. Native shade trees such as wiliwili or milo are recommended because they are adapted to the dry climate and would require minimal care and maintenance. Kiawe is also recommended. Xeric groundcover would inhibit taller grasses that could block views. Stones serving as benches would be suitable for sitting. These rest areas may later be converted into designated picnic sites if desired, as comfort stations become more accessible and available (see High Intensity Alternative 3).

Rest areas for leisure or picnics are designated in four locations at Queen's Beach; at Kaloko Beach, on the north bank of Kaloko Inlet, near the shoreline at the open grassland, and overlooking Kaho'ohaihai Inlet. A rest area is also designated at the State Wayside. This area already has ironwood trees for shade.

q. Establish Scenic Interpretive Venues

The Makapu'u State Wayside, which already has established lookout venues and railings, is the focal viewing point for the headland area. Other scenic viewing spots are available from the Headland Road above Kapaliokamoa, and from the military bunkers at the peak of the headland. Brief and informative interpretive

exhibits would be especially appropriate at the existing lookouts and the new Makapu'u Lookout. Some of the features visible from these lookouts which could be interpreted include those listed for possible inclusion in the Visitor's Center (see discussion under, "Establish Visitor's Center"). During design of the exhibits, consideration should be given to the use of weather- and vandal-resistant materials.

r. Construct Comfort Station at Makapu'u Head Lower Parking

As an added amenity, a comfort station should be constructed near the Lower Parking lot for use by hikers and other visitors. The building may be of stone construction similar to other restrooms in the area and those found in other State parks. The parking area, including comfort station will be closed at night for security reasons.

s. Improve Makapu'u Headland Road

As use of the Wayside by hikers begins to increase, it may become necessary to improve the Makapu'u Headland Road. Presently, the road is substandard, 10-feet wide, with cracked asphalt and large potholes in places. It is scarcely wide enough to accommodate a single motor vehicle which occasionally must access the Wayside for emergency reasons, lighthouse maintenance, or other purposes. Under increased use of the road by park visitors, minimal improvements to the road should be made, including repair of potholes, the addition of pedestrian pull-overs where hikers can safely stand as a vehicle passes, and fencing cliff edges to increase pedestrian safety.

3. High Intensity Alternative 3 - Expanded Recreation

In addition to all low and medium intensity improvements, the following improvements are recommended:

t. Expand Queen's Beach Parking to 100 stalls

If increased park usage proves compatible with resource management, the initial parking area may be expanded. Such expansion space should be identified early and reserved indefinitely in order to avoid significant displacement of landscaping or other park features in the future.

TABLE XI-4

HIGH INTENSITY ALTERNATIVE #3 - EXPANDED INTERPRETATION/RECREATION

	Queen's Beach	Kealakipapa Valley	Makapu'u Head	Coastal Bench Trail
a. Install ORV Barriers at Wawamalu Ranch Wall/Kalanianaole	✓	✓		
b. Clean up Trash, Boulders, and Headland Building Debris	✓	✓	✓	
c. Restore Shoreline Vegetation	✓			
d. Implement Tree Reforestation		✓		
e. Restore Wetland		✓		
f. Restore Inlet Circulation and Water Quality	✓			
g. Restore Remnant of Old King's Highway		✓	✓	
h. Establish Interconnected Trail System throughout the Ka Iwi site	✓	✓	✓	✓
i. Construct Footbridge across Drainage Channel	✓			
j. Extend Makapu'u Lookout			✓	
k. Establish Parking and Access at Queen's Beach and Headland	✓		✓	
l. Construct Queen's Beach Comfort Station	✓			
m. Establish Visitor's Center	✓			
n. Create Botanical Garden	✓			
o. Replicate Kaloko Fishpond	✓			
p. Create Landscaped Rest Areas	✓	✓	✓	
q. Establish Scenic Interpretive Venues			✓	
r. Construct Headland Comfort Station at Lower Parking Area			✓	
s. Improve Lighthouse Access Road		✓	✓	
t. Expand Queen's Beach Parking to 100 Stalls	✓			
u. Construct Outdoor Activities Pavilion/Comfort Station in Open Grassland	✓			
v. Establish Campgrounds at Queen's Beach, Wayside	✓		✓	
w. Construct Comfort Station at Wayside			✓	
x. Convert Selected Rest Areas into Picnic Sites	✓	✓	✓	
y. Establish Shuttle Staging Area; Widen Makapu'u Headland Road		✓	✓	
z. Add Bicycle Trails in Kealakipapa Valley				

u. Construct Outdoor Activities Pavilion/Comfort Station in Open Grassland

An outdoor open pavilion and field would be appropriate within the open grassland under an expanded recreation concept. The pavilion could be a staging area for cultural events such as makahiki. Its construction may appropriately reflect Hawaiian architecture. Construction of an outdoor pavilion should be contingent upon providing an adjacent or adjoining comfort station.

Similar to other State and County park facilities, the pavilion's roof could span between the men's and women's comfort stations for a pleasing and functional single-structure design. If such a pavilion is developed, weekday groups of senior citizens or handicapped users could perhaps gain vehicular access to the area with proper authorization from State Parks.

The comfort station would also serve campsites as well as picnic sites designated in this alternative. The distance from Kaho'ohaihai Inlet, the coastal bench trail, and other features is far enough from the comfort station near the parking lot to warrant construction of another comfort station in the open grassland.

v. Establish Campgrounds at Queen's Beach, Wayside

Campgrounds have been designated within the open grassland along the backdrop of tree reforestation, and up at the Wayside. The Queen's Beach campground site was chosen for its location out of the way of general pedestrian movement, and for its relative proximity to the parking lot. The Wayside campground is designated in the flat area at the end of the Makapu'u Headland Road.

Development of campsites would be dependent upon the construction of adjacent comfort stations. Sites are suggested to be primitive, limited to tent sites with shade trees and picnic benches. No vehicular access to the sites would be available except for general maintenance using golf-cart type vehicles. Camping should be available by permit only and perhaps restricted to organizations such as scouts or church groups.

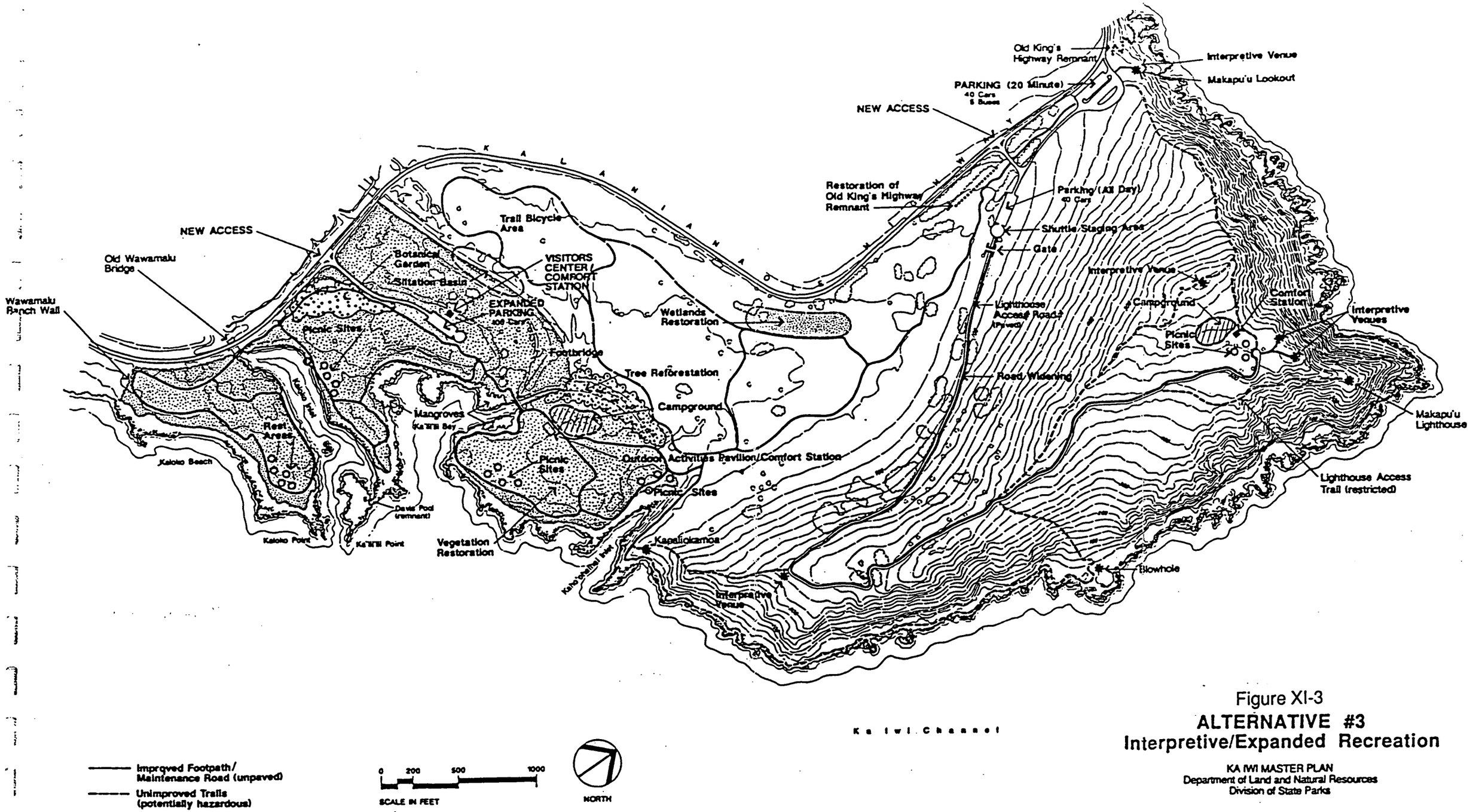

Figure XI-3

ALTERNATIVE #3
Interpretive/Expanded Recreation

KA IWI MASTER PLAN
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w. Construct Comfort Station at Wayside

As mentioned above, the establishment of a campground at the top of the Makapu'u Headland Road would require the construction of a comfort station in this area. This comfort station would receive additional use from hikers, picnickers, and other visitors to the area.

x. Convert Selected Rest Areas into Picnic Sites

For those rest areas which are near comfort station locations, it may be appropriate to upgrade these areas into picnic sites. This would entail the addition of picnic facilities, including benches and trash receptacles. Barbecue grills would not be appropriate due to the fire hazard.

Picnic spots are designated in three locations at Queen's Beach. The first is on the north bank of Kaloko inlet. This area is outside the strand vegetation zone, yet is still close to the shoreline and has views of the ocean. The banks of the inlet provide a tranquil haven. This area is also in proximity to the proposed visitor center and comfort station.

The second and third picnic sites are designated on the shoreline near the open grassland, and overlooking Kaho'ohaihai Inlet. These spots provide a tranquil setting at the foot of Makapu'u Head, near the man-made inlet and beach. The cobble strewn shoreline, strand vegetation, and coastal bench trail are not far away.

If more hikers and sightseers are attracted to the headland as trails and interpretive exhibits are added, a picnic site could also be established in the flat area at the top of the Headland Road. Some of the large asphalt parking area at the Wayside, which is no longer used, could be torn out and replanted with groundcover and shade trees. Ironwoods are presently growing in the area and would do well. Picnic benches could be installed in selected locations.

y. Establish Shuttle Staging Area at Makapu'u Head, and Widen Headland Road

A tour van staging area for guided group tours to the Makapu'u Lighthouse could operate up the Headland Road in the future if demand warrants. This would especially benefit elderly and physically-challenged visitors. A shuttle

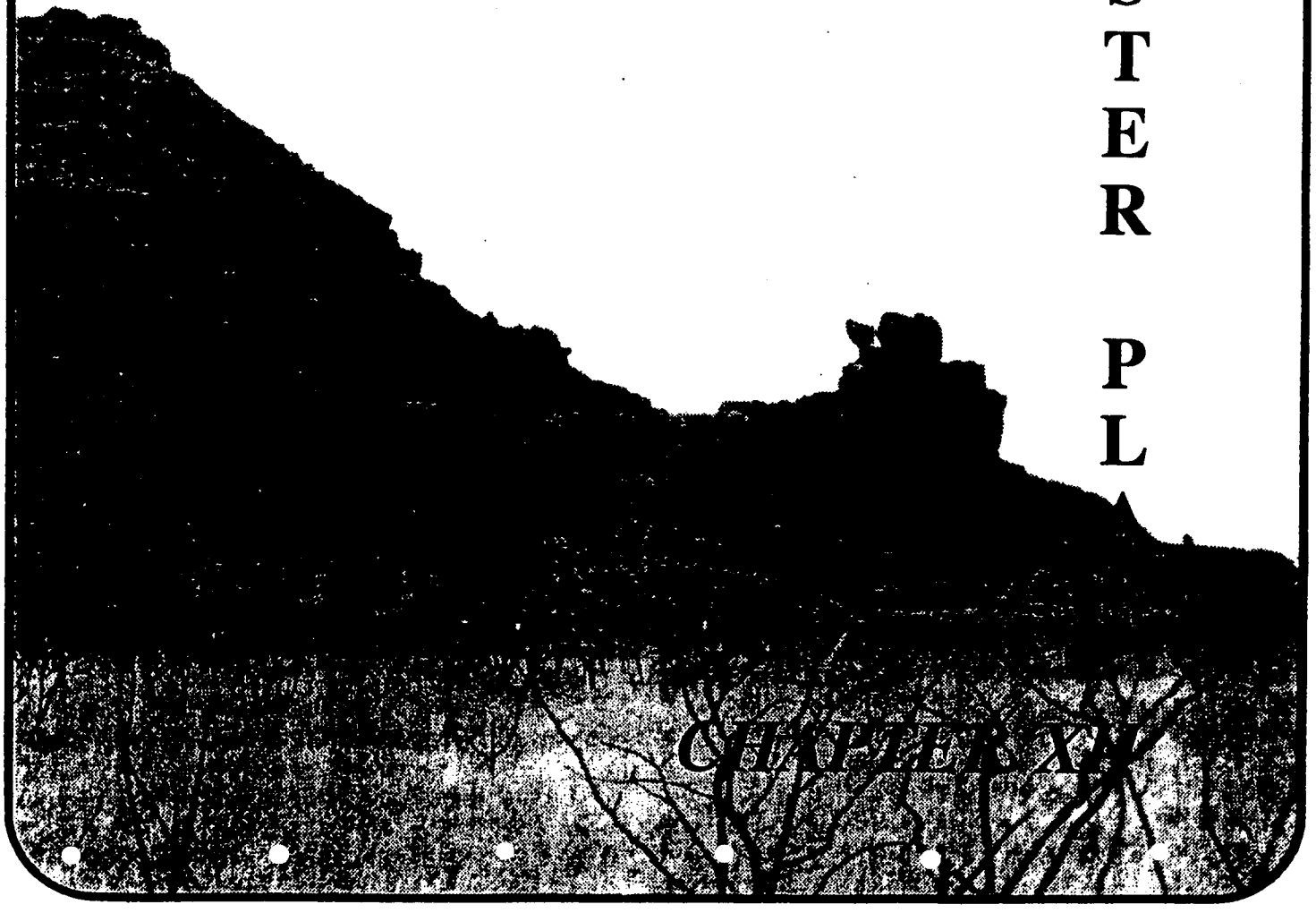
staging area has been designated at the new all-day parking lot at the base of the access road. It is envisioned that the operation of such tours would be limited to non-profit organizations conducting a few tours daily on weekdays only. If some level of shuttle service is provided, issues of who shall provide the service and who will use the shuttle will need to be resolved.

If shuttle service is to be provided, the Makapu'u Headland Road should be widened significantly in major sections. The Hawaii Maritime Museum, which had planned to conduct tours of the lighthouse before construction of the State Wayside, recognized that the Makapu'u Headland Road is currently too narrow and hazardous to accommodate both a vehicle and pedestrians simultaneously, except when absolutely necessary. To make shuttle service feasible, the road needs to be widened along most of its length to give pedestrians a path to walk along.

z. Add Bicycle Trails in Kealakipapa Valley

The Kealakipapa Valley plain holds little attraction for park visitors but may be in demand by off-road bicycle enthusiasts. If developed with sensitivity to the area's flora, bicycle trails could be added in the valley if and when vegetation becomes dense enough to prevent wandering off designated trails. This may also help to give bicyclists a recreation area of their own in order to separate them from pedestrian users in the shoreline area once trails, vegetation, and park use becomes well-established. Once this point is reached, the State could consider restricting bicyclists to the Kealakipapa Valley area. This would have to be accomplished through the use of signage and enforcement by park officials.

KAIWI MASTER PLAN



XII. RECOMMENDED PLAN

The Recommended Plan is a composite of the preceding alternatives. It was formulated based on input from DLNR, Division of State Parks and from public information meetings held on June 21, 23 and 29, 1993. (see Appendix D for summary of meeting minutes). Comments and opinions expressed during these meetings spanned a wide range of issues, experiences, and desires, including those of residents from nearby communities, recreationists, recreation managers, professional planners and architects, a Hawaiian sovereignty organization, and community organizations supporting the protection of the Ka Iwi site.

While the opinions expressed were not unanimous on all of the Recommended Plan components, there was a general consensus that the purpose of the park should be to preserve the area's natural resources, promote interpretive and educational uses and accommodate passive recreation. Hence, all of the components from the Low-Intensity Alternative were incorporated in the Recommended Plan, as well as most of those in the Medium Intensity Alternative.

Discussions on the Low-Intensity Alternative were generally supportive of the proposed components. Some discussion was centered on the provision of a comfort station at the Queen's Beach area since it is viewed as a key factor in defining the visitor mix and length of stay. While a few individuals argued that visitor impacts to the area could be reduced by omitting the comfort station, others felt that the comfort station would allow greater interpretive/educational use of the area, particularly by school groups. Without providing benefits such as interpretation and education, it was argued, there may not be sufficient justification for the State to acquire the land for the park.

With respect to the components in the Medium-Intensity Alternative, the discussion was also generally supportive although there were some who expressed the desire to minimize interpretive and passive recreational uses in favor of resource protection. There was significant concern that the proposed comfort station at Makapu'u Head would promote more usage of the Makapu'u Headland Road and trails in the Headland area than desired; hence, it was omitted from the Recommended Plan.

The High-Intensity Alternative was generally viewed as promoting greater usage than desired at the park. During public informational meetings, bicycle trails were advocated by an individual who felt that such a use could be accommodated without significant impact on natural resources or conflict with other interpretive or passive recreational uses. However, although no strong opposition to the proposal was voiced, no solution was reached which would minimize the conflict of bicycle use with the passive activities

at the park. Thus, all of the high-intensity components, including proposed bicycle trails, were omitted from the plan.

Following the public information meetings, a separate meeting was held with key members of the Ohana Council, a Hawaiian sovereignty group, on January 31, 1994. At this meeting, the Ohana Council discussed their group's efforts with respect to the eventual establishment of an independent Hawaiian nation. Regarding the Ka Iwi site, they expressed particular interest in Makapu'u Head, which they purport to be an ancient site for cultivating medicinal herbs. With the State's permission, the group has been using the Makapu'u Headland Road to access the area near the summit of Makapu'u Head to explore the feasibility of establishing a "Healing Center." According to the Ohana Council, the multi-purpose Healing Center would, among other potential services, provide counseling and activities for youths; promote revival of ancient Hawaiian healing traditions, including the cultivation and use of herbal medicines; and, provide an interpretive venue for visitors on Hawaiian traditions and lore. Preliminary plans drawn up for the site where the former lighthouse keeper's cottages stood include a parking area, comfort station, interpretive venues, hula halau (long house), picnic areas, campgrounds, a trail bike course, and structures housing healing arts pursuits and a keiki-kupuna (youth-elder) program.

Although the Ohana Council's plans have yet to be formally presented to the State for consideration, the primary concern from the perspective of the Recommended Plan is the level of activity generated by the proposed Healing Center. While a variety of facilities are proposed, unlike State facilities for which there is no selective restriction on which segment of the public may use them, the Healing Center facilities are assumed not to be as accessible. Key unresolved questions pertaining to the level of usage are access to the Makapu'u Headland Road, use of the campgrounds and picnic facilities, hours of operation, and staffing of the Healing Center. Assuming that usage levels can be established to be consistent with the objectives and policies of the Recommended Plan, then the Healing Center would be a viable addition to the park. Similar arrangements would also need to be worked out for other potential non-commercial uses of the park which could affect activity levels. These include the restoration and operation of Kaloko Fishpond, interpretive tours of the Makapu'u Lighthouse, and organized nature tours such as the Waikiki Aquarium's tidal pool interpretive programs.

The development cost, including design, grading and construction of the proposed State Park is estimated at $3,960,000 without land acquisition costs. Once appropriations have been made by the Legislature for the proposed project, the major source of funding will be the State of Hawaii Capital Improvements Program. Table XII-2 does not include the cost of trash removal, vegetation restoration, installation of interpretive signs, and

creation of a botanical garden and fishpond. It is recommended that most of these tasks be performed at low or no cost by interested civic, Hawaiian, and community organizations.

TABLE XII-1
RECOMMENDED MASTER PLAN

			Queen's Beach	Kealakipapa Valley	Makapu'u Head	Coastal Bench Trail
MEDIUM INTENSITY	LOW INTENSITY Preservation	a. Install ORV Barriers at Wawamalu Ranch Wall/Kalanianaole Highway	✓	✓		
		b. Clean up Trash, Boulders, and Headland Building Debris	✓	✓	✓	
		c. Restore Shoreline Vegetation	✓			
		d. Implement Tree Reforestation	✓			
		e. Restore Wetland		✓		
		f. Restore Inlet Circulation and Water Quality	✓			
		g. Restore Remnant of Old King's Highway			✓	
		h. Establish Interconnected Trail System throughout the Ka Iwi site	✓	✓	✓	✓
		i. Construct Footbridge across Drainage Channel	✓			
		j. Extend Makapu'u Lookout			✓	
		k. Establish Parking and Access at Queen's Beach and Headland	✓		✓	
	Interpretation	l. Construct Queen's Beach Comfort Station	✓			
		m. Establish Visitor's Center	✓			
		n. Create Botanical Garden	✓			
		o. Replicate Kaloko Fishpond	✓			
		p. Provide Landscaped Rest Areas	✓		✓	
		q. Establish Scenic Interpretive Venues			✓	
		r. Improve Makapu'u Headland Road			✓	

TABLE XII-2
KA IWI STATE PARK MASTER PLAN COST ESTIMATE

ITEM	TOTAL COST
Queen's Beach Comfort Station Structure	
Comfort Station Structure	$300,000
Water System	$65,000
Individual Wastewater System	$20,000
Queen's Beach Visitor Center - Open Structure	$25,000
Roadway/Parking at Queen's Beach	
Site Preparation	$60,000
Site Improvements	$95,000
Landscaping	$5,000
Queen's Beach Utilities Relocation	$30,000
Siltation Basin (max. cost to handle 10-year flood)	$1,000,000
Concrete Footbridge	$340,000
Roadway/Parking at Headland	
Site Preparation	$65,000
Site Improvements	$150,000
Drainage System	$15,000
Landscaping	$5,000
Headland Access Road Improvements	
Site Improvements	$165,000
Makapu'u Lookout Extension	
Site Improvements	$30,000
Headland Overhead Utility Line Relocation	$300,000
Subtotal (rounded up to nearest 1,000)	$2,670,000
6% Mobilization and Demobilization Fee (rounded down)	$160,000
New Subtotal	$2,830,000
20% Contingency Fee (rounded up to nearest 1,000)	$566,000
TOTAL ESTIMATED DEVELOPMENT COST	$3,396,000

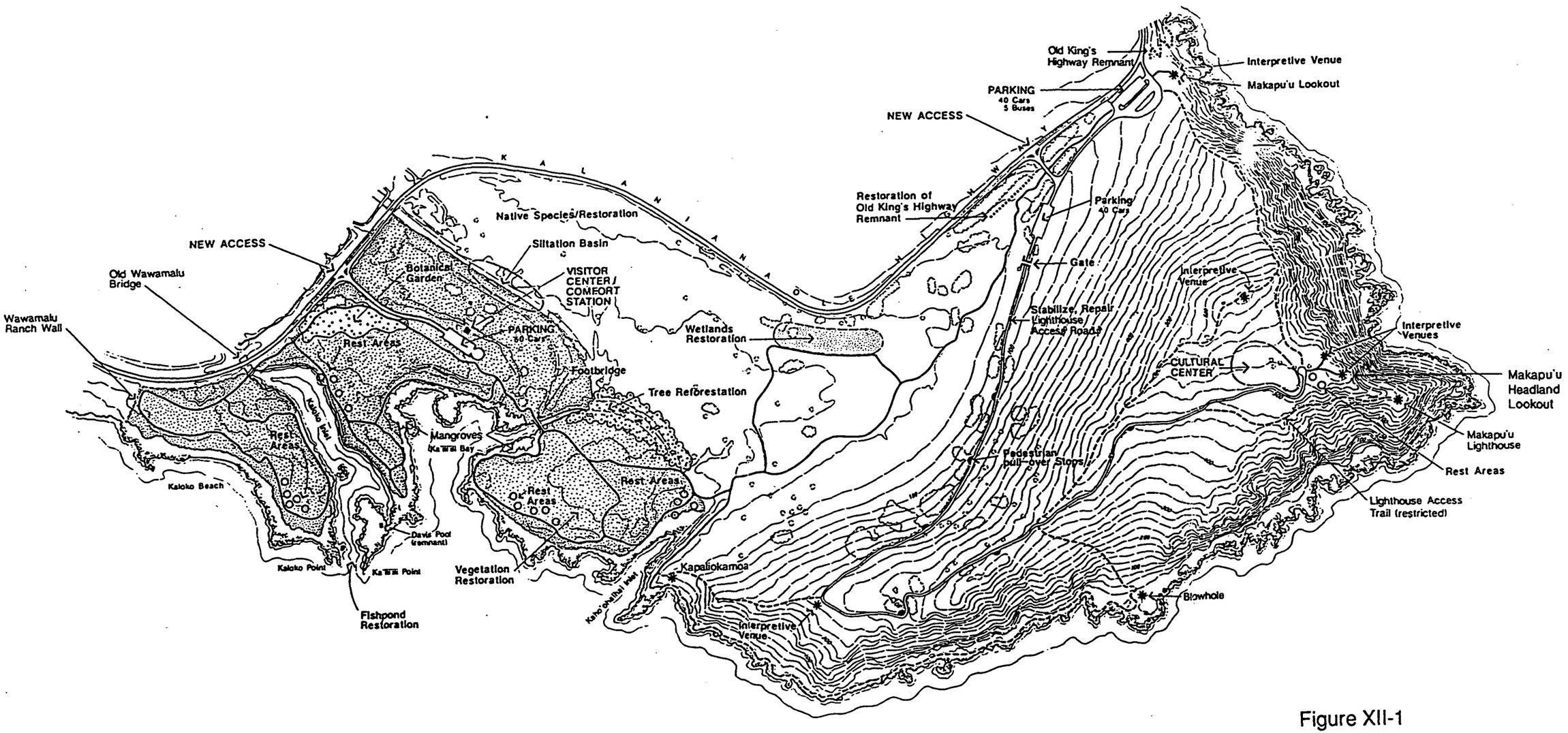
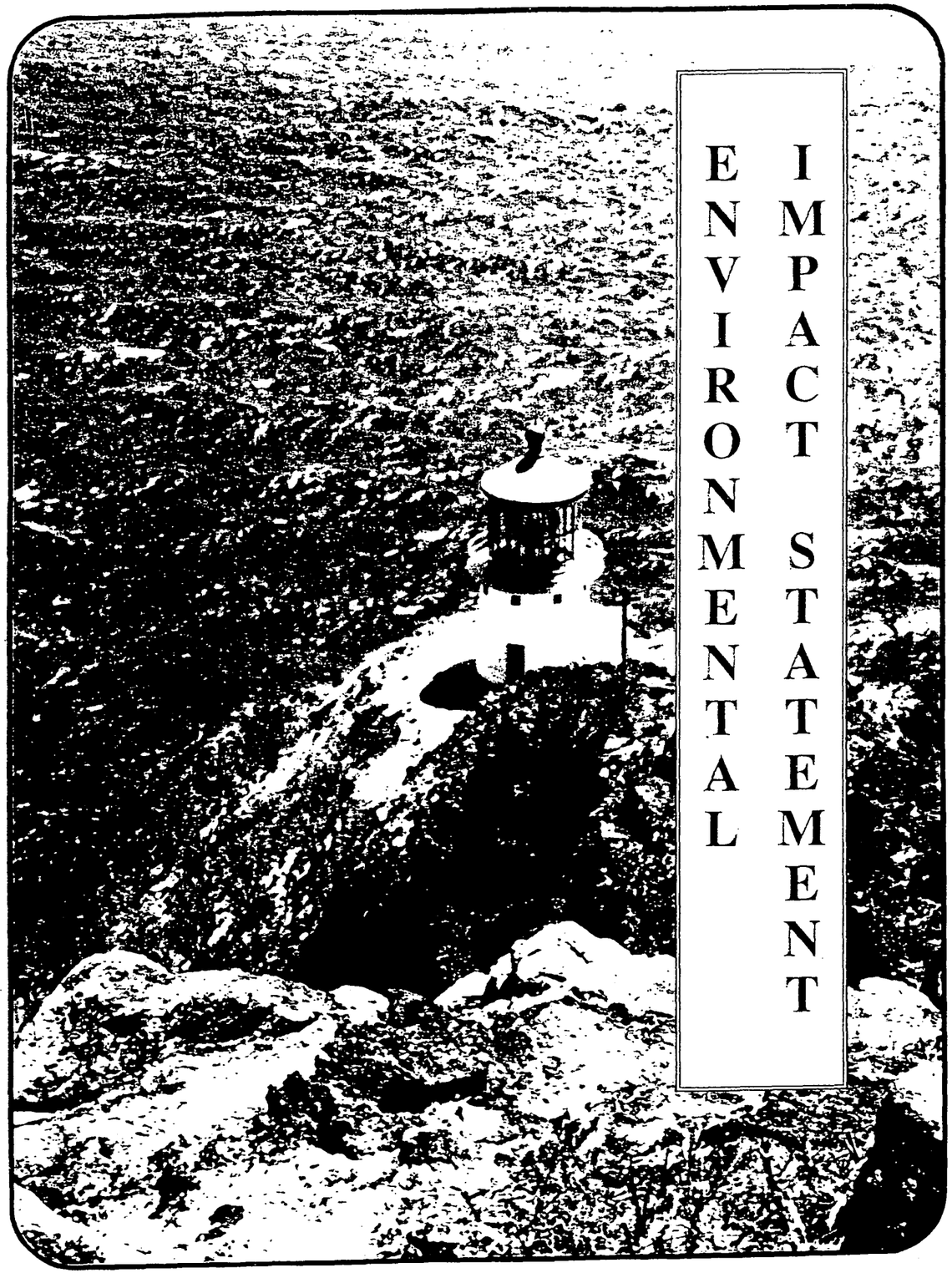


Figure XII-1

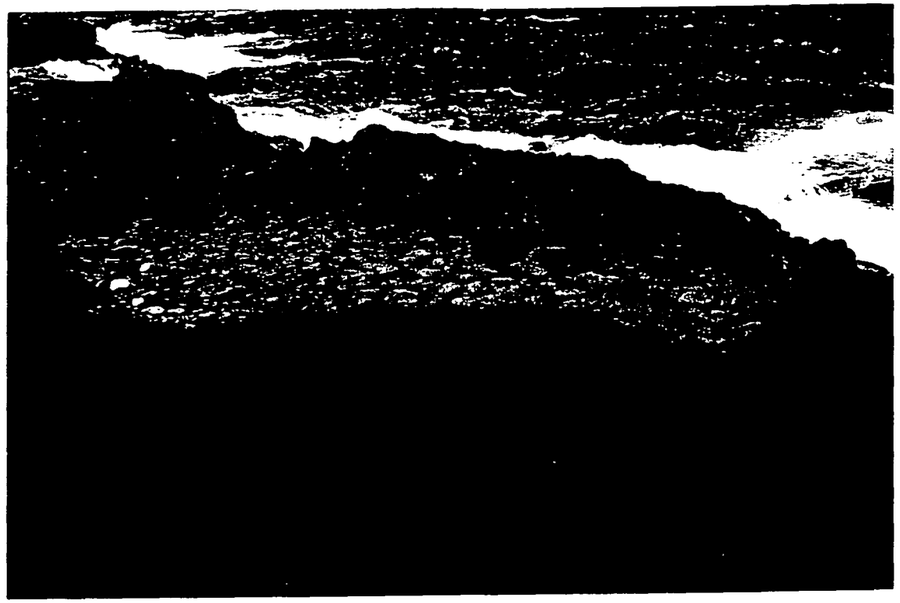
Recommended Plan

KA IWI MASTER PLAN

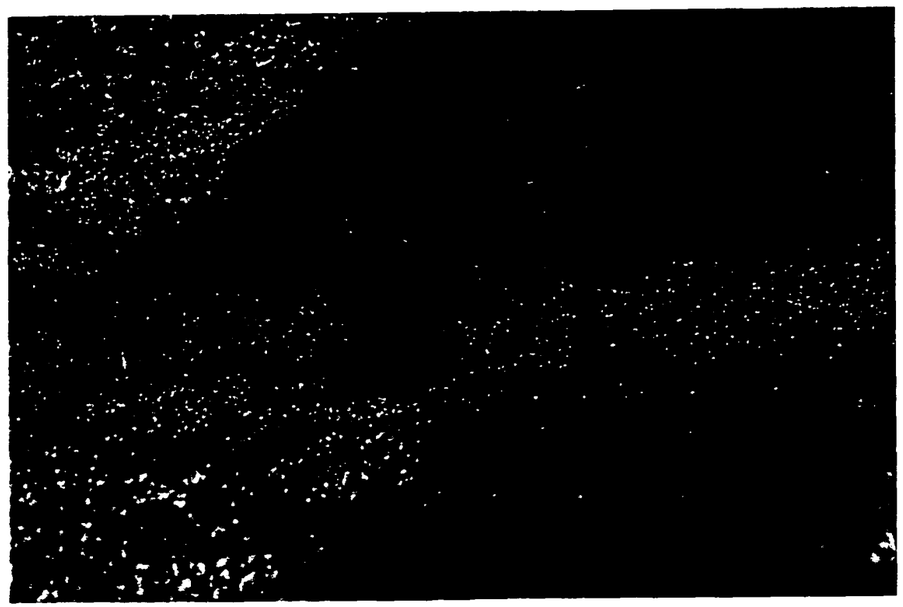
Department of Land and Natural Resources
Division of State Parks



ENVIRONMENTAL IMPACT STATEMENT



Tidepool along the Coastal Bench Trail



Blennie *(Istiblennius zebra)* and Kupipi *(Rhudefduis sordidus sp.)* commonly found in tidepools

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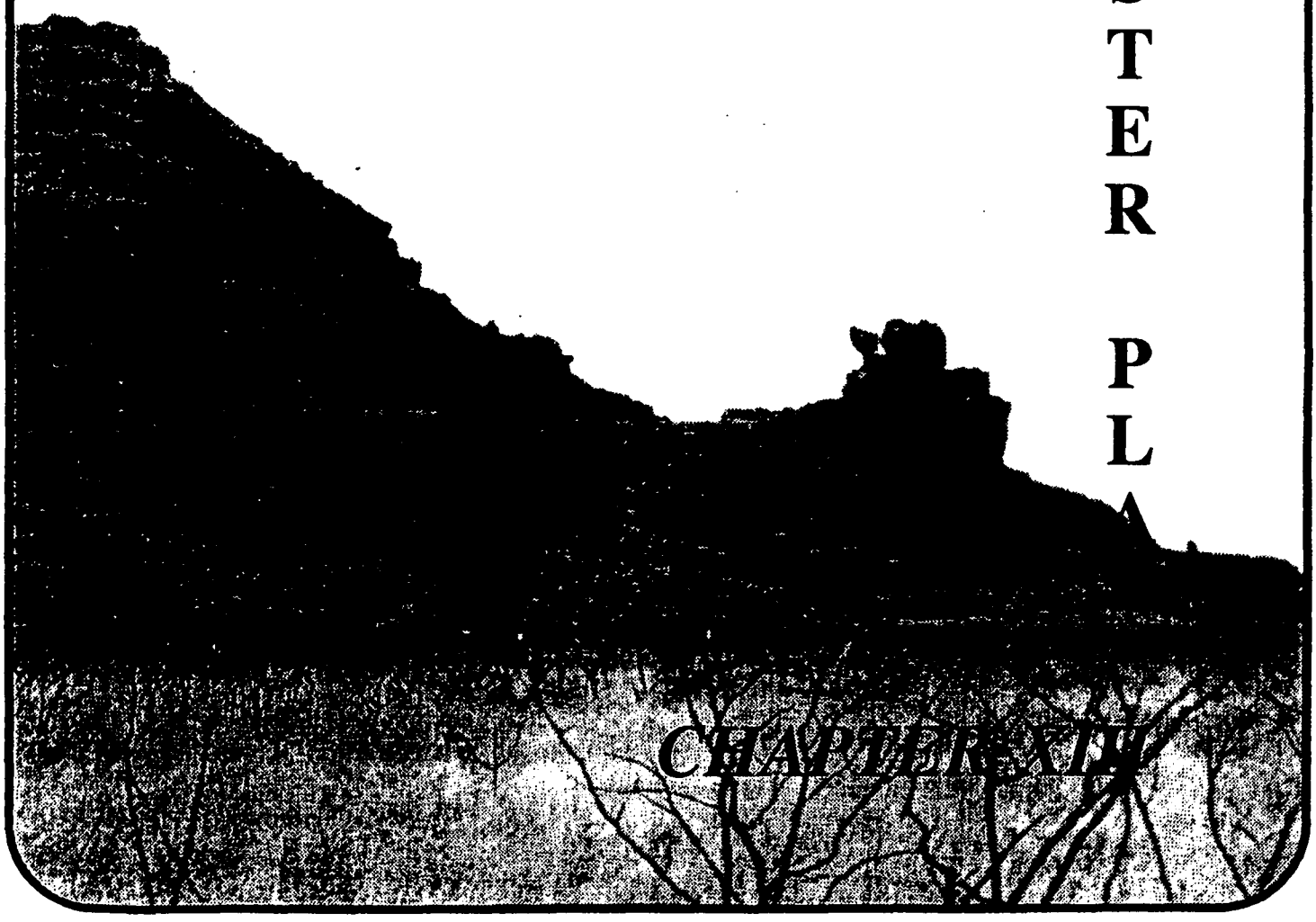


CHAPTER XIV

XIII. SUMMARY

A. Introduction/Background

This document was prepared by Wilson Okamoto and Associates to assist the State of Hawaii Department of Land and Natural Resources determine whether the Queen's Beach and Makapu'u Head area should be acquired for inclusion in the Hawaii State Parks system. The accompanying Ka Iwi Master Plan Final Environmental Impact Statement (EIS) was prepared pursuant to Chapter 343, Hawaii Revised Statues, and Chapter 200 Title 11 Department of Health Administrative Rules. The format of this EIS is unique since it refers to portions of the Master Plan to fulfill its content requirements.

The Ka Iwi State Park Master Plan was prepared pursuant to House Concurrent Resolution No. 261 H.D.1, S.D.1 (H.C.R. 261), entitled "Concerning an Integrated Scenic Shoreline Park in East Oahu Extending from Hanauma Bay to Makapu'u Point," 1988 legislative session. H.C.R. 261 directed the Department of Land and Natural Resources to take all steps necessary to keep this coastal area in open space.

Approximately 1,265 acres along this coastline are currently owned and managed as open park space by the City and County of Honolulu as the Koko Crater Regional Park. However, the approximately 316-acre area known as "Queen's Beach," and including most of Makapu'u Head, is privately owned by Bishop Estate, leaving the area susceptible to development. Thus, State acquisition of the site for the establishment of a park is regarded as one alternative for keeping the Queen's Beach and Makapu'u Head area in open space in perpetuity.

The Ka Iwi State Park Master Plan was prepared to help the State determine whether the Queen's Beach and Makapu'u Head area, referred to hereafter as the Ka Iwi site, should be acquired for inclusion in the Hawaii State Parks system.

B. Development Summary

Proposing Agency:

State of Hawaii
Department of Land and Natural Resources (DLNR)
Division of State Parks
1151 Punchbowl Street, Suite 300
Honolulu, Hawaii 96813
Contact: Mr. William Gorst
(808) 587-0293

EIS Preparer:	Wilson Okamoto and Associates, Inc 1907 South Beretania Street, Suite 400 Honolulu, Hawaii 96826 Contact: Mr. Earl Matsukawa (808) 946-2277
Accepting Authority:	Governor Benjamin J. Cayetano State of Hawaii
Location:	Queen's Beach/Makapu'u Head, East Oahu, Hawaii
Tax Map Key:	3-09-11: 2, 3, 5, 6 and 7 4-01-14: 1
Area:	Approximately 354 acres
Ownership:	Bishop Estate -- 316 acres State of Hawaii -- 35 acres City & County of Honolulu -- 0.65 acres (see Figure II-2)
State Land Use District:	Makapu'u Head -- Conservation District Queen's Beach -- Urban District (see Figure V-1)
City & County Development Plan Maps:	East Honolulu Land Use Map -- Preservation, Public Facility and Parks and Recreation East Honolulu Public Facilities Map -- Implementation of park and recreation facility within six years at an undetermined site in the Queen's Beach area. (see Figures V-2 and V-3)
City & County Zoning:	Makapu'u Head -- P-1 (Restricted Preservation) Queen's Beach -- P-2 (General Preservation) (see Figure V-4)

C. Project Description

To incorporate the Ka Iwi site's resources and features into a State Park which can be enjoyed by the public, three park development schemes were prepared for consideration (see Chapter XI). They were grouped into three intensity levels (low, medium, and high) which correspond with the categories of preservation, interpretive/passive recreation, and expanded interpretation/recreation, respectively. All suggested improvements were derived from the management considerations formulated for each of four management sub areas: Queen's Beach, Kealakipapa Valley, Makapu'u Head and Coastal Bench Trail. (see Chapter X). Following review by the Ka Iwi Technical Advisory Committee and the public, a recommended park master plan was prepared. The recommended plan is a composite of the three alternatives, but is comprised primarily of features from the low intensity and medium intensity scenarios and includes the following:

- Install Off-Road Vehicle (ORV) Barriers
- Clean-up Trash, Boulders, and Headland Building Debris
- Restore Shoreline Vegetation
- Implement Tree Reforestation
- Restore Wetland
- Restore Inlet Circulation and Water Quality
- Restore Remnant of old "King's Highway"
- Establish Interconnected Trail System throughout the Ka Iwi site
- Construct Footbridge across Drainage Channel
- Extend Makapu'u Lookout
- Establish Parking and Access at Queen's Beach and Makapu'u Lookout
- Construct Queen's Beach Comfort Station
- Establish Visitor's Center
- Create Botanical Garden
- Replicate Kaloko Fishpond
- Provide Landscaped Rest Areas
- Establish Scenic Interpretive Venues
- Improve Makapu'u Headland Road

D. Socio-economic Characteristics

The park site is almost entirely undeveloped. There are no residents, businesses or manned public facilities. The current use of the site is primarily for recreation.

The proposed development of the park site will aid in the preservation of geological, ecological, cultural and historical resources, and offer valuable interpretive and educational resources to the community.

E. Summary of Potential Impacts and Mitigation Measures

The intended impact of the project is to improve management of natural ecosystems, including those offering educational, interpretive, and recreational opportunities. While no significant adverse environmental impacts are anticipated, the project includes the expansion of a wetland containing an endangered species, and development of a relatively small public facilities in an ecosystem containing rare and endangered plants and insect species.

F. Alternatives to the Proposed Action

Three alternative park development scenarios were formulated and presented to an advisory committee and to the general public through a series of public informational meetings. The low intensity scenario emphasized resource preservation and protection, the medium intensity scenario included facilities for supporting educational and interpretive programs as well as passive recreational activities, while the high intensity scenario included facilities for additional recreational activities. The recommended master plan is comprised primarily of elements from the low-intensity scenario and the medium-intensity scenario.

G. Unresolved Issues

The treatment of wastewater generated from the proposed comfort stations at the site is currently unresolved. Options include conveying wastewater to the Hawaii Kai Sewage Treatment Plant (via the Hawaii Kai Golf Course Pumping Station) or constructing an on-site to treatment and disposal system. This issue will be resolved when design plans for the comfort station are prepared following State acquisition of the park site.

H. Consultation

Parties consulted in the preparation of the Ka Iwi State Park Master Plan include the Ka Iwi Advisory Committee comprised of concerned community members who were instrumental in obtaining Legislative support for the concept of the Ka Iwi State Park. The general public was consulted about the proposed Master Plan in a series of three public informational meetings held in May and June of 1993.

Parties consulted include:

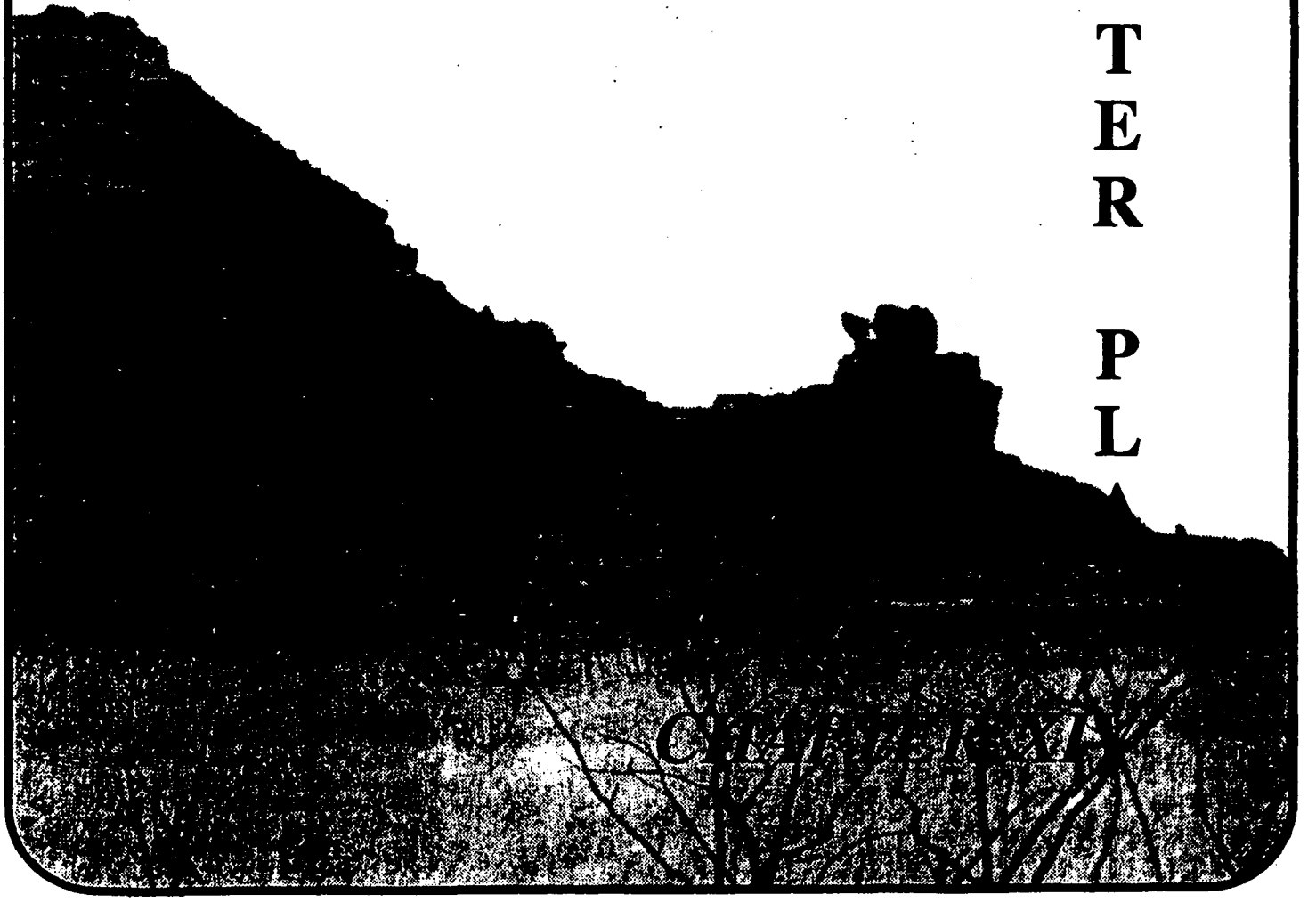
Federal Government
U.S. Fish and Wildlife Service
U.S. Army Engineering District

State of Hawaii
Department of Civil Defense
Department of Transportation, Highways Division
Department of Health
Department of Land and Natural Resource - Historic Preservation
Department of Land and Natural Resource - Office of Conservation and Environmental Affairs
Land Use Commission
Office of Environmental Quality Control
University of Hawaii Sea Grant Program

City and County of Honolulu
Board of Water Supply
Department of Public Works
Department of Wastewater Management
Parks and Recreation
Planning Department

Other Organizations
Kamehameha Schools/Bishop Estate
Nature Conservancy

KAIWI MASTER PL



XIV. PROJECT DESCRIPTION

A. Location

The project area is located on the eastern tip of Oahu on the makai side of Kalanianaole Highway between Sandy Beach and Makapu'u Lookout. *Chapter II, Sections A and B* contains more information on the project location.

B. Purpose and Need

Pursuant to House Concurrent Resolution No. 261, H.D.1, S.D.1, 1988 legislative session, the Ka Iwi Master Plan was developed with the intent of preserving coastal open space. *Chapter I, Sections A through C* contains more information on the purpose and need of the project.

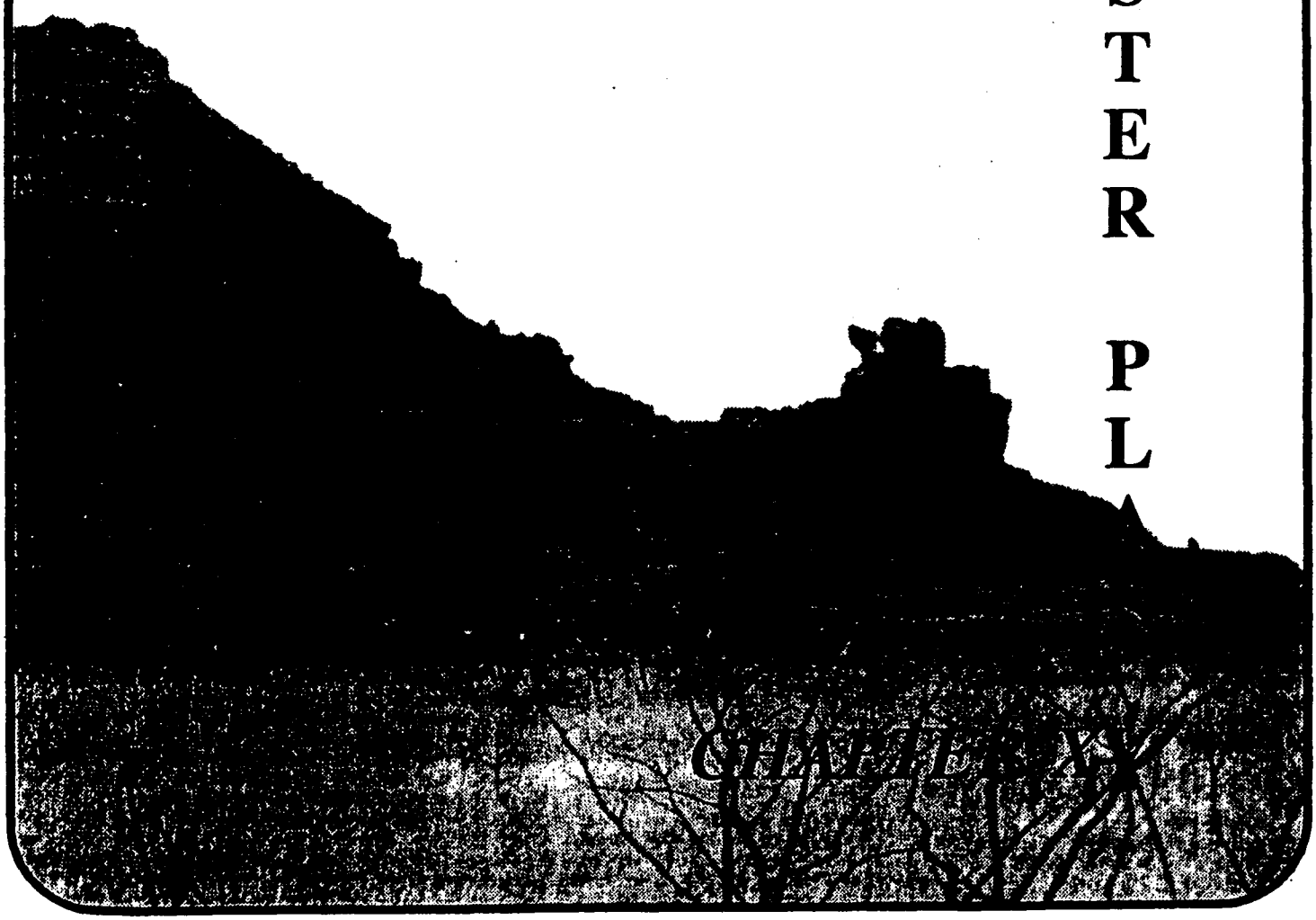
C. Statement of Goals, Objectives and Policies

As a State Park, the Ka Iwi site is most suited for natural resource preservation. *Chapter XI, Section A* elaborates further the goals, objectives and policies for the Ka Iwi site.

D. Proposed Park Layout & Development Cost

Three alternatives considering low-, medium- and high-intensity use of the Ka Iwi site were developed. They correspond with the categories of preservation, interpretive/ passive recreation, and expanded interpretation/recreation, respectively. All suggested improvements were derived from the management considerations formulated for each of four management sub areas: Queen's Beach, Kealakipapa Valley, Makapu'u Head and Coastal Bench Trail. Following review by the Ka Iwi Technical Advisory Committee and the public, a recommended park master plan was prepared. The recommended plan is a composite of the three alternatives, but is comprised primarily of features from the low intensity and medium intensity scenarios. *Chapter XII* describes the proposed park layout.

KAIWI MASTER PL



XV. ENVIRONMENTAL SETTING

The Ka Iwi site has numerous ecological habitats ranging from dry, scrub areas to wetlands to brackish mangroves to coastal tidepools. *Chapter IX* contains more information on the environmental setting of the site.

Climate - *Chapter IX, Section A*
Topography - *Chapter IX, Section B*
Shoreline - *Chapter IX, Section C*
Geology and Soils - *Chapter IX, Section D*
Drainage and Flood Hazard - *Chapter IX, Section E*
Tsunami and Storm Wave Hazard - *Chapter IX, Section F*
Nearshore Oceanography - *Chapter IX, Section G*
Coastal Water Quality - *Chapter IX, Section H*
Ecosystems - *Chapter IX, Section I*
Roadways and Utilities - *Chapter IX, Section J*
Cultural/Historical Environment - *Chapter VIII*

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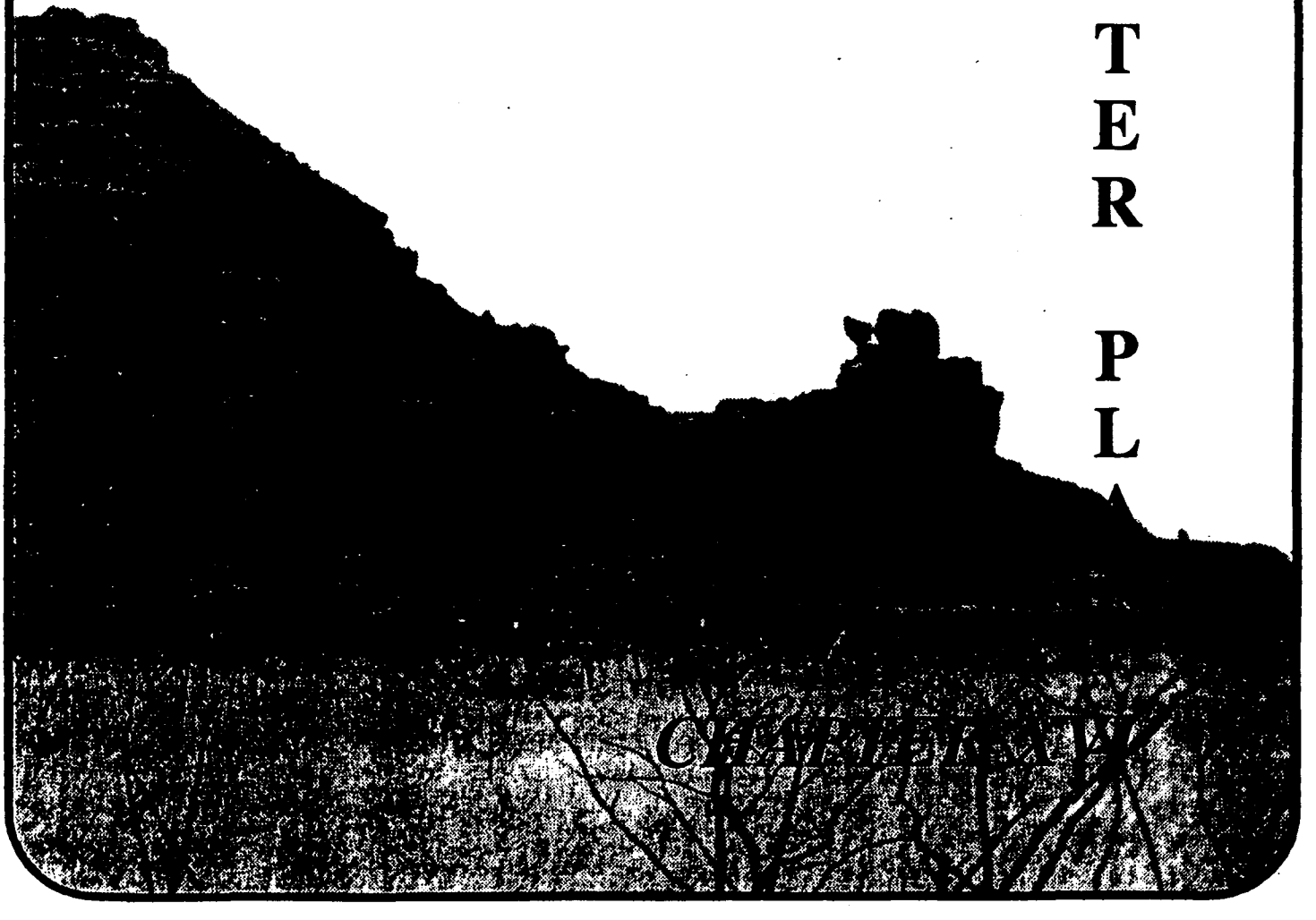
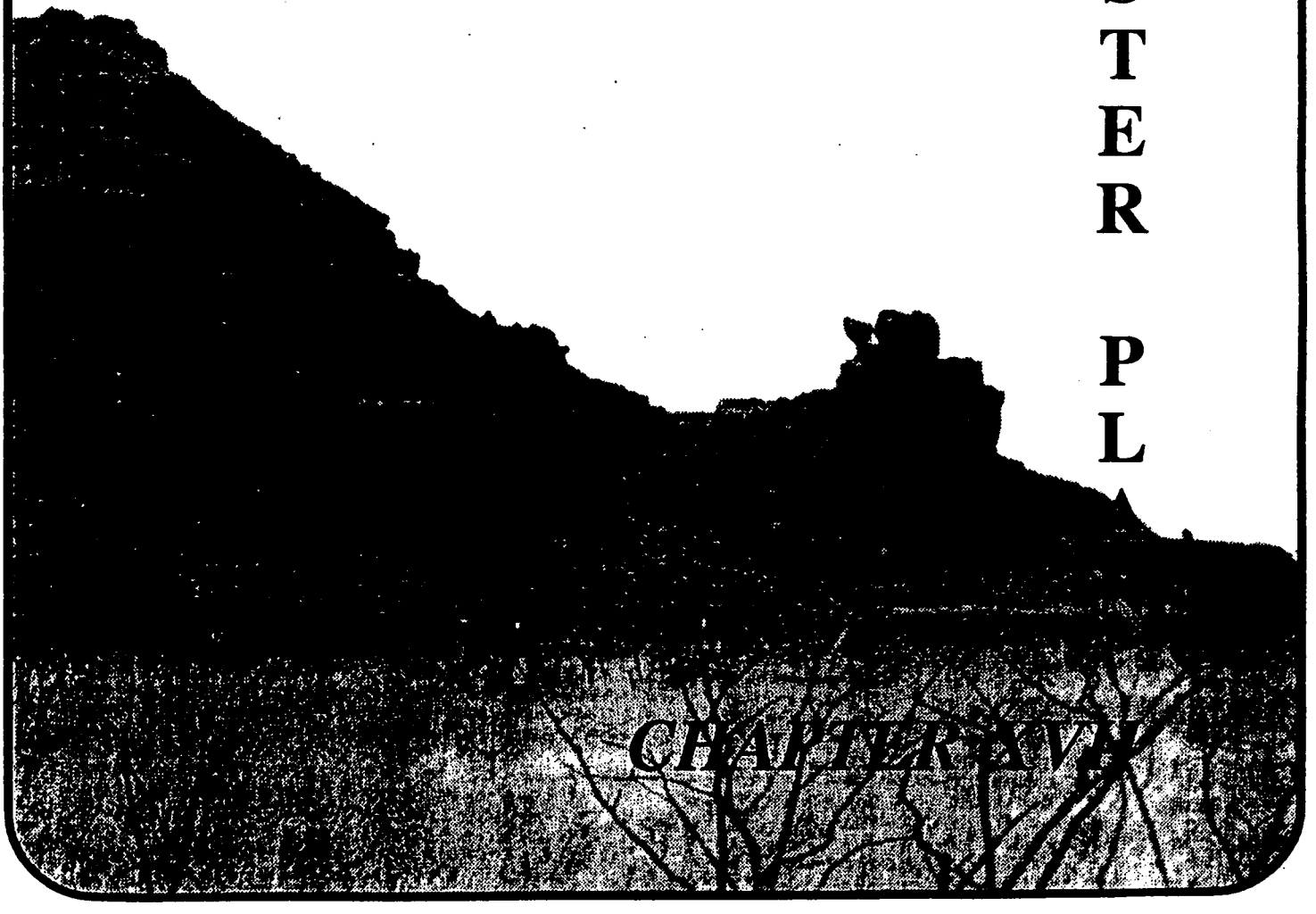


XVI. SOCIOECONOMIC CHARACTERISTICS

The Ka Iwi site is uninhabited and undeveloped, therefore the only socioeconomic characteristics of the site are recreational. *Chapter IV* further expands on the recreational demand of the site.

KAIWI MASTER PL



XVII. PROBABLE IMPACTS AND MITIGATIVE MEASURES

A. Short-Term Impacts

Short-term impacts are related to the construction phase of the project. In general, due to the distance from population centers, no potential adverse impacts to human health will result from temporary degradation in air and noise quality from construction activities. However, some traffic inconvenience may be created during construction of turn lanes along Kalanianaole Highway for the new Queen's Beach and Makapu'u Lookout parking areas. In addition, construction will have some temporary impacts on topography, flora and fauna, soils, and coastal water quality from grading activities. These potential short-term impacts are addressed below.

1. Topography

The topography of the proposed park site will be marginally affected by short-term construction. Site grading will be necessary to construct the visitor center, three parking lots and several paved walkways. Hills and inclines at the site will be incorporated into the overall design of the park for aesthetic purposes and to create space buffers among different park uses. The major topographic change will be in expanding the flood control basin and defining its runoff channel. The wetland area will also be excavated for expansion.

2. Soils and Water Quality

During the construction period, storm runoff could carry increased amounts of sediment into drainage channels due to erosion from exposed soils. Strict adherence to the requirements of the City and County of Honolulu Grading Ordinance will be needed to prevent sediment from reaching coastal waters. If any phase of construction will involve disturbing soils encompassing an area greater than five acres, a National Pollutant Discharge Elimination System (NPDES) permit for Construction Stormwater will also be required. The permit requires that storm runoff from the site entering State waters receive Best Management Practices for controlling silt and other potential pollutants. No short-term impacts to marine water quality or marine life are anticipated since all construction will be on land and appropriate siltation management measures, such as temporary retention basins, will be implemented to assure that the potential for soil runoff is minimized. To the extent feasible, grading activities will be scheduled during the drier months between April and October to minimize the potential for soil runoff.

3. Air Quality

During construction, three potential types of air pollution emissions will likely occur, resulting in short-term air quality impacts: 1) fugitive dust from soil excavation and vehicle movement; 2) carbon monoxide and nitrogen oxide emissions from on-site construction equipment and from vehicles of construction workers and motorized construction equipment traveling to and from the worksite; and 3) vehicular emissions resulting from traffic congestion along Kalanianaole Highway due to disruption of traffic flow by construction-related vehicles. Factors favoring good air quality in the vicinity of the project site include good exposure to tradewinds and ample open space. Moreover, except for vehicles travelling along Kalanianaole Highway, there are no other sources of air pollution in the immediate vicinity.

The short-term effects on air quality during construction will be mitigated by compliance with State Department of Health Administrative Rules, Title 11, Chapter 60, Section 5 (*Air Pollution Control for Oahu*). Potential control measures to reduce fugitive dust include frequent wetting down of loose soil areas with water, use of wind screens, covering of open-bodied trucks during materials transport, and the washing down of tires on construction equipment. Establishment of landscaping early in the construction schedule can also help control fugitive dust. This would initially require frequent watering to carry young plants through the dry season.

Increased vehicular emission due to disruption of traffic by construction equipment and/or commuting construction workers can be alleviated by moving the equipment and personnel to the site during off-peak traffic hours.

4. Ecosystems

Minor short-term impacts on vegetation, wildlife, or insects may be anticipated wherever site clearing and grading or excavation is necessary. Of particular concern, however, is any disturbance of the wetland area which harbors the stand of the endangered species of water fern, *Marsilea villosa*. Once vehicular access is eliminated, the wetland will be shaped and tended to create a permanent boundary. Drainage from the Koolau mauka of Kalanianaole Highway may be directed under the road and into the wetland to lengthen the period when the wetland exhibits standing water. A wetland boundary determination and a Department of the Army permit is required before work in the wetland area can commence. Measures to assure the survival and propagation of the endangered

water fern *Marsilea villosa* will be required. In addition, before any construction activity in the area commences, an inventory and assessment of rare and endangered insect species will be conducted.

5. Archaeological/Historical

Section 106 of the National Historic Preservation Act and Chapter 6E, the Hawaii Historic Preservation Law provide a "process for review of the effect of the proposed project on historic properties." Properties over 50 years old may be eligible for listing on the National and State Register of Historic Places if they meet one or more of the following criteria:

i. Property is associated with broad patterns of development in history or pre-history. (Buildings in historic district, properties representative of traditional/cultural attributes, like set of taro field sites extending up a valley, reflecting the prehistoric development of agriculture, etc.)

ii. Property is associated with a renowned person, family, royalty or deity. (Dwelling of an individual/deity, structure commissioned by individual/deity, etc.)

iii. Property has an excellent example of a type of site which was typically found in the region. (Walled prehistoric fields in Kona, dwelling and canoe houses in Wai'anae, etc.)

iv. Property has useful informational content. (Likely to provide information of historical value, like artifacts, food remains and datable material, etc.)

v. Property has traditional cultural significance to an ethnic group. (Burials, religious sites, major trails, traditional cultural places, etc.)

Constructed in 1909, the Makapu'u Lighthouse located at Makapu'u Point is listed on the National Register of Historic Places and the Hawaii Register of Historic Places. No effect on the lighthouse is anticipated.

The King's Highway remnant, Site No. 50-80-15-03 on the State Register of Historic Places will be cleared of vegetation and reconstructed or restored in consultation with the State of Hawaii Department of Land and Natural Resources Historic Preservation Division (SHPD).

Because most of the other proposed construction will not involve significant disturbance of existing soils, the potential for discovering or harming potential archaeological or historical resources is minimized. Should archaeological remnants be unearthed, work will be halted and the SHPD will be notified.

6. Noise

Due to the distance of the project area from potentially noise-sensitive uses, no adverse impacts resulting from construction noise are anticipated. The only people affected may be the current users of the park site, including hikers, bikers, and fishermen as well as golfers at the adjacent Hawaii Kai Golf Course users. Construction vehciles and activities must comply with State Department of Health Administrative Rules, Title 11, Chapter 42 (*Vehicular Noise Control for Oahu*) and Title 11, Chapter 43, Section 5 (*Community Noise Control for Oahu*), respectively. The State of Hawaii Department of Health's noise control regulation requires a permit for construction activities which emit noise in excess of 95 decibels. Mitigation measures to minimize construction noise include the use of mufflers to suppress loud equipment and limitations on the hours of heavy equipment operation.

7. Employment

The proposed project will generate short-term direct employment, both on- and off-site, during the construction period. Construction activity will generate indirect and induced employment opportunities and multiplier effects, as local material suppliers and retail businesses also benefit from the increased construction.

8. Traffic

Minimal short-term impacts related to traffic are anticipated to result from traffic control measures during the construction of new turn lanes on Kalanianaole Highway. Trucks, heavy equipment and other vehicles will use existing roads to import and remove materials and to access construction areas. While construction vehicles are relatively slow and difficult to maneuver, it is anticipated that they will only marginally affect traffic flow. The impact to the highway should be slight since trucks will most likely be traveling in the opposite direction of peak hour flow, and it is already a major thoroughfare for large trucks prohibited from using the Wilson or Pali Tunnels. To minimize potential traffic congestion, movement of construction equipment and slower vehicles may need to be

coordinated to avoid peak traffic hours. Commuting construction workers will slightly increase traffic levels, although their impact is anticipated to be negligible. During construction of the park, it is anticipated that all construction-related vehicles will park within the proposed park site.

B. Long-Term Impacts

1. Soils and Water Quality

Revegetation with native species adapted to the local climate will be implemented along the shoreline. Coastal water quality should improve to some degree as a result of new management policies emphasizing strict prohibition of ORV's, and maintenance of vegetation. These measures will reduce erosion by stabilizing soils and facilitating infiltration.

The proposed structures, access roads and parking lots will marginally increase storm runoff by creating a net increase in non-porous surfaces. Given the vast undeveloped area in which they will be located, their distance from the coast and the large amount of diverted drainage received from Kalama Valley, however, their impact on water quality will be negligible. Any impact in runoff quantity should be more than offset by revegetation efforts and drainage considerations in the design, which will be required by the City Department of Public Works. While use of the access roads and parking area by vehicles could release petrochemicals in runoff, this impact would be comparable to, or less than, existing releases associated with current ORV activities and dumping of vehicles.

2. Air Quality

After construction of the proposed park, air quality is expected to improve because ORV's and four-wheel drive vehicles will be prohibited from the site. These vehicles are generally responsible for damaging vegetation, raising dust and exposing soil. Areas of the park which are now severely eroded will be re-vegetated.

Traffic introduced to the site may negligibly reduce air quality, downwind of roads and parking areas. However, factors favoring good air quality on the shoreline of the Ka Iwi site include exposure to tradewinds and the expanse of open space.

3. Drainage and Flood Hazard

According to the Flood Insurance Rate Map (FIRM), issued by the Federal Emergency Management Agency, the Makapu'u Headland and the Coastal Bench Trail are designated Zone D, areas in which flood hazards are undetermined. The Kealakipapa Valley and Queen's Beach areas are designated Zone X, an area determined to be outside the 500-year flood plain. Base flood elevations have been determined for nearshore portions of Kaho'ohaihai Inlet, Ka'ili'ili Bay, and Kaloko Inlet. The proposed park site is located outside of areas subject to landslide hazards.

No significant flood hazards or long-term impacts to drainage are anticipated. The only buildings to be constructed are the comfort station and visitor center which are not considered habitable structures. In any case, these structures will be located outside of the floodway, as delineated on the Flood Insurance Rate Map.

The State will assume responsibility for maintaining the 15-foot wide drainage ditch and the proposed retention basin(s) unless other arrangements are made after the proposed park site is acquired and developed.

4. Ecosystems

Native plantlife populations will increase as a result of an extensive landscaping program which will emphasize native species of flora suitable to the area. The stand of the endangered species of water fern, *Marsilea villosa*, will be preserved and expanded in a cultivated wetland sanctuary.

The long-term impact of the proposed park on marine water quality and marine life will be positive because all new improvements will include provisions for landscaping and appropriate drainage facilities to minimize soil runoff. Although the level of use of the proposed park cannot be determined at this time, long-term impacts on fisheries resources may result from greater access by fishermen. On the other hand, some positive benefit may also be achieved since the proposed interpretive program will facilitate dissemination of information on marine habitats, thereby fostering awareness and respect for marine life at the Ka Iwi site.

5. Noise

Following construction, noise levels will be reduced since park usage is geared toward preservation and passive recreational uses. ORV's will be prohibited from the park, thereby eliminating an existing source of noise. There are no residences or other noise-sensitive uses near the park. The beneficial effects of noise-shielding by hilly terrain features, restoration of native vegetation, and the distance of key park features from the highway will buffer the park site from traffic noise.

6. Traffic

Park-related traffic will be generated mostly during off-peak hours. Hence it will not contribute to conditions that may tax the capacity of roadways. Therefore, establishment of a park would generally not raise concerns about the need for traffic improvements, such as widening and traffic signals that may be required if major urban developments are built in the vicinity.

Traffic safety and parking conditions are expected to improve as a result of the proposed park. The provision of 135 parking stalls within the park would justify enforcing the parking prohibition on the highway shoulder. This would greatly relieve current parking hazards on the highway. Given the proposed low intensity use of the site, rates of traffic flow are anticipated to be readily manageable.

The new access to the visitor center/comfort station and Queen's Beach parking area will create a new intersection along the highway which will marginally affect traffic. The limited number of parking stalls will, however, control the amount of vehicular activity at the intersection.

The vehicular access improvements for the Makapu'u Lookout extension will result in smoother traffic flow and safer conditions along Kalanianaole Highway since they eliminate the existing hazardous vehicular movements off of and onto the highway. In addition, the parking area for hikers accessing the Makapu'u Headland Road can improve traffic flow and safety if it leads to the enforcement of parking prohibition on the shoulder of the highway.

Parking accommodations at the Makapu'u Lookout and the Queen's Beach parking are intended to accommodate existing levels of usage. If the proposed park site is further developed, the need for parking may increase. Expansion of the parking areas would be subject to public review pursuant to the EIS law.

7. Utilities

The comfort station, visitor center and minimal landscape irrigation will have requirements for water, wastewater, electrical and telephone services. As development plans for the park are pursued, consultation will be initiated with the following government agencies and utility companies:

Board of Water Supply (C&C of Honolulu)	Water
Dept of Wastewater Mgmt (C&C of Honolulu)	Sewer
Department of Health (State of Hawaii)	Sewer
Department of Public Works (C&C of Honolulu)	Drainage
Hawaiian Electric Company	Electrical
GTE Hawaiian Telephone Company	Telephone

Prior to construction, all plans showing proposed improvements to water lines, water requirements, engineering specifications and necessary fire protection requirements must be submitted to the Board of Water Supply for approval.

Based on the relatively low level of park usage to be accommodated, demands on utilities would be negligible in relation to those of nearby urbanized areas. Therefore, major improvements in utilities serving the area are not anticipated.

8. Public Safety

The relative isolation of the park site due to its distance from population centers, as well as potential safety hazards inherent in the rugged terrain, raises concerns for public safety if greater public access to the area is provided. The presence of more people will probably increase demands on services such as emergency medical, police, ocean rescue and fire protection services. However, letters from the Police and Fire Departments commenting on the Draft EIS indicate that current facilities are able to handle this increase. Civil defense warning systems will need to be extended to cover this area. The State Department of Civil Defense has recommended the installation of two solar-powered omnidirectional 115 dB sirens at the site.

9. Permits

Several permits are anticipated to be required to implement the recommended park improvements, including the following:

Federal Permits

U.S. Army Corp of Engineers

- Department of the Army Permit

State of Hawaii

Department of Land and Natural Resources

- Conservation District Use Application (CDUA)
- Stream Channel Alteration Permit (SCAP)

Office of State Planning

- Costal Zone Management (CZM) Program Federal Consistency Review

Department of Health

- Section 401 Water Quality Certification
- National Pollutant Discharge Elimination System (NPDES) Permit

Department of Transportation

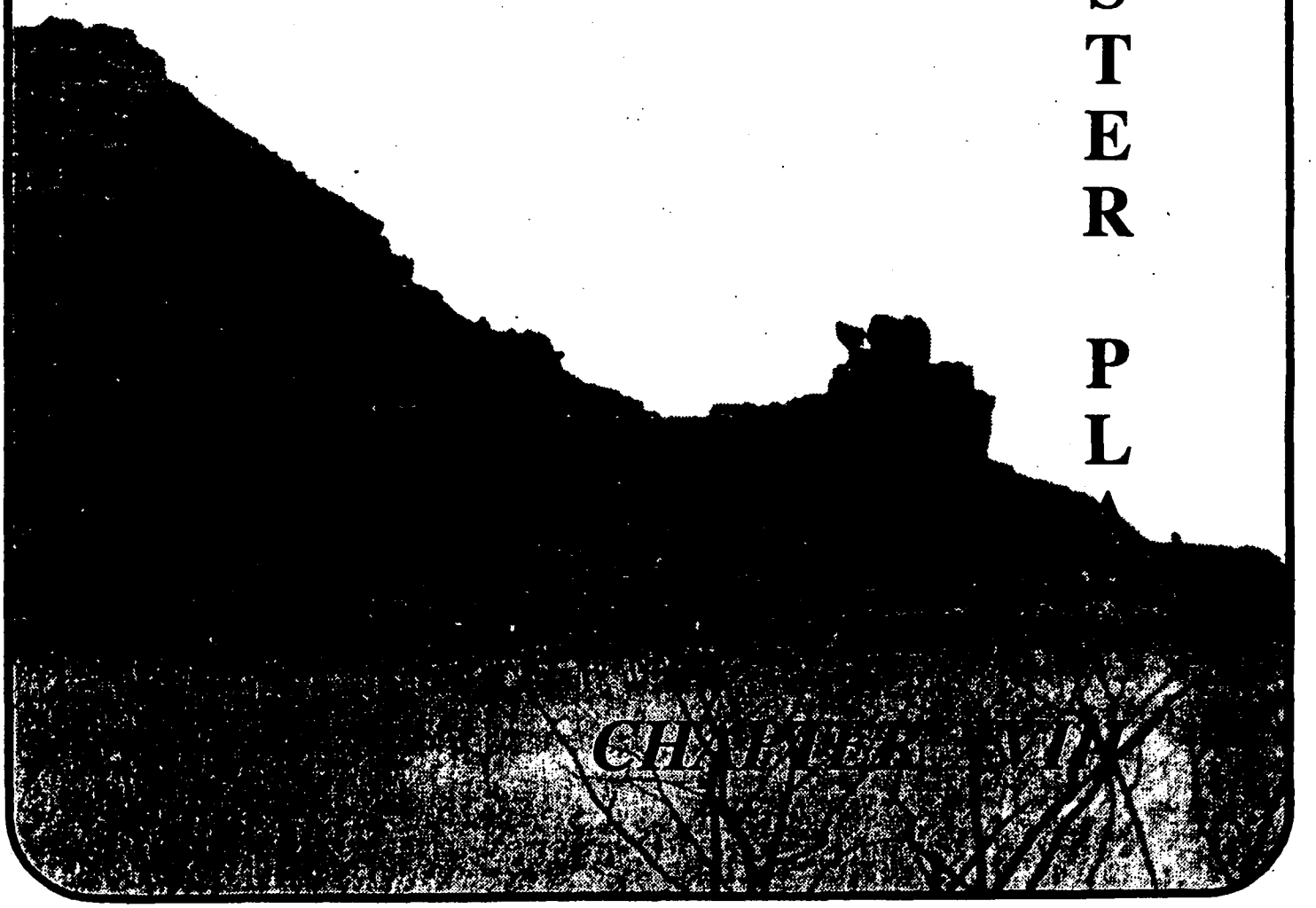
- Work on a State Highway Permit

City & County of Honolulu

Department of Land Utilization

- Special Management Area (SMA) Permit
- Shoreline Setback Variance

KAIWI MASTER PL



XVIII. ALTERNATIVES TO THE PROPOSED ACTION

A. "No Action" Alternative

The no action alternative will retain the current ownership and, at least for the short-term, the existing management of the area. Concerns regarding the status quo include the following:

- The potential that the Queen's Beach area could be developed by private interests for urban uses should appropriate entitlements be regained or as a golf course under existing zoning. While many of the resource values and some public access could be preserved, much of the wilderness qualities would be lost.

- Continued difficulty in preventing access by off-road vehicles which degrade the vegetation, promote soil erosion and generate dust and noise. *See Chapter VII, Section B.2.b., page VII-10.*

- Difficulty in controlling dumping of abandoned or stripped vehicles, trash and litter. *See Chapter VII, Section C.2.b., page VII-13*

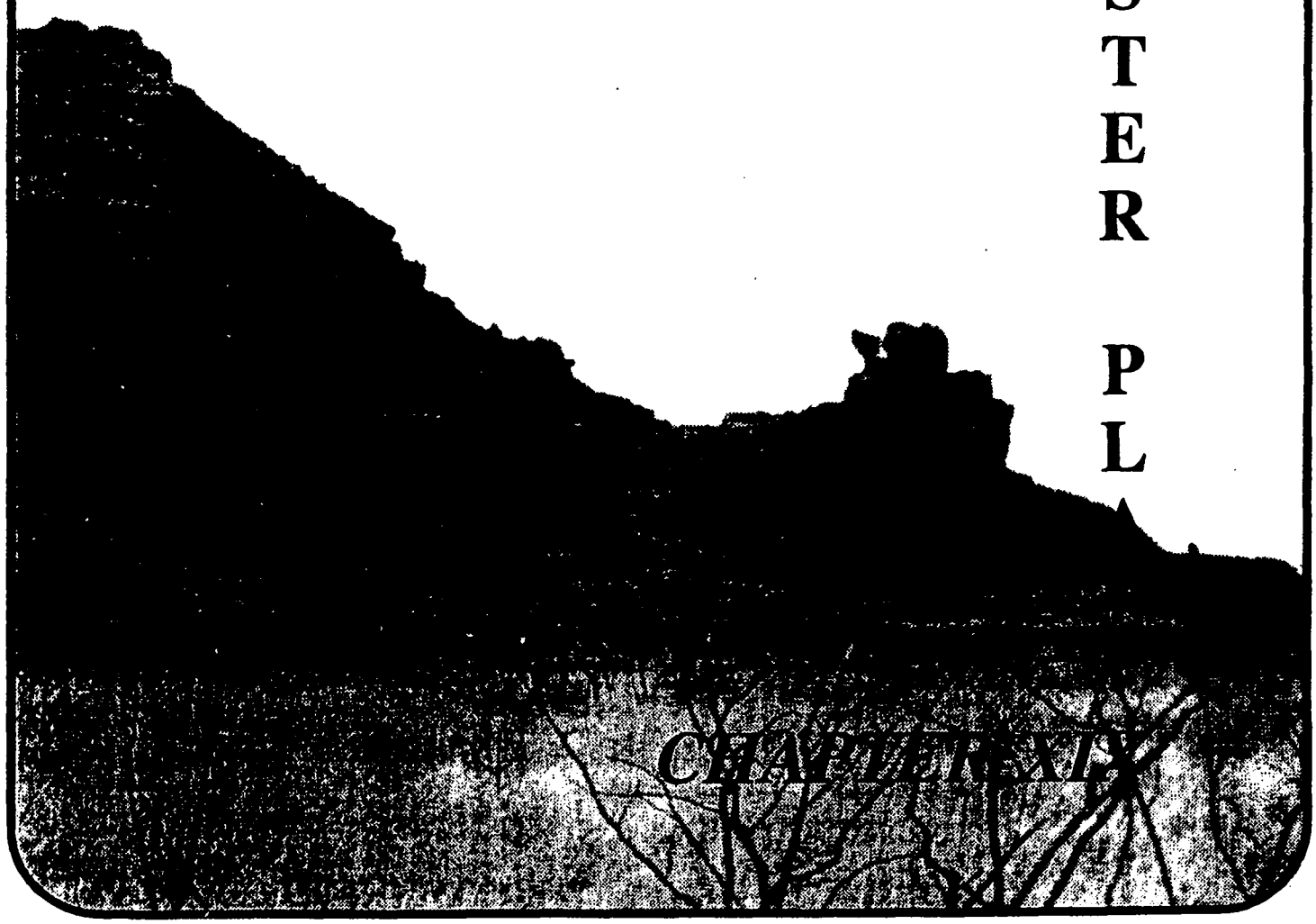
- Continued siltation of inlets and nearshore waters during storms. *See Chapter VII, Section C.2.b., page VII-13*

- Unrealized potential for public education through interpretation of unique geological, ecological and cultural resources. *See Chapter VII, Section C.1., page VII-12*

B. Alternative Designs

See Chapter VII, Sections D & E & Chapter XI, Section B.

KA IWI MASTER PL



CHAPTER XI

XIX. Long Term Considerations/Unresolved Issues

A. Relationship Between Short-Term Uses and Long-Term Productivity

1. Short-Term Use

In the short-term, the project may have some minor negative impacts on the environment. Construction may increase fugitive dust and ambient noise at the site. However, as the site is uninhabited, it will not adversely impact any residences or businesses.

From an ecological standpoint, short-term activities may temporarily disturb natural habitats, especially during construction of the siltation basin. However, short-term activities will also halt ORVs, which do far more damage to the ecosystem, from entering the site, thereby significantly improving the condition of natural habitats.

2. Long-Term Productivity

Development of the proposed project will result in the long-term commitment of the land for a state park. Natural habitats for rare and endangered species will be enhanced. The park site will also offer interpretive, educational and recreational opportunities to the public.

It is possible that, in the long-term, increased park usage may adversely impact natural habitats. Recreational fishing may add pressure to fishery resources and hiking may damage vegetation. Under park management, however, these potential impacts can be addressed if they arise. In comparison to current ORV activity, damage to the environmental will decrease under the proposed plan.

B. Irreversible and Irretrievable Commitments of Resources

Development of the project site would commit the land as a state park for the long-term. Of the current usage, only ORV activity would be compromised. For the long-term, urban development of this land would probably also be deferred.

C. Adverse Effects Which Cannot Be Avoided

Adverse impacts can be divided into short- and long-term effects. Short-term effects are generally associated with construction, and prevail only for the duration of construction.

Long-term effects generally result from the implementation of the project and are permanent.

1. Short-Term Effects

Unavoidable adverse impacts associated with construction include the following:

Water Quality During construction, storm water may carry increased amounts of sediments into drainage channels and into the ocean from exposed soils. Appropriate mitigation measures, however, can be implemented to minimize or eliminate this impact. If construction is to disturb soils in an area greater than five acres, an NPDES Permit and Best Management Practices (BMP) Plan will be required. Temporary retention basins may be needed to prevent silt from reaching coastal waters.

Air Quality Fugitive dust from soil excavation and vehicle movement, carbon monoxide and nitrogen oxide emissions from vehicles may temporarily degrade air quality in the area.

Ecosystems Impacts on ecosystems are expected when site clearing or expanding/restoring wetlands. The U.S. Fish and Wildlife Service suggested that a survey of insects be compiled prior to construction. Such a survey will be conducted prior to any construction activity.

Archeological/Historical The new road linking Kealakipapa valley and Makapu'u Lookout will be built over the former route of the King's Highway, but will not disturb existing remnants.

2. Long-Term Effects

Soils and Water Quality The proposed structures will increase the amount of non-porous surface, theoretically increasing the amount of runoff from the site, although the amount would be negligible within the existing watershed which also receives drainage from neighboring Kalama Valley. The State will assume responsibility for the maintenance of the 15-foot wide drainage easement and the retention basin unless other arrangements are made after the site has been acquired.

Currently, no irrigation is planned for the park once the plant communities are established. Should irrigation continue, the Board of Water Supply suggests using

non-potable water as first source of irrigation for landscaping. At this time, however, there is no non-potable water source, storage or distribution system in the vicinity.

Air Quality Park users may increase traffic levels in the area, although parking capacities at the park are based on existing levels of use. Added traffic can degrade air quality, although the degree of impact would be insignificant.

Ecosystems Although the level of usage of the park is unknown, adverse effects on marine ecosystems could occur due to increased usage by fishermen. On the other hand, some positive benefits may also be achieved since the proposed interpretive program will facilitate dissemination of information on marine habitats, thereby fostering awareness and respect for marine life at the Ka Iwi site.

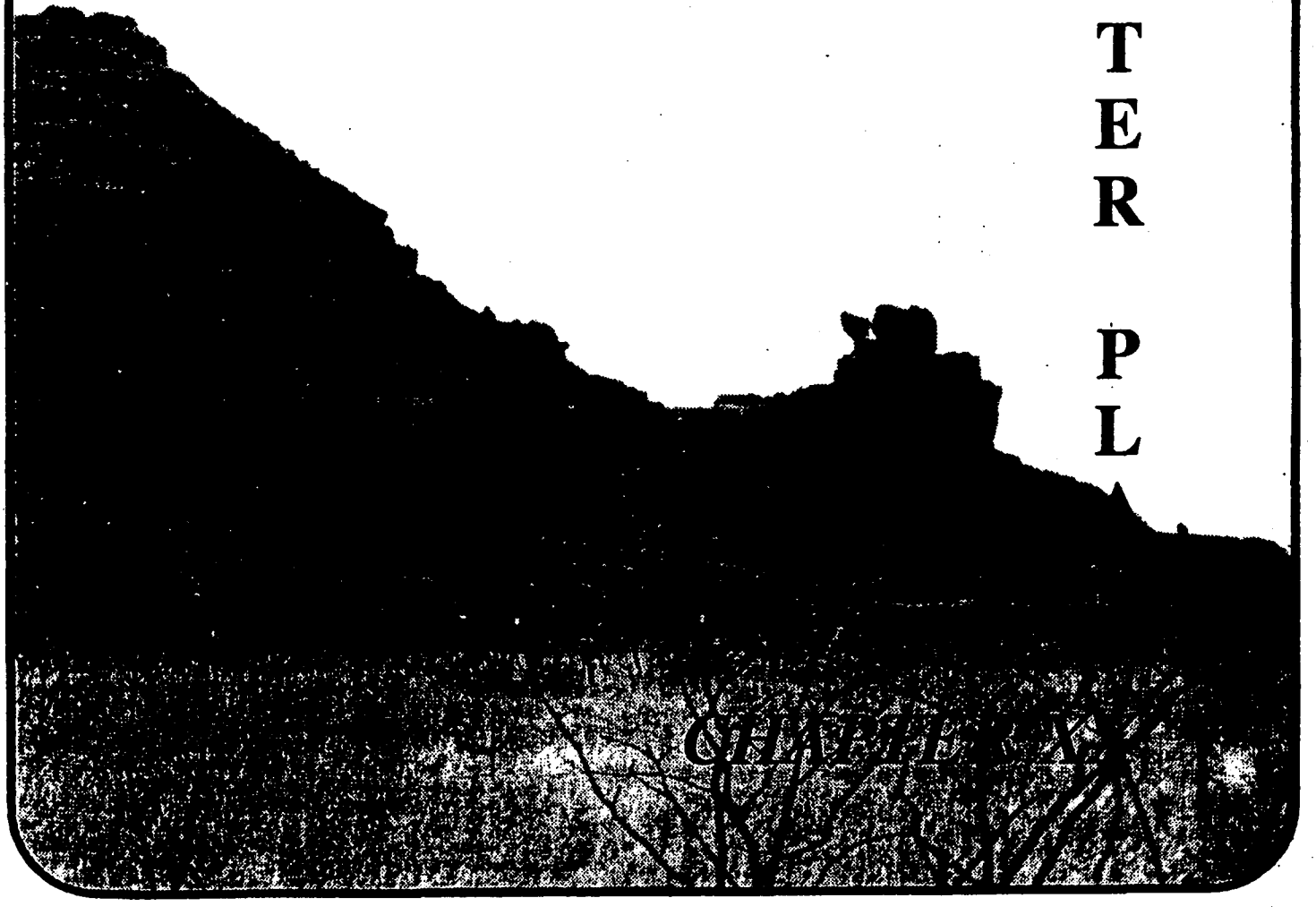
Traffic New turn lanes along Kalanianaole Highway can affect traffic flow although such an impact would be minimized since traffic associated woth the park would generally be during off-peak traffic hours. The State will conduct a traffic assessment in conjunction with designing new intersections serving Queen's Beach and the Makapu'u Lookout and Headland Road parking area.

The State Department of Transportation suggests 20-ft setbacks along Kalanianaole Highway.

D. Unresolved Issues

There are two options for the treatment of wastewater. The first is to convey wastewater to Hawaii Kai STP. This option entails constructing a pipe approximately 1000 yards to the pump station at the Hawaii Kai Golf Course. The second option is to treat wastewater on-site in an individual treatment plant. Further studies will be conducted in conjunction with designing the facility after the site has been acquired. the City Department of Public Works and the State Department of Health will be consulted regarding the resolution of this issue.

KAIWI MASTER PL



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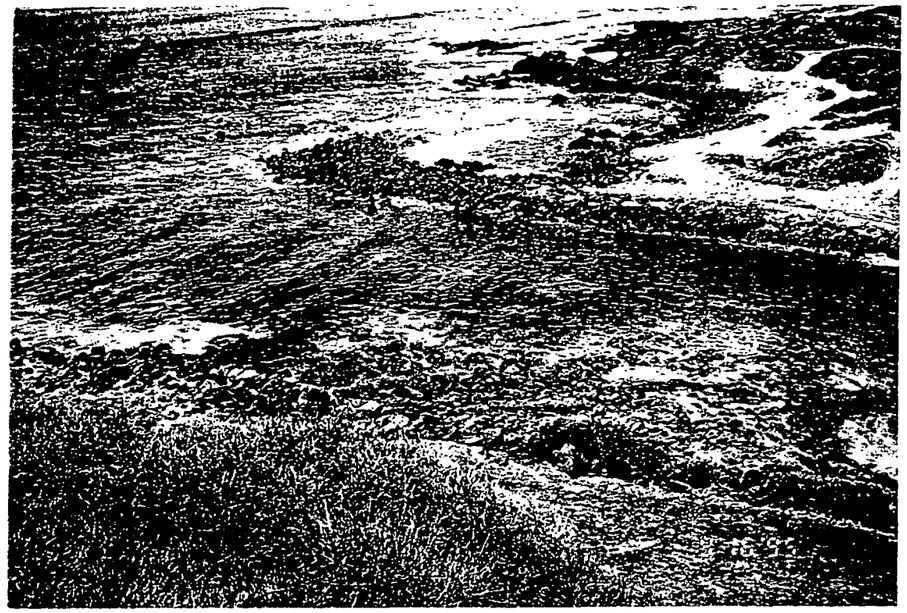
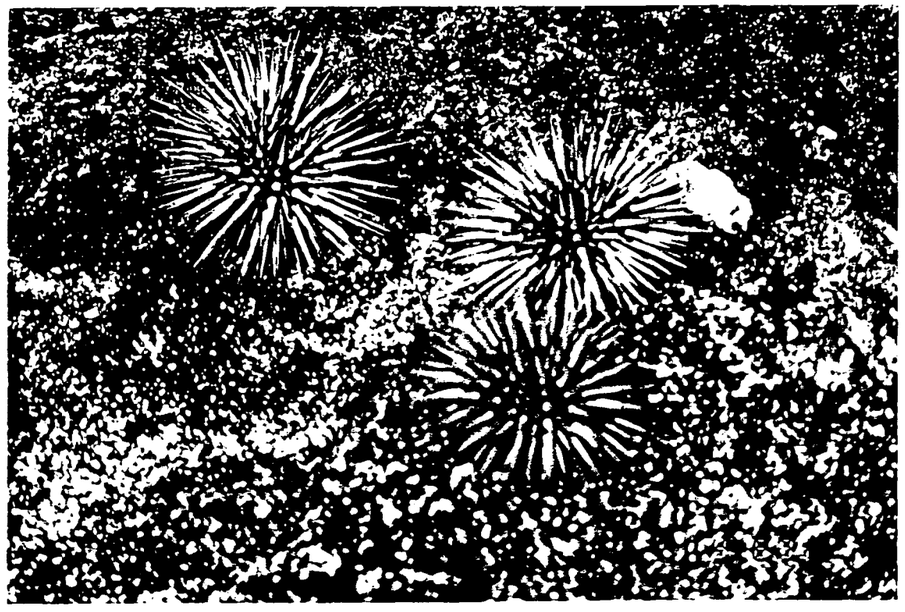
APPENDICES



Kaho'ohaihai Inlet



Sea urchins

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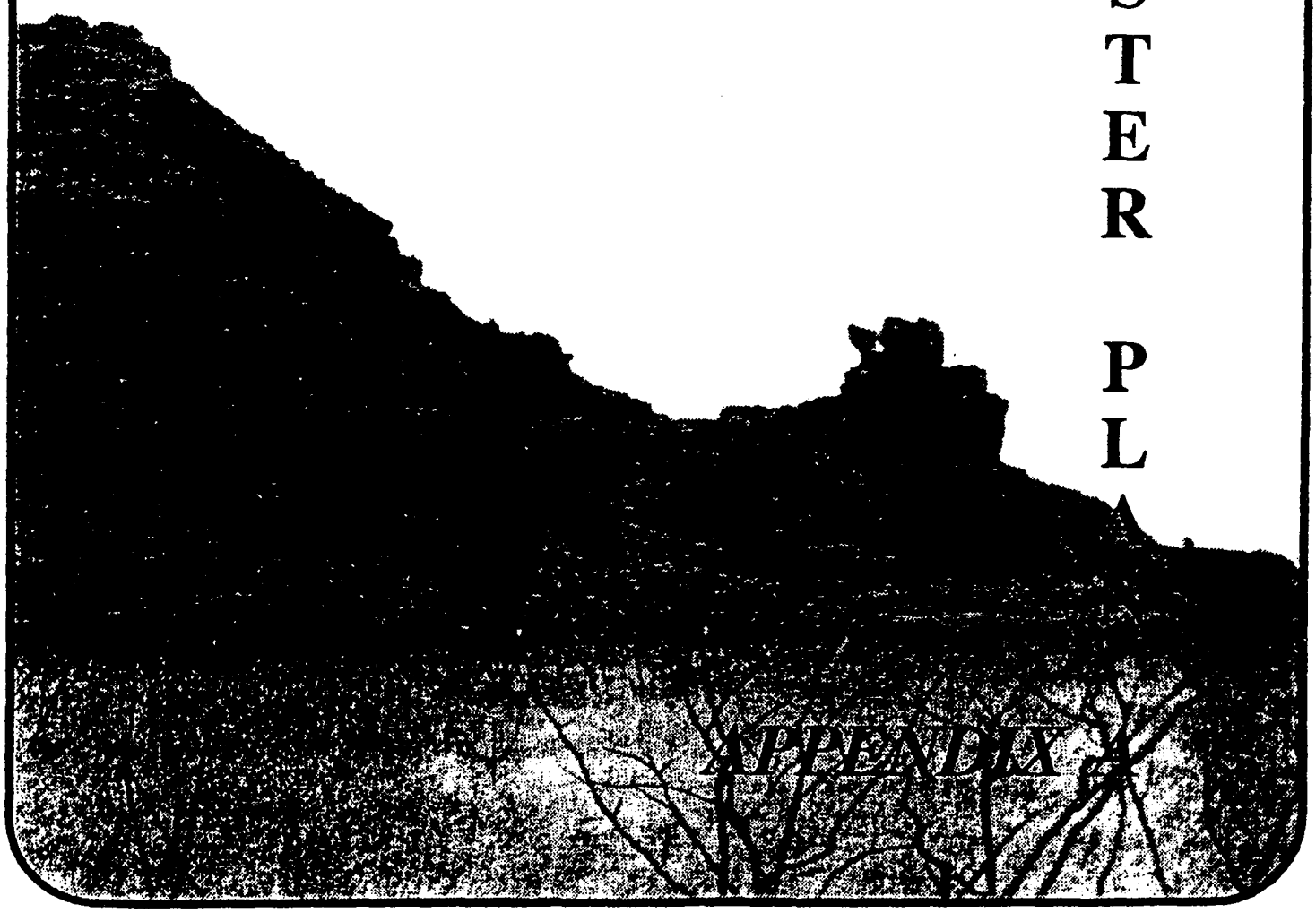

APPENDIX

AGENCIES CONSULTED

Copies of the Draft Environmental Impact State (EIS) were distributed to appropriate Federal, State, City & County of Honolulu and other agencies, with a request for comments on the Draft EIS. As of December 14, 1995, 40 comment letters were received, as listed below. Of these, 9 had no comments, while the 31 others provided substantial comments, as indicated by the • below. The comment letters and corresponding responses have been reproduced herein.

FEDERAL AGENCIES

Department of the Army

STATE OF HAWAII AGENCIES

Department of Accounting and General Services
Department of Business, Economic Development, and Tourism - Energy Division
• Department of Business, Economic Development, and Tourism - Land Use Commission
• Department of Budget & Finance - Housing Finance and Development Corporation
Department of Health
• Department of Land and Natural Resources - Division of Forestry & Wildlife
• Department of Land and Natural Resources - Historic Preservation Division
• Department of Land and Natural Resources - Office of Conservation and Environmental Affairs
• Department of Transportation
• Office of Environmental Quality Control
• Office of Hawaiian Affairs
• University of Hawaii - Environmental Center
• Representative Eve Anderson

CITY & COUNTY OF HONOLULU AGENCIES

Board of Water Supply
Building Department
Fire Department
Police Department
• Planning Department
• Department of Public Works
Department of Transportation Services

CITY & COUNTY OF HONOLULU AGENCIES (CONT)

- City Council - John Henry Felix
- City Council - Steve Holmes

ORGANIZATIONS

- Hawaii's Thousand Friends
- Kaiser Center, Inc.
- The League of Women Voters
- The Outdoor Circle
- Sierra Club Legal Defense Fund

INDIVIDUALS

- Charlene M. Arjona
- Ramon Arjona III
- Ramon Arjona IV
- Marilyn Bornhorst
- Richard Meek Hu'eu Crabbe
- Robert B. Fowler
- Patricia A. Fugere
- William J. King
- David E. Matthews
- Tanya Rubenstein
- Curt Sanburn
- Francis T. and Annette C. Sherry

DEPARTMENT OF THE ARMY
PACIFIC OCEAN DIVISION, CORPS OF ENGINEERS
FORT SHAFTER, HAWAII 96858-5440

REPLY TO
ATTENTION OF

October 31, 1995

Planning and Operations Division

RECEIVED
NOV 03 1995
WILSON OKAMOTO & ASSOC., INC.

Mr. William Gorst
Department of Land and Natural Resources
State Parks Division
State of Hawaii
1151 Punchbowl Street, Room 310
Honolulu, Hawaii 96813

Dear Mr. Gorst:

Thank you for the opportunity to review and comment on the Draft Environmental Impact Statement for the Ka Iwi State Park Master Plan, East Honolulu, Oahu (TMK 3-9-11: 2, 3, 5, 6, 7 and 4-1-14: 1). We do not have any additional comments to offer beyond those provided in our previous letter dated June 1, 1995 (NP95-102).

Sincerely,

Paul Mizue, P.E.
Acting Chief, Planning
and Operations Division

Copies Furnished:

Mr. Gary Gill
Office of Environmental Quality Control
State of Hawaii
220 South King Street, 4th Floor
Honolulu, Hawaii 96813

Mr. Earl K. Matsukawa
Wilson Okamoto and Associates
1907 South Beretania Street, Suite 400
Honolulu, Hawaii 96826

2974-01
April 23, 1996

WILSON
OKAMOTO
& ASSOCIATES, INC.

ENGINEERS
PLANNERS

1907 S. BERETANIA STREET
HONOLULU, HAWAII 96826
PH: (808) 946-2277
FAX: (808) 946-2253

Mailing address:
P.O. Box 3530
Honolulu, Hawaii 96811

Mr. Paul Mizue, Acting Chief
Corps of Engineers, Pacific Ocean Division
Department of the Army
Fort Shafter, Hawaii 96858-5440

Dear Mr. Mizue:

Subject: Ka Iwi State Park
Draft Environmental Impact Statement (EIS)
East Honolulu, Oahu, Hawaii

Thank you for your letter dated October 31, 1995. We acknowledge that you have no additional comments to offer on the subject Draft EIS. Your letter, along with this response, will be reproduced in the forthcoming Final Environmental Impact Statement. We appreciate your interest and participation in the public review phase of the environmental review process.

Sincerely,

Earl K. Matsukawa, Project Manager

cc: William Gorst, DLNR State Parks Division

(P)1755.5

OCT 30 1995

RECEIVED
NOV 01 1995
WILSON OKAMOTO & ASSOC.

Department of Land and
Natural Resources
State Parks Division
State of Hawaii
Honolulu, Hawaii

Attention: Mr. William Gorst

Gentlemen:

Subject: Ka Iwi State Park
East Honolulu, Oahu, Hawaii
Draft Environmental Impact Statement
and Master Plan

Thank you for the opportunity to review the subject document. The proposed project will have no impact on our facilities. Therefore, we have no comments to offer.

If there are any questions, please have your staff contact Mr. Ralph Yukumoto of the Planning Branch at 586-0488.

Very truly yours,

Gordon Matsuoka

GORDON MATSUOKA
State Public Works Engineer

RY:jy
cc: OEQC
Wilson Okamoto & Associates, Inc.

2974-01
April 23, 1996

WILSON
OKAMOTO
& ASSOCIATES, INC.

ENGINEERS
PLANNERS

1907 S. BERETANIA STREET
HONOLULU, HAWAII 96826
PH: (808) 946-2277
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Mailing address:
P. O. Box 3530
Honolulu, Hawaii 96811

Mr. Gordon Matsuoka, State Public Works Engineer
Department of Accounting and General Services
State of Hawaii
P.O. Box 119
Honolulu, Hawaii 96810

Dear Mr. Matsuoka:

Subject: Ka Iwi State Park
Draft Environmental Impact Statement (EIS)
Makapu'u, Oahu, Hawaii

Thank you for your letter dated October 30, 1995. We acknowledge that you have no comments to offer on the subject Draft EIS. Your letter, along with this response, will be reproduced in the forthcoming Final Environmental Impact Statement. We appreciate your interest and participation in the public review phase of the environmental review process.

Sincerely,

Earl K. Matsukawa, Project Manager

cc: William Gorst, DLNR State Parks Division

BENJAMIN J. CAYETA
Gover
SELJI F. NA
Direc
RICK EGC
Deputy Direc

DEPARTMENT OF BUSINESS,
ECONOMIC DEVELOPMENT, AND TOURISM

ENERGY DIVISION, 335 MERCHANT ST., RM. 110, HONOLULU, HAWAII 96813 PHONE: (808) 587-3800 FAX: (808) 587-3820

076 Gorst

October 30, 1995

RECEIVED
NOV 0 1 1995
WILSON OKAMOTO & ASSOC., INC.

Mr. William Gorst
Department of Land and Natural Resources
State Parks Division
State of Hawaii
1151 Punchbowl Street, Room 310
Honolulu, Hawaii 96813

Dear Mr. Gorst:

SUBJECT: Ka Iwi State Park Master Plan and Draft Environmental Impact Statement East Honolulu, Oahu, Hawaii
Tax Map Keys: 3-09-11: 2, 3, 5, 6 and 7
4-01-14: 1

We wish to inform you that we have no comments regarding the Ka Iwi State Park Master Plan.

Thank you for the opportunity to submit any comments or recommendations.

Sincerely,

Maurice H. Kaya
Energy Program Administrator

MHK:aw

c: Mr. Gary Gill, OEQC
Mr. Earl K. Matsukawa, Wilson Okamoto & Associates, Inc.

2974-01
April 23, 1996

WILSON
OKAMOTO
& ASSOCIATES, INC.

ENGINEERS
PLANNERS

1907 S. BERETANIA STREET
HONOLULU, HAWAII 96826
PH: (808) 946-2277
FAX: (808) 946-2253

Mailing address:
P. O. Box 3530
Honolulu, Hawaii 96811

Mr. Maurice Kaya, Energy Program Administrator
Energy Division
Department of Business, Economic Development, and Tourism
State of Hawaii
335 Merchant Street, Room 110
Honolulu, Hawaii 96813

Dear Mr. Kaya:

Subject: Ka Iwi State Park
Draft Environmental Impact Statement (EIS)
Makapu'u, Oahu, Hawaii

Thank you for your letter dated October 30, 1995. We acknowledge that you have no comments to offer on the subject Draft EIS. Your letter, along with this response, will be reproduced in the forthcoming Final Environmental Impact Statement. We appreciate your interest and participation in the public review phase of the environmental review process.

Sincerely,

Earl K. Matsukawa, Project Manager

cc: William Gorst, DLNR State Parks Division

BENJAMIN J. CAYETANO
GOVERNOR

ESTHER UEDA
EXECUTIVE OFFICER

STATE OF HAWAII
DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT & TOURISM
LAND USE COMMISSION
Room 104, Old Federal Building
335 Merchant Street
Honolulu, Hawaii 96813
Telephone: 587-3822

October 26, 1995

Mr. William Gorst
Department of Land and Natural
Resources
State Parks Division
State of Hawaii
1151 Punchbowl Street, Room 310
Honolulu, Hawaii 96813

RECEIVED
OCT 27 1995
WILSON OKAMOTO & ASSOC., INC.

Dear Mr. Gorst:

Subject: Ka Iwi State Park Master Plan and Draft Environmental Impact Statement (DEIS), East Honolulu, Oahu, Hawaii, TMK 3-9-11: 2, 3, 5, 6 and 7; 4-1-14:1

We have reviewed the Ka Iwi State Park Master Plan and DEIS transmitted to our office on October 24, 1995, and have the following comments:

1) We confirm that the proposed park site, as represented on Figure II-1, is located within the State Land Use Conservation and Urban Districts. The study area appears to be located primarily within the State Land Use Conservation District.

2) Upon review of Figure V-1, it appears that the State land use district boundaries are not accurately represented. We have enclosed a portion of the Commission's Land Use District Boundaries Map O-15 (Koko Head) for your information and use.

   Additionally, on Figure V-1, it is difficult to distinguish the district boundaries from the line demarcating the project location due to their similar thickness. We suggest that the boundary of the project location on Figure V-1 be either taken out or be identified by a line that clearly distinguishes the boundaries of the district from that of the project.

3) As noted in our comments dated May 31, 1995, regarding the project's Environmental Impact Statement Preparation Notice, portions of the project location are proposed to be reclassified from the State Land Use Urban District to the State Land Use Conservation District under the Office of State Planning's 1992 Five-Year Boundary Review for the island of Oahu.

We have no further comments to offer at this time. We appreciate the opportunity to comment on this matter.

Should you have any questions, please feel free to call me or Bert Saruwatari of our office at 587-3822.

Sincerely,

ESTHER UEDA
Executive Officer

EU:th

encl.

cc: Gary L. Gill (w/o encl.)
✓Earl K. Matsukawa (w/o encl.)
DBEDT (#95:127-B) (w/o encl.)

2974-01
April 23, 1996

WILSON
OKAMOTO
& ASSOCIATES, INC.

ENGINEERS
PLANNERS

1907 S. BERETANIA STREET
HONOLULU, HAWAII 96826
PH: (808) 946-2277
FAX: (808) 946-2253

Mailing address:
P. O. Box 3530
Honolulu, Hawaii 96811

Ms. Esther Ueda, Executive Officer
Land Use Commission
Department of Business, Economic Development, and Tourism
State of Hawaii
Room 104, Old Federal Building
335 Merchant Street
Honolulu, Hawaii 96813

Dear Ms. Ueda:

Subject: Ka Iwi State Park
Draft Environmental Impact Statement (EIS)
Makapu'u, Oahu, Hawaii

Thank you for your letter dated October 26, 1995 commenting on the subject Draft EIS. We offer the following responses in the respective order of your comments:

1) We appreciate your confirmation that the project site is located within State Land Use Conservation and Urban Districts.

2) In the Draft EIS, we had intended to show only the designations within the Study Area. To avoid confusion, however, we will revise our State Land Use District Boundaries Map (Figure V-1) to reflect all designations based on the Commission's Land Use District Map O-15, which you provided. In addition, we will identify the project boundary with a line which differentiates itself from State Land Use boundaries.

3) The Draft EIS mentions the proposal to reclassify the Urban designations in the Ka Iwi site to Conservation under the 1992 Five-year Boundary Review in Chapter V, Section A. This information will be retained in the Final EIS.

Your letter, along with this response, will be reproduced in the forthcoming Final Environmental Impact Statement. We appreciate your interest and participation in the consultation phase of the environmental review process.

Sincerely,

Earl K. Matsukawa, Project Manager

cc: William Gorst, DLNR State Parks Division

BENJAMIN J CAYETANO
[redacted]
GOVERNOR

ROY S OSHIRO
[redacted]
EXECUTIVE DIRECTOR

STATE OF HAWAII
DEPARTMENT OF BUDGET AND FINANCE
HOUSING FINANCE AND DEVELOPMENT CORPORATION
677 QUEEN STREET, SUITE 300
HONOLULU, HAWAII 96813
FAX (808) 587-0600

IN REPLY REFER TO:
95:PPE/6688

November 28, 1995

RECEIVED
DEC 1 1995
WILSON OKAMOTO & ASSOC.

TO: Mr. William Gorst
Department of Land and Natural Resources
State Parks Division

FROM: Roy S. Oshiro
Executive Director

SUBJECT: Ka Iwi State Park Master Plan and Draft Environmental Impact Statement

We appreciate the opportunity to review the subject reports. While we do not have any housing-related comments, we offer the following observation for your consideration.

As noted, the Ka Iwi Master Plan was prepared to help the State determine whether the Queen's Beach and Makapu'u Head area (which is owned by Kamehameha Schools/Bishop Estate) should be acquired for inclusion in the Hawaii State Parks system.

The master plan report includes a recommendation that the State acquire the privately-owned portion of the Ka Iwi site and proceed to develop a State Park. However, the cost estimate of $3,352,000 does not include the cost of land acquisition. It is extremely difficult for the State to make a determination without knowing (1) the likelihood of acquiring the land and (2) the estimated fair market value of the land. We, therefore, suggest this information be provided to assist in the decision-making process.

Thank you for the opportunity to comment.

c: OEQC
Wilson Okamoto & Associates, Inc.

HFDC

2974-01
April 23, 1996

WILSON
OKAMOTO
& ASSOCIATES, INC.

ENGINEERS
PLANNERS

1907 S. BERETANIA STREET
HONOLULU, HAWAII 96826
PH: (808) 946-2277
FAX: (808) 946-2253

Mailing address:
P. O. Box 3530
Honolulu, Hawaii 96811

Mr. Roy S. Oshiro, Executive Director
Housing Finance and Development Corporation
Department of Budget and Finance
State of Hawaii
677 Queen Street, Suite 300
Honolulu, Hawaii 96813

Dear Mr. Oshiro:

Subject: Ka Iwi State Park
Draft Environmental Impact Statement (EIS)
Makapu'u, Oahu, Hawaii

This is in response to your letter dated November 28, 1995 commenting on the subject Draft EIS. The intent of the Master Plan was to assess the suitability of the site for inclusion in the State Park system. Determining land acquisition costs is beyond the scope of the study. Moreover, inasmuch as litigation over zoning for the privately-owned land is on-going, it is unlikely that the State and the landowner would agree on the basis for an acquisition cost estimate at this time. With a decision to pursue acquisition, however, the State can move on to the next step of exploring various options for acquisition.

Your letter, along with this response, will be reproduced in the forthcoming Final Environmental Impact Statement. We appreciate your interest and participation in the consultation phase of the environmental review process.

Sincerely,

Earl K. Matsukawa, Project Manager

cc: William Gorst, DLNR State Parks Division

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

LAWRENCE MIIKE
DIRECTOR OF HEALTH

STATE OF HAWAII
DEPARTMENT OF HEALTH
P.O. BOX 3378
HONOLULU, HAWAII 96801

In reply, please refer to

December 14, 1995

95-072A/epo

Department of Land and Natural Resources
State Parks Division
State of Hawaii
1151 Punchbowl Street, Room 310
Honolulu, Hawaii 96813

RECEIVED
DEC 20 1995
WILSON OKAMOTO & ASSOC.

Attention: Mr. William Gorst

Dear Mr. Gorst:

Subject: Draft Environmental Impact Statement (DEIS)
Ka Iwi State Park Master Plan
East Honolulu, Oahu
TMK: 3-9-11: 2, 3, 5, 6 & 7 and 4-1-14: 1

Thank you for allowing us to review and comment on the subject document. We do not have any comments to offer on this DEIS. We previously commented on the EIS Preparation Notice and those comments appear in the DEIS and have been adequately addressed.

Sincerely,

Lawrence Miike
Director of Health

c: Office of Environmental Quality Control
Wilson Okamoto & Associates

WILSON
OKAMOTO
& ASSOCIATES, INC.

ENGINEERS
PLANNERS

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Mailing address:
P.O. Box 3530
Honolulu, Hawaii 96811

2974-01
April 23, 1996

Dr. Lawrence, Miike, Director of Health
Department of Health
State of Hawaii
1151 Punchbowl Street, Room 310
Honolulu, Hawaii 96813

Dear Dr. Miike:

Subject: Ka Iwi State Park
Draft Environmental Impact Statement (EIS)
Makapu'u, Oahu, Hawaii

Thank you for your letter dated December 14, 1995. We acknowledge that you have no additional comments to offer on the subject Draft EIS. Your letter, along with this response, will be reproduced in the forthcoming Final Environmental Impact Statement. We appreciate your interest and participation in the public review phase of the environmental review process.

Sincerely,

Earl K. Matsukawa, Project Manager

cc: William Gorst, DLNR State Parks Division

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DIVISION OF
STATE PARKS
NOV 1 1 52 PM '95

ADMIN
BR
BR.
S MGT. BR
ROJ. CONTR
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CLERICAL STAFF
ADMIN. ASS'T.
BR.
CIRCULATE/POST/STAF
COMMENTS & REC.
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SEND COPY TO:

Division of Forestry & Wildlife

1151 Punchbowl Street, Rm. 325 • Honolulu, HI 96813 • (808) 587-0166 • Fax: (808) 587-0160

October 30, 1995

c:\wfc\cdua\95696

MEMORANDUM

TO: Ralston Nagata, Administrator
Division of State Parks

FROM: Michael G. Buck, Administrator

SUBJECT: **Draft Environmental Impact Statement (DEIS): Ka Iwi State Park Master Plan, Queen's Beach/Makapuu Head, Oahu, File No. 96-178**

We have reviewed File No. 96-178 and have the following comments:

(1) The Draft EIS is very thorough in its discussion of existing and future recreational activities.

(2) Alternative No. 1 is probably the only alternative to pursue because it provides needed infrastructure without compromising or affecting the existing uses of the area. Further development (Alternatives 2 & 3) would compromise the feeling of open space.

(3) DOFAW is in the process of drafting an EA for an eco-tourism venture up to the Makapuu Wayside Park. This venture would fit in the realm of Alternative No. 1. The tour, limited to 2 hikes per week (weekdays only, 14 persons maximum per hike), would include ecological, geological, and other information relevant to the Ka Iwi area.

(4) From what was gathered at the public meetings, it can be ascertained that the majority of Oahu's citizens would like to see the area undeveloped or at least developed to the point without compromising the open space feeling that is prominent today. I attend to agree on this point.

(5) Due to the fiscal constraints we are currently expriencing, it would seem a far-sighted vision to see any of the Alternatives implemented. However, portions of Alternative 1 (the construction of a "dirt or coral" parking lot inside the gate of the Makapuu headroad, for example) could be constructed with minimal financial burden to the State and benefit visitors and locals alike.

cc: Oahu Branch
C. Masaki
OCEA

2974-01
April 23, 1996

WILSON
OKAMOTO
& ASSOCIATES, INC.

ENGINEERS
PLANNERS

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Mailing address:
P. O. Box 3530
Honolulu, Hawaii 96811

Mr. Michael G. Buck, Administrator
Division of Forestry and Wildlife
Department of Land and Natural Resources, State of Hawaii
1151 Punchbowl Street, Room 325
Honolulu, Hawaii 96813

Dear Mr. Buck:

Subject: Ka Iwi State Park
Draft Environmental Impact Statement (EIS)
Makapu'u, Oahu, Hawaii

This is in response to your letter dated October 30, 1995 commenting on the subject Draft EIS. We offer the following responses in the respective order of your comments:

1. Thank you for your acknowledgement.

2. Alternative No. 1 emphasizes preservation of the project site with limited public use. While there was much support for this alternative, there was also concern expressed that if the State intended to include the Ka Iwi area in the State Parks system, greater public usage should be accommodated. Hence, many elements of Alternative II, which emphasizes interpretive programs and passive recreation, were included in the Recommended Master Plan. We feel that the recommended plan preserves open space values while accommodating such usage.

3. We concur that guided hikes on the Makapu'u Wayside would be an appropriate use under Alternative 1 or the recommended plan. Both would provide parking for hikers.

4. We acknowledge your opinion on this matter. The recommended plan provides a long-term development scenario emphasizing interpretive programs and passive recreation. It is anticipated that development will proceed in phases, beginning with those measures intended to preserve and nurture the natural ecosystem. If it is determined at a later time that no further development is desired beyond those measures, then full build-out of the recommended plan need not necessarily be pursued. By deferring development decisions to later phases, there will be ample time to weigh the advantages and disadvantages of progressing with each step of plan implementation.

5. Within the context of our preceding response, we concur that a low-cost measure could be pursued. In terms of priority, however, some measures such as installing ORV barriers, stabilizing beach vegetation and tree reforestation should also be implemented before or concurrent with accommodating greater public access.

Your letter, along with this response, will be reproduced in the forthcoming Final Environmental Impact Statement. We appreciate your interest and participation in the consultation phase of the environmental review process.

Sincerely,

Earl K. Matsukawa, Project Manager

cc: William Gorst, DLNR State Parks Division

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

MICHAEL D. WILSON, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

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LAND MANAGEMENT
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WATER AND LAND DEVELOPMENT

STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

STATE HISTORIC PRESERVATION DIVISION
33 SOUTH KING STREET, 6TH FLOOR
HONOLULU, HAWAII 96813

November 24, 1995

RECEIVED
NOV 27 1995
WILSON OKAMOTO & ASSOC

Earl Matsukawa, Project Manager
Wilson Okamoto & Associates
1907 S. Beretania Street
Honolulu, Hawaii 96826

LOG NO: 15809
DOC NO: 9511EJ08

Dear Mr. Matsukawa:

SUBJECT: **Ka Iwi State Park Master Plan and Draft Environmental Impact Statement**
Maunalua, Kona, O'ahu
TMK: 3-9-11:2, 3, 5-7; 4-1-14:1

Thank you for the opportunity to review the Master Plan and DEIS for the Ka Iwi State Park Master Plan. We previously commented on the EIS preparation notice for this project. Our comments that the development plans included in the EISPN will have "no adverse effect" on historic sites and that the inclusion of interpretive venues will have a beneficial effect have been correctly incorporated into this document.

If you have any questions please call Elaine Jourdane at 587-0015.

Aloha,

for Don Hibbard, Administrator
State Historic Preservation Division

EJ:jk

cc: William Gorst, DLNR State Parks
Gary Gill, OEQC

2974-01
April 23, 1996

WILSON
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& ASSOCIATES, INC.

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PLANNERS

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Mailing address:
P. O. Box 3530
Honolulu, Hawaii 96811

Mr. Don Hibbard, Administrator
State Historic Preservation Division
State of Hawaii
33 South King Street, 6th Floor
Honolulu, Hawaii 96813

Dear Mr. Hibbard:

Subject: Ka Iwi State Park
Draft Environmental Impact Statement (EIS)
Makapu'u, Oahu, Hawaii

This is in response to your letter dated November 24, 1995 commenting on the subject Draft EIS.

We appreciate your acknowledgement that your previous comments, which stated that the Recommended Master Plan will have "no adverse effect" on historic sites and that the interpretive venues will have a beneficial effect, had been addressed in the Draft EIS.

Your letter, along with this response, will be reproduced in the forthcoming Final Environmental Impact Statement. We appreciate your interest and participation in the consultation phase of the environmental review process.

Sincerely,

Earl K. Matsukawa, Project Manager

cc: William Gorst, DLNR State Parks Division

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STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
Land Division
Planning and Technical Services Branch

TO:
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DEV. BR.
PLAN BR.
RES. MGT. BR.
PROJ. CONTROL
SW. REC. PLAN.
CLERICAL STAFF
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File No.: 96-178

DEC 7 1995

MEMORANDUM

TO: Ralston Nagata, Administrator
Division of State Parks

ATTN: Bill Gorst

FROM: Roger C. Evans, Administrator
Office of Conservation and Environmental Affairs

SUBJECT: Master Plan and Draft Environmental Impact Statement (DEIS) for Ka Iwi State Park, Oahu, TMKs: 3-9-11: 2, 3, 5, 6, and 7; 4-1-14: 1

We have reviewed the above referenced document and would like to offer the following comments:

Land Transaction Branch

The acquisition of the coastal land identified in the Ka Iwi State Park Master Plan and Draft Environmental Assessment will have no significant impact on State land managed by Department of Land and Natural Resources (DLNR), Land Management Division.

We concur with legislative finding and directive that the State should take measures to preserve Hawaii's natural resources and especially its coastal zone area. Should the coastal land be acquired by the State, we will recommend to the Governor that the acquired land be set aside to DLNR State Parks for their development, control and jurisdiction. All required easements will be processed through DLNR Oahu District Land Management Division.

Water and Land Development Branch

We have reviewed both the attached DEIS and previously submitted EIS publication notice. In both documents, the potable and non-potable water requirements for the subject project were not included. Please coordinate the water requirements with us.

Division of Aquatic Resources

We fully support the State's efforts to acquire Queen's Beach and establish Ka Iwi State Park. The proposed action will enhance the area's recreational fishing value.

2974-01
April 23, 1996

WILSON
OKAMOTO
& ASSOCIATES, INC.

ENGINEERS
PLANNERS

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PH: (808) 946-2277
FAX: (808) 946-2253

Mailing address:
P. O. Box 3530
Honolulu, Hawaii 96811

Mr. Roger C. Evans, Administrator
Office of Conservation and Environmental Affairs
State of Hawaii
33 South King Street, 6th Floor
Honolulu, Hawaii 96813

Dear Mr. Evans:

Subject: Ka Iwi State Park
Draft Environmental Impact Statement (EIS)
Makapu'u, Oahu, Hawaii

This is in response to your letter dated December 7, 1995 commenting on the subject Draft EIS. We offer the following responses in the respective order of your comments:

Land Transaction Branch

We acknowledge your concurrence with the legislative finding and directive that the State should take measures to preserve Hawaii's natural resources, especially its coastal zone area. We also concur with your recommendation that land acquired in conjunction with the implementation of the master plan be set aside to the State Parks Division.

Water and Land Development Branch

Potable and non-potable water requirements for the park have yet to be developed. At this stage, the plan presents a conceptual development plan as a basis for determining if the State should proceed with acquisition. If and when the State acquires the site for park development, design plans for implementing the recommendations will be prepared. At that stage, water requirements will be determined and submitted for your review.

Division of Aquatic Resources

We acknowledge and appreciate your support for acquiring land at Queen's Beach and for establishing the proposed State Park at Ka Iwi.

Your letter, along with this response, will be reproduced in the forthcoming Final Environmental Impact Statement. We appreciate your interest and participation in the consultation phase of the environmental review process.

Sincerely,

Earl K. Matsukawa, Project Manager

cc: William Gorst, DLNR State Parks Division

BENJAMIN J. CAYETANO
GOVERNOR

RECEIVED
DIVISION OF
STATE PARKS
Nov 24 11 37 AM '95

KAZU HAYASHIDA
DIRECTOR

DEPUTY DIRECTORS
JERRY M. MATSUDA
GLENN M. OKIMOTO

TO:
___ ADMINISTRATOR
___ ASST. ADMIN.
___ DIV.
___ PARKS
___ RES. SUPV.
___ PROJ. MGMT.
___ SVC. REP.
___ CLERICAL STAFF
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___ INTERP. BR.

FOR:
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

NOV 22 1995

IN REPLY REFER TO:
HWY-PS
2.8189

TO: MICHAEL D. WILSON, CHAIRPERSON
DEPARTMENT OF LAND AND NATURAL RESOURCES

ATTN: WILLIAM GORST

FROM: KAZU HAYASHIDA, DIRECTOR
DEPARTMENT OF TRANSPORTATION

SUBJECT: DRAFT ENVIRONMENTAL IMPACT STATEMENT (EIS), KA IWI STATE PARK MASTER PLAN, QUEEN'S BEACH/ MAKAPU'U HEAD, EAST OAHU
TMK: 3-9-11: 2,3,5,6 AND 7; 4-1-14: 1

Thank you for requesting our review of the subject EIS. We have the following comments:

1. A traffic impact assessment report (TIAR) should be prepared and included in the EIS that describes the projected impacts to traffic on Kalanianaole Highway.

2. The 1989 and 1990 24-hour traffic volume figures from Table IX-5 need to be updated to reflect current counts.

3. The master plan should include right-turn and left-turn storage and deceleration lanes on Kalanianaole Highway at both of the park's new accesses.

4. The new access road to the Queen's Beach area should be directly opposite the access driveway of the Hawaii Kai Golf Course.

5. A sight distance study must be submitted along with construction plans for any proposed driveways for our review and approval.

6. The EIS should indicate whether the parking facilities will be utilized at night. In the event that night-time use is anticipated, lighting must be provided at park driveways. In the event that night-time parking is not anticipated, will there be controlled access such as a gate or chain?

7. Although there are no current plans to widen Kalanianaole Highway in this vicinity, the master plan should reserve a 100 foot total right-of-way width fronting the development for possible future highway improvements.

8. Provisions for a pedestrian and bicycle path separate from but parallel to Kalanianaole Highway from Sandy Beach to the Makapu'u Lookout should be part of the master plan.

9. Construction plans for all improvements within the State highway right-of-way must be submitted for our review and approval.

2974-01
April 23, 1996

WILSON
OKAMOTO
& ASSOCIATES, INC.

ENGINEERS
PLANNERS

1907 S. BERETANIA STREET
HONOLULU, HAWAII 96826
PH: (808) 946-2277
FAX: (808) 946-2253

Mailing address:
P. O. Box 3530
Honolulu, Hawaii 96811

Mr. Kazu Hayashida, Director
Department of Transportation
869 Punchbowl Street
State of Hawaii
Honolulu, Hawaii 96813

Dear Mr. Hayashida:

Subject: Ka Iwi State Park
Draft Environmental Impact Statement (EIS)
East Honolulu, Oahu, Hawaii

This is in response to your letter dated November 22, 1995 indicating that you have no comments on the subject Draft EIS. We offer the following responses in the respective order of your comments:

1. The intent of the Master Plan was to assess the suitability of the site for inclusion in the State Park system. At this time, no specific development proposals are being offered, only a recommended development plan based on our assessment. If the park site is acquired and development proceeds, then a TIAR could be prepared for your review. It should be noted that the traffic generated at the Queen's Beach parking area would be mostly during off-peak traffic hours and on weekends. The parking area at the Makapu'u Lookout is intended to accommodate existing sightseeing traffic while alleviating existing traffic safety concerns.

2. As you have suggested, we have obtained recent (1994-95) traffic counts from your Planning Statistics and Traffic Counts Branch and will include them in the Final EIS. The traffic counts have slightly decreased in comparison to the counts in the Draft EIS.

3. As discussed previously, the Recommended Master Plan is only a design concept. Additional discussions with the DOT will be pursued to determine the need for storage and deceleration lanes if the site is acquired and design plans are developed.

4. Again, design plans will be coordinated with your office when they are formulated. The proposed location of the access road maximizes the sight distance along that stretch of Kalanianaole Highway.

5. A sight distance study and construction plans would be submitted for your review and approval as part of any design plans.

6. The description of the Queen's Beach parking and access in Chapter XI, Section B.1.k. states that the gate at the entrance will be used to control access based on standard operating hours of other State parks. State parks are closed at night; the Ka Iwi Park would be operated as a daylight facility with no overnight camping allowed.

7. Should plans for the park proceed, the State's portion of a 100-foot wide right-of-way width can be accommodated on the park property. At this time, however, we are uncertain how the State's portion of the right-of-way would be configured. We will coordinate this matter with your agency as design plans proceed.

8. An internal trail system will provide pedestrian access from the Wawamalu Ranch wall area adjacent to Sandy Beach to the proposed Makapu'u Lookout. The trail system will accommodate bicycle traffic to the extent that the safety of pedestrians is not compromised. Toward minimizing development costs, the trail would follow existing informal pathways that minimize grading and filling. To some extent, modifications to comply with requirements of the Americans With Disabilities Act may be required.

   We are not aware of any public need for a path for pedestrians and bicycles that parallels Kalanianaole Highway unless it was part of a larger path system extending beyond the park.

9. Construction plans for all improvements with the State highway right-of-way will be submitted for your review and approval when they are prepared.

Your letter, along with this response, will be reproduced in the forthcoming Final Environmental Impact Statement. We appreciate your interest and participation in the consultation phase of the environmental review process.

Sincerely,

Earl K. Matsukawa, Project Manager

cc: William Gorst, DLNR State Parks Division

BENJAMIN J. CAYETANO
[redacted]
GOVERNOR

GARY GILL
DIRECTOR

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL
220 SOUTH KING STREET
FOURTH FLOOR
HONOLULU, HAWAII 96813
TELEPHONE (808) 586-4185
FACSIMILE (808) 586-2452

RECEIVED
DEC 08 1995
WILSON OKAMOTO & ASSO.

December 7, 1995

Mr. Michael D. Wilson, Director
Department of Land and Natural Resources
P.O. Box 621
Honolulu, Hawaii 96809

Attention: William Gorst

Dear Mr. Wilson:

Subject: Draft Environmental Impact Statement (EIS) for Ka 'Iwi State Park Master Plan, Oahu, TMK: 3-9-11: 2,3,5,6 & 7; 4-1-14: 1

Please include the following in the final EIS:

1. Indicate *total* actual or anticipated State costs for this project, including the cost of land acquisition for the proposed park. Since this land is predominantly zoned preservation, which is of limited economic value to the landowner, a listing of comparable values from state land purchases or exchanges of agricultural or preservation land would provide an accurate comparison. Identify potential sources of funding for land acquisition and park development. Some funding sources that have been suggested include federal ISTEA enhancement funds and county revenue from admission fees to Hanauma Bay.

2. The proposed Ka 'Iwi park is a natural extension of and immediately adjacent to existing County owned park lands of the Koko Head Regional park and Hanauma Bay. The final EIS should assess the feasibility of combining these parks for administrative purposes or coordinating the regional park system development, expansion and enhancement between the city and the state.

3. Discuss all known ongoing or proposed development projects in or adjacent to the study site and what impacts these developments may have on the the proposed park, such as the scenic nature of the area, traffic issues and safety concerns. Specifically, it is known that the land owner would like to

urbanize the area immediately mauka of the proposed park site. Discuss any and all cumulative impacts this urbanization would have on the community and the proposed park. What affect would urban run-off from mauka development have on the water quality in the park and on near shore waters?

4. Discuss by what methods the state and or city could guarantee that no further urban development would take place in the area from Koko Head to Makapu'u Head.

5. Wastewater treatment for park effluent is an unresolved issue. Discuss how this issue will be resolved.

6. In addition to the above, please make the following corrections:
   -- on page IX-33 the three references to Figure IX-9 are incorrect;
   -- the table on page XI-4 needs a table number;
   -- Tables XI-2, XI-3 and XI-4 have "Kealakipapa Highway" as an incorrect column heading;
   -- page XII-2 references Table XIV-1, which is missing from the document.

If you have any questions, please call Nancy Heinrich at 586-4185.

Sincerely,

GARY GILL
Director

GG/NH

c: Earl Matsukawa, Wilson Okamoto & Associates

2974-01
April 23, 1996

WILSON
OKAMOTO
& ASSOCIATES, INC.

ENGINEERS
PLANNERS

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Mailing address:
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Honolulu, Hawaii 96811

Mr. Gary Gill, Director
Office of Environmental Quality Control
State of Hawaii
Honolulu, Hawaii 96813

Dear Mr. Gill:

Subject: Ka Iwi State Park
Draft Environmental Impact Statement (EIS)
East Honolulu, Oahu, Hawaii

This is in response to your letter dated December 7, 1995 commenting on the subject Draft EIS. We offer the following responses in the respective order of your comments:

1. The intent of the Master Plan was to assess the suitability of the site for inclusion in the State Park system. Determining land acquisition costs is beyond the scope of the study. Moreover, inasmuch as litigation over zoning for the privately-owned land is on-going, it is unlikely that the State and the landowner would agree on the basis for an acquisition cost estimate at this time. With a decision to pursue acquisition, however, the State can move on to the next step of exploring various options for acquisition.

2. Alternative administrative regimes for the Ka Iwi area are assessed in Chapter VII, Section D of the Master Plan. The option of placing the Ka Iwi area under City jurisdiction is specifically discussed. We will reference this Chapter in the Final EIS in the section discussing alternatives to the project.

3. It is our understanding of the EIS law and administrative rules that the EIS is intended to discuss the environmental impacts anticipated to result from the proposed action. Hence, we are puzzled by your comment that we assess the impacts of potential future developments *on* the park. It would seem appropriate that, if park development is pursued, any environmental assessment requirements for those future developments would need to address their impacts on the park. This would include any water quality, traffic and safety concerns.

   With respect to cumulative impacts, the park's contribution would be insignificant in relation to any major urban development proposed in the area. The proposed park improvements, such as for parking, are not intended to accommodate significantly greater usage than currently occurs. Moreover, ORV activity would be prohibited. Park-related

traffic would be generated mostly during off-peak hours, hence it would not be a significant consideration in plans for traffic improvements that might be required for major urban developments proposed in the vicinity. Similarly, demands for water and wastewater treatment would be negligible in relation to a major urban development in the area. We will clarify this in the Final EIS.

4. The Ka Iwi Master Plan was prepared pursuant to House Concurrent Resolution No. 261, H.D.1, S.D.1 for the study of *"the establishment of a continuous scenic shoreline park from Koko Head to Makapu'u."* The resolution limits the study area to parcels makai of Kalanianaole Highway plus Koko Crater, not all lands in the area from Koko Head to Makapu'u Head.

5. Wastewater treatment and disposal for the park will be resolved if and when the State acquires the park site and design plans are prepared for specific restroom facilities. We will clarify this in the Final EIS.

6. Thank you for calling these inaccuracies to our attention. They will be corrected in the Final EIS.

Your letter, along with this response, will be reproduced in the forthcoming Final Environmental Impact Statement. We appreciate your interest and participation in the consultation phase of the environmental review process.

Sincerely,

Earl K. Matsukawa, Project Manager

cc: William Gorst, DLNR State Parks Division

RECEIVED
DIVISION OF
STATE PARKS
DEC 5 2 10 PM '95

STATE OF HAWAII
OFFICE OF HAWAIIAN AFFAIRS
711 KAPIOLANI BOULEVARD, SUITE 500
HONOLULU, HAWAII 96813-5249
PHONE (808) 586-3777
FAX (808) 586-3799

December 1, 1995

TO:
ADMINISTRATOR
ADMIN.
BR
NGT BR.
CONTROL
REC. PLAN.
CLERICAL STAFF
ADMIN. ASST.
INTERP BR
FOR:
CIRCULATE/POST/STAFF RM
COMMENTS & REC.
DRAFT REPLY
FILE
FOLLOW UP
INFO.
RUSH (DUE
SEE ME
SEND COPY TO:

Department of Land and Natural Resources
State Parks Division
State of Hawaii
1151 Punchbowl Street, Room 310
Honolulu, Hawai'i 96813
Attn: Mr. William Gorst

Re: Ka Iwi State Park Master Plan and
Draft Environmental Impact Statement,
East Honolulu, O'ahu Hawai'i
TMKs: 3-09-11:2,3,5,6 and 7; 4-01-14:1

Dear Sir:

Thank you for the opportunity to review the above-referenced Master Plan and Draft Environmental Impact Statement ("the Plan") After review, the Office of Hawaiian Affairs (OHA) has a number of concerns.

As noted in the Plan the property anticipated for the Park is private property and is currently the subject of litigation and negotiated settlement between the owner, Bishop Estate, and the City and County of Honolulu. The current situation makes some of the premises in the Plan outdated. For instance, the Plan concludes that immediate acquisition of the property may not be necessary since the out-come of litigation is expected to be favorable to the City and County. Considering recent action by the City and County to enter into settlement negotiations, the Plan's assumptions may be in error.

Most Honolulu citizens would like to see the area preserved in open park space. We believe, however, that acquisition of the property must be done in a straight-forward and equitable manner. This belief is strengthened by OHA's long standing commitment to halt the erosion of both public and private native Hawaiian trust lands.

We understand that the state is currently in a financially lean period and might be tempted to acquire the property by exchanging other ceded lands for this property. The Office of Hawaiian Affairs would strongly object to any acquisition process which involved the exchange of ceded lands.

If our concerns regarding land acquisition issues are addressed, we would have additional changes regarding the park proposal. First, we believe that the access route to the Makapu'u lighthouse and lookout area should remain a pedestrian trail. Vehicular use of the trail should continue to be prohibited. One of the very special attributes of the area is the freedom from automobiles. The serenity of the area must be of the utmost consideration. Even a shuttle service would shatter the tranquility of the area - and reduce the calm pleasure of viewing the ocean without the noise created by urban living.

Second, the reforestation of Kealakipapa Valley should be done with native and indigenous plants as much as possible. In this context replanting with Kiawe trees would not be appropriate.

Again, thank you for the opportunity to comment. If you have any question or need additional information, please contact Linda Delaney, Land and Natural Resources Officer or Lynn Lee, EIS Planner at 594-1888.

Sincerely,

Linda M. Colburn
Administrator

cc: Clayton H.W. Hee, Chairperson
Board of Trustees

Kina'u Boyd Kamali'i, Chairperson
Land and Sovereignty Committee

2974-01
April 23, 1996

WILSON
OKAMOTO
& ASSOCIATES, INC.

ENGINEERS
PLANNERS

1907 S. BERETANIA STREET
HONOLULU, HAWAII 96826
PH: (808) 946-2277
FAX: (808) 946-2253

Mailing address:
P.O. Box 3530
Honolulu, Hawaii 96811

Ms. Linda M. Colburn
Office of Hawaiian Affairs
State of Hawaii
711 Kapiolani Boulevard, Suite 500
Honolulu, Hawaii 96813-5249

Dear Ms. Colburn:

Subject: Ka Iwi State Park
Draft Environmental Impact Statement (EIS)
East Honolulu, Oahu, Hawaii

This is in response to your letter dated December 1, 1995 commenting on the subject Draft EIS. We offer the following responses in the respective order of your comments:

Given recently publicized terms of the on-going negotiations between the City and Bishop Estate, it appears that our study may have been optimistic regarding the effectiveness of City land use controls in preventing development of the Ka Iwi area.

Currently, it is administration policy that ceded lands shall not be sold or traded in exchange for other lands. Given the State's existing financial situation, other means of acquisition are obviously limited, but Federal grant opportunities and other possibilities are being explored.

Our recommended plan keeps the road to the lighthouse in pedestrian use to the general public. Vehicular use will only be allowed for maintenance of the property and the lighthouse, and for emergencies. The only additional vehicular use contemplated will be for interpretive programs associated with the lighthouse or those catering to the handicapped or elderly who may otherwise not have the opportunity to enjoy the headland area. Any such use would possibly be available through non-profit organizations and limited to only a few shuttle runs per day at the most, and probably only on weekdays.

Reforestation efforts will, in the long-term, emphasize native species such as wiliwili. Actual selection of species, however will take into account other factors, including the possibility that faster growing exotic species may be initially used to stabilize soils, improve moisture retention or to restore nutrients. The previously existing native forest represented an advanced stage of ecological succession. Since its removal, conditions in the area may have deteriorated to the point that simple tree replacement will not guarantee survival. If so, it may be necessary to replicate, over time, conditions that led to the establishment of the native forest. Exotic species such as kiawe could be used to accelerate

this process. Botanists and landscapers will be consulted in developing a detailed reforestation plan.

Your letter, along with this response, will be reproduced in the forthcoming Final Environmental Impact Statement. We appreciate your interest and participation in the consultation phase of the environmental review process.

Sincerely,

Earl K. Matsukawa, Project Manager

cc: William Gorst, DLNR State Parks Division

University of Hawai'i at Mānoa

Environmental Center
A Unit of Water Resources Research Center
Crawford 317 · 2550 Campus Road · Honolulu, Hawai'i 96822
Telephone: (808) 956-7361 · Facsimile: (808) 956-3980

December 7, 1995
RE: 0667

RECEIVED
DEC 2 1995
WILSON OKAMOTO & ASSOC. INC

Governor Benjamin Cayetano
c/o Office of Environmental Quality Control
220 South King Street, Fourth Floor
Honolulu, Hawaii 96813

Governor Cayetano:

Draft Environmental Impact Statement (EIS)
Ka Iwi State Park Master Plan
Honolulu, Oahu

The Ka Iwi State Park Master Plan was prepared at the request of the Fourteenth Legislature to help the State determine how the Queen's Beach and Makapu'u Head area, encompassing approximately 354 acres, should be developed if it is acquired for inclusion in the Hawaii State Parks system. There was consensus among participants in three public meetings held in 1993 that use should generally be of low intensity, with some medium intensity use related to outdoor education programs. Some of the recommendations contained in the master plan include restricting off-road vehicles, restoring shoreline vegetation, establishing an interconnected trail system, constructing parking areas, extending the Makapu'u lookout, and adding a comfort station and a visitor center to the Queen's Beach area. Short-term construction impacts are anticipated to affect topography, flora and fauna, soils and coastal water quality.

This review was completed with the assistance of Sheila Conant, Zoology; Ira Rohter, Political Science; Peter Rappa, Sea Grant and Tom Hawley, Environmental Center.

Our reviewers generally are pleased with the intent of this project, which is to establish "an integrated scenic shoreline park in East Oahu extending from Hanauma Bay to Makapu'u Point." This park would preserve and enhance the natural, cultural and scenic qualities of one of the remaining underdeveloped shoreline settings in the highly urbanized areas of East Oahu. Data presented in Chapter IV show that such a park would be of enormous value for Honolulu's residents whose access to shoreline activities is being greatly curtailed as coastal development proceeds at a rapid pace. Its trails and interpretive

programs would also be a natural attraction for "ecotourism" type visitors, that is, visitors who want to see the "real Hawaii."

Our reviewers note that this master plan is well executed and clearly demonstrates that protecting this site from urbanization would preserve a unique shoreline resource and greatly "promote public education and appreciation" of Hawaii's natural, cultural and scenic qualities. The recommended plan, with its emphasis on preservation, interpretation, and moderate recreational use, evolved from the planning of concerned citizens and is endorsed by community groups. The plan also appears to advance a reasonable set of goals, objectives and policies (Chapter XI). We would also like to commend the preparers of this draft EIS for assembling a clear, comprehensive and easily understood document.

Our reviewers suggest, however, that the boundaries of the park should be extended to genuinely preserve the unique features of the area. The boundaries of Ka Iwi Park should also include: two parcels of land mauka of Kalanianaole Highway across from Sandy Beach, known as Golf Course 5 and 6; and the ridge lands mauka of Kalanianaole Highway between the "Hawaii Kai Executive Golf Course" and Makapu'u Lookout, up to and including the Ko'olau ridgeline (called "Queen's Rise 1 and 2"). These as yet undeveloped parcels constitute an integral part of the viewplain of the proposed park; and were they urbanized, the possibility of excessive rainwater and chemical runoff from residential areas and golf courses could further degrade the area's fauna and marine life (pp. X-20).

The discussion in Chapter 8 of the draft EIS includes a detailed history of land use in the area around Makapu'u Head. Omitted, however, is any discussion of an incident at the Makapu'u Lighthouse in which a Hawaiian family took over the parcel and claimed ownership of the site. It is important to discuss in detail the issue of ownership and land use in the area from the perspective of all concerned parties, rather than those who simply own or lease various parcels. Given the importance of this part of Oahu to native Hawaiians, the final EIS should include a much more detailed description of native Hawaiian ownership claims in this area.

Our reviewers also note that some of the information presented in the draft EIS is repetitive. The description of Makapu'u Head which occurs on page X-2 of the document repeats much information presented earlier in the document. Similarly, the description of whale watching activities available from the area presented on page X-5 is also adequately covered earlier in the document. We suggest that such descriptions be condensed and, to the extent possible, presented in one section of the document only in order to alleviate possible confusion. Our reviewers also note that the wildlife section of the document (pg. IX-26) fails to include any mention of the pueo population in the area. The impact to any species present in a given project area should always be discussed, and we urge inclusion of the pueo in the wildlife section of the final EIS.

Section XVII Probable Impacts and Mitigative Measures

This section addresses the potential impacts associated with construction of the proposed project and possible impacts following completion. As stated on page XVII-1 of the draft EIS, possible short-term impacts include runoff from grading and construction activities. Our reviewers point out that the project area experiences a pronounced dry season between April and October. We thus suggest that any grading activities for the project be scheduled during those months so as to mitigate possible runoff effects and we urge the incorporation of such a plan into the final EIS.

Section XVIII Alternatives to the Proposed Action

The discussion of the no-action alternative to the proposed project is far too brief (pg. XVIII-1). Simply listing the possible uses of the land should the project not take place inadequately addresses an area of such significance to so many people. The final EIS must include a sustained discussion of the potential impacts of each listed scenario should the state not end up taking over the land and constructing the park.

Thank you for this opportunity to comment.

Sincerely,

Jacqueline N Miller
for

John T. Harrison
Environmental Coordinator

cc: OEQC
Roger Fujioka
Division of State Parks
Wilson Okamoto and Associates, Inc.
Ira Rohter
Peter Rappa
Sheila Conant
Tom Hawley

2974-01
April 23, 1996

WILSON
OKAMOTO
& ASSOCIATES, INC.

ENGINEERS
PLANNERS

1907 S. BERETANIA STREET
HONOLULU, HAWAII 96826
PH: (808) 946-2277
FAX: (808) 946-2253

Mailing address:
P.O. Box 3530
Honolulu, Hawaii 96811

Mr. John T. Harrison, Environmental Coordinator
Environmental Center
University of Hawaii
Crawford 317
2550 Campus Road
Honolulu, Hawaii 96822

Dear Mr. Harrison:

Subject: Ka Iwi State Park
Draft Environmental Impact Statement (EIS)
East Honolulu, Oahu, Hawaii

This is in response to your letter dated December 7, 1995. We appreciate your support for the Master Plan. The following responses are offered in the respective order of your comments:

Your comment regarding the park boundary extending mauka of Kalanianaole Highway is well taken. The Ka Iwi State Park Master Plan and EIS was, however, prepared pursuant to House Concurrent Resolution No. 261, H.D.1, S.D.1. The resolution specified the study area as including parcels makai of Kalanianaole Highway plus Koko Crater, and identified them by their TMK numbers. This is consistent with the intent of the study to examine *"the establishment of a continuous scenic shoreline park from Koko Head to Makapu'u."* (emphasis added).

The existing state park land at Makapu'u Head was acquired from the Federal Government. They earlier acquired the developable land from Bishop Estate. The undevelopable pali land was ceded State land. The Title records do not include any Hawaiian ownership claims.

The Ohana Council has expressed interest in developing a Healing Center at Makapu'u Head as reported in Chapter XII of the Master Plan/EIS Document. This proposal will be given further consideration as more details are made available.

While we concur that some of the information regarding the Makapu'u Head and whale watching were repeated, they were discussed in different contexts. In our effort to thoroughly document the planning process, some park resources needed to be discussed in more than one context.

Although no pueo were observed at the site by the botanists or others preparing the plan, we have found previous literature which cites pueo occupying the cliffs of Koko Crater. It is possible that pueo include the Ka Iwi site in their hunting range and possibly inhabit the area. This point will be included in the Final EIS.

Section XVII Probable Impacts and Mitigative Measures

We will include this recommendation in the Final EIS.

Section XVIII Alternatives to the Proposed Action

We will expand the discussion of the potential impacts of each concern listed in the "No Action" Alternative by referencing other sections of the document.

Your letter, along with this response, will be reproduced in the forthcoming Final Environmental Impact Statement. We appreciate your interest and participation in the consultation phase of the environmental review process.

Sincerely,

Earl K. Matsukawa, Project Manager

cc: William Gorst, DLNR State Parks Division

HOUSE OF REPRESENTATIVES
STATE OF HAWAII
STATE CAPITOL
HONOLULU, HAWAII 96813

December 7, 1995

Mr. William Gorst
Department of Land and Natural Resources, State Parks Division
1151 Punchbowl Street, Room 310
Honolulu, HI 96813

Dear ~~Mr. Gorst~~ Bill:

I want to say how impressed I am with the Master Plan and Draft Environmental Impact Statement on Ka Iwi State Park! It is very informative, easy to review, and a fair presentation of the issue.

After reading the report I have a few concerns I would like to share:

XI-13 and XI-18 The Open Air Pavilion and Outdoor Activities Pavilion in Open Grassland

I am against building any structure in this proposed park, other than a parking lot, a bath house/lua, and perhaps an educational display board. A pavilion is not needed in this "natural" park area, and if built would be a constant target for graffiti or other destructive behavior. Seating areas and shade areas can be provided by using natural rock benches with trees.

X-33 Camping

It is not necessary to provide showers; water will be wasted. A gallon jug can be left in the car, and showers can wait until you get home.

X-33 Picnicking

Encourage picnickers, fisherman, beach users to carry trash out to trash cans at the parking area by the visitor center.

X-34 Define Bicycle Paths

Mountain bikers should be asked to maintain and upkeep their course. Users of the bicycle path must understand that bicyclists must give way to hikers. No off-road vehicles, motocross, etc should be allowed beyond the parking lots. (Hikers can walk to the beach. It is better for their health and lessens the impact to the environment!)

X-18 High Intensity Alternative 3 - Expanded Recreation

Instead of building huge parking lots build smaller parking areas throughout the beach park to minimize the impact of large expanses of asphalt

XI-22 Establish Shuttle Staging Area at Makapu'u Head and Widen Headland Road

The improvement to the road to the Makapu'u Headland should be kept narrow to accommodate one shuttle bus to go up and then return (not multiple shuttle buses in use). It is important to keep traffic low-key and to not shuttle "hundreds" of people back and forth. Don't turn this proposed park into a tourist attraction, but keep it as an environmental experience - a recreational outing for all ages to enjoy!

I hope that the master plan will lead to preserving this lovely corner of our island in its natural rugged state. I encourage our leadership to work closely with Bishop Estate to develop a recreational area we can share with our children for many decades to come.

Aloha,

Rep. Eve Anderson

Representative Eve Anderson

cc: Gary Gill
Earl Matsukawa

2974-01
April 23, 1996

WILSON
OKAMOTO
& ASSOCIATES, INC.

ENGINEERS
PLANNERS

1907 S. BERETANIA STREET
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FAX: (808) 946-2253

Mailing address:
P. O. Box 3530
Honolulu, Hawaii 96811

Representative Eve Anderson
House of Representatives
State of Hawaii
State Capitol
Honolulu, Hawaii 96813

Dear Representative Anderson:

Subject: Ka Iwi State Park
Draft Environmental Impact Statement (EIS)
East Honolulu, Oahu, Hawaii

This is in response to your letter dated December 7, 1995 indicating that you have no comments on the subject Draft EIS.

1. The open-air pavilion is envisioned as a roofed shelter for an educational display. Its size should be small; less than 400 square feet to provide an initial orientation point to disseminate information about the park.

   The "rest areas" are envisioned to retain a natural character. Shade trees together with a few large rocks to sit on would be adequate.

2. The Recommended Master Plan provides no facilities for camping within the park. It will only be operated as a daylight facility and the parking area will be secured at night.

3. User responsibility in maintaining and protecting the park will be one of the themes in the information disseminated. This would include removal of trash. Nevertheless, conveniently sited trash receptacles will probably be needed to curb littering.

4. No facilities for off-road bicycling is proposed in the Recommended Master Plan. Trails in the park are intended for pedestrian use. While there is no intent to exclude bicyclists, if pedestrian safety becomes a concern, then restrictions on bicycle usage could be considered.

   No automobiles, trucks, motorcycles, mopeds, or other motorized recreational vehicles would be allowed beyond the Queen's Beach parking lot, except park maintenance and emergency vehicles.

5. The parking area for the entire Queen's Beach area serves several functions:

a. Provide a single point for controlling access into the park;

b. Channel visitors through the visitor center for park orientation, including dissemination of information regarding park care and personal safety;

c. Require park users to walk to their destination, thus creating a pedestrian environment and limiting access to those who are willing to participate in the walk necessary to reach various points of interest.

Roadways necessary to serve small parking lots throughout the Queen's Beach area would create a much greater impression of asphalt and vehicular intrusion than the single road and parking lot.

5. Improvements to the Lighthouse Access Road would maintain its single-lane configuration but improve safety for pedestrians as well as vehicles. Our recommended plan keeps the road to the lighthouse in pedestrian use to the general public. Vehicular use will be reserved for maintenance of the property and the lighthouse and emergencies. The only additional vehicular use contemplated will be for interpretive programs associated with the lighthouse or those catering to the handicapped or elderly who may otherwise not have the opportunity to enjoy the headland area. Any such use would be available only to non-profit organizations and limited to only a few shuttle runs per day at the most, and probably only on weekdays.

Your letter, along with this response, will be reproduced in the forthcoming Final Environmental Impact Statement. We appreciate your interest and participation in the consultation phase of the environmental review process.

Sincerely,

Earl K. Matsukawa, Project Manager

cc: William Gorst, DLNR State Parks Division

BOARD OF WATER SUPPLY
CITY AND COUNTY OF HONOLULU

COPY

November 28, 1995

RECEIVED
NOV 29 1995
WILSON OKAMOTO & ASSOC., INC.

Mr. William Gorst
Department of Land and Natural Resources
State Parks Division
State of Hawaii
1151 Punchbowl Street, Room 310
Honolulu, Hawaii 96813

Dear Mr. Gorst:

Subject: Your Letter of October 23, 1995 Regarding the Draft Environmental Impact Statement (DEIS) for the Ka Iwi State Park Master Plan, East Honolulu, Oahu, Hawaii, TMK: 3-09-11: 2, 3, 5, 6 and 7; 4-01-14: 1

Thank you for the opportunity to review the DEIS for the Ka Iwi State Park Master Plan. Our previous comments of June 14, 1995 are still applicable and are included in Appendix A of the document.

If you have any questions, please contact Barry Usagawa at 527-5235.

Very truly yours,

RAYMOND H. SATO
Manager and Chief Engineer

cc: Gary Gill, Office of Environmental Quality Control
Earl Matsukawa, Wilson Okamoto & Associates, Inc.

2974-01
April 23, 1996

WILSON
OKAMOTO
& ASSOCIATES, INC.

ENGINEERS
PLANNERS

1907 S. BERETANIA STREET
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PH: (808) 946-2277
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Mailing address:
P. O. Box 3530
Honolulu, Hawaii 96811

Mr. Raymond H. Sato, Manager and Chief Engineer
Board of Water Supply
City & County of Honolulu
630 South Beretania Street
Honolulu, Hawaii 96813

Dear Mr. Sato:

Subject: Ka Iwi State Park
Draft Environmental Impact Statement (EIS)
Makapu'u, Oahu, Hawaii

Thank you for your letter dated November 28, 1995 indicating that you have no further comments on the subject Draft EIS. As noted, your comments of June 14, 1995 and our response to them were included in the Draft EIS. Your current letter and this response will be reproduced in the forthcoming Final EIS. We appreciate your interest and participation in the consultation phase of the environmental review process.

Sincerely,

Earl K. Matsukawa, Project Manager

cc: William Gorst, DLNR State Parks Division

RECEIVED
DEC 11 1995
WILSON OKAMOTO & ASSOC

PB 95-908

December 7, 1995

Department of Land and Natural Resources
State Parks Division
State of Hawaii
1151 Punchbowl Street, Room 310
Honolulu, Hawaii 96813

Attn: Mr. William Gorst

Gentlemen:

Subject: Ka Iwi State Park Master Plan and
Draft Environmental Impact Statement
East Honolulu, Oahu, Hawaii
TMK: 3-9-11:2,3,5,6 and 4; 4-1-14:1

This is in response to your request to review the subject document.

We have no comments to offer. Thank you for the opportunity to review the document.

Very truly yours,

RANDALL K. FUJIKI
Director and Building Superintendent

DC:jo
cc: G. Tamashiro
Office of Environmental Quality Control
(Gary L. Gill)
Wilson Okamoto & associates
(Earl K. Matsukawa)

WILSON
OKAMOTO
& ASSOCIATES, INC.

ENGINEERS
PLANNERS

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Mailing address:
P.O. Box 3530
Honolulu, Hawaii 96811

2974-01
April 23, 1996

Mr. Randall K. Fujiki, Director and Building Superintendent
Building Department
City & County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Fujiki:

Subject: Ka Iwi State Park
Draft Environmental Impact Statement (EIS)
Makapu'u, Oahu, Hawaii

This is in response to your letter dated December 7, 1995 indicating that you have no comments on the subject Draft EIS. Your letter, along with this response, will be reproduced in the forthcoming Final Environmental Impact Statement. We appreciate your interest and participation in the consultation phase of the environmental review process.

Sincerely,

Earl K. Matsukawa, Project Manager

cc: William Gorst, DLNR State Parks Division

FIRE DEPARTMENT
CITY AND COUNTY OF HONOLULU
3375 KOAPAKA STREET SUITE H425
HONOLULU HAWAII 96819-1869

JEREMY HARRIS
MAYOR

ANTHONY J. LOPEZ, JR
FIRE CHIEF

ATTILIO K. LEONARDI
FIRE DEPUTY CHIEF

November 1, 1995

Mr. William Gorst
Department of Land and Natural Resources
State Parks Division
State of Hawaii
1151 Punchbowl Street, Room 310
Honolulu, Hawaii 96813

RECEIVED
NOV 07 1995
WILSON OKAMOTO & ASSOC.

Dear Mr. Gorst:

Subject : Ka Iwi State Park Master Plan and
Draft Environmental Impact Statement
East Honolulu, Oahu, Hawaii
Tax Map Key Numbers: 3-09-11: 2,3,5,6 and 7
4-01-14: 1

We have reviewed the subject material provided and have the following comments:

Currently, fire protection is provided by engine companies from Hawaii Kai and Waimanalo Fire Stations, with ladder support from Hawaii Kai Fire Station. Ocean and mountain rescue support is provided by a rescue company at Pawaa Fire Station. We feel that the fire services provided from these locations are adequate.

Should you have any questions, please call Assistant Chief Arthur Ugalde of our Administrative Services Bureau at 831-7774.

Sincerely,

ANTHONY J. LOPEZ, JR.
Fire Chief

PHG:ny

cc: Office of Environmental Quality Control w/EIS draft
Wilson Okamoto & Associates, Inc.

2974-01
April 23, 1996

WILSON
OKAMOTO
& ASSOCIATES, INC.

ENGINEERS
PLANNERS

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FAX: (808) 946-2253

Mailing address:
P. O. Box 3530
Honolulu, Hawaii 96811

Mr. Anthony J. Lopez, Jr., Fire Chief
Fire Department
City & County of Honolulu
2275 Koapaka Street, Suite H425
Honolulu, Hawaii 96819

Dear Mr. Lopez:

Subject: Ka Iwi State Park
Draft Environmental Impact Statement (EIS)
Makapu'u, Oahu, Hawaii

This is in response to your letter dated November 1, 1995. We appreciate your confirmation that adequate fire protection services are provided for the project site by the Waimanalo and Hawaii Kai Fire Stations and that ocean and mountain rescue support, provided by the Pawaa Fire Station, is also adequate.

Your letter, along with this response, will be reproduced in the forthcoming Final Environmental Impact Statement. Thank you for your interest and participation in the consultation phase of the environmental review process.

Sincerely,

Earl K. Matsukawa, Project Manager

cc: William Gorst, DLNR State Parks Division

POLICE DEPARTMENT
CITY AND COUNTY OF HONOLULU
801 SOUTH BERETANIA STREET
HONOLULU, HAWAII 96813 - AREA CODE (808) 529-3111

JEREMY HARRIS
MAYOR

MICHAEL S. NAKAMURA
CHIEF

HAROLD M. KAWASAKI
LEE DONOHUE
DEPUTY CHIEFS

OUR REFERENCE BS-DL

October 25, 1995

RECEIVED
OCT 27 1995
WILSON OKAMOTO & ASSOC

Mr. William Gorst
State Parks Division
Department of Land and Natural
Resources
State of Hawaii
1151 Punchbowl Street, Room 310
Honolulu, Hawaii 96813

Dear Mr. Gorst:

This is in response to Mr. Earl K. Matsukawa's letter of October 23, 1995, requesting comments on a master plan and draft environmental impact statement for Ka Iwi State Park.

This project should have no significant impact on the operations of the Honolulu Police Department.

Thank you for the opportunity to comment.

Sincerely,

MICHAEL S. NAKAMURA
Chief of Police

By Eugene Uemura
EUGENE UEMURA, Assistant Chief
Administrative Bureau

cc: Mr. Gary L. Gill
Ofc. of Environmental Quality Control

Mr. Earl K. Matsukawa
Wilson Okamoto & Associates, Inc.

2974-01
April 23, 1996

WILSON
OKAMOTO
& ASSOCIATES, INC.

ENGINEERS
PLANNERS

1907 S. BERETANIA STREET
HONOLULU, HAWAII 96826
PH: (808) 946-2277
FAX: (808) 946-2253

Mailing address:
P. O. Box 3530
Honolulu, Hawaii 96811

Michael S. Nakamura, Chief of Police
Police Department
City & County of Honolulu
801 South Beretania Street
Honolulu, Hawaii 96813

Dear Chief Nakamura:

Subject: Ka Iwi State Park
Draft Environmental Impact Statement (EIS)
Makapu'u, Oahu, Hawaii

This is in response to a letter from Mr. Eugene Uemura, dated October 25, 1993. We appreciate your confirmation that the project should have no significant impacts on the operation of the Police Department.

Your letter, along with this response, will be reproduced in the forthcoming Final Environmental Impact Statement. Thank you for your interest and participation in the consultation phase of the environmental review process.

Sincerely,

Earl K. Matsukawa, Project Manager

cc: William Gorst, DLNR State Parks Division

PLANNING DEPARTMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

JEREMY HARRIS
MAYOR

CHERYL D SOON
CHIEF PLANNING OFFICER

CAROLL TAKAHASHI
DEPUTY CHIEF PLANNING OFFICER

TH 10/95-2192

December 13, 1995

RECEIVED
DEC 18 1995
WILSON OKAMOTO & ASSO.

Honorable Michael D. Wilson, Chairperson
Board of Land and Natural Resources
Department of Land and Natural Resources
State of Hawaii
P.O. Box 621
Honolulu, Hawaii 96809

Attention: Mr. William Gorst
State Parks Division

Dear Mr. Wilson:

Ka Iwi State Park Master Plan and Draft Environmental Impact Statement (EIS), East Honolulu, Oahu, Hawaii, Tax Map Keys: 3-09-11: 2, 3, 5, 6 and 7; 4-01-14: 1

In response to a letter from Wilson Okamoto and Associates, Inc. of October 23, 1995, we have reviewed the subject draft EIS and offer the following comments.

The majority of the proposed park site is located in the East Honolulu Development Plan (DP) area and is designated Preservation. However, the northwestern face of the proposed park site from the top of Makapuu Head to Makapuu Point is within the Koolaupoko DP area and is designated Parks and Recreation, and Public Facilities. Figure 1-2 in the Final EIS Development Summary should be corrected.

Thank you for the opportunity to comment on this matter. Should you have any questions, please contact Tim Hata of our staff at 527-6070.

Sincerely,

CHERYL D. SOON
Chief Planning Officer

CDS:ft

cc: Office of Environmental Quality Control
Wilson Okamoto & Associates, Inc.

2974-01
April 23, 1996

WILSON
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& ASSOCIATES, INC.

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Honolulu, Hawaii 96811

Ms. Cheryl D. Soon, Chief Planning Officer
Planning Department
City & County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Ms. Soon:

Subject: Ka Iwi State Park
Draft Environmental Impact Statement (EIS)
Makapu'u, Oahu, Hawaii

This is in response to your letter dated December 13, 1995 commenting on the subject Draft EIS. The correction you noted regarding the Development Plan Land Use Map designation for the north facing slope of Makapu'u Head will be made in Figure V-2 of the Final EIS. Thank your for calling this discrepancy to our attention.

Your letter, along with this response, will be reproduced in the forthcoming Final Environmental Impact Statement. We appreciate your interest and participation in the consultation phase of the environmental review process.

Sincerely,

Earl K. Matsukawa, Project Manager

cc: William Gorst, DLNR State Parks Division

DEPARTMENT OF PUBLIC WORKS
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

JEREMY HARRIS
MAYOR

KENNETH E. SPRAGUE
DIRECTOR AND CHIEF ENGINEER

DARWIN J. HAMAMOTO
DEPUTY DIRECTOR

RECEIVED
NOV 17 1995
WILSON OKAMOTO & ASSOC.

ENV 95-309

November 15, 1995

Mr. William Gorst
Department of Land and Natural Resources
State Park Division
State of Hawaii
1151 Punchbowl Street, Room 310
Honolulu, Hawaii 96813

Dear Mr. Gorst:

Subject: Draft Environmental Impact Statement (DEIS)
Ka Iwi State Park Master Plan
TMK: 3-09-11: 2, 3, 5, 6 and 7; 4-01-14: 1

We have reviewed the subject DEIS and have the following comments:

1. Prior comments on Environmental Impact Statement Preparation Notice was only partially addressed.

2. Although $1,000,000 line item cost for siltation basin was listed in Table XII-2, no location nor size of the basin was shown.

3. We understand that the State will maintain the park upon its completion.

Should you have any questions, please contact Mr. Alex Ho, Environmental Engineer, at 523-4150.

Very truly yours,

for KENNETH E. SPRAGUE
Director and Chief Engineer

cc: OEQC
Wilson Okamoto & Associates

2974-01
April 23, 1996

WILSON
OKAMOTO
& ASSOCIATES, INC.

ENGINEERS
PLANNERS

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Mailing address:
P. O. Box 3530
Honolulu, Hawaii 96811

Mr. Kenneth E. Sprague, Director and Chief Engineer
Department of Public Works
City & County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Sprague:

Subject: Ka Iwi State Park
Draft Environmental Impact Statement (EIS)
Makapu'u, Oahu, Hawaii

This is in response to your letter dated November 15, 1995 commenting on the subject Draft EIS. We offer the following responses in the respective order of your comments:

1. We believe that the Ka Iwi State Park Master Plan/Draft EIS addresses your prior comments of June 13, 1995, although the organization of the report does not lend itself to readily finding the specific statements. We will also revise the Final EIS to better address your comments:

   a. The drainage easement is discussed in Chapter IX, Section J.3. Drainage. It notes that a 1,540 square foot easement nearest Kalanianaole Highway has been dedicated to the City.

   b. Figure IX-10 depicts the drainage easement as the 40-foot wide concrete channel. To eliminate any confusion, we will clarify that the easement includes the concrete channel.

   c. Chapter XVII Probable Impacts and Mitigative Measures, Section B.3. notes that the state will assume responsibility for the 15-foot wide drainage easement (leading from the 40-foot wide concrete channel) and retention basin (siltation basin) unless other arrangements are made. We will correct this statement to refer to the 15-foot wide drainage *ditch* since no easement will be required.

   d. The revised cost estimate in Chapter XII includes construction of the siltation basin.

   e. As noted in our response of October 9, 1995, once the site has been acquired by the State and development of the park is pursued, design and construction plans will be prepared and submitted to your office for review and comment.

2. The size of the siltation basin will be determined when it is designed. For the purpose of estimating construction costs, however, its size was assumed to be approximately 200,000 cubic yards to handle 10-year storm flows. The approximate location of the siltation basin is shown in the Draft EIS in Figure XII-1. The final configuration and location of the siltation basin will be determined when it is designed.

3. The Department of Land and Natural Resources, State Parks Division intends to maintain the park upon its acquisition and throughout its development and operation.

Your letter, along with this response, will be reproduced in the forthcoming Final Environmental Impact Statement. We appreciate your interest and participation in the consultation phase of the environmental review process.

Sincerely,

Earl K. Matsukawa, Project Manager

cc: William Gorst, DLNR State Parks Division

DEPARTMENT OF TRANSPORTATION SERVICES
CITY AND COUNTY OF HONOLULU
PACIFIC PARK PLAZA
711 KAPIOLANI BOULEVARD, SUITE 1200
HONOLULU, HAWAII 96813

JEREMY HARRIS
MAYOR

CHARLES O. SWANSON
DIRECTOR

10/95-05003R

December 7, 1995

Department of Land and Natural
Resources
State Parks Division
State of Hawaii
1151 Punchbowl Street, Room 310
Honolulu, Hawaii 96813

DEC 8 1995

Attention: Mr. William Gorst

Gentlemen:

Subject: Master Plan and Draft Environmental Impact Statement for Ka Iwi State Park

We have reviewed the subject master plan and draft environmental impact statement. The access for this project appears to be from Kalanianaole Highway, a State Department of Transportation facility, and there seems to be no impacts to the City road facilities. We, therefore, have no objections or comments regarding the transportation or traffic impacts of this project.

Should you have any questions regarding this matter, please contact Faith Miyamoto of the Transportation Systems Planning Division at 527-6976.

Respectfully,

for CHARLES O. SWANSON
Director

cc: Office of Environmental
Quality Control
✓Mr. Earl Matsukawa, Wilson Okamoto
& Associates, Inc.

2974-01
April 23, 1996

WILSON
OKAMOTO
& ASSOCIATES, INC.

ENGINEERS
PLANNERS

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FAX: (808) 946-2253

Mailing address:
P. O. Box 3530
Honolulu, Hawaii 96811

Mr. Charles O. Swanson, Director
Department of Transportation Services
City & County of Honolulu
711 Kapiolani Boulevard, Suite 1200
Honolulu, Hawaii 96813

Dear Mr. Swanson:

Subject: Ka Iwi State Park
Draft Environmental Impact Statement (EIS)
Makapu'u, Oahu, Hawaii

This is in response to your letter dated December 7, 1995. We appreciate your confirmation that the project will not impact City road facilities and, therefore, that you have no objections or comments. Your letter, along with this response, will be reproduced in the forthcoming Final Environmental Impact Statement. Thank you for your interest and participation in the consultation phase of the environmental review process.

Sincerely,

Earl K. Matsukawa, Project Manager

cc: William Gorst, DLNR State Parks Division

JOHN HENRY FELIX
VICE CHAIR

CITY COUNCIL

CITY AND COUNTY OF HONOLULU
HONOLULU, HAWAII 96813-3065 / TELEPHONE 547-7000

November 28, 1995

William Gorst
Department of Land and Natural Resources
State Parks Division
State of Hawaii
1151 Punchbowl Street, Room 310
Honolulu, Hawaii 96813

RECEIVED
DEC 01 1995
WILSON OKAMOTO & ASSO

Dear Mr. Gorst:

I am in receipt of and have reviewed the Master Plan and Draft Environmental Impact Statement (DEIS) for the Ka Iwi State Park. This letter serves as my comments for inclusion in the final Environmental Impact Statement.

I support the acquisition of land by the State of Hawaii for a park and preserve along the Ka Iwi shoreline, particularly the Sandy Beach area. The reasons are numerous.

The first reason relates to the overall economy of the State. Tourism was, is, and will continue to remain for the foreseeable future the dominant industry of Hawaii. Hawaii's tourism depends most heavily upon its scenic beauty. Without the preservation of this portion of Oahu's remaining undeveloped natural bounty—indisputably one of the world's most unique and inspiring vistas—Hawaii, particularly Oahu, will become a chain of overdeveloped, urbanized islands, causing would-be visitors to seek alternative destinations. Indeed, the National Park Service, in its 1993 report on the area "Reconnaissance Survey Study of Management Alternatives: Ka Iwi Shoreline Study, Oahu, Hawaii" said of this stretch of Oahu: "the ocean-land interface is quite scenic, and areas such as Hanauma Bay, the Halona Point blowhole, Sandy Beach, and the views to other islands are important tourist attractions."

With planning focused on growth in the Ewa and Central Plains, development in East Oahu would be counterproductive to the vision the people of Oahu have endorsed for their island home. In 1988, the citizens of Oahu were asked to vote on whether the land across from Sandy Beach should be rezoned to Preservation. The majority vote was "yes" for the

Rainbow Coalition, Pohakupu Community Association, Portlock Fishing Coalition, and the Maunawili Community Association.

The National Parks Service's final study found, among other findings, that the Koko Rift area contains a "nationally significant combination of natural and recreational resources," citing Hanauma Bay and the Koko Rift. The study reports a finding that "a lava tube near Makapuu Point may be the best documented example on earth of a geological feature akin to one found on the moon known as a sinuous rill." The study went on to point out that "two animals on the federal list of endangered species have been reported in the Koko Rift unit—the Hawaiian hoary bat and the Hawaiian monk seal. The green sea turtle, a federally listed threatened species, has also been reported. Another species, the Hawaiian owl, is formally listed as endangered by the State of Hawaii on Oahu only." The report also found that this area contained a number of endangered plant species and "rare natural communities."

Regrettably, the study found that the area did not warrant inclusion into the National Parks System under its "Suitability" guidelines because it was felt that State and County governments would protect the area through judicious land management.

In conclusion, it is my firm belief and intention that this area must remain open and undeveloped in perpetuity. Since elected to the Honolulu City Council, I have fought to keep the remaining undeveloped portions of the entire Ka Iwi shoreline in their natural state. I totally concur with the recommendations to protect and preserve for all generations Ka Iwi's natural, recreational, and cultural resources as promulgated in the State's Master Plan and Draft Environmental Impact Statement (DEIS) for the Ka Iwi State Park.

I will continue to closely monitor this area and will vigorously oppose any and all efforts to develop it for either commercial or residential use.

Sincerely,

JOHN HENRY FELIX

cc: Mr. Gary Gill, State Office of Environmental Quality Control
Mr. Earl K. Matsukawa, Wilson Okamoto & Associates, Inc.

JHF/rh
LH95-109

2974-01
April 23, 1996

WILSON
OKAMOTO
& ASSOCIATES, INC.

ENGINEERS
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Honolulu, Hawaii 96811

John Henry Felix, Vice Chair
City Council
City & County of Honolulu
Honolulu, Hawaii 96813-3065

Dear Councilmember Felix:

Subject: Ka Iwi State Park
Draft Environmental Impact Statement (EIS)
Makapu'u, Oahu, Hawaii

This is in response to your letter dated November 28, 1995 commenting on the subject Draft EIS. We acknowledge your support for the proposed State Park as a means of protecting the Ka Iwi area from urban development. Your letter, along with this response, will be reproduced in the forthcoming Final Environmental Impact Statement. We appreciate your interest and participation in the consultation phase of the environmental review process.

Sincerely,

Earl K. Matsukawa, Project Manager

cc: William Gorst, DLNR State Parks Division

8611
1007

CITY COUNCIL

CITY AND COUNTY OF HONOLULU
HONOLULU, HAWAII 96813-3065 / TELEPHONE 547-7000

RECEIVED
DIVISION OF
STATE PARKS
DEC 11 10 00 AM '95

STEVE HOLMES
Councilmember
(808) 547-7002

December 7, 1995

RECEIVED
95 DEC 8 P 3:23
DEPT OF LAND
& NATURAL RESOURCES
STATE OF HAWAII

Mr. Mike Wilson
Department of Land and Natural Resources
Division of State Parks
1151 Punchbowl Street, Room 310
Honolulu, Hawai`i 96813

Subject: Ka`Iwi State Park Master Plan and Draft EIS

Dear Mr. Wilson:

I am in complete support of the Ka `Iwi State Park Master Plan and am pleased to have the opportunity to comment on the Draft Environmental Impact Statement for the Ka `Iwi State Park Master Plan and will confine my observations to three subjects that I believe should be addressed in the Plan.

The Park would be enhanced by adding the land parcels commonly known as Golf Course 5 and 6 as well as the ridges known as Mauuwai and Queen's Rise. Intense public interest during the successful Sandy Beach initiative is evidence of wide-spread public sentiment in favor of preserving open space and mauka views in the area from Haunauma Bay to Makapu'u Point. With the addition of these areas to the Ka `Iwi Park planning and scope, the implications must then be discussed in the EIS.

The EIS document does not address the importance of preserving views *mauka* from the shoreline. The *Coastal View Study,* prepared for the City & County of Honolulu in 1987 by Michael S. Chu and Robert B. Jones, provides an inventory of significant coastal views and coastal land forms which make up the shoreline scenic resources on Oahu. The Koko Head Viewshed which contains the area proposed for Ka `Iwi State Park is identified by the *Study* as one of the "type 1" areas which are thought to be most applicable for preservation and protection. I suggest that mauka views within the proposed Ka `Iwi Park be addressed and plans be developed for their preservation as part of the scenic viewplane from the park.

Given the pressure of Bishop Estate against the City based on recent negotiations for land use reclassification of portions of the proposed Ka `Iwi Park area, the suggested land exchange in the Plan needs further discussion. In particular, there should be an inventory and impact study of potential land. Another alternative for land acquisition which should also be discussed is the use of Intermodal Surface Transportation Efficiency Act (ISTEA) Surface Transportation Program funds. This program provides funds to purchase lands that possess significant aesthetic, natural, visual or open space values. These funds could supplement other state or city funds to assist in acquiring the necessary properties to develop the Ka `Iwi State Park.

I fully support the concept of Ka `Iwi Park and look forward to working together to make it happen.

Sincerely,

STEVE HOLMES
Councilmember, District II

2974-01
April 23, 1996

WILSON
OKAMOTO
& ASSOCIATES, INC.

ENGINEERS
PLANNERS

1907 S. BERETANIA STREET
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Mailing address:
P. O. Box 3530
Honolulu, Hawaii 96811

Steve Holmes, Councilmember
City Council
City & County of Honolulu
530 South King Street
Honolulu, Hawaii 96813-3065

Dear Councilmember Holmes:

Subject: Ka Iwi State Park
Draft Environmental Impact Statement (EIS)
Makapu'u, Oahu, Hawaii

This is in response to your letter dated December 7, 1995 commenting on the subject Draft EIS. We offer the following responses in the respective order of your comments:

Your comment regarding the park boundary extending mauka of Kalanianaole Highway is well taken. The Ka Iwi State Park Master Plan and EIS was, however, prepared pursuant to House Concurrent Resolution No. 261, H.D.1, S.D.1. The resolution specified the study area as including parcels makai of Kalanianaole Highway plus Koko Crater, and identified them by their TMK numbers. This is consistent with the intent of the study to examine *"the establishment of a continuous scenic shoreline park from Koko Head to Makapu'u."* (emphasis added).

The examination of visual impact focused on the value of the Ka Iwi site on the preservation of scenic shoreline vistas in the study area. This was consistent with the formulation of a recommendation for the State to acquire the site. Nevertheless, Chapter VII, Section A.3. discusses how mauka views from the park could be affected by on-going and planned development and how any additional development proposals could be affected by considerations of views from the park, if it is established.

The intent of the Master Plan was to assess the suitability of the site for inclusion in the State Park system. Determining land acquisition costs and identifying potential lands to be exchanged is beyond the scope of the study. Moreover, inasmuch as litigation over zoning for the privately-owned land is on-going, it is unlikely that the State and the landowner would agree on the basis for establishing the value of the Ka Iwi site at this time. With a decision to pursue acquisition, however, the State can move on to the next step of exploring various options for acquisition, including seeking ISTEA funding. Currently, it is administration policy that ceded lands shall not be sold or traded in exchange for other lands so exchange opportunities are quite limited.

We acknowledge your support for the establishment of a park at Ka Iwi.

Your letter, along with this response, will be reproduced in the forthcoming Final Environmental Impact Statement. We appreciate your interest and participation in the consultation phase of the environmental review process.

Sincerely

Earl K. Matsukawa, Project Manager

cc: William Gorst, DLNR State Parks Division

HAWAII'S THOUSAND FRIENDS

Ke aloha o ko kākou 'āina, 'O ia ka mana kū pa'a. Pānoanoa ka 'āina, Mānoanoa ka po'e.
The Love of our land, is the power for us to stand fast. Rare is the land, many are the people.

December 5, 1995

RECEIVED
DEC 8 1995
WILSON OKAMOTO

Bill Gorst
Department of Land and Natural Resources
State Parks Division
1151 Punchbowl Street, Room 310
Honolulu, Hawaii 96813

RE: KA IWI STATE PARK
MASTER PLAN AND DRAFT ENVIRONMENTAL IMPACT STATEMENT

Hawaii's Thousand Friends has the following comments and recommendations.

We support the purchase or other agreements that will eventually lead to the creation of Ka Iwi State Park at Queens Beach and Makapu'u as identified in Alternative 1.

Pg. XI-2 Objectives

Objective 1: Limiting car parking space is one way to limit the number of people using the park but since there is outside parking that added user population must be accounted for.

Limiting buses and taxis to sightseeing only, no parking longer than 15 minutes or dropping off for hiking, picnicking, swimming etc., is another way to control the user population. A carrying capacity for the park should be established to avoid creating another Haunama Bay.

Objective 2: We concur with the need to provide safety barriers along the cliffs and recommend that they be constructed of natural material to blend with the terrain and be as low as possible so as not to block views.

305 Hahani St., Suite 282 • Kailua, HI 96734 • Phone/Fax: (808) 262-0682

Objective 3: We support the creation of a public information program.

Low Intensity Alternative 1 - Preservation
We generally support all recommendations with the following specific comments.

Figure XI-1 Under Alternative 1, Ka Iwi State Park is to be preserved, protected, cleaned-up and restored. While we agree that improvements are needed to the Makapu'u lookout area we do not support connecting the parking for 40 cars and 5 buses with the new access. Such a connection would open up the area to massive tourist drop off and pick up vis-a-vis Haunama Bay, a mistake we do not want to repeat.

We are adamantly opposed to the paving over of the King's Highway to make the parking and road area. Hawaii is rich in history, culture and archaeological sites and we can not continue to pave over these rich reminders of the past because they are inconveniently located.

We recommend relocation of the parking, road and incorporating the King's Highway into the hiking trail system.

Pg. XI-5 While we support the installation of ORV barriers to protect the ecological integrity of the area we also know that there is a need for some place for ORV enthusiasts to go. We recommend that as part of the process in establishing Ka Iwi State Park areas outside of Ka Iwi Park be identified, designed and designated for ORV activities.

Pg. XI- 9 f. Restore Inlet Circulation and Water Quality

What is meant by "marine resource"? We support the recommended actions specifically restoration of the first section of King's Highway with interpretive signs explaining the history of the Highway including showing its original route.

Pg. XI-13 1. Construct Queen's Beach Comfort Station

We support the construction of a comfort station built of stone or wood that is low-key and unobtrusive and on the periphery of the Park.

Medium Intensity Alternative 2 - Interpretive/Passive Recreation

Pg. XI-13 m. Establish Visitor's Center

We do not support the establishment of a visitor's center. The wonder of this area is the remoteness and wilderness, while so close to urban development. Constructing permanent structures would detract from the wilderness, isolation experience.

Pg. XI-16 n. Create Botanical Garden

We do not support nor see the need to create a botanical garden since there is such a garden in Koko Head Crater.

Pg. XI-17 o. Recreate Kaloko Fishpond

From the information provided we did not get the impression that there was a fishpond at Kaloko yet the recommendation is to recreate Kaloko Fishpond. If there was a fishpond at Kaloko then the recreation should be designed after the original design. We generally support the addition of a fishpond but reserve complete support until we have a clearer idea of who would manage it and for what purposes.

p. Create Landscaped Rest Areas

We do not support this concept because the beauty of the area is the wildness and untamed terrain. To manicure sections would detract from the wilderness adventure and begin to resemble just another park.

q. Establish Scenic Interpretive Venues

We support the concept of interpretive exhibits but only if they are infrequent, unobtrusive and give the Hawaiian history of the area.

Pg. XI-18 r. Construct Comfort Station at Makapu'u Head Lower Parking

We support the construction of a comfort station built of stone or wood that is low-key and unobtrusive and are built on the periphery.

s. Improve Makapu'u Headland Road

We do not see the need for improvements to the road since presumably the road will only be used for hiking. Minor improvements to the road such as filling pot holes could make it usable by service/maintenance vehicles. We are assuming that these are the only vehicles that will use this road. If this road is to be used for different

reasons, the users and the circumstances need to be identified.

Pg. XI-18 High Intensity Alternative 3 - Expanded Recreation

We do not support this alternative at all. As we stated before the area offers the wilderness experience and this is the type of activity we believe is appropriate, unique and should continue.

Table XII-1 RECOMMENDED MASTER PLAN

For the reasons stated above we do not support the inclusion of m,n,o,p,q or r in the Master Plan.

Table XII-2 KA IWI STATE PARK MASTER PLAN COST ESTIMATE

All the projects we see budgeted for are construction related. We don't see any money allotted for preservation or to the restoration of shoreline vegetation, tree reforestation, wetland restoration, restoration of Old King's Highway, trail improvements and design, or creation/recreation of Kaloko Fishpond. Since all these activities are part of the recommended master plan it is puzzling as to why they are not included in the costs. Does the exclusion of these costs mean that they are not scheduled for implementation? The Final EIS should explain why these costs were not included.

We do not support the concreting of the Makapu'u Lookout Extension. Why is this area being recommended for concreting?

The Final EIS needs to explain the need for such extensive road improvements and concreting of Makapu'u Lookout Extension.

How and why was it determined that the Footbridge would be concrete?

What utilities need to be relocated and why? Their current and proposed locations along with costs and environmental impacts need to be addressed.

KA IWI EIS

Pg. XIII-4 We are pleased to see that community members were actively involved in the preparation of the Ka Iwi State Park Master Plan. We recommend that the list be expanded to include the Hawaii State Audubon Association, OHA or other Hawaiian organizations.

Pg. XVII-2 4. Ecosystems

Since the purpose of an Draft EIS is to look at impacts to the environment how are the impacts of drainage from the Koolaus mauka of Kamehameha Highway to be addressed when drainage paths have not been identified. Instead the following vague description"may be directed under the road and into the wetland..."(emphasis added) is given. The Final EIS must identify the mauka to makai runoff patterns and identify runoff containment methods. We recommend that natural systems be used to contain runoff.

Pg. XVII-3 5. Archaeological/Historical

We absolutely oppose **any** destruction, building on or paving over of the King's Highway. Why wasn't the paving over aspect mentioned in the *recommendations* section when they spoke of clearing and restoring and incorporating the King's Highway into the regional trail system?

Instead of paving over the King's Highway it should be recommended for listing on the National Register of Historic Places.

Pg. XVII-4 7. Employment

This section looks at employment to narrowly. If a visitor's center is built it will generate at least part time jobs and possibly docent jobs. If established under controlled and culturally correct conditions the fishpond could offer some jobs or be of subsistence value.

8. Traffic

Why is the traffic impact only dealing with construction vehicles and the construction time period? Why isn't the impact from the new 130 car and 5 bus parking spaces discussed? This is a serious omission and must be fully analyzed in the Final EIS.

Pg. XVII-5 B. Long-Term Impacts

1. **Soils and Water Quality**

Were any water quality studies done to obtain base line data to evaluate how the "new management policies" will work in decreasing runoff and stabilizing soils? Impacts to water quality from the addition of new impermeable surfaces must be evaluated. The EIS must address how Inlet Circulation will be improved and Water Quality protected.

Since the entire area is within the CZM it is critical that **all**

impacts to the coastal zone be fully investigated, reported, discussed and proposed measures for minimizing adverse impacts be in the Final EIS.

Pg. XVII-6 3. Drainage and Flood Hazard

As a precaution a flood/tsunami evacuation plan should be devised since the Davis family barely survived the 1946 tsunami.

Drainage plans with proposed measures to minimize adverse impacts need to be done for the new parking lots, visitor center, Makapu'u Head area, landscaped rest areas, botanical garden, new roads, and comfort stations since all of these activities require grubbing, grading and land reconfiguration.

4. Ecosystems

The Draft EIS did not identify any studies or show data that would verify the assumption that "Native plant life populations will increase as a result of an extensive landscaping program....". This is an oversight and must be corrected in the Final EIS. How will the "extensive landscaping program" be implemented when costs for landscaping are not outlined in the budget?

It is hard to understand how "all new improvements will include provisions for landscaping and appropriate drainage to minimize soil runoff" when the budget doesn't identify costs for landscaping or drainage. These costs need to be added to the budget.

While carrying capacity was mentioned in the Master Plan we are unaware of any study or figures showing that carrying capacity studies were done. A carrying capacity study on traffic (foot and car) for the entire ecosystem needs to be done for the Final EIS.

Pg. XVII-7 6. Traffic

For clarity we suggest that **all** traffic issues be handled under one section on traffic. It is confusing to have traffic issues in four different sections. How was the figure of 170 parking stalls determined? In alternatives 1 & 2 we added the -50, 40 and 45 and got 135 parking stalls. In Alternative #3 -108, 40, 45 equalled 193 parking stalls. What is the correct number of parking stalls?

We welcome the relocation of parking at the Makapu'u lookout since the area is dangerous but don't understand how this section can claim "smoother traffic flow and safer conditions" when there is no explanation

of how this will be accomplished.

While the last line eludes to future parking expansion there is no text on when, how, where or under what circumstances parking expansion would occur. In order to protect the environment from uncontrolled parking expansion these questions must be answered.

Pg. XIX-2 1. Short-Term Effects

Wetland - We disagree with the use of the word "may" in connection with surveying and studying the parameters of the wetland. Boundaries must be determined prior to construction in order to protect the resource.

Water Quality - We do not feel that the issues of grading areas greater than five acres or the need for retention basins has been adequately addressed. The Final EIS needs to firmly identify the acreage to be graded and the methods of runoff retention. We recommend that natural drainage methods be used.

Ecosystems - An ecosystem survey must be conducted since there are many fragile areas.

Archeological/Historical - The Final EIS needs to identify, retain and offer methods of incorporation of archaeological/historical and cultural aspects into the park scheme.

Traffic - While traffic is discussed two other times this is the first time "new turn lanes" have been identified. Traffic on this two lane road is of major concern so it is inadequate to simply pronounce that the new lanes "may" impede traffic flow. The Final EIS needs to address the impact of these new lanes on traffic, include a traffic count and discuss traffic patterns and their impacts.

Traffic should be considered comprehensively for both Short-Term Effect, for construction activities, and Long-Term Effects for everyday traffic impacts.

Pg. XIX-3 2. Long-Term Effects

Soils and Water Quality -This repeat of earlier statements notes that possible runoff from non-porous sites will occur but offers no

solutions. When the Park is established there will be increased impacts from people and cars and those issues need to addressed under this section.

Ecosystems - While this section states that the level of usage is unknown it acknowledges that "adverse effects on marine ecosystems could occur...due to increased fishing" but the EIS does not suggest any mitigation or solutions.

The Final EIS must fully discuss "adverse effects" on not only fishing but on other ecosystems, such as the wetland, coastal areas and endangered plants.

Traffic - This is the fourth time traffic has been discussed yet it is the first time that the possible construction of a new intersection is mentioned. The Final EIS **must** comprehensively address all traffic issues in one section including traffic patterns for all three alternatives.

The purpose(s) for the suggested 20-ft setbacks along Kalanianaole Highway needs to be explained.

D. Unresolved Issues

Since the Park will require irrigation and restroom facilities we recommend creating on-site low impact wastewater facilities including the use of composting toilets and leach fields.

The Draft EIS does not include measures to minimize any future adverse effects, alternatives to proposed actions and the effects of those alternatives.

The Draft EIS does not provide traffic, wastewater, ecosystem or carrying capacity research or data. This information should be provided in the Final EIS.

Sincerely,

Donna Wong

CC: OEQC
Wilson Okamoto & Associates, Inc.

2974-01
April 23, 1996

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Ms. Donna Wong
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Dear Ms. Wong:

Subject: Ka Iwi State Park
Draft Environmental Impact Statement (EIS)
East Honolulu, Oahu, Hawaii

This is in response to your letter dated December 5, 1995. We acknowledge your support for the acquisition of the Ka Iwi park land and implementation of Alternative I.

1. Objective 1:

The role of parking in managing access to the park is discussed in Chapter XI, Section B.k.*i*. Also discussed is the possibility of eliminating an existing parking area near Wawamalu Beach. Parking along the shoulders of Kalanianaole Highway also could be eliminated.

A time limit for sightseers parking at Makapu'u Lookout is discussed in Chapter XI, Section B.k.*ii*. No such limits are discussed for the Queen's Beach parking area because there are no significant panoramic views from there that are comparable to Hanauma Bay, Halona Blowhole or Makapu'u Lookout.

Compared to Hanauma Bay, the Queen's Beach area offers very little beach space for sunbathing, extremely limited opportunities for swimming and snorkeling and few shaded areas conducive for picnicking. We do not envision the area becoming a major visitor attraction. Nevertheless, the area is ecologically sensitive and some form of management based on carrying capacity should be established, as recommended in the plan, if hiking and interpretive/educational use threaten the environment. At this time, however, recommendations for parking are based on maintaining approximately the same level of public usage as currently exists, aside from destructive ORV activities.

2. Objective 2:

Your recommendation for safety barriers along cliffs is acknowledged. Their intent would be to warn people away from the cliff edge while maintaining views. The State Parks Division will take into consideration your recommendation for materials to be used in constructing it.

3. Objective 3:

We acknowledge your support for the creation of a public information program.

4. Low Intensity Alterative I - Preservation

We acknowledge your support for this alternative with the stated exceptions.

5. Figure XI-1

The recommended improvements are intended to improve traffic and sightseers' safety based on observations of existing use, as well as to accommodate hikers to the new Makapu'u Wayside, as discussed in Chapter XI, Section B.j and k. The traffic pattern for the existing pull-out and overlook are unsafe. Buses and other sightseers enter and exit the pull-out along a curve with limited sight distance. The modified entry and exit would improve traffic safety.

As recommended in the Master Plan, the proposed parking area at the lookout would have a 20-minute time limit, limiting its use to sightseers. We did not observe any drop-offs or pick-ups occurring in this area for visitors using Makapu'u Beach Park, the Makapu'u Wayside or Queen's Beach. Since the recommended Master Plan emphasizes preservation with minimum facilities for some interpretive/educational and passive recreational activities, we do not foresee visitor demand that could be compared to Hanauma Bay.

With respect to the King's Highway, as discussed in Chapter X, Section A.1.b.*iii*, two remnants of the highway were identified in a May 1992 survey conducted by the State Historic Preservation Division. These are shown in Figure X-2. The relationship of these remnants to the proposed road and parking lot at Makapu'u Lookout is shown on all of the Alternative Proposals and Recommended Plan (Figures XI-1,2 and 3 and XII-1, respectively). Clearly, the proposed improvements avoid the remnants of the King's Highway. Chapter XIX, Section C. Adverse Effects Which Cannot be Avoided misstated in subsection 1. Short-Term Effects for Archaeological/Historical (page XIX-2) that the new road "will be built over the King's Highway remnant." This will be corrected in the final EIS. Most of the former route of the highway has long been obliterated by prior development, including Kalanianaole Highway. The historical value of the King's Highway is associated with its remnants which will be preserved as recommended in the

Master Plan. As for incorporating the King's Highway remnants in the trail system, the potential for damage by hikers would be detrimental to its preservation. Hence, it was recommended that the remnant parallel to Kalanianaole Highway be restored and preserved as a interpretive/ educational feature accessible by the proposed trail system for viewing. It was also recommended that the King's Highway remnant on the cliff be preserved in its current state since its use by hikers would be hazardous to the hikers and detrimental to the remnant.

6. Pg. XI-5

While there is merit to your suggestion, the identification and establishment of an ORV course is beyond the current role of the State Parks Division and beyond the scope of this Master Plan.

7. Pg. XI-9 - f. Restore Inlet Circulation and Water Quality.

The marine biota of the inlets is discussed in terms of its resource values in Chapter X, Proposed Park Site Resource Assessment, in B.1.a.*ii*.

We acknowledge your support for the restoration and interpretation of the first section of the King's Highway.

8. Pg. XI-13 - l. Construct Queen's Beach Comfort Station

We acknowledge your support for the construction of a comfort station in the Queen's Beach area. The State Parks Division will take into consideration your recommendation for materials to be used in constructing it.

9. Pg. XI-13 - m. Establish Visitor's Center

We acknowledge your opposition to the visitor's center. We view the visitor's center as a key facility in promoting interpretation and education, instilling a sense of resource conservation to deter destructive behaviors, and warning of potential hazards. By centralizing such functions, the need for signage elsewhere in the park will be reduced. The pavilion is envisioned as a small roofed shelter, less than 400 square feet. As an open air pavilion housing displays, the visitor's center would detract from the wilderness experience no more than the comfort stations which you expressed support for.

10. Pg. XI-16 - n. Create Botanical Garden

Your opposition to the botanical garden is acknowledged. We view it as an interpretive/educational display presenting flora native to the Ka Iwi area shoreline which is a different ecosystem from Koko Crater. This function would also be different from the botanical garden in Koko Crater which features many exotic species.

11. Pg. XI-17 - o. Recreate Kaloko Fishpond

We concur that there is an absence of historical information provided to support the re-creation of a previously existing fishpond at Kaloko. The recommendation would allow a non-profit organization, such as one supporting the preservation of Hawaiian culture, to utilize the inlet to construct a working replica of a Hawaiian fishpond as an interpretive/educational exhibit. To eliminate potential confusion, we will re-label the recommendation as "Replicate Hawaiian Fishpond." When a proposal to build and operate the fishpond is received, its feasibility would need to be scrutinized, including its environmental impact and the guarantee that existing conditions can be restored if the project is abandoned. Since the proposal would need to be approved by the Board of Land and Natural Resources, opportunity for further public input would be available.

12. Pg. XI-17 - p. Create Landscaped Rest Areas

We acknowledge your opposition to the landscaped rest areas. The landscaped rest areas are not envisioned as manicured sections of the park but as shady respites from the typically hot climate. Native shade trees with rocks to sit on and native xeric groundcover to inhibit tall grasses that could obscure views would be sufficient and could be maintained with little or no irrigation.

13. Pg. XI-17 - q. Establish Scenic Interpretive Venues

We acknowledge your support for unobtrusive interpretive venues. One of the functions of the proposed visitor's center is to centralize such interpretation to minimize the need for signage elsewhere in the park, thus preserving its natural setting. In additional to Hawaiian history, the venues will discuss the area's natural history.

14. Pg. XI-18 - r. Construct Comfort Station at Makapu'u Head

We acknowledge your support for the construction of a comfort station at the Makapu'u Head Lower Parking area. The State Parks Division will take into consideration your recommendation for materials to be used in constructing it.

15. Pg. XI-18 - s. Improve Makapu'u Headland Road

As discussed in Chapter XI, Section B.2.s. minimal improvements are proposed, including the repair of potholes, the addition of pedestrian pullovers, and fencing cliff edges for pedestrian safety. No shuttle staging area is proposed in this alternative.

16. Pg. XI-18 - High Intensity Alternative 3 - Expanded Recreation

We acknowledge your opposition to Alternative 3 which was not included in the recommended plan.

17. Table XII-1 - RECOMMENDED MASTER PLAN

We acknowledge your support and non-support of the various components in the recommended master plan.

18. Table XII-2 - COST ESTIMATE

As stated in Chapter XII, Table XII-2 does not include the cost of trash removal, vegetation restoration, installation of interpretive signs and creation of a botanical garden and fishpond. The construction-related costs are for facilities the State would be responsible for providing to begin operation of the park after the land is acquired. The other items are enhancements which the State could also fund, however, the State would invite civic, Hawaiian or community organizations to undertake them as a community service.

The rationale for the improvements proposed at the Makapu'u Lookout is discussed in our response No. 5, above.

The cost of the footbridge was conservatively based on concrete which is the most expensive material. However, as discussed in Chapter XI, Section B.1.i. the footbridge could consist of an elevated wooden boardwalk or stone or concrete walkway which would let high water flow beneath it.

Utilities Relocation includes the removal of six overhead utilities poles along Kalanianaole Highway which would be displaced by the parking lot for the Lookout.

KA IWI EIS

19. Pg. XIII-4

Preparation of the Master Plan has been completed. The Office of Hawaiian Affairs has participated in the EIS process, having commented on the Draft EIS. The Ohana Council, which had expressed particular interest in the proposal, was consulted, as documented in Chapter XII. The Audubon Association and other organizations are welcome to provide their input in the development of the park which will proceed in phases after the land is acquired.

20. Pg. XVII-2 - 4. Ecosystems

We assume your reference is to Kalanianaole Highway; not Kamehameha Highway. Currently, drainage from the hillsides mauka of the highway between the golf course and Makapu'u Lookout enters Kealakipapa Valley through inlets under the highway as shown in Figure IX-5. During heavy rains, these inlets are apparently inadequate to accommodate flows and the highway has a tendency to flood. In conjunction with the restoration of the wetland, it was recommended that the natural drainage patterns of the mauka area be investigated to determine if these heavy flows can be directed under the highway to reduce flooding while feeding the wetland, possibly lengthening the period it contains standing water.

With respect to identifying mauka and makai drainage patterns, this is done in Chapter IX, Section E and shown in Figure IX-5. Reference is made to this discussion in Chapter XV in the Draft EIS. As discussed above, if drainage can be directed into the wetland, it would serve as a natural containment system. Also, as discussed in Chapter XI, Section B.1.f., a siltation basin is proposed to be constructed within the drainageway leading to Ka'ili'ili Bay. Due to the potential volume of storm flows from existing drainage diversions encompassing the leeward side of the Ko'olau Range from Kamehame Ridge to the Hawaii Kai Golf Course, use of a natural system is unfeasible.

21. Pg. XVII-3 - 5. Archaeological/Historical

As discussed in our response No.5 above, none of the remnants of the King's Highway will be paved over. Our statement that the new road will be built over the King's Road remnant was an error and will be deleted in the Final EIS. Also, as discussed in Chapter XI.B.1.g. the recommendation is to restore the remnant of the King's Highway alongside Kalanianaole Highway. The feature would be incorporated as a interpretive feature within the trail system so it would be accessible to park users. There was no intent to have the historical feature used as a trail.

The State Parks Division will consult with the State Historical Preservation Division regarding the eligibility of the King's Highway remnants for listing in the State or National Historic Register.

22. Page XVII-4 - 7. Employment

The visitor center is initially proposed as an open-air shelter housing informational displays. If the popularity of the park increases to the point that a manned facility is desired, there is a potential that a paid docent may be stationed there. More likely, however, unpaid volunteer docents would initially man the facility.

With respect to park maintenance, the existing State Parks Division personnel will likely add the park to its circuit of facilities to be maintained by its existing staff. Therefore, the creation of maintenance jobs is uncertain.

The fishpond, if it is built and operated by a non-profit organization could create paid jobs and be of subsistence value but it is uncertain at this time if such as project would proceed.

Given the uncertainty of long-term job creation and the relatively few positions that might be created, it was not viewed an anticipatable impact of the project.

23. Page XVII-4 - 8. Traffic

The traffic discussion you are referring to is Section A, Short-term Impacts which is explained as those "related to the construction phase of the project." The proposed parking for the park is considered a long-term impact and is discussed in Section B, Long-

term impacts. This differentiation is required by the State EIS law and Administrative Rules.

24. Page XVII-5 - 1. Soils and Water Quality

Coastal water quality studies were not conducted to determine the degree of positive impacts which the new management practices would have. Water quality in the vicinity is determined in larger part by the discharging of diverted drainage from Kalama Valley than runoff from the project site. Therefore, the beneficial impact of reducing erosion from the site would not be readily detectable. It is generally acknowledged, however, that the restoration of vegetation will have the effect of reducing erosion and, consequently, will have some degree of beneficial impact on coastal water quality. The primary benefit of re-vegetation at the project site is to restore strand vegetation and the forest biome that previously existed.

The EIS discloses that the new impermeable surfaces created by the proposed structures and parking areas will increase runoff, but it is apparent that within the expanse of Kealakipapa Valley, which extends to the Queen's Beach shoreline, the volume of additional runoff would be relatively insignificant. Moreover, with the proposed drainage improvements, and/or with natural or man-enhance re-vegetation of eroded areas following the elimination of ORV activity, any increase in surface runoff should be more than mitigated by the opportunity for detention and consequent percolation. As noted previously, coastal water quality in the vicinity of the project site, as impacted by runoff within the natural watershed of Kealakipapa Valley, is dwarfed by the volume of diverted drainage from the highly urbanized neighboring watershed of Kalama Valley. Within this context, the water quality impact of the proposed construction will be negligible.

Erosion and runoff within the immediate vicinity of the structures and parking areas will be addressed by the City Department of Public Works which will review all plans to assure that associated drainage is properly managed. When design plans are developed, they will be submitted to the Department for review and approval.

25. Page XVII-6 - 3. Drainage Flood Hazard

The Davis family's encounter with the 1946 tsunami was due to the era's inadequate warning system and lack of knowledge of which areas should be evacuated. As discussed in Chapter XVII, Section B.8. - Public Safety, civil defense warning systems will need to be

extended to cover the project area. It was also noted that the State Department of Civil Defense has recommended the installation of two solar-powered omnidirectional 115 dB sirens at the site. The Department of Civil Defense calls for evacuating all areas shown on the Tsunami Evacuation Maps in the telephone book. The Ka Iwi area is an area that would need to be evacuated.

Drainage plans will need to be developed for the various proposed facilities, depending on their design, including the amount of clearing, grading and grubbing they involve. As required, these plans will be submitted to the Department of Public Works for review and approval.

26. Page XVII-6 - 4. Ecosystems

The statement simply refers to the recommendation to use native vegetation in landscaping. We will clarify this statement by adding that native vegetation "suited to the area" will be used, as discussed in Chapter XI, Section B.1, c and d. We do not see the need to provide technical documentation attesting to the likely success of the landscaping and reforestation program. The details of this program will need to be worked out following an investigation of existing conditions by landscapers or botanical consultants. The State's role in financing all or portions of this program would also need to be determined.

Plans for facilities such as structures and parking areas will include provisions for landscaping and erosion control, as necessary, in anticipation of requirements typically imposed by the City Department of Public Works on such facilities. Since the Draft EIS, the cost estimate has been updated and the landscape cost has been itemized in the updated version.

One of the policies stated in Chapter XI, A. Park Goals, Objective and Policies is for the establishment of park visitor carrying capacities. At this time, it is uncertain what degree of public demand may be created by the park, what sorts of activities and behaviors park users may engage in, or what park resource values may be compromised as a result. Carrying capacities would be determined after the park is operating and a pattern of public use is established. Toward assuring that initial usage will not overtax on park resources, the amount of parking recommended for the Queen's Beach area is comparable to the number of cars observed parked in the area. Aside from ORV activities and trash dumping, current

public use of the area is not considered particularly damaging to park resources.

27. Pg. XVII-7 - 6. Traffic

Due to the volume and complexity of the information that is needed to rationally document the formulation of the Master Plan and, for meeting the informational requirements of the EIS, grouping all traffic discussions in single section would make the document difficult to follow. The cross-referenced EIS we provided is intended to minimize the duplication of information while presenting the information in a rational format.

Thank you for calling this error to our attention. The recommended master plan provides for 135 parking stalls.

The rationale for modifying Makapu'u Lookout is provided in Chapter XI, Section B.k.*ii*. Basically, the current pullout has buses and other vehicles entering and exiting the lookout along a curve with very limited sight distance. As explained in the above cited section, the new entrance would be along a straighter section of Kalanianaole Highway with a much greater sight distance. From the lookout area, only a right turn exit toward Waimanalo would be allowed, since this movement can be accomplished safely. The proposed improvements will be subject to approval by the State Department of Transportation Highways Division, which has indicated that a traffic impact assessment will be required. The assessment will be prepared in conjunction with seeking DOT's approval of the lookout modification.

As discussed previously, the amount of parking was determined based on approximating current levels of park usage. By beginning at this level and allowing park usage patterns to develop, it can be determined if carrying capacities are being reached or exceeded and if there is a greater demand for the park than can be accommodated by the proposed amount of parking. If there is an excess demand for parking, and additional usage can be accommodated without exceeding carrying capacities, then an expansion of parking could be considered. We will clarify the statement in the EIS to provide assurance that if more parking is to be provided it would be subject to public review pursuant to the EIS law.

28. Pg. XIX-2 - 1. Short-Term Effects - Wetlands

At the time the Draft EIS was prepared, it was uncertain whether or not a formal wetland boundary determination had been prepared for the wetland area. Since then, it was confirmed that while the Army Corps of Engineers had made an informal determination that the area possessed the characteristics of a wetland, a determination of its boundary had not been prepared. Hence, a wetland boundary determination will be required before the State can apply for a Department of Army permit to modify the wetland, as discussed in Chapter XVII, A, 4. This will be clarified in the Final EIS.

29. Pg. XIX-2 - 1. Short-Term Effects - Water Quality

Pursuant to EIS content requirements, the discussions in this section summarize those impacts previously discussed in Chapter XVII which are considered unavoidable adverse effects. The Wetland discussion is covered in greater detail in that chapter in Section A.2. Soils and Water Quality.

At the master planning level, there is insufficient design detail to provide a technical discussion of water quality impact, particularly when the amount of soil disturbance is relatively small. The disclosure statement acknowledges the potential for soil runoff, but also recognizes that there are grading permits which will require measures to mitigate these impacts, although the specific measures are uncertain at this time. If the area of disturbance is over five acres, an NPDES permit will also be required which will provide another layer of technical review. We are uncertain what you are referring to as "natural drainage methods."

30. Pg. XIX-2 - 1. Short-Term Effects - Ecosystems

A botanical survey was conducted in conjunction with the Draft EIS. A survey of insects was conducted in 1934 and another survey will be needed prior to any construction activity.

31. Pg. XIX-2 - 1. Short-Term Effects - Archaeological/Historical

The Draft EIS incorporates such aspects as noted in Chapter XI, Section B.2 - Establish Scenic Interpretive Venues. Such venues are mentioned in Chapter X, and include Cultural/Historical aspects.

32. Pg. XIX-2 - 1. Short-Term Effects - Traffic

The provision of traffic storage lanes will be mentioned in Chapter XI, Section B.k of the Final EIS for the proposed accesses to the Queen's Beach Parking area and the modified Makapu'u Lookout parking area. Although the scale of the drawings do not provide a clear representation, these storage lanes are shown on the Recommended Master Plan (Figure XII-1) and Alternatives.

It is generally acknowledged that any new intersection has the potential for impeding traffic flow along a roadway. We will augment the discussion of traffic impact in the Final EIS with a qualitative assessment. At the Makapu'u Lookout, for example, the proposed improvements would facilitate traffic flow by eliminating potentially hazardous vehicular movements off of and onto the highway. Likewise, the impact of the new intersection for the access road to the Queen's Beach parking area could be offset by enforcing the parking restriction along the shoulder of the highway, which would be justifiable because parking would be provided within the park. It should also be noted that the Makapu'u Lookout improvement and the Queen's Beach parking are intended to accommodate existing levels of usage. Hence, significant increases in traffic are not anticipated.

33. Pg. XIX-3 - 2. Long-Term Effects - Soils and Water Quality

Pursuant to EIS content requirements, the discussions in this section summarize those impacts previously discussed in Chapter XVII which are considered unavoidable adverse effects. The Wetland discussion is covered in greater detail in that chapter in Section B.1. Soils and Water Quality. Also, please refer to our response No. 24.

34. Pg. XIX-3 - 2. Long-Term Effects - Ecosystems

Pursuant to EIS content requirements, the discussions in this section summarize those impacts previously discussed in Chapter XVII which are considered unavoidable adverse effects. The Ecosystem discussion is covered in greater detail in that chapter in Section B.4. Ecosystems.

35. Pg. XIX-3 - 2. Long-Term Effects -Traffic

Pursuant to EIS content requirements, the discussions in this section summarize those impacts previously discussed in Chapter XVII

which are considered unavoidable adverse effects. The Traffic discussion is covered in greater detail in that chapter in Section B.6. The new intersection is mentioned in that section. We are uncertain on what basis you insist that all traffic issues need to be discussed in one section. There is no such requirement in the EIS law or administrative rules. Also, the traffic pattern for vehicular movements off of and onto Kalanianaole Highway are the same for the recommended plan and all three alternatives, as shown in the respective figures.

36. D. Unresolved Issues

Your recommendation for the use of on-site low impact wastewater facilities will be taken into consideration.

Our preceding responses address your summary comments on the Draft EIS.

Your letter, along with this response, will be reproduced in the forthcoming Final Environmental Impact Statement. We appreciate your interest and participation in the consultation phase of the environmental review process.

Sincerely,

Earl K. Matsukawa, Project Manager

cc: William Gorst, DLNR State Parks Division

Mr. Bob Burke
Vice President of Development
Kaiser Center, Inc.
300 Lakeside Drive, Suite 130
Oakland, CA 94612-3534

December 7, 1995

DEC 11 1995

Mr. Earl Matsukawa
Wilson Okamoto and Associates, Inc.
1907 South Beretania Street
Honolulu, Hawaii 96826

Dear Mr. Matsukawa:

Ka Iwi State Park Master Plan and
Draft Environmental Impact Statement

Kaiser Aluminum and Chemical Corporation holds the Ground Lease from Kamehameha Schools Bernice Pauahi Bishop Estate (KSBE) on the Queens Beach Property that is the subject of the above document. As lessee, we feel it is appropriate to offer the following comments on this document:

1. Page IV-4, paragraph 4. Reference: *Forecasts of the most likely future based on market forces and the extent to which those forces have been accommodated in the past, it is estimated that the number of visitor arrivals will increase to 11.6 million visitors by 2010. That average daily visitor census is expected to be about 260,000. The increase on Oahu is expected to be 38.1 percent.*

   Comment: There is no reference for forecasted visitor arrivals in the year 2010. In order to reach 11.6 million visitors by the year 2010, arrivals would have to increase by approximately 100 percent over current arrivals. The forecasted numbers are based on outdated assumptions and should be revisited.

2. Page V-4, paragraph 1. Reference: *During the 1992 State Land Use District Boundary Review, a Priority 2 recommendation was made to reclassify the Queen's Beach area as Conservation based on the conclusion that the area contains "significant scenic, recreational, coastal, and open space resources." The proposed reclassification of this area to Conservation District would be consistent with the County's "Preservation" designation.*

   Comment: It should be noted that Priority 2 recommendations are identified as lower priority than Priority 1 recommendations. The inherent distinction between the classifications seems to be that resources found in Priority 1 areas are at greater risk, requiring more immediate protection. The Office of State Planning

has determined that it will likely only petition the State Land Use Commission to redesignate the Priority 1 areas to the State Conservation District.

Also, the statement that the "proposed reclassification...would be consistent with the County's "Preservation" designation" suggests that the current Urban designation is inconsistent with the County's Preservation designation. In fact, both the County development plan and zoning designations of "Preservation" allow for park use (and golf course use) without any changes in land use categories.

3. Page V-5, paragraph 5. Reference: *The City and County of Honolulu Land Use Ordinance and accompanying uses of land zoned for residential, apartment, business, resort, industrial, agricultural, preservation and mixed uses. Most of the study area is zoned P-1, Restricted Preservation, while the Queen's Beach area is zoned P-2, General Preservation.*

The discussion of the zoning designation for the Queen's Beach area does not include any reference to the fact that golf courses are allowed (as a plan review use) under the provisions of the P-2 district. This notation is critical to understanding the current land uses which would be affected by the proposed change to park use and the market value of the lands which would need to be acquired by the State through any proposed condemnation or land exchange.

4. Page VI-11, paragraph 4. Reference: *With regard to land acquisition, the Ka Iwi site is designated Urban by the State and litigation regarding prior downzoining is pending. Should the prior designations be restored, the land value would be significant, possibly beyond the means of the State. However, an alternative to purchasing the land may be a land exchange.*

Comment: The use of a land exchange to effectuate State acquisition of the Queen's Beach site is a possible option. However, in order to appreciate the rationale for a land exchange instead of State purchase the EIS should discuss the value of the site, especially in light of the fact that the City and County of Honolulu has acknowledged that a golf course is allowed at Queen's Beach. In fact, the City and County successfully argued to the federal court in the land use lawsuit on Queens Beach that the right to build a golf course at Queens Beach even after the down-zoning left the landowner and its lessee with a viable, economic use of the property. In addition, the DEIS should comment on the feasibility of effectuating a land exchange.

5. Page VII-3, paragraph 5. Reference: *For example, a recent proposal to develop residences on the mauka side of Kalanianaole Highway from Sandy Beach ignited*

a heated controversy which eventually resulted in the denial of the SMA permit for the development and down-zoning of the property.

Comment: This statement inaccurately reflects the circumstances surrounding the downzoning of the so-called "Golf Course 5 and 6" properties. In fact, approvals for both the Special Management Area and Cluster Development were granted by the City Council and the Department of Land Utilization, respectively. After these approvals were obtained from the City Council and DLU, an initiative proposal was placed on the ballot in 1988, and adopted by the voters to effect the down-zoning of the Golf Course 5 and 6 properties. However, this initiative proposal was subsequently invalidated by the Hawaii Supreme Court. Thereafter, during 1989, the City Council adopted ordinances to down-zone and down-plan the Golf Course 5 and 6 properties to P-2 Preservation District, which action led to the filing of lawsuits by Kamehameha Schools Bishop Estate and Hawaii Kai Development Company against the City and County of Honolulu based on the deprivation of their vested rights in the prior zoning and planning approvals under the U.S. and state constitutions.

6. Page VII-14, paragraph 3. Reference: *Urban and golf course runoff may also be prone to containing contaminants such as fertilizer, pesticides and petro-chemicals.*

This statement suggests that golf courses in the vicinity (or even at the site) will contribute to the degradation of water quality within the inlets proximal to the site and other nearshore coastal waters. The statement stands unsubstantiated, and in view of current management practices for golf courses, could lead to unwarranted assumptions about the environmental impacts attributed to golf courses.

7. Pages IX-18, IX-19. Reference: *Notably, one of the 9 endemic species identified during the botanical survey was a large stand of the water fern Marsilea villosa, a recently listed endangered species. It was found in what appeared to be a wetland at the base of Kealakipapa Valley more than three weeks after heavy rainfall. The stand occupied a line of deep, water-filled ruts made by off-road vehicles. The approximate area of the wetland conditions is about 30 feet wide by 600 feet long.*

A representative of the U.S. Army Corps of Engineers surveyed the subject wetland in October 1991. Based on the survey, it was concluded the area met all of the above conditions [specific criteria for a wetland].

These statements lead the reader to believe that the area in question (approximately 0.4 acres) has been officially delineated a wetland by the U.S. Army Corps of Engineers, and is entirely occupied by Marsilea villosa. In fact, the

U.S. Army Corps of Engineers has not officially delineated a wetland on the subject site. Further, a draft recovery plan for the Marsilea villosa prepared by the U.S. Fish and Wildlife Service in 1994, clearly states that the Marsilea population is restricted to an area scattered over 30 square meters (270 square feet), but if clumped together would cover an area of approximately 6 square meters (54 square feet). No mention is made of a wetland in the U.S. Fish and Wildlife Service report.

The statements contained in these sections of the EIS, and the graphics which accompany them, suggest that a wetland (and the Marsilea villosa), occupy a significant portion of northwest section of the property. These facts are incorrect and the statements and graphics need to be clarified accordingly.

8. Page IX-30, paragraph 1. Reference: *Three of the endemic insects, [found on the site in 1934] the Hawaiian rhopalid bug, Ithamar hawaiiensis* Kirkaldy*; the Oliarus wild cotton planthopper, Oliarus discrepans* Giffard*; and a Hawaiian snout beetle (weevil), Rhyncogonus simplex* Perkins*; have been listed by the U.S. Fish and Wildlife Service as candidate...*

Apparently, no rhopalids or wild cotton planthoppers have been seen on the site since the 1934 survey conducted by Swezy. In fact, it is probable that other habitat is more suited to support these species than are found at Queen's Beach. This is according to Dr. Steven Montgomery, (biological consultant) who conducted an entomological survey during the winter of 1994-1995 at Queens Beach.

9. Page XI-8, paragraph 5. Reference: subsection "e," *Restore Wetland.*

Comment: Language used to describe this section of the DEIS ("Restore Wetland") suggests that either an officially delineated wetland is located on the property, or one formerly existed and has degraded to the point of requiring restoration. This heading is misleading as there has been no official designation of any portion of the property as a wetland or determination that one previously existed which warranted restoration.

10. Page XI-17, paragraph 1. Reference: Subsection "o," *Recreate Kaloko Fishpond.*

Similar to item #9, above, this language suggests that a fishpond either exists or formerly existed on the site and has fallen into a state of disrepair, giving the reader a false sense of the cultural context of the site. This heading is misleading as there has been no official determination that a fishpond existed on the site or that one previously existed which warrants restoration.

11. Pages XIII-4, XIX-3, Unresolved Issues.

Comment: These two sections of the DEIS are intended to identify issues that, despite the investigation and study related to the DEIS, remain unresolved. A significant issue does remain unresolved, but has not been included in these sections. That issue relates to the private ownership of the site, the potential acquisition price of the proposed site, the current financial condition of the State of Hawaii, and the suggestion that the only way to ensure development of a park at Queen's Beach may be for the State of Hawaii to effect a land exchange with Kamehameha Schools Bernice Pauahi Bishop Estate. Clearly, this issue is perhaps the most significant one surrounding the proposal that would have the State of Hawaii develop a park at the site. Yet, it is only given cursory treatment in one section of the DEIS (page VI-11).

Sincerely,

Bob Burke
Vice President
Kaiser Center, Inc.

cc: Mr. William Gorst, DLNR

2974-01
April 23, 1996

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& ASSOCIATES, INC.

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Mailing address:
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Honolulu, Hawaii 96811

Mr. Bob Burke, Vice President of Development
Kaiser Center, Inc.
300 Lakeside Drive, Suite 130
Oakland, CA 94612-3534

Dear Mr. Burke:

Subject: Ka Iwi State Park
Draft Environmental Impact Statement (EIS)
East Honolulu, Oahu, Hawaii

This is in response to your letter dated December 7, 1995. We offer the following responses to your numbered comments, respectively:

1. The visitor forecast is based on 1988 M-K projections from the State of Hawaii Department of Business, Economic Development and Tourism (DBEDT). We concur that due to the current economic situation, these figures may be overstated. Since DBEDT is currently updating their projections, the 1988 figures are still the most recent forecasts available. We will note this in the Final EIS.

2. We will revise the discussion in the Final EIS to indicate the distinction between Priority 1 and Priority 2 areas and note that according to the 1992 State Land Use District Boundary Review for Oahu, Priority 1 areas are areas that the Office of State Planning will likely petition for redesignation.

3. We will add to our discussion the types of uses that are permitted under the P-2 zoning, including golf courses.

4. We will revise the discussion to note that under present zoning, golf courses would be an allowable use contingent upon the approval of a Plan Review Use permit and Special Management Area Permit. This development potential is a consideration in assessing the value of the property in acquisition proceedings. The feasibility of land exchange will also be revised to note the current administration policy that ceded lands shall not be sold or traded in exchange for other lands.

5. We will revise this statement. Thank you for clarifying that the City Council had approved the SMA Permit.

6. We will clarify this statement to indicate that urban and golf course runoff is a concern because it has the potential to contain contaminants such as fertilizer, pesticides and petrochemicals although this has not been substantiated in this area.

7. Chapter IX, Section I.1. states that a representative of the U.S. Army Corps of Engineers concluded that the area met the criteria established by the Federal Manual. This acknowledgement is significant because it commits to the Corps to formally delineating the wetland boundary before permitting any development in the vicinity. No mention was made that a wetland boundary determination had been made. This is clear in the statement that the "*approximate* area of wetland *conditions* is *about* 30 feet wide by 600 feet long" (emphasis added). We will clarify in the Final EIS that the Marsilea villosa was found at the *northern end* of the wetland area. Figure IX-9 of the Draft EIS clearly depicts where the Marsilea villosa was found in relation to the approximate area of wetland conditions.

8. We understand that the entomological survey by Dr. Steven Montgomery, which you have cited is not available for review. Thus, the entomological survey cited in the EIS is the only one we know of on which to base the EIS.

9. Please refer to our response No. 7 above regarding our reference to the area as a wetland. The altered condition of the wetland is obvious inasmuch as the presence of open water following heavy rainfall is defined by the wheel ruts of Off-Road vehicles. Restoration could, for example, involve reconfiguration of open water areas based on natural factors such as soil type. Rediscovery of marsilea villosa at the site, particularly with its current status as an endangered species, would appear to provide sufficient justification for the restoration of its ephemeral wetland habitat.

10. We concur that there is an absence of historical information provided to support the re-creation of a previously existing fishpond at Kaloko. The recommendation would allow a non-profit organization, such as one supporting the preservation of Hawaiian culture, to utilize the inlet to construct a working replica of a Hawaiian fishpond as an interpretive/educational exhibit. To eliminate potential confusion, we will re-label the recommendation as "Replicate Hawaiian Fishpond."

11. We did not consider ownership as an unresolved issue in the context of assessing environmental impacts of the project. As discussed in Chapter I, Section A, the intent of the Master Plan was to help the State determine whether the Ka Iwi area

should be acquired for inclusion in the State Parks system. The EIS assesses the environmental consequences of acquiring and developing the site as a park as recommended. The environmental consequence of not acquiring the site is discussed under the "No Action" alternative in Chapter XVIII. These include the potential for development by private interests, continued degradation of the ecosystem by off-road vehicles, continued littering and dumping of abandoned vehicles, continued water quality impacts, and the unrealized potential for public interpretation and education.

Your letter, along with this response, will be reproduced in the forthcoming Final Environmental Impact Statement. We appreciate your interest and participation in the consultation phase of the environmental review process.

Sincerely,

Earl K. Matsukawa, Project Manager

cc: William Gorst, DLNR State Parks Division

THE LEAGUE
OF WOMEN VOTERS OF HONOLULU

December 6, 1995

Department of Land and Natural Resources
State Parks Division
State of Hawaii
1151 Punchbowl Street, Room 310
Honolulu, Hawaii 96813

RECEIVED
DEC 0 8 1995
WILSON OKAMOTO & ASSOC.

ATTN: Mr. Willaim Gorst

RE: Ka Iwi State Park Master Plan and Draft EIS

Dear Mr. Gorst:

We have reviewed the above mentioned material with great interest. We long hoped that the various previous proposals for such an extended regional park could be made specific and implemented. Whatever criticisms we or others might make of the Plan or the EIS should not be allowed to prevent or delay the purchase of the privately owned land involved as soon as possible. This is the last pristine shoreline area on this island within reasonable and accessible distance of our major population and visitor centers. It should be preserved, for both recreational and aesthetic reasons, at all costs. Our comments on both the Plan and the EIS are:

1. We would like to have both the Plan and the EIS follow the basic principle that the Ka Iwi area should not be part of another public park, but rather a natural wilderness resource to be enjoyed in tranquility and reverence in as nearly an untouched state as possible. The island does not need another Ala Moana Park or Hanauma Bay. We would like to see as little "development" as possible in this area such as roads for ORV's, parking lots, food stands, comfort stations, and the like. Since it is planned to be part of the Regional Park --- 361 acres out of a total of 1625 --- we urge that as many of these facilities as may be needed be located in other portions of the park, leaving this special area for hiking, bird-watching, study of native plants, and other activities not accompanied by noisy motors, crowds of people, lots of buses and cars, baseball fields, tennis courts, restaurants, and the like.

2. With this in mind we urge that developments start and hopefully end, with those listed in Alternative I, which emphasizes preservation. If items "k" and "l" must be included, we urge that they be confined to the outer edges of the area and made as unobtrusive as possible. We question the need for a parking area at Makapu'u Head, which is walking distance of the highway. For older people or the handicapped, perhaps a shuttle could be provided in order to keep cars out of the area.

49 S. Hotel Street, Room 314, Honolulu, Hawaii 96813 Telephone: (808)531-7448 / 537-6267

Among Alternative II's "interpretive passive recreation" facilities, items "m, n, p, r" perhaps should not be located on the Ka Iwi area at all -- and certainly, not at first. All these would detract from the untouched, wilderness quality which we feel is unique to this area, and which cannot be found anywhere else on the island in a location accessible to most people.

3. The "Study Area" is limited to land makai of the highway. Yet the scenic beauty seen as one drives along the road is to a significant degree enhanced by the fact that the road is between the ocean and the rocky mauka highlands. If development -- housing or other -- characterized the mauka side of the road, the effect would be greatly diminished. We think the study area should include all the mauka area visible from the highway. A map is needed to show which privately owned land is steep, rocky, unbuildable; and which is buildable but vacant, such as Golf Course 5 and 6 opposite Sandy Beach. We think that all parcels in the third category should be acquired by the State (or City) as soon as possible -- either as part of the Ka Iwi Plan and EIS, or in separate action.

4. The EIS, we feel, gives insufficient attention to the impact of visitors to the Ka Iwi section of the Regional Park. If preservation is to be emphasized here, there must be a carefully planned effort not to draw masses of buses, cars, and indeed, even people into it. With Hanauma Bay over-utilized and restricted, it can be expected that those -- including buses -- who cannot park there will go out into the easterly portion of the Park, and if allowed there, could destroy the pristine character of the Ka Iwi area. We would like the EIS to include studies of the area's carrying capacity, and how any excess expected could be accommodated in the more westerly -- and more accessible -- portions of the Regional Park. In other words, we would like to see a more coordinated approach to the development of the Park as a single unit, with the various desired activities and facilities distributed in such a way as to minimize destruction of the unique quality of the Ka Iwi portion. The EIS should include a more detailed analysis of the traffic and parking problems, especially buses, which are to be expected.

5. The merging of the EIS with the Plan is unusual and perhaps tends to minimize attention given to the impacts of the Plan. We feel that since EIS's are usually prepared by developers, it is inevitable that they emphasize the favorable impacts expected and minimize the adverse effects. This is probably more the case with private proposals than a State-sponsored one like Ka Iwi. In this case, the Plan includes much material which would ordinarily go into the EIS. W can understand that, in the interests of reducing costs, these were not repeated in the EIS but rather, cross-referenced. We think, however, that the EIS itself could be augmented as indicated above, and possibly a more detailed discussion of many environmental factors, which others making comments will doubtless list.

6. None of these comments outweigh the desirability of moving ahead as rapidly as possible with land acquisition. We do not find any discussion in the Plan or EIS of how much this might cost and how it would be financed. Of course, we understand that since the land price is yet to be negotiated or determined, possibly by a jury, it would be unwise to make any cost estimates at this stage. Doubtless a bond issue would be needed. We feel strongely, however, that in the long run any such costs would be worth paying. The costs of providing water, sewerage, roads, police protection, schools, and other public facilities to support whatever private residential, commercial, industrial, or reaort development might otherwide be built will also be high and will not preserve the area for permanent recreational and scenic enjoyment. If the Plan and EIS are not approved, and soon, we will have lost an unparalled opportunity which can never be duplicated.

Thank you for asking us to comment.

Suzanne Meisenzahl
Suzanne Meisenzahl
President by ARE

Astrid Monson
Astrid Monson, Chair
Planning & Zoning Committee
by ARE

2974-01
April 23, 1996

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Ms. Suzanne Meisenzahl, President
Ms. Astrid Monson, Planning and Zoning Committee Chair
The League of Women Voters of Honolulu
49 South Hotel Street, Room 314
Honolulu, Hawaii 96813

Dear Ms. Meisenzahl & Ms. Monson:

Subject: Ka Iwi State Park
Draft Environmental Impact Statement (EIS)
East Honolulu, Oahu, Hawaii

This is in response to your letter dated December 6, 1995. We acknowledge your support for the acquisition of the Ka Iwi site by the State as soon as possible. We offer the following responses to your comments in their respective order which they were made:

1. Chapter VII of the Master Plan assesses the scenic/open space, recreational and interpretive/educational resources of the Ka Iwi site within the broader study area from Hanauma Bay to Makapu'u Point. It assesses the existing management of those resources and whether or not State acquisition of the site would improve its management. Finally, it assesses jurisdictional alternatives for managing the park under Federal, State or City authority. While there are a few advantages to placing the Ka Iwi site under the same jurisdiction as the Koko Head Regional Park, resolution of these management "linkages" should not interfere with the State's decision to proceed with the acquisition.

   The recommended plan proposes no roads for ORVs. Instead it would bar any ORV activity in the area. Parking and comfort stations are proposed for park users but they are located away from the shoreline to discourage beach-type activities that would be better accommodated at Sandy Beach or Hanauma Bay. It should also be pointed out that Ka Iwi does not have any significant beaches or swimming areas that would attract typical beachgoers. Buses and cars associated with sightseeing would be accommodated at Makapu'u Lookout. No baseball fields, tennis courts or restaurants are proposed.

2. We acknowledge your support for Alternative I. The rationale for the location of items "k" and "l" is discussed above. The recommended plan does not include parking at Makapu'u Head. A separate parking area accessible from the Makapu'u Lookout is proposed for hikers using the Makapu'u Wayside. This would facilitate management of parking at the Makapu'u Lookout, where a 20-minute time limit would limit it to sightseers.

A shuttle staging area for use by the handicapped, elderly, or for interpretive/educational tours of the lighthouse is proposed in Alternative 3, item "y," but was omitted from the recommended plan. Such shuttle activity would be strictly managed and is envisioned to be limited to a few runs per day on weekdays only. Other than the shuttles, the only other vehicles that would be permitted on the internal roads would be for park or lighthouse maintenance or for emergencies.

We acknowledge your opinion that the wilderness experience at the Ka Iwi site should be preserved. The items you object to would allow greater interpretive/educational use of the area, including by school groups. We feel that accommodating such public use helps to justify State acquisition of the site for a State Park and fosters public appreciation of the wilderness.

3. Your comment regarding the park boundary extending mauka of Kalanianaole Highway is well taken. The Ka Iwi State Park Master Plan and EIS was, however, prepared pursuant to House Concurrent Resolution No. 261, H.D.1, S.D.1. The resolution specified the study area as including parcels makai of Kalanianaole Highway plus Koko Crater, and identified them by their TMK numbers. This is consistent with the intent of the study to examine *"the establishment of a continuous scenic shoreline park from Koko Head to Makapu'u."* (emphasis added).

   The examination of visual impacts focused on the value of the Ka Iwi site for the preservation of scenic shoreline vistas in the study area. This was consistent with the formulation of a recommendation for the State to acquire the site. Nevertheless, Chapter VII, Section A.3. discusses how mauka views from the park could be affected by on-going and planned development and how any additional development proposals could be affected by considerations of views from the park, if it is established.

4. We do not foresee that the Ka Iwi area will receive significant numbers of "spill-over" visitors from Hanauma Bay. Nearby Sandy Beach and Makapu'u Beach parks both offer large white sand beaches that could attract "spill over" use but neither offer comparable sightseeing, snorkeling, or swimming opportunities. Hence, tour promoters do not currently offer

Sandy Beach nor Makapu'u Beach as alternatives to visiting Hanauma Bay. Comparable beach sunbathing and safer swimming opportunities are available in Waikiki. Ka Iwi has no significant sightseeing, beach sunbathing, snorkeling or swimming opportunities. Hence, it is difficult to conceive that Ka Iwi will approach the level of usage seen at Hanauma Bay, Sandy Beach or Makapu'u Beach.

Due in large part to its lack of mass appeal, many of Ka Iwi's delicate natural resources have been preserved. These resources are prone to damage from human activity, as witnessed by the damage done by ORVs. The recommended master plan proposes to restore and preserve these resources while allowing low levels of activity in the form of interpretation and education as well as passive recreation.

One of the policies stated in Chapter XI, A. Park Goals, Objective and Policies is for the establishment of park visitor carrying capacities. At this time, it is uncertain what degree of public demand may be created by the park, what sorts of activities and behaviors park users may engage in, or what park resource values may be compromised as a result. Carrying capacities would be determined after the park is operating and a pattern of public use is established. To assure that initial usage will not overtax park resources, the amount of parking recommended for the Queen's Beach area is comparable to the number of cars observed parked in the area. Aside from ORV activities and trash dumping, current public use of the area is not considered particularly damaging to Ka Iwi's resources.

5. Contrary to your opinion, we feel that the EIS section of the report highlights the discussion of environmental impacts because most of the other required EIS components, such as the proposed project, existing conditions, and alternatives are covered elsewhere in the report in great detail.

Your characterization that EIS for private developments emphasizes favorable impacts is puzzling. Positive impacts of most private developments are mainly economic, such as job creation. By contrast, the Ka Iwi State Park Master Plan and EIS offer ample discussions of intended public benefits such as the preservation of scenic and open space resources, natural ecosystems, and cultural resources, as well providing

opportunities for interpretation and education as well as recreation.

6. Development costs for major park facilities is estimated in Chapter XII, Table XII-2. The intent of the Master Plan was to assess the suitability of the site for inclusion in the State Park system. Determining land acquisition costs is beyond the scope of the study. Moreover, inasmuch as litigation over zoning for the privately-owned land is on-going, it is unlikely that the State and the landowner would agree on the basis for an acquisition cost estimate at this time. With a decision to pursue acquisition, however, the State can move on to the next step of exploring various options for acquisition.

Your letter, along with this response, will be reproduced in the forthcoming Final Environmental Impact Statement. We appreciate your interest and participation in the consultation phase of the environmental review process.

Sincerely,

Earl K. Matsukawa, Project Manager

cc: William Gorst, DLNR State Parks Division

THE OUTDOOR CIRCLE
1110 University Ave., #406 • Honolulu, HI 96826
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Established 1912
A Non-profit Organization
BRANCHES
OAHU
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DEC 08 1995
WILSON OKAMOTO & ASSO.

December 7, 1995

Mr. William Gorst
Department of Land and Natural Resources
State Parks Division
State of Hawai'i
1151 Punchbowl Street, Room 310
Honolulu, HI 96813

RE: Ka Iwi State Park Master Plan and Draft Environmental Impact Statement; East Honolulu, Oahu, Hawai'i; T.M.K.: 3-09-11: 2, 3, 5, 6 and 7 and 4-01-14:1

Dear Mr. Gorst:

Thank you for the opportunity to review and comment on the above referenced master plan and draft environmental impact statement. The Outdoor Circle has worked for more than 80 years to "keep Hawai'i clean, green, and beautiful." One of the ways in which we have accomplished our mission is by advocating for green, open space. In addition, The Circle has always been a promoter of the "lei of green" around Oahu.

Our organization feels that the master plan proposed for the Ka Iwi State Park makes a persuasive argument for representatives from the State, City, and landowners to work together to see this plan realized. There is no doubt that the Ka Iwi State Park Plan would benefit residents as well as the thousands of visitors that come to our island each year. Protecting Hanauma Bay-to-Makapuu greatly enhances the concept of the lei of green, preserving this area in perpetuity.

The Outdoor Circle is in favor of the recommended plan as stated in Chapter XII of the Master Plan. We agree that the purpose of the park should be to "preserve the area's natural resources, promote interpretive and educational uses and accommodate passive recreation." The recommended plan incorporates all of the uses as stated in the Low-Intensity Alternative and most of them listed in the Medium Intensity Alternative. We would like to address our volunteer efforts to "preserve and enhance the natural, cultural, and scenic qualities of Ka Iwi State Park." We look forward to being part of the long-term planning process to bring this park to fruition.

Sincerely,

Carolyn Heinrich
President

Mary Steiner
CEO

cc: Gary L. Gill, Office of Environmental Quality Control
Earl K. Matsukawa, Wilson Okamoto & Associates

2974-01
April 23, 1996

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Ms. Carolyn Heinrich, President
Ms. Mary Steiner, CEO
The Outdoor Circle
1110 University Ave., #406
Honolulu, HI 96826

Dear Ms. Heinrich and Ms. Steiner:

Subject: Ka Iwi State Park
Draft Environmental Impact Statement (EIS)
East Honolulu, Oahu, Hawaii

This is in response to your letter dated December 7, 1995. We appreciate your support for the proposed project and recommended plan. Your offer to volunteer services for preserving and enhancing the natural, cultural and scenic qualities of the park are particularly heartening.

Your letter, along with this response, will be reproduced in the forthcoming Final Environmental Impact Statement. We appreciate your interest and participation in the consultation phase of the environmental review process.

Sincerely,

Earl K. Matsukawa, Project Manager

cc: William Gorst, DLNR State Parks Division



Sunrise, Mt. McKinley Ansel Adams

SIERRA CLUB LEGAL DEFENSE FUND, INC.

The Law Firm for the Environmental Movement

223 South King Street, 4th Fl., Honolulu, HI 96813 (808) 599-2436 FAX (808) 521-6841

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WILSON OKAMOTO &

December 7, 1995

Governor Benjamin Cayetano
c/o Office of Environmental Quality Control
220 South King Street, 4th Floor
Honolulu, Hawaii 96813

Dear Governor Cayetano:

Draft Environmental Impact Statement (DEIS)
Ka Iwi State Park Master Plan

The State of Hawaii prepared a draft environmental impact statement ("DEIS") to help determine how the Queen's Beach and the Makapu'u Head area should best be developed under the Hawaii State Park system. The Ka Iwi Master Plan and Draft Environmental Impact Statement is for approximately 354 acres that the community and the State has identified as a priority area for open space preservation.

The Ahupua'a Action Alliance supports the intent of the State and this Master Plan to establish a state park and preserve open space at the area. However, the Master Plan and its accompanying DEIS do not provide a comprehensive plan for the proposed park, nor a complete assessment of the existing conditions and potential impacts from the development of a park in the area. Consequently, it is difficult to make an accurate assessment of how the area may be affected.

Cultural Impact Assessment

As part of the Chapter 343, Hawaii Revised Statues ("HRS"), and Title 11-200, Hawaii Administrative Rules ("HAR") the proposed project must be assessed in terms of its potential impacts on the social and cultural conditions of the community. While the document does contain a cursory literature review of the archaeological remains and local myths concerning the area, it fails to describe how the proposed park could potentially affect native Hawaiians and their cultural traditions as they are practiced today. It fails to describe the significance of the place to native Hawaiians, particularly the beach area near Sea

Life Park that was occupied by native Hawaiians during recent history.

The DEIS also fails to discuss access rights for native Hawaiians to the coastal areas after a park is developed. Will the park preserve the rights of native Hawaiians to gather according to their local customs and traditions? Will the park recognize the cultural significance of the area in its "interpretative" programs beyond possible development of Kaloko fishpond?

Physical Conditions at Ka Iwi

The DEIS also only provides a standard description of the coastal/nearshore environment at Ka Iwi based on a literature review of surveys done in the past decades. The description of the off-shore conditions is cursory, and only includes a description of the obvious conditions like the "Molokai Express". For a comprehensive management plan to succeed there must be a more thorough consideration of the existing conditions and planning for their sustainable management.

Conclusion

As an alliance of native Hawaiian and environmental groups, we strongly support the preservation of this area. We similarly urge that the planning of this project integrate the concerns of native Hawaiians, the natural environment, and the non-Hawaiian community so that comprehensive and sustainable management can occur. The completion of a thorough social and cultural impact assessment as part of the Master Plan and DEIS would facilitate this objective.

Yours very truly,

Andrew Tomlinson
Resource Analyst

cc: Wilson Okamoto and Associates, Inc.

2974-01
April 23, 1996

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Mr. Andrew Tomlinson, Resource Analyst
Sierra Club Legal Defense Fund, Inc.
223 South King Street, 4th Floor
Honolulu, Hawaii 96813

Dear Mr. Tomlinson:

Subject: Ka Iwi State Park
Draft Environmental Impact Statement (EIS)
East Honolulu, Oahu, Hawaii

This is in response to your letter dated December 7, 1995 commenting on the subject Draft EIS. The Ka Iwi Master Plan and Draft EIS was prepared to help the State determine whether the 316-acre Ka Iwi site should be acquired for inclusion in the Hawaii State Parks System. This included an assessment of the alternative park development scenarios.

The Master Plan provides a comprehensive overview of the role of the Ka Iwi area within the Study Area from Hanauma Bay to Makapu'u Lookout. It also provides a comprehensive assessment of potential park resources and alternative development concepts. It does not, however, offer detailed park development and operation plans. Preparation of such plans would be appropriate if the State acquires the site based on the recommendation of the Master Plan. At that point, additional State resources should be committed to begin fleshing-out design details, and conducting additional studies such as an insect survey, wetland boundary determinations, and traffic analyses in conjunction with anticipated permits and approvals.

Cultural Impact Assessment

The Master Plan and EIS provides a comprehensive assessment of cultural resources based on existing literature, including prior archaeological surveys. Also discussed is a survey conducted by the State Historic Preservation Division specifically for the master plan. We disagree with your characterization that the Master Plan/EIS provides only a cursory literature review.

In addition, we consulted with the Ohana Council, which has expressed an interest in the Makapu'u Head area. That consultation is documented in Chapter XII. Since the Ohana Council's plans for the area have yet to be formally presented to the State, it is uncertain how their plans or the State's plans would be affected. In deference to the Ohana Council's efforts, a potential Cultural Center was indicated on the recommended Master Plan. We have found no documentation mentioning modern cultural traditions practiced at the site.

The beach area near Sea Life Park which you refer to is not within the Ka Iwi site or the larger Study Area examined in the Master Plan and EIS.

As a State park, the Ka Iwi area would be open to the general public during normal park hours. No additional restrictions on fishing or gathering activities beyond existing State laws and rules are proposed at this time. We have not observed nor have we been made aware of any local customs and traditional gathering being practiced at the Ka Iwi site that could be adversely affected. The Master Plan merely suggests potential interpretive/educational themes that could be used in such programs. Other suggestions would be welcomed.

Physical Conditions at Ka Iwi

We are unclear as to what you mean by a "standard" description of the coastal/nearshore environment and why the description provided would be deficient. Similarly, we are unclear why you would label our description of offshore currents as "cursory" or how it would bear on the success of the plan for appropriately managing Ka Iwi resources. The recommended master plan would accommodate low levels of use comparable to existing activities except for highly destructive ORV use and trash dumping. Thus, additional adverse environmental impacts would be avoided and existing destruction curtailed. This alone would contribute to sustaining existing resources. Additional studies are recommended in the plan to further improve management after the park is established.

Conclusion

We appreciate your support for the preservation of this area. We feel that we have addressed the concerns of the natural environment as well as the concerns of the Hawaiian and non-Hawaiian community. In preparing this plan, we held three public meetings in the vicinity of the Ka Iwi site to solicit community input. As discussed previously, a separate meeting was also held with the Ohana Council to specifically solicit input from a native Hawaiian point of view.

Your letter, along with this response, will be reproduced in the forthcoming Final Environmental Impact Statement. We appreciate your interest and participation in the consultation phase of the environmental review process.

Sincerely,

Earl K. Matsukawa, Project Manager

cc: William Gorst, DLNR State Parks Division

Utilities Relocation includes the removal of six overhead utilities poles along Kalanianaole Highway which would be displaced by the parking lot for the Lookout.

KA IWI EIS

19. Pg. XIII-4

Preparation of the Master Plan has been completed. The Office of Hawaiian Affairs has participated in the EIS process, having commented on the Draft EIS. The Ohana Council, which had expressed particular interest in the proposal, was consulted, as documented in Chapter XII. The Audubon Association and other organizations are welcome to provide their input in the development of the park which will proceed in phases after the land is acquired.

20. Pg. XVII-2 - 4. Ecosystems

We assume your reference is to Kalanianaole Highway; not Kamehameha Highway. Currently, drainage from the hillsides mauka of the highway between the golf course and Makapu'u Lookout enters Kealakipapa Valley through inlets under the highway as shown in Figure IX-5. During heavy rains, these inlets are apparently inadequate to accommodate flows and the highway has a tendency to flood. In conjunction with the restoration of the wetland, it was recommended that the natural drainage patterns of the mauka area be investigated to determine if these heavy flows can be directed under the highway to reduce flooding while feeding the wetland, possibly lengthening the period it contains standing water.

With respect to identifying mauka and makai drainage patterns, this is done in Chapter IX, Section E and shown in Figure IX-5. Reference is made to this discussion in Chapter XV in the Draft EIS. As discussed above, if drainage can be directed into the wetland, it would serve as a natural containment system. Also, as discussed in Chapter XI, Section B.1.f., a siltation basin is proposed to be constructed within the drainageway leading to Ka'ili'ili Bay. Due to the potential volume of storm flows from existing drainage diversions encompassing the leeward side of the Ko'olau Range from Kamehame Ridge to the Hawaii Kai Golf Course, use of a natural system is unfeasible.

21. Pg. XVII-3 - 5. Archaeological/Historical

As discussed in our response No.5 above, none of the remnants of the King's Highway will be paved over. Our statement that the new road will be built over the King's Road remnant was an error and will be deleted in the Final EIS. Also, as discussed in Chapter XI.B.1.g. the recommendation is to restore the remnant of the King's Highway alongside Kalanianaole Highway. The feature would be incorporated as a interpretive feature within the trail system so it would be accessible to park users. There was no intent to have the historical feature used as a trail.

The State Parks Division will consult with the State Historical Preservation Division regarding the eligibility of the King's Highway remnants for listing in the State or National Historic Register.

22. Page XVII-4 - 7. Employment

The visitor center is initially proposed as an open-air shelter housing informational displays. If the popularity of the park increases to the point that a manned facility is desired, there is a potential that a paid docent may be stationed there. More likely, however, unpaid volunteer docents would initially man the facility.

With respect to park maintenance, the existing State Parks Division personnel will likely add the park to its circuit of facilities to be maintained by its existing staff. Therefore, the creation of maintenance jobs is uncertain.

The fishpond, if it is built and operated by a non-profit organization could create paid jobs and be of subsistence value but it is uncertain at this time if such as project would proceed.

Given the uncertainty of long-term job creation and the relatively few positions that might be created, it was not viewed an anticipatable impact of the project.

23. Page XVII-4 - 8. Traffic

The traffic discussion you are referring to is Section A, Short-term Impacts which is explained as those "related to the construction phase of the project." The proposed parking for the park is considered a long-term impact and is discussed in Section B, Long-

November 28, 1995

Mr. William Gorst
Department of Land and Natural Resources
State Parks Division
1151 Punchbowl St. rm. 310
Honolulu, Hawai'i 96813

RECEIVED
DEC 04 1995
WILSON OKAMOTO & ASSOC.

Dear Mr. Gorst,

Subject: Ka'Iwi State Park Master Plan and Draft EIS

Thank you for this opportunity to review and comment on the Ka'Iwi State Park Master Plan and Draft Environmental Impact Statement.

The document's assessment of the area's scenic, recreational and cultural resources is comprehensive and enlightening. The document makes a persuasive case for the State of Hawai'i , the City and County of Honolulu, landowners and the general public to work together to see that the Hanauma Bay-to-Makapu'u area, one of O'ahu's most utilized and appreciated scenic and recreational shorelines, be preserved in perpetuity as a park.

I especially agree with the recommended plan's concept of mixing some components of the Mixed-Intensity alternative with all of the components of the Low-Intensity alternative. This solution provides the greatest amount of resource protection while providing a reasonable amount of access and convenience for parkusers, including student groups and visitor groups.

I would suggest, however, that the proposed park boundary be amended to include three key parcels: the two parcels mauka of Kalaniana'ole Highway across for Sandy Beach Park known as Golf Course 5 & 6; and the ridge lands mauka of Kalaniana'ole Highway between the Hawai'i Kai Executive Golf Course and Makapu'u Lookout, up to and including the Ko'olau ridge line,. These two undeveloped, privately-owned parcels are important wild spaces along the scenic highway, providing valuable natural buffers and landscape integrity to the entire coast.

Sincerely,

Charlene M. Arjona

Charlene M. Arjona

1839 Hoolehua St.
Pearl City, Hi. 96782

cc: Office of Environmental Quality Control, State of Hawai'i, 220 S. King St., 4th floor, Honolulu 96813 ATTN: Mr Gary Gill

Wilson Okamoto & Assoc., 1907 S. Beretania St., suite 400, Honolulu, 96826 ATTEN: Mr. Earl Matsukawa

2974-01
April 23, 1996

WILSON
OKAMOTO
& ASSOCIATES, INC.

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1907 S. BERETANIA STREET
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FAX: (808) 946-2253

Mailing address:
P. O. Box 3530
Honolulu, Hawaii 96811

Ms. Charlene M. Arjona
1839 Hoolehua Street
Pearl City, Hawaii 96782

Dear Ms. Arjona:

Subject: Ka Iwi State Park
Draft Environmental Impact Statement (EIS)
Makapu'u, Oahu, Hawaii

This is in response to your letter dated November 28, 1995 commenting on the subject Draft EIS. We acknowledge your support for the project and recommended plan.

Your comment regarding the park boundary extending mauka of Kalanianaole Highway is well taken. The Ka Iwi State Park Master Plan and EIS was, however, prepared pursuant to House Concurrent Resolution No. 261, H.D.1, S.D.1. The resolution specified the study area as including parcels makai of Kalanianaole Highway plus Koko Crater, and identified them by their TMK numbers. This is consistent with the intent of the study to examine *"the establishment of a continuous scenic shoreline park from Koko Head to Makapu'u."* (emphasis added).

The examination of visual impact focused on the value of the Ka Iwi site on the preservation of scenic shoreline vistas in the study area. This was consistent with the formulation of a recommendation for the State to acquire the site. Nevertheless, Chapter VII, Section A.3. discusses how mauka views from the park could be affected by on-going and planned development and how any additional development proposals could be affected by considerations of views from the park, if it is established.

Your letter, along with this response, will be reproduced in the forthcoming Final Environmental Impact Statement. We appreciate your interest and participation in the consultation phase of the environmental review process.

Sincerely,

Earl Matsukawa, Project Manager

cc: William Gorst, DLNR State Parks Division

November 28, 1995

RECEIVED
DEC 04 1995
WILSON OKAMOTO & ASSOC.

Mr. William Gorst
Department of Land and Natural Resources
State Parks Division
1151 Punchbowl St. rm. 310
Honolulu, Hawai'i 96813

Dear Mr. Gorst,

Subject: Ka'Iwi State Park Master Plan and Draft EIS

Thank you for this opportunity to review and comment on the Ka'Iwi State Park Master Plan and Draft Environmental Impact Statement.

The document's assessment of the area's scenic, recreational and cultural resources is comprehensive and enlightening. The document makes a persuasive case for the State of Hawai'i , the City and County of Honolulu, landowners and the general public to work together to see that the Hanauma Bay-to-Makapu'u area, one of O'ahu's most utilized and appreciated scenic and recreational shorelines, be preserved in perpetuity as a park.

I especially agree with the recommended plan's concept of mixing some components of the Mixed-Intensity alternative with all of the components of the Low-Intensity alternative. This solution provides the greatest amount of resource protection while providing a reasonable amount of access and convenience for parkusers, including student groups and visitor groups.

I would suggest, however, that the proposed park boundary be amended to include three key parcels: the two parcels mauka of Kalaniana'ole Highway across for Sandy Beach Park known as Golf Course 5 & 6; and the ridge lands mauka of Kalaniana'ole Highway between the Hawai'i Kai Executive Golf Course and Makapu'u Lookout, up to and including the Ko'olau ridge line,. These two undeveloped, privately-owned parcels are important wild spaces along the scenic highway, providing valuable natural buffers and landscape integrity to the entire coast.

Sincerely,

Ramon Arjona III

Ramon Arjona III

1839 Hoolehua St.
Pearl City, Hi. 96782

cc: Office of Environmental Quality Control, State of Hawai'i, 220 S. King St., 4th floor, Honolulu 96813 ATTN: Mr Gary Gill

Wilson Okamoto & Assoc., 1907 S. Beretania St., suite 400, Honolulu, 96826 ATTEN: Mr. Earl Matsukawa

2974-01
April 23, 1996

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FAX: (808) 946-2253

Mailing address:
P.O. Box 3530
Honolulu, Hawaii 96811

Mr. Ramon Arjona III
1839 Hoolehua Street
Pearl City, Hawaii 96782

Dear Mr. Arjona:

Subject: Ka Iwi State Park
Draft Environmental Impact Statement (EIS)
Makapu'u, Oahu, Hawaii

This is in response to your letter dated November 28, 1995 commenting on the subject Draft EIS. We acknowledge your support for the project and recommended plan.

Your comment regarding the park boundary extending mauka of Kalanianaole Highway is well taken. The Ka Iwi State Park Master Plan and EIS was, however, prepared pursuant to House Concurrent Resolution No. 261, H.D.1, S.D.1. The resolution specified the study area as including parcels makai of Kalanianaole Highway plus Koko Crater, and identified them by their TMK numbers. This is consistent with the intent of the study to examine *"the establishment of a continuous scenic shoreline park from Koko Head to Makapu'u."* (emphasis added).

The examination of visual impact focused on the value of the Ka Iwi site on the preservation of scenic shoreline vistas in the study area. This was consistent with the formulation of a recommendation for the State to acquire the site. Nevertheless, Chapter VII, Section A.3. discusses how mauka views from the park could be affected by on-going and planned development and how any additional development proposals could be affected by considerations of views from the park, if it is established.

Your letter, along with this response, will be reproduced in the forthcoming Final Environmental Impact Statement. We appreciate your interest and participation in the consultation phase of the environmental review process.

Sincerely,

Earl Matsukawa, Project Manager

cc: William Gorst, DLNR State Parks Division

November 28, 1995

Mr. William Gorst
Department of Land and Natural Resources
State Parks Division
1151 Punchbowl St. rm. 310
Honolulu, Hawai'i 96813

RECEIVED
DEC 04 1995
WILSON OKAMOTO & ASSOC

Dear Mr. Gorst,

Subject: Ka'Iwi State Park Master Plan and Draft EIS

Thank you for this opportunity to review and comment on the Ka'Iwi State Park Master Plan and Draft Environmental Impact Statement.

The document's assessment of the area's scenic, recreational and cultural resources is comprehensive and enlightening. The document makes a persuasive case for the State of Hawai'i , the City and County of Honolulu, landowners and the general public to work together to see that the Hanauma Bay-to-Makapu'u area, one of O'ahu's most utilized and appreciated scenic and recreational shorelines, be preserved in perpetuity as a park.

I especially agree with the recommended plan's concept of mixing some components of the Mixed-Intensity alternative with all of the components of the Low-Intensity alternative. This solution provides the greatest amount of resource protection while providing a reasonable amount of access and convenience for parkusers, including student groups and visitor groups.

I would suggest, however, that the proposed park boundary be amended to include three key parcels: the two parcels mauka of Kalaniana'ole Highway across for Sandy Beach Park known as Golf Course 5 & 6; and the ridge lands mauka of Kalaniana'ole Highway between the Hawai'i Kai Executive Golf Course and Makapu'u Lookout, up to and including the Ko'olau ridge line,. These two undeveloped, privately-owned parcels are important wild spaces along the scenic highway, providing valuable natural buffers and landscape integrity to the entire coast.

Sincerely,

Ramon Arjona IV

1839 Hoolehua St.
Pearl City, Hi. 96782

cc: Office of Environmental Quality Control, State of Hawai'i, 220 S. King St., 4th floor, Honolulu 96813 ATTN: Mr Gary Gill

Wilson Okamoto & Assoc., 1907 S. Beretania St., suite 400, Honolulu, 96826 ATTEN: Mr. Earl Matsukawa

2974-01
April 23, 1996

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Mailing address:
P.O. Box 3530
Honolulu, Hawaii 96811

Mr. Ramon Arjona IV
1839 Hoolehua Street
Pearl City, Hawaii 96782

Dear Mr. Arjona:

Subject: Ka Iwi State Park
Draft Environmental Impact Statement (EIS)
Makapu'u, Oahu, Hawaii

This is in response to your letter dated November 28, 1995 commenting on the subject Draft EIS. We acknowledge your support for the project and recommended plan.

Your comment regarding the park boundary extending mauka of Kalanianaole Highway is well taken. The Ka Iwi State Park Master Plan and EIS was, however, prepared pursuant to House Concurrent Resolution No. 261, H.D.1, S.D.1. The resolution specified the study area as including parcels makai of Kalanianaole Highway plus Koko Crater, and identified them by their TMK numbers. This is consistent with the intent of the study to examine *"the establishment of a continuous scenic shoreline park from Koko Head to Makapu'u."* (emphasis added).

The examination of visual impact focused on the value of the Ka Iwi site on the preservation of scenic shoreline vistas in the study area. This was consistent with the formulation of a recommendation for the State to acquire the site. Nevertheless, Chapter VII, Section A.3. discusses how mauka views from the park could be affected by on-going and planned development and how any additional development proposals could be affected by considerations of views from the park, if it is established.

Your letter, along with this response, will be reproduced in the forthcoming Final Environmental Impact Statement. We appreciate your interest and participation in the consultation phase of the environmental review process.

Sincerely,

Earl Matsukawa, Project Manager

cc: William Gorst, DLNR State Parks Division

Marilyn Bornhorst
1525 Oneele Place
Honolulu, Hawaii 96822

December 4, 1995

Mr. William Gorst
Department of Land and Natural Resources
State Parks Division
FAX 587-0311

Dear Mr. Gorst

I have been through the Environmental Impact Statement for the Ka IWi State Park.

The Recommended Plan makes sense to me. My concern, though, is that money might be spent early for programs and buildings and compromise the acquisition of land. To me, the most important thing is to gain control of all the land up to Makapuu Beach while it is still undeveloped. At the very least we should keep free all the land now makai of the highway as well as Golf Course 5 and 6 which is critical to the sweeping view we see as we drive along the coastline.

I would like to see a proposed timetable and estimated cost. When does that come in this process?

Sincerely,

Marilyn Bornhorst

Marilyn Bornhorst
941-1845 phone/fax

Copies: Office of Environmental Quality Control, FAX 586-2452
Wilson Okamoto & Assoc., FAX 946-2253

2974-01
April 23, 1996

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Mailing address:
P.O. Box 3530
Honolulu, Hawaii 96811

Ms. Marilyn Bornhorst
1525 Oneele Place
Honolulu, Hawaii 96822

Dear Ms. Bornhorst:

Subject: Ka Iwi State Park
Draft Environmental Impact Statement (EIS)
Makapu'u, Oahu, Hawaii

This is in response to your letter dated December 4, 1995 commenting on the subject Draft EIS. In general, the study's recommendations are consistent with your priorities. The initial recommendation, resulting from the Regional Context of the study (Part A) is for the State to acquire the privately owned land at the Ka Iwi site (Chapter VII, Section E, Recommendations). The development recommendations formulated for the Ka Iwi Site (Part B) is based on the assumption that the State has acquired the site. The only recommendation for improvements on existing State-owned land is for the Makapu'u Lookout area. These improvements, however, can be deferred in favor of land acquisition.

Your comment regarding the acquisition of land mauka of Kalanianaole Highway is well taken. The Ka Iwi State Park Master Plan and EIS was, however, prepared pursuant to House Concurrent Resolution No. 261, H.D.1, S.D.1. The resolution specified the study area as including parcels makai of Kalanianaole Highway plus Koko Crater, and identified them by their TMK numbers. This is consistent with the intent of the study to examine *"the establishment of a continuous scenic shoreline park from Koko Head to Makapu'u."* (emphasis added).

Your letter, along with this response, will be reproduced in the forthcoming Final Environmental Impact Statement. We appreciate your interest and participation in the consultation phase of the environmental review process.

Sincerely,

Earl Matsukawa, Project Manager

cc: William Gorst, DLNR State Parks Division

December 06, 1995

Mr. William Gorst
Department of Land and Natural Resources
State Parks Division
1151 Punchbowl St., Rm 310
Honolulu, Hawai'i 96813

DEC 8 1995

Dear Mr. Gost,

Subject: Ka Iwi State Park Master Plan and Draft EIS

Aloha! Mahalo for the chance to review and comment on the Ka 'Iwi State Park Master Plan and Draft Environmental Impact Statement.

It would be great to see the proposed park boundaries extended to include three important land parcels: Queen's Rise (the ridge lands mauka of Kalaniana'ole Highway between the Hawaii Kai Executive Golf Course and Makapu'u Lookout), which would include land up to the Ko'olau ridge line, and Golf Courses 5 & 6 (the two parcels mauka of Kalaniana'ole Highway across from Sandy Beach Park). These still-undeveloped parcels are important wild spaces along the scenic highway. They will also provide important natural buffers and landscape integrity to the entire coastal area.

The plan's concept of mixing some components of the Mixed-Intensity alternative with components of the Low-Intensity alternative is an excellent and prudent idea. This would offer a substantial amount of resource protection while providing access and convenience for parkusers, which may include both student and visitor groups.

As a teenager, my friends and I always journied from Pearl City to this beautiful side of the island, just to get away from the concrete and suburban sprawl of Honolulu. It would be wonderful to see this beautiful shoreline area, from Hanauma Bay to Makapu'u, preserved as a park. As a Native Hawaiian, it also makes strong cultural sense to me.

Sincerely,

Richard Meek Hu'eu Crabbe
763 Ho'opai St.
Pearl City, HI 96782-2231

cc: Office of Environmental Quality Control, State of Hawai'i, 220 S. King St., 4th floor, Honolulu 96813 ATTN: Mr. Gary Gill
Wilson Okamoto & Assoc., 1907 S. Beretania St., suite 400, Honolulu, 96826 ATTN: Mr. Earl Matsukawa

297-01
April 23, 1996

WILSON
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FAX: (808) 946-2253

Mailing address:
P. O. Box 3530
Honolulu, Hawaii 96811

Mr. Richard Meek Hu'eu Crabbe
763 Ho'opai Street
Pearl City, Hawaii 96782-2231

Dear Mr. Crabbe:

Subject: Ka Iwi State Park
Draft Environmental Impact Statement (EIS)
Makapu'u, Oahu, Hawaii

This is in response to your letter dated December 6, 1995 commenting on the subject Draft EIS. We acknowledge your support of the recommended plan.

Your comment regarding the park boundary extending mauka of Kalanianaole Highway is well taken. The Ka Iwi State Park Master Plan and EIS was, however, prepared pursuant to House Concurrent Resolution No. 261, H.D.1, S.D.1. The resolution specified the study area as including parcels makai of Kalanianaole Highway plus Koko Crater, and identified them by their TMK numbers. This is consistent with the intent of the study to examine *"the establishment of a continuous scenic shoreline park from Koko Head to Makapu'u."* (emphasis added).

Your letter, along with this response, will be reproduced in the forthcoming Final Environmental Impact Statement. We appreciate your interest and participation in the consultation phase of the environmental review process.

Sincerely,

Earl Matsukawa, Project Manager

cc: William Gorst, DLNR State Parks Division

531 Hahaione St. #9E
Honolulu, Hawaii 96825

19 November 1995

Department of Land and Natural Resources
State Parks Division
State of Hawaii
1151 Punchbowl St., Room 310
Honolulu, Hawaii 96813

RECEIVED
NOV 21 1995
WILSON OKAMOTO & ASSOC.

Attn: Mr. William Gorst

Subject: Ka Iwi State Park Master Plan and Draft Environmental Impact Statement (DEIS)

I have reviewed the subject document and concur with the concept of developing the Ka Iwi State Park. I particularly support the acquisition of the Queen's Beach parcel as a portion of the proposed park. A park would be a far more preferable use of the Queen's Beach parcel than a golf course as proposed by the developers.

Development of the park would ensure preservation of the land, whereas there is no assurance that approval of a golf course could at some time in the future open the park to future development.

Very truly yours,

Robert B. Fowler
(808) 395-7929

cc: Office of Environmental Control
State of Hawaii
220 S. King St., 4th Floor
Honolulu, Hawaii 96813
Attn: Mr. Gary Gill

✓ Wilson Okamoto & Associates, Inc.
1907 S. Beretania, Suite 400
Honolulu, Hawaii 96826
Attn: Mr. E. K. Matsukawa

2974-01
April 23, 1996

WILSON
OKAMOTO
& ASSOCIATES, INC.

ENGINEERS
PLANNERS

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FAX: (808) 946-2253

Mailing address:
P.O. Box 3530
Honolulu, Hawaii 96811

Mr. Robert B. Fowler
531 Hahaione Street
Honolulu, Hawaii 96725

Dear Mr. Fowler:

Subject: Ka Iwi State Park
Draft Environmental Impact Statement (EIS)
Makapu'u, Oahu, Hawaii

This is in response to your letter dated November 19, 1995 commenting on the subject Draft EIS. We acknowledge your support of the proposed project.

We appreciate your interest and participation in the consultation phase of the environmental review process.

Sincerely,

Earl Matsukawa, Project Manager

cc: William Gorst, DLNR State Parks Division

363 Holokai Place
Honolulu, Hawaii 96825

November 8, 1995

RECEIVED
NOV 13 1995
WILSON OKAMOTO & ASSOC.

Department of Land and Natural Resources
State Parks Division
State of Hawaii
1151 Punchbowl Street, Room 310
Honolulu, Hawaii 96813

ATTENTION: MR. WILLIAM GORST

Dear Mr. Gorst:

I am writing regarding the Ka Iwi State Park Master Plan and Draft Environmental Impact Statement (DEIS) for Ka Iwi State Park.

I firmly believe that the State of Hawaii should take all the steps necessary to keep the coastal area from Hanauma Bay to Makapu'u Point as open space. I am particularly concerned with the Queen's Beach area. This area is the last easily accessible natural open space available on Oahu. It provides many scenic vistas and is known for its uniquely Hawaiian landscape.

I wish to voice my support for acquisition of this area by the Hawaii State Parks system. This area should definitely be maintained for park purposes and outdoor education programs. Please ensure that this important recreational resource is preserved.

Thank you for the opportunity to express my concern.

Sincerely,

Patricia A. Fugere

Patricia A. Fugere

cc: Office of Environmental Quality Control
Wilson Okamoto & Associates, Inc.
Councilmember John Henry Felix

2974-01
April 23, 1996

WILSON
OKAMOTO
& ASSOCIATES, INC.

ENGINEERS
PLANNERS

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PH: (808) 946-2277
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Mailing address:
P.O. Box 3530
Honolulu, Hawaii 96811

Ms. Patricia A. Fugere
363 Holokai Place
Honolulu, Hawaii 96725

Dear Ms. Fugere:

Subject: Ka Iwi State Park
Draft Environmental Impact Statement (EIS)
Makapu'u, Oahu, Hawaii

This is in response to your letter dated November 8, 1995 commenting on the subject Draft EIS. We acknowledge your support of the proposed project as well as your opinion that the State of Hawaii should take all steps necessary to keep the coastal area from Hanauma Bay to Makapu'u Point as open space, especially the Queen's Beach area.

Your letter, along with this response, will be reproduced in the forthcoming Final Environmental Impact Statement. We appreciate your interest and participation in the consultation phase of the environmental review process.

Sincerely,

Earl Matsukawa, Project Manager

cc: William Gorst, DLNR State Parks Division

1002-A Prospect St. #28
Honolulu, 96822
December 5, 1995

Mr. Bill Gorst
DLNR
State Parks Division
1151 Punchbowl St.
Honolulu, 96813

Dear Bill:

I am writing is support of the master plan for Ka Iwi State Park. Having been a fisherman of the area for decades, I and others have enjoyed access to the Queen's Beach and Makapu'u ledge. Often a struggle as the access has been difficult and restricted; but usually rewarding for fishermen willing to make the hike in.

Also of concern to fishermen is the cleanliness of the water which has deteriorated over the decades. The Hawaii Kai golf course has carried runoff of fertilizer and most likely herbicides and pesticides in to the waters of Kaloko Inlet and Ka'ili'ili Bay effecting the aquatic life.

I do believe, however, your estimates of fishermen mentioned in he plan may have been low and influenced by factors such as the weather, day of week, time of day, the season, and the sampling method.

Be that as it may, fishermen one and all will support the Ka Iwi State Park which will both insure access to the area and improve water quality to this needed open space which is relief from the congestion of Honolulu.

Thank you and Aloha,

William J. King
Member, Atlapac fishing Club
956 2403

CC: Office of Quality Control, Department of Health
Earl Matsuoka, Wilson Okamoto & Associates Inc.

2974-01
April 23, 1996

WILSON
OKAMOTO
& ASSOCIATES, INC.

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1907 S. BERETANIA STREET
HONOLULU, HAWAII 96826
PH: (808) 946-2277
FAX: (808) 946-2253

Mailing address:
P. O. Box 3530
Honolulu, Hawaii 96811

Mr. William J. King
1002-A Prospect Street, #28
Honolulu, Hawaii 96822

Dear Mr. King:

Subject: Ka Iwi State Park
Draft Environmental Impact Statement (EIS)
Makapu'u, Oahu, Hawaii

This is in response to your letter dated December 5, 1995 commenting on the subject Draft EIS. We acknowledge your support of the proposed project.

As discussed in our recommendations for the Ka Iwi park site (Chapter XI), Kaloko Inlet and Ka'ili'ili Bay receive much more runoff than they did in their natural state due to the diversion of drainage from nearby residential areas and golf course. Although unconfirmed at this time, such runoff has the potential of introducing silt as well as pesticides and fertilizers which may also have a significant impact on water quality. It was recommended that a water monitoring program be established to better understand the impacts on water quality and to determine appropriate actions.

We concur that a two-day survey would not be reliable for characterizing fishing activity in the area. Within the limited context of the survey method, its intent was to gain some insight into what might occur within the study site on a given weekday and weekend. Our park development recommendations are not directly based upon the numerical data generated by the survey of recreational activities at the Ka Iwi site.

Your letter, along with this response, will be reproduced in the forthcoming Final Environmental Impact Statement. We appreciate your interest and participation in the consultation phase of the environmental review process.

Sincerely,

Earl Matsukawa, Project Manager

cc: William Gorst, DLNR State Parks Division

December 7, 1995

RECEIVED
'95 DEC -7 P3:55
OFC. OF ENVIRONMENTAL
QUALITY CONTROL

Director
Department of Parks and Recreation
City & County of Honolulu

Dear Sir:

I am writing to comment on the proposed park for the "Ka "Iwi" (Queen's Beach) shoreline. This area should be kept as open space for perpetuity. It's value as a resource for the citizens of Hawaii is incalculable.

The people who live here come to enjoy one of the last bits of the natural beauty of 'Oahu. In a City/County commissioned study, this area was called "one of the most beautiful in all 'Oahu", and a recommendation, which was never acted upon, was made to make the area a park.

Tourists come from all over the world to see the Hawaiian "paradise" about which they have read. This becomes harder and harder to find every day and the number of tour buses that visit every day is an indication of the need for a natural preserve near to the tourist centers in Waikiki.

Ecologically, it would be damaging beyond repair to put another golf course in that area. I live next to the Hawaii Kai Golf Course. The chemicals used to treat it are both powerful and indiscriminate. My dog who used to run on the golf course, can no longer do so because the chemicals used make her have seizures. My neighbor who also walked her dog on the golf course had to stop because these chemicals would blister her dog's feet. Think of the irreparable damage that would be caused to the ocean along the shore from the run-off of these chemicals as well as from fertilizers and pesticides that would be used on proposed house lots for the area. No fisherman would want to eat the catch from such waters. This, of course, is assuming that the golf course owners would let fishermen in to fish. At Ku Ilima one has to pay a parking fee to get into the resort and there is no easy access to the water.

It is also important to leave the area across the highway and up the hillsides open as well. The sanctity of the view plane is upheld by the undeveloped mountains and cliffs along the Mauka side. Remember, we are not speaking of something we can build temporarily and then replace. We are speaking of a century of loss, for my grandchildren and my grandchildren's grandchildren. Don't let it happen! It is imperative that this whole area be preserved for all Hawaiians -- to do less would be a travesty of what make Hawaii, Hawaii.

Daniel E Martin

David E. Matthews
7909 Makaaoa Place
Honolulu, HI 96825
(808) 395-7600

cc: O.E.Q.C.

2974-01
April 23, 1996

WILSON
OKAMOTO
& ASSOCIATES, INC.

ENGINEERS
PLANNERS

1907 S. BERETANIA STREET
HONOLULU, HAWAII 96826
PH: (808) 946-2277
FAX: (808) 946-2253

Mailing address:
P.O. Box 3530
Honolulu, Hawaii 96811

Mr. David E. Matthews
7909 Makaaoa Place
Honolulu, Hawaii 96825

Dear Mr. Matthews:

Subject: Ka Iwi State Park
Draft Environmental Impact Statement (EIS)
Makapu'u, Oahu, Hawaii

This is in response to your letter dated December 7, 1995 commenting on the subject Draft EIS. We acknowledge your opinion that the study area be kept as an open space resource for both residents and tourists. We also acknowledge your concern regarding the possible impacts of another golf course in the area.

As discussed in our recommendations for the Ka Iwi park site (Chapter XI), Kaloko Inlet and Ka'ili'ili Bay receive much more runoff than they did in their natural state due to the diversion of drainage from nearby residential areas and golf course. In addition to silt, pesticides and fertilizers may also have a significant impact on water quality, although this has not been substantiated. Additional golf course development draining into these areas has the potential for adverse coastal water quality impacts if they are not properly managed.

Your letter, along with this response, will be reproduced in the forthcoming Final Environmental Impact Statement. We appreciate your interest and participation in the consultation phase of the environmental review process.

Sincerely,

Earl Matsukawa, Project Manager

cc: William Gorst, DLNR State Parks Division

RECEIVED
DIVISION OF
STATE PARKS

DEC 4 10 27 AM '95

1638-A Mikahala Way
Honolulu, HI 96816

Mr. William Gorst
State Parks Division
Department of Land and Natural Resources
1151 Punchbowl St. Rm. 310
Honolulu, HI 96813

Dear Mr. Gorst,

Congratulations on your master plan and draft environmental impact statement on the proposed Ka Iwi State Park.

I strongly support the creation of a park stretching from Hanauma Bay through Makapuu. Preserving one of the most scenic areas in such close proximity to urban Honolulu should be a priority. It is an area that whale watchers, fishermen, hikers, surfers, tourists and others can enjoy.

You should explore two possible avenues of funding. First, you can use the Department of Transportation's funds to acquire scenic areas next to state highways. Both federal funds (through ISTEA) and state highway funds can be used for this purpose. Second, by creating a huge Ka Iwi Park, stretching from Hanauma Bay through Makapuu, a Hanauma Bay entrance fee can be used to finance land acquisition for the park. Revenue bonds used for acquisition can be paid off over two decades from the entrance fees.

While I support combining some of the elements of the mixed-intensity alternative with the low-intensity alternative, I question the reason for a footbridge across one of the inlets. There is no need to spend the money for a footbridge when park users can simply walk around the inlet, or get wet walking/swimming across. In any case, the footbridge will likely be undermined by natural processes in the long-term. Let's highlight the areas natural features, instead of a costly, unnecessary footbridge.

I also encourage you to include the area know as golf course 5 & 6, as well as Queen's Rise in the park. These areas provide important natural buffers and scenic vistas.

Sincerely,

Tanya Rubenstein

Tanya Rubenstein

2974-01
April 23, 1996

WILSON
OKAMOTO
& ASSOCIATES, INC.

ENGINEERS
PLANNERS

1907 S. BERETANIA STREET
HONOLULU, HAWAII 96826
PH: (808) 946-2277
FAX: (808) 946-2253

Mailing address:
P. O. Box 3530
Honolulu, Hawaii 96811

Ms. Tanya Rubenstein
1683-A Mikahala Way
Honolulu, Hawaii 96816

Dear Ms. Rubenstein:

Subject: Ka Iwi State Park
Draft Environmental Impact Statement (EIS)
Makapu'u, Oahu, Hawaii

This is in response to your letter commenting on the subject Draft EIS. We acknowledge you support for the creation of a park extending from Hanauma Bay to Makapu'u Point.

Your two suggested avenues for funding park acquisition are worthy of serious consideration. With a decision to pursue acquisition, as recommended by the Master Plan, the State can move on to the next step of exploring various options for acquisition.

The proposed footbridge across the drainage channel emptying into Ka'ili'ili Bay provides access to areas on the east side of the park, including Kaho'ohaiahai Inlet and the Coastal Bench Tail, as well as the trail leading to the wetland area and toward Makapu'u Lookout.

We noticed that hikers crossing the drainage ditch would walk upstream alongside the ditch until they reached a point where the mud had hardened enough to support their weight or simply wade across wet areas. Due to the tidal influence, the point where the hikers crossed varied considerably. This has resulted in trampling of vegetation along both banks of the ditch. Those who chose to wade across the lower portions of the ditch tended to stir up the silt which could be carried downstream into the inlet, depending on the tide.

We felt that providing a footbridge would reduce trampling of vegetation and encourage hikers to stay on designated trails. We also felt that hikers should be encouraged to stay out of the inlet to minimize stirring up silt. The footbridge would also accommodate park maintenance and emergency vehicles.

The design of the bridge would be important to maintain the natural character of the area. Your comment about it being subject to natural process is well taken. The engineers we consulted indicate that a bridge with low visual impact could be constructed to withstand most natural processes. The area, however, is subject to flooding during a 100-year tsunami event, according to the National Flood Insurance Rate Maps. A bridge that could withstand such a flooding event would be costly and have a significant visual impact.

Given the infrequency of such a tsunami, it is felt that constructing a bridge with low visual impact but, which may need to be repaired after a devastating tsunami, would be appropriate.

Your comment regarding the park boundary extending mauka of Kalanianaole Highway is well taken. The Ka Iwi State Park Master Plan and EIS was, however, prepared pursuant to House Concurrent Resolution No. 261, H.D.1, S.D.1. The resolution specified the study area as including parcels makai of Kalanianaole Highway plus Koko Crater and identified them by their TMK numbers. This is consistent with the intent of the study to examine *"the establishment of a continuous scenic shoreline park from Koko Head to Makapu'u."* (emphasis added).

The examination of visual impact focused on the value of the Ka Iwi site on the preservation of scenic shoreline vistas in the study area. This was consistent with the formulation of a recommendation for the State to acquire the site. Nevertheless, Chapter VII, Section A.3. discusses how mauka views from the park could be affected by on-going and planned development and how any additional development proposals could be affected by considerations of views from the park, if it is established.

Your letter, along with this response, will be reproduced in the forthcoming Final Environmental Impact Statement. We appreciate your interest and participation in the consultation phase of the environmental review process.

Sincerely,

Earl Matsukawa, Project Manager

cc: William Gorst, DLNR State Parks Division

November 21, 1995

Mr. William Gorst
Department of Land and Natural Resources
State Parks Division
1151 Punchbowl St., rm 310
Honolulu, Hawaii 96813

RECEIVED
NOV 22 1995
WILSON OKAMOTO & ASSOC., INC.

Dear Mr. Gorst,

Subject: Ka Iwi State Park Master Plan and Draft EIS

Thank you for this opportunity to review and comment on the Ka Iwi State Park Master Plan and Draft Environmental Impact Statement.

The document's assessment of the area's scenic, recreational and cultural resources is comprehensive and enlightening. The document makes a persuasive case for the State of Hawaii, the City and County of Honolulu, landowners and the general public to work together to see that the Hanauma Bay-to-Makapuu area, one of Oahu's most utilized and appreciated scenic and recreational shorelines, be preserved in perpetuity as a park.

I especially agree with the recommended plan's concept of mixing some components of the Mixed-Intensity alternative with all of the components of the Low-Intensity alternative. This solution provides the greatest amount of resource protection while providing a reasonable amount of access and convenience for park-users, including students groups and visitor groups.

I would suggest, however, that the proposed park boundary be amended to include three key parcels: the two parcels mauka of Kalanianaole Highway across from Sandy Beach Park known as Golf Course 5 &6; and the ridgelands mauka of Kalanianaole Highway between the Hawaii Kai Executive Golf Course and Makapuu Lookout, up to and including the Koolau ridgeline. These two undeveloped, privately owned parcels are important wild spaces along the scenic highway, providing valuable natural buffers and landscape integrity to the entire coast.

Sincerely,

Curt Sanburn

435 Portlock Rd.
Honolulu, HI 96825

cc: Office of Environmental Quality Control, State of Hawaii, 220 S. King St., 4th floor, Honolulu 96813 ATTN: Mr. Gary Gill
Wilson Okamoto & Assoc., 1907 S. Beretania St., suite 400, Honolulu, 98626 ATTN: Mr. Earl Matsukawa

2974-01
April 23, 1996

WILSON
OKAMOTO
& ASSOCIATES, INC.

ENGINEERS
PLANNERS

1907 S. BERETANIA STREET
HONOLULU, HAWAII 96826
PH: (808) 946-2277
FAX: (808) 946-2253

Mailing address:
P.O. Box 3530
Honolulu, Hawaii 96811

Mr. Curt Sanburn
435 Portlock Road
Honolulu, Hawaii 96825

Dear Mr. Sanburn:

Subject: Ka Iwi State Park
Draft Environmental Impact Statement (EIS)
Makapu'u, Oahu, Hawaii

This is in response to your letter dated November 21, 1995 commenting on the subject Draft EIS. We acknowledge your support for the proposed project, as well as your opinion that the area from Hanauma Bay to Makapu'u should be preserved in perpetuity as a park. We also acknowledge your support for the recommended master plan.

Your comment regarding the park boundary extending mauka of Kalanianaole Highway is well taken. The Ka Iwi State Park Master Plan and EIS was, however, prepared pursuant to House Concurrent Resolution No. 261, H.D.1, S.D.1. The resolution specified the study area as including parcels makai of Kalanianaole Highway plus Koko Crater, and identified them by their TMK numbers. This is consistent with the intent of the study to examine *"the establishment of a continuous scenic shoreline park from Koko Head to Makapu'u."* (emphasis added).

The examination of visual impact focused on the value of the Ka Iwi site on the preservation of scenic shoreline vistas in the study area. This was consistent with the formulation of a recommendation for the State to acquire the site. Nevertheless, Chapter VII, Section A.3. discusses how mauka views from the park could be affected by on-going and planned development and how any additional development proposals could be affected by considerations of views from the park, if it is established.

Your letter, along with this response, will be reproduced in the forthcoming Final Environmental Impact Statement. We appreciate your interest and participation in the consultation phase of the environmental review process.

Sincerely,

Earl Matsukawa, Project Manager

cc: William Gorst, DLNR State Parks Division

367 Holokai Place
Honolulu, HI 96825
November 30, 1995

Department of Land and Natural Resources
State Parks Division
State of Hawaii
1151 Punchbowl Street, Room 310
Honolulu, HI 96813

Attention: Mr. William Gorst

Dear Mr. Gorst:

We are writing this letter in support of the proposed Ka Iwi State Park for the East Oahu area. There is a need to protect natural areas that are within close proximity to downtown Honolulu where many of the citizens of the state of Hawaii live. Unless such areas are protected current and future citizens will have few natural areas within a short commute of their homes for recreational purposes.

Tourism will also suffer. From living in the area we can attest to observing many visitors coming to the area to enjoy morning sunrises, to hike on the surrounding rural paths, and to spend time on Sandy Beach. While some proposals claim to protect small areas by keeping them in their natural state, opening up development of the surrounding areas will result in a jumbled patchwork of light industrial, residential, and rural uses, spoiling the recreational aspect of a large unspoiled area.

As former residents of Massachusetts, we can attest to the positive impact obtained when a large tract of land on historic Cape Cod was declared a national state park during President Kennedy's time in office. At the time there was not a great deal of development in the area, however, on a recent visit there, it was easy to see the difference between the area outside the park where there now are a multitude of shops, cottages, businesses, while the area within the Cape Cod National Seashore remains in its natural state with open windswept beaches, marshes, and undeveloped land. Countless numbers of residents and tourists enjoy this national park. Such forward thinking is needed for Oahu now!

We strongly urge you to support the establishment of Ka Iwi State Park for East Oahu.

Yours truly,

Francis T. Sherry

Francis T. Sherry

Annette C. Sherry

Annette C. Sherry

CC: Office of Environmental Quality Control
Wilson Ikamoto & Associates, Inc.
Councilor John Henry Felix

WILSON
OKAMOTO
& ASSOCIATES, INC.

ENGINEERS
PLANNERS

1907 S. BERETANIA STREET
HONOLULU, HAWAII 96826
PH: (808) 946-2277
FAX: (808) 946-2253

Mailing address:
P. O. Box 3530
Honolulu, Hawaii 96811

2974-01
April 23, 1996

Mr. Francis T. Sherry and Ms. Annette C. Sherry
367 Holokai Place
Honolulu, Hawaii 96825

Dear Mr. and Ms. Sherry:

Subject: Ka Iwi State Park
Draft Environmental Impact Statement (EIS)
Makapu'u, Oahu, Hawaii

This is in response to your letter dated November 30, 1995 commenting on the subject Draft EIS. We acknowledge your support for the proposed project and your opinions regarding the importance of the park to tourism and land use planning in general.

Your letter, along with this response, will be reproduced in the forthcoming Final Environmental Impact Statement. We appreciate your interest and participation in the consultation phase of the environmental review process.

Sincerely,

Earl Matsukawa, Project Manager

cc: William Gorst, DLNR State Parks Division

Prior to the publication of the Draft EIS, copies of the Environmental Impact State Preparation Notice (EISPN) were distributed to appropriate Federal, State, City & County of Honolulu and other agencies, with a request for comments on the EISPN. As of June 27, 1995, 21 comment letters were received, as listed below. Of these, five had no comments, while the 16 others provided substantial comments, as indicated by the • below. The comment letters and corresponding responses have been reproduced herein.

Federal Agencies

- U.S. Army Engineering District, Honolulu
- U.S. Fish and Wildlife Service

State Agencies

Department of Accounting and General Services
Department of Business, Economic Development & Tourism
Department of Business, Economic Development & Tourism, Energy Program
- Department of Defense, Civil Defense

Department of Education
- Department of Health
- Department of Land and Natural Resources (DLNR) Office of Conservation and Environmental Affairs
- DLNR, Division of Aquatic Resources
- DLNR, Historic Preservation Division
- Land Use Commission
- Department of Transportation, Highways Division
- Office of Environmental Quality Control
- University of Hawaii Sea Grant Program

City & County Agencies

- Board of Water Supply
- Department of Public Works
- Planning Department
- Department of Parks and Recreation

Department of Transportation Services

Other Agencies

- The Nature Conservancy of Hawaii

DEPARTMENT OF THE ARMY
U. S. ARMY ENGINEER DISTRICT, HONOLULU
FT. SHAFTER, HAWAII 96858-5440

June 1, 1995

REPLY TO
ATTENTION OF

Planning Division

Mr. William Gorst
State of Hawaii
Department of Land and Natural Resources
Division of State Parks
1151 Punchbowl Street, Room 310
Honolulu, Hawaii 96813

Dear Mr. Gorst:

Thank you for the opportunity to review and comment on the Environmental Impact Statement Preparation Notice (EISPN) for the Ka Iwi State Park Master Plan, East Oahu, Hawaii (TMKs 3-9-11: 2, 3, 5-7; and, 4-1-14: 1). The following comments are provided pursuant to Corps of Engineers authorities to disseminate flood hazard information under the Flood Control Act of 1960 and to issue Department of the Army (DA) permits under the Clean Water Act; the Rivers and Harbors Act of 1899; and the Marine Protection, Research and Sanctuaries Act.

a. Since there are several projects proposed within the EISPN such as wetland/fishpond restoration and construction of a foot bridge, coordination with our Regulatory Branch will be necessary to determine DA permit requirements. Please contact Ms. Kathy Dady for further information at 438-9258 (extension 15).

b. The flood hazard information provided on page II-10 of the EISPN is correct.

Sincerely,

BIPeliwoki

Ray H. Jyo, P.E.
Director of Engineering

Copies Furnished:

Mr. Gary Gill
State of Hawaii
Office of Environmental Quality Control
220 South King Street, 4th Floor
Honolulu, Hawaii 96813

Mr. Earl Matsukawa
Wilson Okamoto & Associates. Inc.
P.O. Box 3530
Honolulu, Hawaii 96811

2974-01
October 9, 1995

WILSON
OKAMOTO
& ASSOCIATES, INC.

ENGINEERS
ARCHITECTS
PLANNERS

1907 S. BERETANIA STREET
HONOLULU, HAWAII 96826
PH: (808) 946-2277
FAX: (808) 946-2253

Mailing address:
P.O Box 3530
Honolulu, Hawaii 96811

Mr. Ray H. Jyo, P.E.
Director of Engineering
U.S. Army Engineer District, Honolulu
Fort Shafter, Hawaii 96858-5440

Subject: Ka Iwi State Park Master Plan
Environmental Impact Statement Preparation Notice (EISPN)

Dear Mr. Jyo:

Thank you for taking the time to comment on the subject EISPN. We offer the following responses to your comments of June 1, 1995, in their respective order.

1. A list of the necessary permits, including DA permits, which will be necessary for implementation of the project will be included in the Draft EIS. If and when the State acquires the project site and proposes to implement any construction work, your agency will be contacted to determine any permit requirements.

2. Thank you for corroborating the flood hazard information provided in the EISPN.

We hope that we have adequately responded to your concerns. If you have any questions, please call Mr. Allen Kam of our staff at 946-2277.

Sincerely,

Earl K. Matsukawa, Project Manager
Wilson Okamoto and Associates, Inc.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
PACIFIC ISLANDS OFFICE
500 ALA MOANA BLVD, SUITE 3-580
HONOLULU, HI 96813
tel:(808) 541-3441 fax:(808) 541-3470

In Reply Refer To: AAP

JUL 3 1995

Mr. William Gorst
Department of Land and Natural Resources
Division of State Parks
1151 Punchbowl Street, Room 310
Honolulu, Hawaii 96813

Re: May 1995 Environmental Impact Statement Preparation Notice for the Ka Iwi State Park Master Plan, East Honolulu, Hawaii TMK: 309011:2, 3, 5, 6 and 7; 4-01-14:1

The U.S. Fish and Wildlife Service (Service) has reviewed the May 1995 Environmental Impact Statement Preparation Notice for the Ka Iwi State Park Master Plan (KISPMP) in East Honolulu, Hawaii. The project sponsor is the Department of Land and Natural Resources. The proposed park site encompasses 143 hectares (354 acres) of land. The Service offers the following comments for your consideration.

The proposed KISPMP assesses the value and role of the Ka Iwi site as a potential addition to the State Park system and examines the proposed park site's cultural, historic, scenic, recreational, interpretive/educational and ecosystem resource values. Results from the assessment led to the formulation of goals, objectives, policies, and recommendations to manage and develop the site's resources into an integrated scenic shoreline park extending from Hanauma Bay to Makapu'u Point. Three park development schemes were devised according to low, medium, and high intensity use levels. The recommended plan is a composite of the three alternatives and is comprised of features from the low and medium intensity scenarios. Comfort stations, a visiter center, relocation of utilities, and road access improvements are anticipated. The KISPMP proposes the alteration of an existing wetland that supports the federally endangered water fern Ihi'ihilauakea (*Marsilea Villosa*).

The Service has several concerns regarding the implementation of the proposed park. The document identifies several important fish and wildlife resources but does not indicate their specific locations within the proposed park site. The resources of concern include the existing wetland and its associated population of Ihi'ihilauakea; two endemic nocturnal species of littoral crickets (*Caconemobius* sp. and *Thetella* sp.); the yellow faced bee (*Nesoprosopis* sp.); and three endemic candidate 2 species, the Hawaiian snout beetle (*Rhyncogonus simplex*), the Hawaiian rhopalid bug (*Ithamar hawaiiensis*), and the Oliarus wild cotton planthopper (*Oliarus discrepans*). Therefore, the Service requests a site plan that indicates the presence of the above-mentioned species in order to facilitate our assessment of potential impacts to these resources.

EIS May 1995 Preparation Notice
KISPMP
East Honolulu, Hawaii

The document provides inadequate details pertaining to: (1) the expansion and topographic changes to the wetland; (2) measures to protect the existing population of Ihi'ihilauakea and wetland habitat during project construction; and (3) the propagation of future populations of Ihi'ihilauakea. The Service would like to inform the project sponsor that any aspects of the proposed action that may affect the wetland and the population of Ihi'ihilauakea should be coordinated with the Service.

The Service is willing to offer technical assistance to ensure that the hydrological characteristics of the wetland, the existing population of Ihi'ihilauakea, and native insect communities are preserved. We look forward to discussing these issues with your office and recommend that our concerns be incorporated into the draft EIS.

The Service appreciates the opportunity to provide these comments. If you have questions regarding these comments, please contact our Wetlands Branch Chief, Karen Evans, at 808/541-3441.

Sincerely,

Karen G. Evans

for Brooks Harper
Field Supervisor
Ecological Services

cc: Office of Environmental Quality Control
Wilson Okamoto & Associates, Inc.

2974-01
October 9, 1995

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OKAMOTO
& ASSOCIATES, INC.

ENGINEERS
ARCHITECTS
PLANNERS

1907 S. BERETANIA STREET
HONOLULU, HAWAII 96826
PH: (808) 946-2277
FAX: (808) 946-2253

Mailing address:
P. O. Box 3530
Honolulu, Hawaii 96811

Mr. Brooks Harper, Field Supervisor
U.S. Fish and Wildlife Service
Pacific Islands Office
500 Ala Moana Blvd., Suite 3-580
Honolulu, Hawaii 96813

Subject: Ka Iwi State Park Master Plan
Environmental Impact Statement Preparation Notice
(EISPN)

Dear Mr. Harper:

Thank you for taking the time to comment on the subject EISPN. We offer the following responses to your comments of July 3 1995, in their respective order.

1. A written description of the location of the existing wetland is given on page II-16 and a map location is shown on Figure 3. A vegetation map of the proposed park site will be included in the Draft EIS which will help to clarify the location of the *Marsilea villosa* found during the botanical survey. As for the insect species cited in the document, the information was obtained from previous studies which had no accompanying maps except to show the location of *Rhyncogonus simplex* during winter surveys between 1977-1979. The two endemic, nocturnal species of littoral crickets identified commonly occur on the shoreline, and the yellow-faced bee (*Nesoprosopis sp.*) has been known to inhabit tree heliotrope at Queen's Beach. The three other candidate 2 species are believed to inhabit the inland areas and may be host specific to certain plants.

   The Department of Land and Natural Resources, Division of State Parks shares your concerns regarding these insect species. However, since the State does not own the proposed park site and it is not known when the Ka Iwi site may be acquired for inclusion in the State Parks system, the department believes that a survey of insects at this time would be premature. Please be assured that once the proposed park site is acquired and before any construction activity is pursued, a comprehensive survey of insects at Ka Iwi will be prepared.

2. As stated in the master plan, the wetland containing Marsilea villosa is currently defined by wheel ruts from four-wheel drive vehicles. The State Park's proposal is to expand the existing wetland habitat to promote its propagation. Again, however, due to the uncertainty of acquiring the site, no

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OKAMOTO
& ASSOCIATES, INC.

detailed topographic studies or surveys to identify the parameters of the wetland have been prepared. Upon acquiring the proposed site and prior to any construction activities, detailed topographic studies and/or surveys will be conducted.

3. The Division of State Parks would appreciate your technical assistance during implementation of the project to ensure that the native plant and insect communities on the site are preserved.

We hope that we have adequately responded to your concerns. If you have any questions, please call Mr. Allen Kam of our staff at 946-2277.

Sincerely,

Earl K. Matsukawa, Project Manager
Wilson Okamoto and Associates, Inc.

(P)1453.5

JUN 20 1995

Mr. Ralston H. Nagata
Administrator
Division of State Parks
Department of Land and
Natural Resources
State of Hawaii
Honolulu, Hawaii

JUN 21 1995

Attention: Mr. William Gorst

Gentlemen:

Subject: Ka Iwi State Park Master Plan
East Honolulu, Hawaii
EIS Preparation Notice

Thank you for the opportunity to review the subject document. The proposed project will have no impact on our facilities. Therefore, we have no comments to offer.

If there are any questions, please have your staff contact Mr. Ralph Yukumoto of the Planning Branch at 586-0488.

Very truly yours,

Gordon Matsuoka

GORDON MATSUOKA
State Public Works Engineer

RY:jy
cc: Wilson Okamoto & Associates, Inc.
OEQC

BENJAMIN J. CAYETANO
GOVERNOR
SEIJI F. NAYA
DIRECTOR
RICK EGGED
DEPUTY DIRECTOR

DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT & TOURISM

Central Pacific Plaza, 220 South King Street, 11th Floor, Honolulu, Hawaii 96813
Mailing Address: P.O. Box 2359, Honolulu, Hawaii 96804

Telephone (808) 586-2355
Fax (808) 586-2377

June 1, 1995

Mr. Earl Matsukawa
Project Manager
Wilson Okamoto & Associates, Inc.
1907 S. Beretania Street
Honolulu, Hawaii 96826

Dear Mr. Matsukawa:

Subject: Ka Iwi State Park Master Plan
Environmental Impact Statement Preparation Notice

The State Land Use Commission has prepared the attached comments regarding the subject project.

Thank you for allowing us to comment.

Sincerely,

for

Shelley M. Mark
Senior Advisor to Director

Attachment

BENJAMIN J. CAYETANO
Governor
SEIJI F. N
Dire
RICK EG
Deputy Director

DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT, AND TOURISM

ENERGY DIVISION, 335 MERCHANT ST., RM. 110, HONOLULU, HAWAII 96813 PHONE: (808) 587-3800 FAX: (808) 587-382(

EIS 036

May 23, 1995

RECEIVED
MAY 2 4 1995

Mr. William Gorst
State of Hawaii
Department of Land and Natural Resources
Division of State Parks
1151 Punchbowl Street, Room 310
Honolulu, Hawaii 96813

Dear Mr. Gorst:

SUBJECT: Ka Iwi State Park Master Plan, Environmental Impact Statement Preparation Notice, East Honolulu, Hawaii
Tax Map Keys: 3-9-11:2, 3, 5, 6 and 7; 4-01-14: 1

We wish to inform you that we have no comments regarding the subject Ka Iwi State Park Master Plan.

Thank you for the opportunity to submit any comments or recommendations.

Sincerely,

Maurice H. Kaya
Energy Program Administrator

MHK/hk

c: Office of Environmental Quality Control
Wilson Okamoto & Associates, Inc.

BENJAMIN J. CAYETANO
GOVERNOR

MAJOR GENERAL EDWARD V. RICHARDSON
DIRECTOR OF CIVIL DEFENSE

ROY C. PRICE
VICE DIRECTOR OF CIVIL DEFENSE

PHONE (808) 734-2161
FAX (808) 737-4150

STATE OF HAWAII
DEPARTMENT OF DEFENSE
OFFICE OF THE DIRECTOR OF CIVIL DEFENSE
3949 DIAMOND HEAD ROAD
HONOLULU, HAWAII 96816-4495

July 6, 1995

TO: Division of State Parks
Department of Land and Natural Resources
State of Hawaii

ATTN: William Gorst

FROM: Roy C. Price, Sr.
Vice Director of Civil Defense

SUBJECT: ENVIRONMENTAL IMPACT STATEMENT PREPARATION NOTICE (EISPN); KA IWI STATE PARK MASTER PLAN

We appreciate this opportunity to comment on the Division of State Parks' Environmental Impact Statement Preparation Notice, East Honolulu, Hawaii, Tax Map Keys: 3-09-11:2, 3, 5, 6 and 7; 4-01-14: 1.

State Civil Defense (SCD) does not have any negative comments specifically directed at this EISPN. However, we propose that the developer purchase and install two omnidirectional solar powered 115 dB sirens and a siren support infrastructure. These sirens require a 100-foot radius buffer zone in which there are no residential build- ings. A complete siren installation consists of the siren, a siren pole and appropriate grounding. In "Phase 1," a 115 dB siren should be installed at the Visitor Station Comfort Station Parking lot. In "Phase 2," the second 115 dB siren should be installed in the area of the proposed site of the Cultural Center. The siren locations are annotated in red on the enclosed "Figure 3" copy of the "Recommended Plan, KA IWI MASTER PLAN."

Reference is made on Page II-10, paragraph F., "Tsunami and Storm Wave Hazard," in subparagraph 2, line 5, to ". . . **State of Hawaii Civil Defense Tsunami Inundation Line**" and in subparagraph 3, line 5, to "The Civil Defense Tsunami Inundation Line . . ."; also depicted in Figure 9, "Tsunami Inundation Limits at Queen's Beach" is a

dashed line labeled "Civil Defense Tsunami Inundation Line." The terminology, dashed line, and document cited are not used in current civil defense **evacuation** planning scenarios. Please contact SCD to discuss this matter in more detail.

Section II., "**ENVIRONMENTAL SETTING**," paragraph A., "Climate," addresses temperatures, rainfall and wind and paragraph C., "Topography," addresses elevations from sea level to 669 feet Mean Sea Level (MSL) with slopes ranging up to 360% respectively. The impact of orographic/terrain amplification of the winds associated with tropical cyclones--tropical storm/hurricane force winds and the torrential rainfall associated with tropical cyclones need to be further evaluated. Based on this evaluation, any structures/facilities could be favorably sited, designed and constructed to resist the potentially destructive winds of tropical cyclones. The properly designed and constructed structures/facilities could then be surveyed for use as public shelters in disasters.

Our SCD planners and technicians are available to discuss this further if there is a requirement. Please have your staff call Mr. Mel Nishihara of my staff at 734-2161.

Enc.

c: Wilson Okamoto & Associates, Inc.
Office of Environmental Quality Control
ATTN: Gary Gill

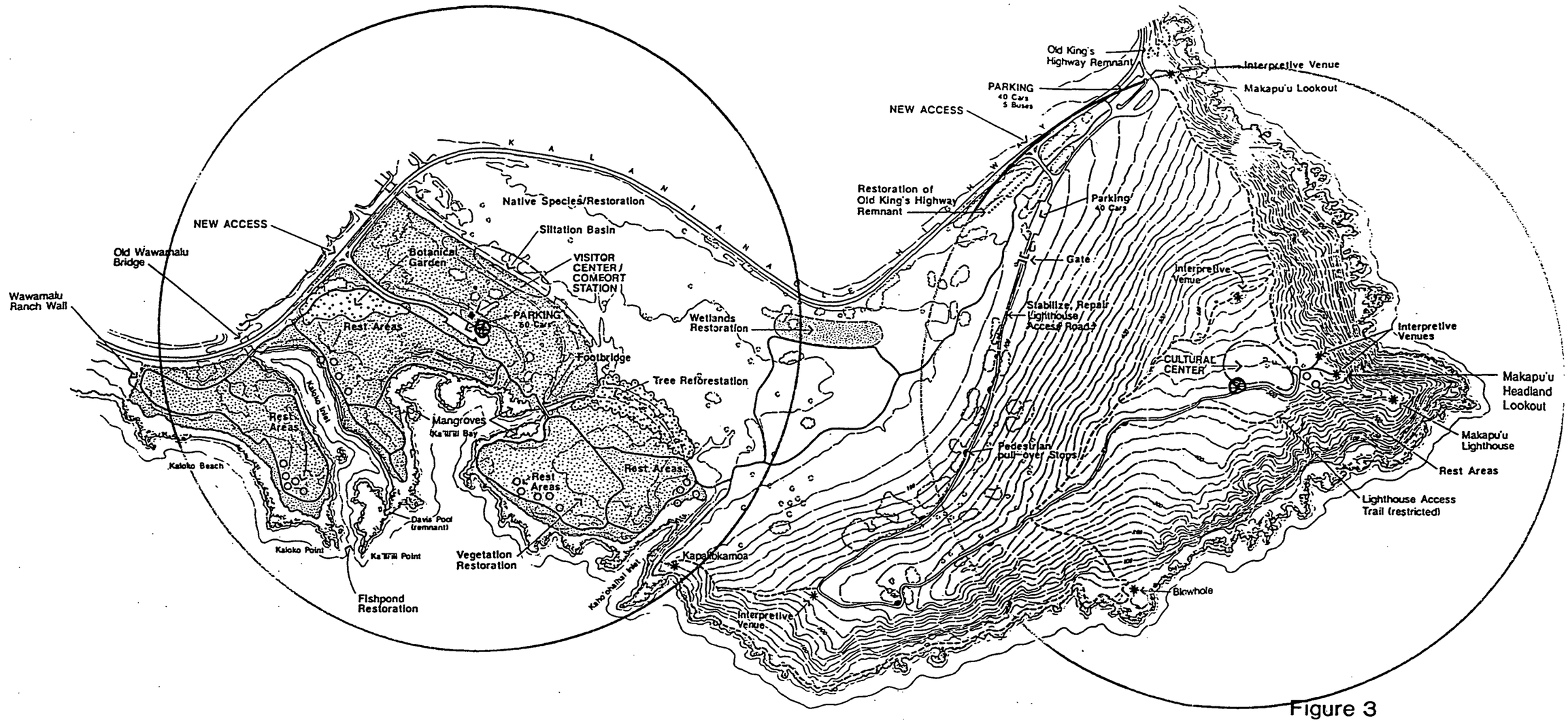

Figure 3

Recommended Plan

KA IWI MASTER PLAN

Department of Land and Natural Resources
Division of State Parks

2974-01
October 9, 1995

WILSON
OKAMOTO
& ASSOCIATES, INC.

ENGINEERS
ARCHITECTS
PLANNERS

1907 S. BERETANIA STREET
HONOLULU, HAWAII 96826
PH: (808) 946-2277
FAX: (808) 946-2253

Mailing address:
P. O. Box 3530
Honolulu, Hawaii 96811

Mr. Roy C. Price, Sr.
Vice Director of Civil Defense
State of Hawaii Department of Defense
3949 Diamond Head Road
Honolulu, Hawaii 96816-4495

Subject: Ka Iwi State Park Master Plan
Environmental Impact Statement Preparation Notice
(EISPN)

Dear Mr. Price:

Thank you for taking the time to comment on the subject EISPN. We offer the following responses to your comments of July 6, 1995, in their respective order.

1. Given the large land area and relative isolation of portions of the project site, your suggestion to install two omnidirectional solar powered 115 dB sirens and support infrastructure seems prudent. We will include your suggestion in the Draft EIS.

2. The Draft EIS will include a revised discussion of tsunami and storm wave hazards at the proposed park site. The revised discussion will incorporate the civil defense tsunami evacuation line published in the Oahu phone directory, and will omit prior references to inundation lines.

3. In the environmental setting section of the EISPN, normal tradewind patterns have been described. However, we have no information on how the project site terrain might affect winds during tropical storm or hurricane conditions, nor do we have the expertise to conjecture what those effects might be. Inasmuch as only negligible changes to topography are proposed, any changes in wind patterns would likely be insignificant. Also, please note that the only structures proposed for the area are a restroom building and a visitor center consisting of an unmanned, open air pavilion. The design of these buildings will take into account the threat which high winds, waves, earthquakes and tsunamis may pose to the integrity of these structures.

WILSON
OKAMOTO
& ASSOCIATES, INC.

We hope that we have adequately responded to your concerns. If you have any questions, please call Mr. Allen Kam of our staff at 946-2277.

Sincerely,

Earl K. Matsukawa, Project Manager
Wilson Okamoto and Associates, Inc.

Benjamin J. Cayetano
GOVERNOR

HERMAN M. AIZAWA, PH.D.
SUPERINTENDENT
[redacted]

STATE OF HAWAII
DEPARTMENT OF EDUCATION
P. O. BOX 2360
HONOLULU, HAWAII 96804

OFFICE OF THE SUPERINTENDENT

June 5, 1995

MEMO TO: Mr. Gary Gill
Office of Environmental Quality Control, DOH

F R O M: Herman M. Aizawa, Ph.D., Superintendent
Department of Education

SUBJECT: Ka Iwi State Park Master Plan, Environmental Impact Statement Preparation Notice, East Honolulu, Hawaii
TMK: 3-9-11: 2, 3, 5, 6 and 7; 4-01-14: 1

We have reviewed the subject preparation notice and have determined that the proposed park master plan will have no impact on the public schools.

Thank you for the opportunity to comment.

HMA:jml

cc: A. Suga
J. Sosa
Wilson Okamoto & Associates

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

LAWRENCE MIIKE
DIRECTOR OF HEALTH

STATE OF HAWAII
DEPARTMENT OF HEALTH
P.O. BOX 3378
HONOLULU, HAWAII 96801

In reply, please refer to:

July 3, 1995

95-072

Mr. William Gorst, Planner
Department of Land and Natural Resources
Division of State Parks
1151 Punchbowl Street, Room 310
Honolulu, Hawaii 96813

Dear Mr. Gorst:

Subject: Environmental Impact Statement Preparation Notice (EISPN)

Ka Iwi State Park Master Plan
East Honolulu, Hawaii
TMK: 3-9-11: 2, 3, 5, 6 & 7
4-1-14: 01

Thank you for allowing us to review and comment on the subject project. We have the following comments to offer:

Wastewater

At this time, we have no objections to the proposed state park master plan as we concur with the proposed method of wastewater treatment and disposal, which is the conveyance of wastewater to the Hawaii Kai sewage Treatment Plant.

All wastewater plans must conform to applicable provisions of the Department of Health's Administrative Rules, Chapter 11-62, "Wastewater Systems."

Should you have any questions on this matter, please contact Ms. Lori Kajiwara of the Wastewater Branch at 586-4294.

Water Pollution

A National Pollutant Discharge Elimination System (NPDES) permit is required for any discharge to waters of the State including the following:

1. Storm water discharges relating to construction activities for projects equal to or greater than five acres;

2. Storm water discharges from industrial activities;

3. Construction dewatering activities;

4. Cooling water discharges less than one million gallons;

5. Ground water remediation activities; and

6. Hydrotesting water.

Any person wishing to be covered by the NPDES general permit for any of the above activities should file a Notice of Intent with the Department's Clean Water Branch at least 90 days prior to commencement of any discharge to waters of the State.

Any questions regarding this matter should be directed to Mr. Denis Lau of the Clean Water Branch at 586-4309.

Air Pollution Concerns

Due to the nature and location of the project, there is a significant potential for fugitive dust emissions during the removal, grading, excavation and construction activities for a project area of this size. Implementation of adequate dust control measures during all phases of construction will be necessary. Construction activities must comply with provisions of Chapter 11-60.1, Hawaii Administrative Rules, "Air Pollution Control", section 11-60.1-33 on Fugitive Dust.

The Contractor should provide adequate means to control dust from road areas and during the various phases of construction activities, including but not limited to:

1. Planning the different phases of construction, focusing on minimizing the amount of dust generating materials and activities, centralizing material transfer points and onsite vehicular traffic routes, and locating potentially dusty equipment in areas of the least impact;

2. Providing an adequate water source at site prior to startup of construction activities;

3. Rapid landscaping of bare areas, including slopes, starting from the initial grading phase;

4. Control of dust from shoulders, project entrances and access roads; and

5. Providing adequate dust control measures during weekends, after hours and prior to daily startup of construction activities.

General Comments

The proposed project would benefit the environment by providing the following:

1. The installation of Off-Road Vehicle barriers into Queen's Beach from Kalanianaole Highway;

2. The removal of abandoned vehicles, structures and other miscellaneous items in the area;

3. The restoration of shoreline vegetation and water quality/circulation in the area;

4. The restoration of an existing wetland area; and

5. The reforestation of low lying areas with native trees.

Sincerely,

LAWRENCE MIIKE
Director of Health

c: CAB
WWB
CWB
OEQC
Wilson Okamoto & Associates

2974-01
October 9, 1995

WILSON
OKAMOTO
& ASSOCIATES, INC.

ENGINEERS
ARCHITECTS
PLANNERS

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FAX: (808) 946-2253

Mailing address:
P. O. Box 3530
Honolulu, Hawaii 96811

Dr. Lawrence Miike, Director
State of Hawaii
Department of Health
P.O. Box 3378
Honolulu, Hawaii 96801

Subject: Ka Iwi State Park Master Plan
Environmental Impact Statement Preparation Notice
(EISPN)

Dear Dr. Miike:

Thank you for taking the time to comment on the subject EISPN. We offer the following responses to your comments of July 3, 1995, in their respective order:

1. Wastewater - The method of wastewater treatment and disposal envisioned for the proposed restrooms at Queen's Beach is to use an individual on-site treatment system. Alternatively, it may be possible to convey flows to Pump Station No. 6, a privately owned pump station located mauka of Kalanianaole Highway, approximately 1,200 feet southwest of the proposed restroom building location. This pump station conveys wastewater to the Hawaii Kai Sewage Treatment Plant. However, it cannot be determined at this time whether this pump station will have sufficient capacity in the future to accommodate wastewater from the proposed comfort stations since a construction date for the project has not been established. In any event, whichever system is utilized, State Parks will comply with all applicable provisions of the Department of Health's Administrative Rules, Chapter 11-62, "Wastewater Systems."

2. Water Pollution - Although the project area is greater than five acres, the amount of land that may be disturbed for construction is minimal due to the extremely low density of development proposed. At this time, it is anticipated that an NPDES permit would be appropriate for constructing the proposed siltation basin within the drainage easement which outlets into Ka'ili'ili Bay. A list of permits which would be required to implement the proposed project will be included in the Draft EIS.

3. Air Pollution - The mitigation measures for the control of fugitive dust are appreciated. We will incorporate these measures into the body of the Draft EIS, by reference to HAR section 11-60.1-33.

WILSON
OKAMOTO
& ASSOCIATES, INC.

We hope that we have adequately responded to your concerns. If you have any questions, please call Mr. Allen Kam of our staff at 946-2277.

Sincerely,

Earl K. Matsukawa, Project Manager
Wilson Okamoto and Associates, Inc.

BENJAMIN J. CAYETANO
Governor of Hawaii

RECEIVED
DIVISION OF
STATE PARKS
JUN 23 9 06 AM '95

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

P. O. Box 621
Honolulu, Hawaii 96809

Chairperson
MICHAEL D. WILSON
Board of Land and Natural Resources

Deputy Director
GILBERT COLOMA-AGARAN

Aquaculture Development
Aquatic Resources
Boating and Ocean Recreation
Bureau of Conveyances
Conservation and Environmental Affairs
Conservation and Resources Enforcement
Forestry and Wildlife
Historic Preservation
Land Management
State Parks
Water and Land Development

REF:OCEA:TES

File No.: 95-565

MEMORANDUM

JUN 22 1995

TO: Ralston Nagata, Administrator
Division of Parks and Recreation

ATTN: Bill Gorst, Planner

FROM: Roger C. Evans, Administrator
Office of Conservation and Environmental Affairs

SUBJECT: Environmental Impact Statement Preparation Notice (EISPN): Ka Iwi State Park Master Plan, Makapu'u, Oahu, TMKs: 3-9-11: 2, 3, 5, 6, 7; 4-01-14: 1

We have reviewed the EISPN information for the subject project and transmitted by Mr. Earl Matsukawa's letter dated May 19, 1995, and have the following comments:

The Draft EIS should include a map of the State Land Use District boundaries within the Master Plan area. We note that areas of the proposed park which are located within the Conservation District, are within the General "G" and Limited "L" subzones. In addition, the Draft EIS should discuss of project's conformance with the objectives of Conservation District and the particular subzones.

We have no other comments to offer at this time. Thank you for the opportunity to comment in this process.

Please feel free to call Steve Tagawa of my staff at ext. 7-0385, should you have any questions.

ST:tes

2974-01
October 9, 1995

WILSON
OKAMOTO
& ASSOCIATES, INC.

ENGINEERS
ARCHITECTS
PLANNERS

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Mailing address:
P. O. Box 3530
Honolulu, Hawaii 96811

Mr. Roger C. Evans, Administrator
State of Hawaii
Department of Land and Natural Resources
Office of Conservation and Environmental Affairs
P.O. Box 621
Honolulu, Hawaii 96809

Subject: Ka Iwi State Park Master Plan
Environmental Impact Statement Preparation Notice
(EISPN)

Dear Mr. Evans:

Thank you for taking the time to comment on the subject EISPN. We offer the following responses to your comments of June 22, 1995, in their respective order:

1. A map of the State Land Use District boundaries within the study area is included in the Ka Iwi State Park Master Plan, which will also incorporate the Draft EIS.

2. The Draft EIS will also address how the project would conform with the objectives of the Conservation District and the General and Limited subzones.

We hope that we have adequately responded to your concerns. If you have any questions, please call Mr. Allen Kam of our staff at 946-2277.

Sincerely,

Earl K. Matsukawa, Project Manager
Wilson Okamoto & Associates, Inc.

Suspense Date: _____

STATE OF HAWAII

Department of Land and Natural Resources

Division of Aquatic Resources

MEMORANDUM

To: Roger Evans, Administrator
Office of Conservation and Environmental Affairs

From: Bill Devick, Program Manager
Division of Aquatic Resources

Subject: Comments on ____ 1) Conservation District Use Application
__X__ 2) EIS Prep. Notice

Date of Request: 6/7/95 Date Received: 6/8/95

Summary of Project

Title: Ka Iwi State Park Master Plan
Proj. By: Division of State Parks/DLNR
Location: Queen's Beach/Makapu'u Head, Oahu

Brief Description:

The Ka Iwi State Park Master Plan was prepared pursuant to House Concurrent Resolution No. 261 and companion measure House Resolution No. 333, entitled "Requesting an Integrated Scenic Shoreline Park in East Oahu Extending from Hanauma Bay to Makapu'u Point," 1988 legislative session. H.C.R. 261 directed the Department of Land and Natural Resources to take all steps necessary to keep this coastal area in open space.

The proposed park site will occupy approximately 354 acres of land. Bishop Estate is presently the largest landowner with approximately 315 acres at Queens's Beach, Kealakipapa Valley, an a portion of Makapu'u Head. The State of Hawaii owns about 38 acres, consisting of the headland access road and land around the Makapu'u Lighthouse. The City and County of Honolulu owns the Makapu'u Lookout along Kalanianaole Highway, an area of approximately 0.65 acre.

Suspense Date: _____

STATE OF HAWAII

Department of Land and Natural Resources

Division of Aquatic Resources

Some of the recommendations contained in the master plan include restricting off-road vehicles, restoring shoreline vegetation, establishing and interconnected trail system, constructing parking areas, extending the Makapuu Lookout, and adding a comfort station and a visitor center to the Queen's Beach area. Short-term construction impacts are anticipated to affect topography, flora and fauna, soils and coastal water quality. Long-term positive impacts are anticipated on soils, water quality, and plant ecosystems due to vegetation restoration.

Comments:

The "no action" alternative will result in continued degradation of the vegetation, which will promote soil erosion and siltation of nearshore waters. There is also the danger that private interests will develop the area should appropriate entitlements be regained. For these reasons we strongly support the proposed Ka Iwi State Park.

The forthcoming EIS should describe both short-term (construction activities) and long-term impacts on the nearshore environment, and proposed mitigative measures.

2974-01
October 9, 1995

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& ASSOCIATES, INC.

ENGINEERS
ARCHITECTS
PLANNERS

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FAX: (808) 946-2253

Mailing address:
P. O. Box 3530
Honolulu, Hawaii 96811

Mr. Bill Devick, Program Manager
State of Hawaii
Department of Land and Natural Resources
Division of Aquatic Resources
P.O. Box 621 Honolulu, Hawaii 96809

Subject: Ka Iwi State Park Master Plan
Environmental Impact Statement Preparation Notice
(EISPN)

Dear Mr. Devick:

Thank you for taking the time to comment on the subject EISPN (memo dated 6/7/95). We concur with your assessment that implementation of the proposed Ka Iwi State Park Master Plan would have a positive impact on the nearshore marine environment. The beneficial environmental effects of the proposed park will be discussed in the Draft EIS.

In response to your specific concerns, please also note that the Draft EIS will include a description of the short and long-term impacts of the proposed project on the nearshore environment. Construction mitigation measures which could limit or eliminate potential adverse impacts on nearshore water quality and marine life will also be addressed.

We hope that we have adequately responded to your concerns. If you have any questions, please call Mr. Allen Kam of our staff at 946-2277.

Sincerely,

Earl K. Matsukawa, Project Manager
Wilson Okamoto & Associates, Inc.

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

MICHAEL D. WILSON, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DEPUTY
GILBERT COLOMA-AGARAN

AQUACULTURE DEVELOPMENT PROGRAM
AQUATIC RESOURCES
CONSERVATION AND ENVIRONMENTAL AFFAIRS
CONSERVATION AND RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION DIVISION
LAND MANAGEMENT
STATE PARKS
WATER AND LAND DEVELOPMENT

F4

STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

STATE HISTORIC PRESERVATION DIVISION
33 SOUTH KING STREET, 6TH FLOOR
HONOLULU, HAWAII 96813

June 28, 1995

Earl Matsukawa, Project Manager
Wilson Okamoto & Associates
1907 S. Beretania Street
Honolulu, Hawaii 96826

LOG NO: 14667
DOC NO: 9506EJ25

Dear Mr. Matsukawa:

SUBJECT: **Environmental Impact Statement Preparation Notice (EISPN): Ka Iwi State Park Master Plan**
Maunalua, Kona, O'ahu
TMK: 3-9-11:2, 3, 5-7; 4-1-14:1

Thank you for the opportunity to review the EISPN for the Ka Iwi State Park Master Plan. The plan calls for preservation, interpretation and passive or expanded recreation activities for four development areas. Archaeological survey conducted in 1984 located two previously unrecorded sites, a cave site between Kapaliokamoa and Makapu'u Point and a midden area about 50 meters north of the old Wawamalu Ranch boundary wall. In addition the reconnaissance identified several historic sites, the Davis Ranch swimming pool, the Davis Ranch Wall and remnants of the King's Highway (Kealakipapa Valley Road; Site 50-80-15-03). It is also noted that the Makapu'u Lighthouse is listed on the National and Hawaii Register of Historic Places. Levels of park development in the coastal areas are limited to trail improvement and restoration and installation of off the road vehicle barriers. These improvements will have a beneficial effect on the historic walls, pond, midden and cave sites by limiting and directing foot traffic in these areas. We also believe that plans for restoration and interpretation of the old Kings' Highway (Kealakipapa Valley Road) will also have a beneficial effect on the site. In 1992 our office also recommended that the Kealakipapa Valley Road be included in the trail system of the Makapu'u Head area as a good example of interpretive display as a historic site.

We believe that the development plans included in this EISPN will have "no adverse effect" on historic sites and that the inclusion of interpretive venues will have a beneficial effect. However, because these sites are significant for the information on Hawaiian prehistory and history that they are likely to yield and to counter any adverse effect on historic sites we recommend that the any additional development plans of the Kaiwi State Park not included in this EISPN be reviewed by this office.

Aloha,

Don Hibbard, Administrator
State Historic Preservation Division

EJ:jk

2974-01
October 9, 1995

WILSON
OKAMOTO
& ASSOCIATES, INC.

ENGINEERS
ARCHITECTS
PLANNERS

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PH: (808) 946-2277
FAX: (808) 946-2253

Mailing address:
P. O. Box 3530
Honolulu, Hawaii 96811

Mr. Don Hibbard, Administrator
State Historic Preservation Division
33 South King Street, 6th floor
Honolulu, Hawaii 96813

Subject: Ka Iwi State Park Master Plan
Environmental Impact Statement Preparation Notice
(EISPN)

Dear Mr. Hibbard:

Thank you for taking the time to comment on the subject EISPN. Please be assured that any further development plans by the Director of State Parks for the Ka Iwi site will be submitted to your office for review. If you have any questions, please call Mr. Allen Kam of our staff at 946-2277.

Sincerely,

Earl K. Matsukawa, Project Manager
Wilson Okamoto and Associates, Inc.

BENJAMIN J. CAYETANO
GOVERNOR

ESTHER UEDA
EXECUTIVE OFFICER

STATE OF HAWAII
DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT & TOURISM
LAND USE COMMISSION
Room 104, Old Federal Building
335 Merchant Street
Honolulu, Hawaii 96813
Telephone: 587-3822

May 31, 1995

SUBJECT: Director's Referral No. 95-061-F
Environmental Impact Statement Preparation Notice (EISPN) for the Ka Iwi State Park Master Plan, East Oahu, Hawaii

We have reviewed the subject EISPN have the following comments to offer:

1) We confirm that the project site as shown on figure 1 of the EISPN is located within the State Land Use Urban and Conservation Districts.

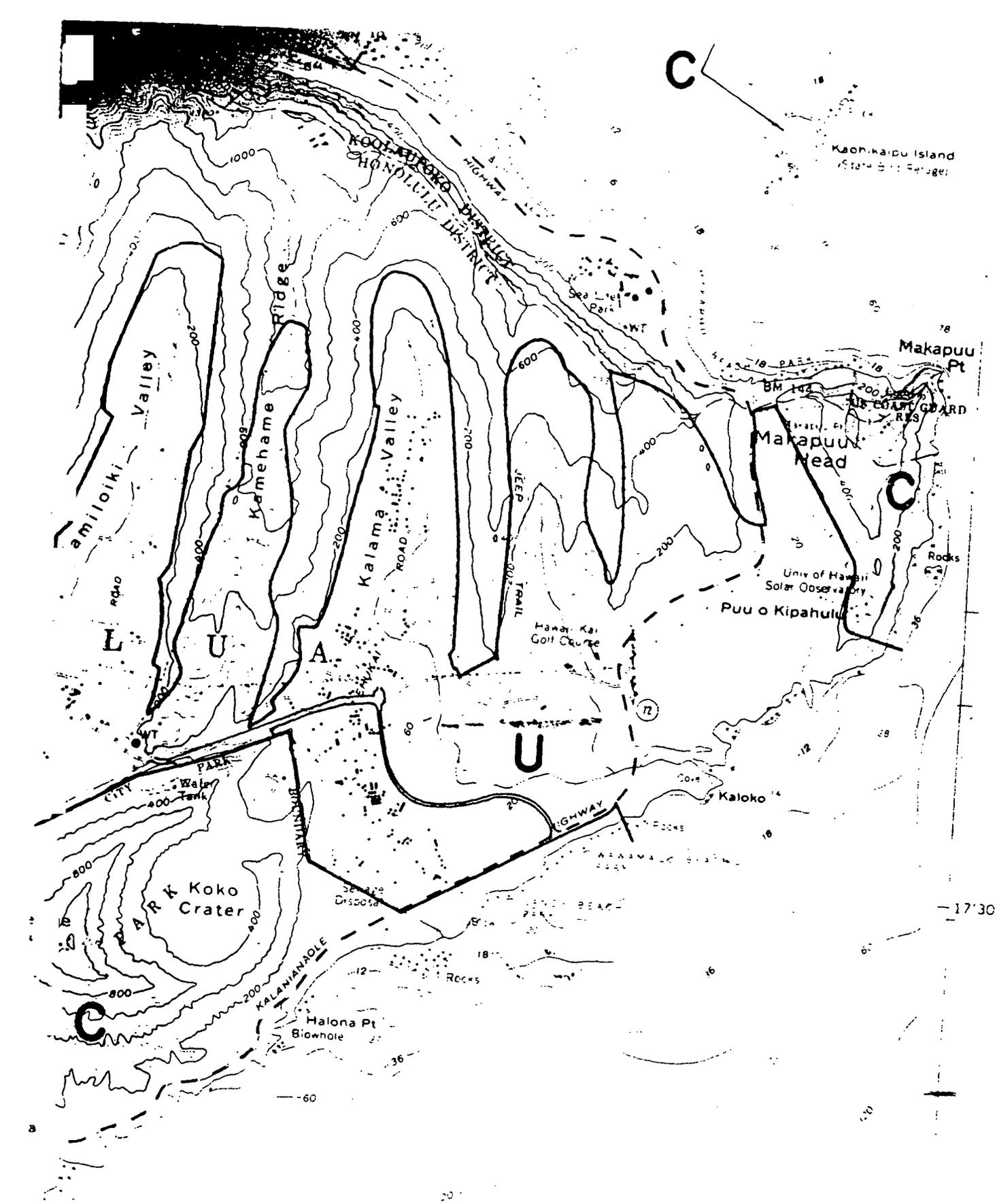
2) We have enclosed for your information a copy of the State Land Use District Boundaries for the project site, specifically portion of USGS Quad O-15 (Koko Head).

3) We would also like to note that portions of the project site are proposed for reclassification from the State Land Use Urban District to the State Land Use Conservation District under the Office of State Planning's 1992 Five-Year Boundary Review for the Island of Oahu.

We have no other comments to offer at this time.

EU:KY:th

enc.



ea Point

C-15 (Koko Head)

2974-01
October 9, 1995

WILSON
OKAMOTO
& ASSOCIATES, INC.

ENGINEERS
ARCHITECTS
PLANNERS

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Mailing address:
P. O. Box 3530
Honolulu, Hawaii 96811

Ms. Esther Ueda
State of Hawaii
Land Use Commission
335 Merchant Street, Room 104
Honolulu, Hawaii 96813

Subject: Ka Iwi State Park Master Plan
Environmental Impact Statement Preparation Notice
(EISPN)

Dear Ms. Ueda:

Thank you for taking the time to comment on the subject EISPN. We offer the following responses to your comments of June 1, 1995, in their respective order.

1. Thank you for corroborating the State Land Use District designations of the project site, and for the district map of the area.

2. We are aware that a portion of the site has been proposed for reclassification from the Urban to the Conservation District under OSP's 1992 Five-Year Boundary Review. This was discussed in the master plan document and will be included in the Draft EIS.

We hope that we have adequately responded to your concerns. If you have any questions, please call Mr. Allen Kam of our staff at 946-2277.

Sincerely,

Earl K. Matsukawa, Project Manager
Wilson Okamoto and Associates, Inc.

BENJAMIN CAYETANO
GOVERNOR

KAZU HAYASHIDA
DIRECTOR

DEPUTY DIRECTORS
SAM CALLEJO
GLENN M. OKIMOTO

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

June 21, 1995

IN REPLY REFER TO:
HWY-PS
2.6145

TO: WILLIAM GORST
DIVISION OF STATE PARKS
DEPARTMENT OF LAND AND NATURAL RESOURCES

FROM: HUGH Y. ONO, ADMINISTRATOR
HIGHWAYS DIVISION

SUBJECT: ENVIRONMENTAL IMPACT STATEMENT PREPARATION NOTICE, KA IWI STATE PARK MASTER PLAN, QUEEN'S BEACH/ MAKAPU'U HEAD, EAST OAHU
TMK: 3-9-11: 2, 3, 5-7; 4-1-14: 1

Thank you for the opportunity to provide our comments on the proposed master plan.

1. A traffic assessment should be prepared and included in the draft environmental impact statement.

2. The master plan should consider providing left-turn storage lanes at the park's accesses.

3. Provisions for a pedestrian and bicycle path separate from but parallel to Kalanianaole Highway from Sandy Beach to the Makapu'u Lookout should be considered as a part of the master plan.

4. Although there are no current plans to widen Kalanianaole Highway in this vicinity, the master plan should consider providing a setback of 20 feet along its highway frontage that will be designated for future highway improvements.

c: Wilson Okamoto & Assoc. (Earl Matsukawa)

2974-01
October 9, 1995

WILSON
OKAMOTO
& ASSOCIATES, INC.

ENGINEERS
ARCHITECTS
PLANNERS

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Mailing address:
P.O. Box 3530
Honolulu, Hawaii 96811

Mr. Hugh Y. Ono, Administrator
State of Hawaii
Department of Transportation
Highways Division
869 Punchbowl Street
Honolulu, Hawaii 96813-5097

Subject: Ka Iwi State Park Master Plan
Environmental Impact Statement Preparation Notice
(EISPN)

Dear Mr. Ono:

Thank you for taking the time to comment on the subject EISPN. We offer the following responses to your comments of June 21, 1995, in their respective order:

1. Upon acquiring the proposed site and before any construction commences, the Department of Land and Natural Resources shall prepare a brief traffic assessment for review by your department.

2. The recommended master plan makes provision for left-turn storage lanes at the park's accesses. The master plan document will be incorporated into the Draft EIS.

3. The master plan provides for pedestrian access on unpaved foot trails through the park site from Sandy Beach up to the Makapu'u Lookout. As for bicycles, during public and advisory committee meetings for preparation of the master plan, the option of opening these trails to bicycles was rejected due to the perceived conflict of bicyclists with hikers and joggers. With regard to bicycling along Kalanianaole Highway, this is a feasible alternative which we will mention in lieu of providing bicycle trails. However, since bicycling along the highway would be occurring outside park boundaries, we do not feel it is an appropriate recommendation to incorporate into our illustrated master plan.

4. The master plan consists of an illustrated park plan which focuses on environmental restoration and the recreational potential of the project site. Other than new vehicular access points, no improvements for the park are proposed along the highway, and future widening should not conflict with park operations. However, we will note your suggestion to provide a setback of 20 feet along Kalanianaole Highway in Chapter 19, Section C.2. - Long-term Effects, in the DEIS, especially as it may relate to eventual design of new vehicular access points.

WILSON
OKAMOTO
& ASSOCIATES, INC.

We hope that we have adequately responded to your concerns. If you have any questions, please call Mr. Allen Kam of our staff at 946-2277.

Sincerely,

Earl K. Matsukawa, Project Manager
Wilson Okamoto and Associates, Inc.

BENJAMIN J. CAYETANO
GOVERNOR

GARY GILL
DIRECTOR

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL
220 SOUTH KING STREET
FOURTH FLOOR
HONOLULU, HAWAII 96813
TELEPHONE (808) 586-4185
FACSIMILE (808) 586-2452

June 14, 1995

Mr. Michael D. Wilson, Director
Department of Land and Natural Resources
P.O. Box 621
Honolulu, Hawaii 96809

Attention: Mr. William Gorst

Dear Mr. Wilson:

Subject: Environmental Impact Statement Preparation Notice (EISPN) for Ka Iwi State Park Master Plan, Oahu, TMK: 3-9-11: 2,3,5,6 & 7; 4-1-14: 1

After a careful review of the subject project, we recommend that you include the following in the draft environmental impact statement:

1. Indicate the timeframe for this project.

2. Consult with the City & County of Honolulu Planning Department and the Office of State Planning's Coastal Zone Management Program and include documentation of your consultations.

3. List any community groups that participated in the public meetings; if none, contact such groups and enclose any correspondence with them.

4. Contact all neighboring land owners.

If you have any questions, please call Nancy Heinrich at 586-4185.

Sincerely,

GARY GILL
Director

GG/NH:kk

c: Earl Matsukawa, Wilson Okamoto & Associates

2974-01
October 9, 1995

WILSON
OKAMOTO
& ASSOCIATES, INC.

ENGINEERS
ARCHITECTS
PLANNERS

1907 S. BERETANIA STREET
HONOLULU, HAWAII 96826
PH: (808) 946-2277
FAX: (808) 946-2253

Mailing address:
P O Box 3530
Honolulu, Hawaii 96811

Mr. Gary Gill, Director
State of Hawaii
Office of Environmental Quality Control
220 South King Street, 4th Floor
Honolulu, Hawaii 96813

Subject: Ka Iwi State Park Master Plan
Environmental Impact Statement Preparation Notice
(EISPN)

Dear Mr. Gill:

Thank you for taking the time to comment on the subject EISPN. We offer the following responses to your comments of June 14, 1995, in their respective order.

1. Because the site is privately owned and there is uncertainty about if and when the site may be acquired for inclusion in the State Park's system, there is no time frame for this project.

2. Both the City and County of Honolulu Planning Department and the Office of State Planning received a copy of the EISPN. However, only comments from the City and County of Honolulu Planning Department were received. These comments will be incorporated into the Draft EIS.

3. The attendance list, which includes representatives from community groups, and summary meeting minutes of the public meeting held for this project will be included in an Appendix of the Draft EIS.

4. Neighboring landowners will be apprised of this project and sent a copy of the Draft EIS.

We hope that we have adequately responded to your concerns. If you have any questions, please call Mr. Allen Kam of our staff at 946-2277.

Sincerely,

Earl K. Matsukawa, Project Manager
Wilson Okamoto and Associates, Inc.

University of Hawaii Sea Grant Program

June 23, 1995

Mr. Earl Matsukawa
Wilson Okamoto and Associates
1907 So. Beretania St., Suite 4000
Honolulu, HI 96826

Subject: Ka Iwi State Park Master Plan

Dear Dear Mr. Matsukawa::

I have reviewed the planning document for the Kai Iwi State Park and on the whole find it to be well done. I am also please to note that there is an upfront recommendation to establish the carrying capacity of the park. This concept did not appear to be a routine consideration for park planning as recently as one or two years ago.

I have two recommendations:

1. The storm waters originating on the flood plains landward of Kalanianaole Hwy should be contained landward of the Highway to prevent overflow into Kaiiliili Bay. This provision may be in the plan, but I would like to emphasize its importance in making the Bay a more viable area for recreation. Also, the accumulated dirt and rubble that prevent the Bay from being a more useful and viable recreation site should be dredged to allow the bay to rejuvenate itself. The expectation here is that once the flood waters are contained mauka of the highway, the Bay will be nearly free of sediment loading.

2. There should be provisions made to accommodate tour buses. There is a need to open other nature vistas to lessen the impact on Hanauma Bay. The cost incurred would be for expanding the parking lot. We need to provide tourists with opportunities to enjoy our beautiful islands. It is the reason why they come to Hawaii. The availability of more vistas and recreational sites is critical if the state hopes to reverse the current downward trend of numbers of visitors. While I say this, I am not suggesting that tour buses be allowed to overrun the park. Along with the general carrying capacity of human impact that is proposed, the apportioned impact of tourists and tourist carrying vehicles should also be factored into the carryin capacity equation. Tourism impacts pose conditions and concerns differing from those for residents, as you know. I am, in particular, concerned that there be managed accommodation of tour buses. We need to consciously make provisions for this segment of tourists, most of whom come from Asia, because it represents not only the present source that make the greatest contribution to the state's revenues, but it is the growth sector of tourism for Hawaii. Failure to recognize and address the needs of this segment of tourism does a to the state's continuing efforts to expand its revenues. In the near term, there are no other viable options to replace tourism.

Thank you for this opportunity to comment on the Master Plan for Ka Iwi Park. If there are any questions, please do not hesitate to call me. I hope my comments are useful.

1000 Pope Road -- MSB 220 • Honolulu, Hawaii 96822 • 808-956-7031 • Fax: 808-956-3014

Sincerely,

Rose T. Pfund, Ph.D.
Associate Director

2974-01
October 9, 1995

WILSON
OKAMOTO
& ASSOCIATES, INC.

ENGINEERS
ARCHITECTS
PLANNERS

1907 S. BERETANIA STREET
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PH: (808) 946-2277
FAX: (808) 946-2253

Mailing address
P. O. Box 3530
Honolulu, Hawaii 96811

Ms. Rose T. Pfund, Ph.D.
Associate Director
University of Hawaii Sea Grant Program
1000 Pope Road, MSB 220
Honolulu, Hawaii 96822

Subject: Ka Iwi State Park Master Plan
Environmental Impact Statement Preparation Notice
(EISPN)

Dear Ms. Pfund:

Thank you for taking the time to comment on the subject EISPN. We offer the following responses to your comments of June 23, 1995, in their respective order:

1. The Division of State Parks shares your concerns about sediment entering Ka'ili'ili Bay from the drainage easement which passes through the Hawaii Kai Golf Course. This situation resulted from the urbanization of mauka areas. With an estimated flow on the order of approximately 1,500 cfs during a 10-year storm event, it would be impractical to contain the runoff mauka of the highway. Alternatively, the master plan recommended a sediment basin within the park site to reduce the volume of sediment reaching the Bay.

   In response to your statement that dredging Ka'ili'ili Bay would make it a more useful and viable area for recreation, we caution that such an action could adversely affect the estuary's function as a nursery for marine fish species. The accumulation of sediment in the bay is probably a natural condition since it was receiving runoff from Kealakipapa Valley long before the man-made diversions compounded sediment loading from Kalama Valley. The added sediment load would not necessarily have affected the depth of the bay, although it is apparently affecting water quality.

2. The proposed expansion of Makapu'u lookout, the new access road entrance from Kalanianaole Highway, and the new lookout parking area were planned with tour buses in mind. These proposed improvements were included after observing that the existing parking area at the lookout is inadequate and unsafe both for traffic movement and for sightseers on the cliff. We feel that the tour buses using this new parking area can be better managed through proper design. It is assumed that the majority of these tour buses will accommodate sightseers taking the around-the-island tour. Therefore, tour buses were not accommodated at the Queen's Beach parking area, since this

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& ASSOCIATES, INC.

area is expected to primarily attract residents and visitors for extended periods of park use.

We hope that we have adequately responded to your concerns. If you have any questions, please call Mr. Allen Kam of our staff at 946-2277.

Sincerely,

Earl K. Matsukawa, Project Manager
Wilson Okamoto and Associates, Inc.

BOARD OF WATER SUPPLY
CITY AND COUNTY OF HONOLULU

COPY

June 14, 1995

Mr. William Gorst
Division of State Parks
Department of Land and Natural Resources
State of Hawaii
1151 Punchbowl Street, Room 310
Honolulu, Hawaii 96813

Dear Mr. Gorst:

Subject: Your Letter of May 23, 1995 on the Environmental Impact Statement Preparation Notice (EISPN) for the Proposed Ka Iwi State Park Master Plan, East Oahu, Hawaii, TMK: 3-9-11: 2, 3, 5, 6, and 7; 4-01-14: 1

Thank you for the opportunity to review and comment on the EISPN for the proposed Ka Iwi State Park Master Plan. We have the following comments to offer:

1. There is no existing water service serving the proposed project site. The applicant will be required to install the necessary water system improvements to serve the proposed State Park.

2. A water master plan showing proposed improvements, water requirements, and hydraulic calculations should be submitted for our review and approval.

3. If a three-inch or larger meter is required, the construction drawings showing the installation of the meter should be submitted for our review and approval.

4. The on-site fire protection requirements should be coordinated with the Fire Prevention Bureau of the Honolulu Fire Department.

5. The applicant will be required to obtain a water allocation from the State Department of Land and Natural Resources or Bishop Estate.

6. The Board of Water Supply (BWS) Rules and Regulations require nonpotable water as the first option for an irrigation source for large landscaped areas. Therefore, a dual water system should be thoroughly investigated to provide nonpotable water for irrigation of large landscaped areas.

COPY

7. Water efficient landscaping should be utilized to reduce the irrigation demand.

8. The proposed project is subject to our cross-connection control requirements prior to the issuance of the building permit. BWS approved backflow prevention assemblies will be required after all domestic water meter(s) serving the park.

If you have any questions, please contact Barry Usagawa at 527-5235.

Very truly yours,

RAYMOND H. SATO
Manager and Chief Engineer

cc: Office of Environmental Quality Control, Attn: Gary Gill
Wilson Okamoto & Associates, Inc., Attn: Earl Matsukawa

2974-01
October 9, 1995

WILSON
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& ASSOCIATES, INC.

ENGINEERS
ARCHITECTS
PLANNERS

1907 S. BERETANIA STREET
HONOLULU, HAWAII 96826
PH: (808) 946-2277
FAX: (808) 946-2253

Mailing address:
P. O. Box 3530
Honolulu, Hawaii 96811

Mr. Raymond H. Sato, Chief Engineer
City and County of Honolulu
Board of Water Supply
630 South Beretania Street
Honolulu, Hawaii 96813

Subject: Ka Iwi State Park Master Plan
Environmental Impact Statement Preparation Notice
(EISPN)

Dear Mr. Sato:

Thank you for taking the time to comment on the subject EISPN. We offer the following responses to your comments of June 14, 1995.

1. We are aware that there is no existing water service in the project site vicinity and have planned accordingly. During the design phase of the project, plans showing the proposed improvements, water requirements, and engineering specifications will be submitted to your office for review and approval. Plans will include the necessary fire protection requirements.

2. A mechanical irrigation system is not planned within the proposed project site. All of the plants recommended for vegetation restoration of the area are native or introduced species which are adapted to the arid site conditions.

We hope that we have adequately responded to your concerns. If you have any questions, please call Mr. Allen Kam of our staff at 946-2277.

Sincerely,

Earl K. Matsukawa, Project Manager
Wilson Okamoto and Associates, Inc.

DEPARTMENT OF PUBLIC WORKS
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

JEREMY HARRIS
MAYOR

KENNETH E. SPRAGUE
DIRECTOR AND CHIEF ENGINEER

DARWIN J. HAMAMOTO
DEPUTY DIRECTOR

ENV 95-183

June 13, 1995

Mr. Mike Wilson, Chairman
Board of Land and Natural Resources
Department of Land and Natural Resources
State of Hawaii
1151 Punchbowl Street, Room 310
Honolulu, Hawaii 96813

Attention: William Gorst

Dear Mr. Wilson:

Subject: Environmental Impact State Preparation Notice (EISPN)
Ka Iwi State Park Master Plan
TMK: 3-9-11: 2, 3, 5, 6, and 7; 4-01-14: 1

We have reviewed the subject EISPN and have the following comments:

1. The EISPN should address the size, ownership of the drainage easement and maintenance of the retention basin.

2. Suggest the drainage easement be included in figure 12, "Utility Easement."

3. Cost estimate in Table 2 (Page I-17) does not include line item for silt basin.

4. A drainage report should be submitted to Drainage Section, Division of Engineering, for review and comment.

Should you have any questions, please contact Mr. Alex Ho, Environmental Engineer, at 523-4150.

Very truly yours,

for KENNETH E. SPRAGUE
Director and Chief Engineer

cc: OEQC
Wilson Okamoto & Associates, Inc.

2974-01
October 9, 1995

WILSON
OKAMOTO
& ASSOCIATES, INC.

ENGINEERS
ARCHITECTS
PLANNERS

1907 S. BERETANIA STREET
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PH: (808) 946-2277
FAX: (808) 946-2253

Mailing address:
P. O. Box 3530
Honolulu, Hawaii 96811

Mr. Kenneth E. Sprague, Director
City and County of Honolulu
Department of Public Works
650 South King Street
Honolulu, Hawaii 96813

Subject: Ka Iwi State Park Master Plan
Environmental Impact Statement Preparation Notice
(EISPN)

Dear Mr. Sprague:

Thank you for taking the time to comment on the subject EISPN. We offer the following responses to your comments of June 13 1995, in their respective order:

1. The Draft EIS will address the size of the drainage easement and indicate that the State will assume responsibility for maintenance of the retention basin unless other arrangements are made after the proposed park site is acquired and developed.

2. The discussion of drainage at the proposed park site was consolidated with flood hazard information on page II-8. The drainage assessment will be shown in Figure IX-9 in the Draft EIS.

3. A cost estimate for the siltation basin will be included in the Draft EIS.

4. Once the site has been acquired by the State and development of the park is pursued, design and construction plans for proposed drainage improvements will be submitted to your office for review and comment.

We hope that we have adequately responded to your concerns. If you have any questions, please call Mr. Allen Kam of our staff at 946-2277.

Sincerely,

Earl K. Matsukawa, Project Manager
Wilson Okamoto and Associates, Inc.

PLANNING DEPARTMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

JEREMY HARRIS
MAYOR

CHERYL D. SOON
CHIEF PLANNING OFFICER

CAROLE TAKAHASHI
DEPUTY CHIEF PLANNING OFFICER

TH 5/95-1026

June 14, 1995

Honorable Michael D. Wilson, Chairperson
Board of Land and Natural Resources
Department of Land and Natural Resources
Division of State Parks
1151 Punchbowl Street, Room 310
Honolulu, Hawaii 96813

Attention: William Gorst

Dear Mr. Wilson:

Ka Iwi State Park Master Plan, Environmental Impact Statement Preparation Notice (EISPN), East Honolulu, Hawaii, Tax Map Keys: 3-9-11: 2, 3, 5, 6 and 7; 4-1-14: 1

In response to a letter from Wilson Okamoto and Associates, Inc. of May 19, 1995, we have reviewed the subject EISPN and offer the following comments.

1. The proposed Ka Iwi State Park Master Plan is consistent with and supports General Plan objectives and policies relating to the natural environment and culture and recreation. The master plan is also consistent with the Development Plan's urban design considerations to preserve open space and promote public views on Oahu.

2. The majority of the proposed park site is located within the East Honolulu Development Plan (DP) area with a DP land use designation of Preservation. The remainder of the proposed park site is within the Koolaupoko DP area and is designated Preservation, Parks and Recreation, and Public Facilities. Areas of the proposed park which are designated Preservation have a general height limit of 25 feet, as specified under Article 4, Section 24-4.2(a)(3), and Article 6, Section 24-6.2(a)(3), of the Development Plan Special Provisions for East Honolulu and Koolaupoko, respectively. The Draft Environmental Impact Statement (DEIS) should clarify the proposed park's location in both DP areas and the additional DP land use designation cited above.

3. The East Honolulu DP Public Facilities Map indicates two future beach parks (Queen's Beach Park and Makapuu Point Nature Park) within the boundaries of the proposed Ka Iwi State Park Master Plan. As such, the DEIS should acknowledge the existence of each park although both are identified as site undetermined. Additionally, we recommend that the City's Department of Parks and Recreation be included as a consulted party for this project.

Thank you for the opportunity to comment on this matter. Should you have any questions, please contact Tim Hata of our staff at 527-6070.

Sincerely,

Carol Takahashi for
Cheryl Soon

CHERYL D. SOON
Chief Planning Officer

CDS:js

cc: Office of Environmental Quality Control
Wilson Okamoto & Associates, Inc.
(Attention: Earl Matsukawa)

2974-01
October 9, 1995

WILSON
OKAMOTO
& ASSOCIATES, INC.

ENGINEERS
ARCHITECTS
PLANNERS

1907 S. BERETANIA STREET
HONOLULU, HAWAII 96826
PH: (808) 946-2277
FAX: (808) 946-2253

Mailing address:
P. O. Box 3530
Honolulu, Hawaii 96811

Ms. Cheryl D. Soon, Chief Planning Officer
City and County of Honolulu
Planning Department
650 South King Street
Honolulu, Hawaii 96813

Subject: Ka Iwi State Park Master Plan
Environmental Impact Statement Preparation Notice
(EISPN)

Dear Ms. Soon:

Thank you for taking the time to comment on the subject EISPN. We offer the following responses to your comments of June 14, 1995, in their respective order:

1. Thank you for corroborating the master plan's consistency with the General Plan objectives and policies, and with the Development Plan's open space and public view considerations.

2. A discussion of the Development Plan Land Use designations for the proposed park site is included in the Ka Iwi State Park Master Plan document, which will be incorporated in the Draft EIS. This information, as well as the Development Plan Special Provisions information you cited, will be incorporated into this document.

3. The Master Plan/Draft EIS document includes a discussion of the future beach parks which are indicated on the East Honolulu DP Public Facilities Map. It is noted in the Master Plan that the park designation at Makapu'u Head which is depicted on the DPPF Map has already been implemented as the Makapu'u State Wayside -- a State recreation area which encompasses approximately 38 acres at the end of the Makapu'u Lighthouse access road.

   The City and County Department of Parks and Recreation has received a copy of the EISPN and will continue to be a consulted party throughout the EIS process.

WILSON
OKAMOTO
& ASSOCIATES, INC.

We hope that we have adequately responded to your concerns. If you have any questions, please call Mr. Allen Kam of our staff at 946-2277.

Sincerely,

Earl K. Matsukawa, Project Manager
Wilson Okamoto and Associates, Inc.

DEPARTMENT OF PARKS AND RECREATION
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

JEREMY HARRIS
MAYOR

DONA L. HANAIKE
DIRECTOR

ALVIN K.C. AU
DEPUTY DIRECTOR

June 22, 1995

Mr. William Gorst
Division of State Parks
Department of Land and Natural Resources
State of Hawaii
1151 Punchbowl Street, Room 310
Honolulu, Hawaii 96813

Dear Mr. Gorst:

Subject: Ka Iwi State Park Master Plan
Environmental Impact Statement Preparation Notice
Honolulu, Oahu, Hawaii
Tax Map Keys 3-9-11: 2, 3, 5, 6 & 7; 4-1-14: 1

Thank you for providing us with this opportunity to comment on the environmental impact statement preparation notice for the Ka Iwi State Park Master Plan.

We look forward to continuing our participation as a consulted party during the preparation and review of your draft environmental impact statement.

We would like to invite you to work with our department to discuss how this project can meet the public's recreational needs. Since both our respective agencies are dedicated to developing recreational use on these two large adjacent sites, we should make every effort to coordinate our planning.

We feel that the master plan could have made better use of the active recreational opportunities in the area. For example, the area is popular with fishermen and divers, but the plan makes no provision to accommodate their use. In addition, we feel that Kaloko Beach should be evaluated for any possible conceptual link to the adjoining Sandy Beach Park area.

If you have any questions please call John Morihara of our Advance Planning Branch at 523-4246.

Sincerely,

For DONA L. HANAIKE
Director

DLH:ei

cc: Office of Environmental Quality Control (Gary Gill)
✓Wilson Okamoto & Associates, Inc. (Earl Matsukawa)

2974-01
October 9, 1995

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& ASSOCIATES, INC.

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HONOLULU, HAWAII 96826
PH: (808) 946-2277
FAX: (808) 946-2253

Mailing address:
P. O. Box 3530
Honolulu, Hawaii 96811

Ms. Dona L. Hanaike, Director
City and County of Honolulu
Department of Parks and Recreation
650 South King Street
Honolulu, Hawaii 96813

Subject: Ka Iwi State Park Master Plan
Environmental Impact Statement Preparation Notice
(EISPN)

Dear Ms. Hanaike:

Thank you for taking the time to comment on the subject EISPN (letter dated June 22, 1995). The Division of State Parks looks forward to your continued participation in the proposed Ka Iwi State Park project, and to working with your office on this project in the future.

The Ka Iwi State Park Master Plan presents the process and rationale leading to the selection of a low-impact recreational use of the site, with an emphasis on preserving existing natural resources. Hence, other than for a new parking area, visitor center, and restroom facility, no other facilities are designated at Queen's Beach. This low level of development was also supported by the community, as indicated during three public meetings. We are not sure what additional facilities for fishermen and divers you have in mind, but we would welcome your specific suggestions on this and any other aspects of the proposed master plan.

I have spoken with Mr. Don Griffin of your staff and apprised him that we will be sending your department a copy of the Master Plan/Draft EIS document for review. Mr. Griffin indicated that he would present the document to the Planning Committee for review. If you require additional copies or have any further questions, please call Mr. Allen Kam of our staff at 946-2277.

Sincerely,

Earl K. Matsukawa, Project Manager
Wilson Okamoto and Associates, Inc.

DEPARTMENT OF TRANSPORTATION SERVICE
CITY AND COUNTY OF HONOLULU

PACIFIC PARK PLAZA
711 KAPIOLANI BOULEVARD, SUITE 1200
HONOLULU, HAWAII 96813

JEREMY HARRIS
~~FRANK F. FASI~~
MAYOR

CHARLES O. SWANSON
~~JOSEPH M. MAGALDI, JR.~~
DIRECTOR

~~AMAR SAPPAL~~
~~DEPUTY DIRECTOR~~

TE-2559
PL95.1.156

June 21, 1995

Mr. William Gorst
Division of State Parks
Department of Land and Natural Resources
State of Hawaii
1151 Punchbowl Street, Room 310
Honolulu, Hawaii 96813

Dear Mr. Gorst:

Subject: Ka Iwi Park Master Plan
Environmental Impact Statement Preparation Notice
TMK: 3-9-11: 2, 3, 5, 6 and 7; 4-1-14: 1

This is in response to a letter 2974-01 dated May 19, 1995 from Wilson Okamoto & Associates, Inc., requesting comments on the subject project.

It appears that all the access points for this project will be from Kalanianaole Highway, a State Department of Transportation facility. We, therefore, have no objections or comments to offer at this time.

Should you have any questions, please contact Wayne Nakamoto of my staff at 523-4190.

Respectfully,

Peter H. O. Ho
for CHARLES O. SWANSON
Director

cc: Office of Environmental Quality Control
Wilson Okamoto & Associates, Inc.

The Nature Conservancy of Hawaii

• 1116 SMITH STREET • HONOLULU, HAWAII • 96817 • PH: (808) 537-4508 • FAX (808) 545-2019

June 19, 1995

William Gorst
Department of Land and Natural Resources
Division of State Parks
1151 Punchbowl Street, Room 310
Honolulu, Hawaii 96813

Subject: Ka Iwi State Park Master Plan, Environmental Impact Statement Preparation Notice
Tax Map Keys: 3-9-11: 2, 3, 5, 6, 7 and 4-01-14: 1

Dear Mr. Gorst:

Thank you for the opportunity to review the Ka Iwi State Park Master Plan, Environmental Impact Statement Preparation Notice. The comments from the Hawaii Natural Heritage Program follow:

- The Reconnaissance Survey Ka Iwi Shoreline Study draft (January 1992) is cited, but the information is not incorporated into the document being reviewed. In addition, much of this information was based on Hawaii Natural Heritage Program information which is not cited in the document under review. Both documents cover the vegetation and rare species information of the whole study area, whereas the document under review includes the results of a botanical survey of just a small portion of the study area (the Makapuu section).

- Page II-18, first paragraph: common names do not match the scientific names. Pa'uohi'iaka (*Jacquemontia ovalifolia*), 'Ilima (*Sida fallax*), Nehe (*Lipochaeta integrifolia, Lipochaeta lobata*)

- Page II-20, d. Rocky Cliff/Windsheared Grass: the common name for *Eragrostis variabilis* is kawelu or 'emoloa. In addition, the list of species in this paragraph is incomplete as several rare plants have been reported from this area.

- *Marsilea villosa* is misspelled throughout.

We hope that our comments are useful. If you have any questions, please call Joel Lau or Sam Gon at 537-4508.

Sincerely,

Joel Lau

Joel Lau
Hawaii Natural Heritage Program

cc: Gary Gill
Earl Matsukawa

Jeffrey N. Watanabe, Chairman
S. Haunani Apoliona
Peter D. Baldwin
Zadoc W. Brown, Jr.
Meredith J. Ching
Robert F. Clarke
Samuel A. Cooke
Walter A. Dods, Jr.
Julia Frohlich
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Frank I. Hata
James J. C. Haynes
Stanley Hong
Lawrence M. Johnson
Kenneth Y. Kaneshiro, ex officio
Bert A. Kobayashi
Thomas C. Leppert
Patti J. Lyons
Duncan MacNaughton
Frank J. Manaut
Bill D. Mills
Henry G. Neal
C. Dudley Pratt, Jr.
H. Monty Richards
Jean E. Rolles
Yoshiharu Satoh
Hannah K. Springer
R. Duwayne Steele
Oswald K. Stender
William H. Struker

International Headquarters, 1815 North Lynn Street, Arlington, Virginia 22209

2974-01
October 9, 1995

WILSON
OKAMOTO
& ASSOCIATES, INC.

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Mailing address
P.O Box 3530
Honolulu, Hawaii 96811

Mr. Joel Lau
The Nature Conservancy of Hawaii
1116 Smith Street
Honolulu, Hawaii 96817

Subject: Ka Iwi State Park Master Plan
Environmental Impact Statement Preparation Notice
(EISPN)

Dear Mr. Lau:

Thank you for taking the time to comment on the subject EISPN. We offer the following responses to your comments of June 21, 1995, in their respective order:

1. Mention of the Reconnaissance Survey Ka Iwi Shoreline Study is made on page I-5 of the EISPN as it relates to the suitability of the project site for inclusion in the National Parks system. The vegetation and rare species information in that study document was not incorporated into the EISPN since the study area was primarily assessed for recreational resource opportunities.

2. The common and scientific names which you cited will be corrected in the Draft EIS.

3. The common name for *Eragrostis variabilis* (kawelu or 'emoloa) will be included in the Draft EIS. As for the list of species found on east facing, rocky slopes of Makapu'u Head, any additional information which you can provide about the area's rare plants would be welcome.

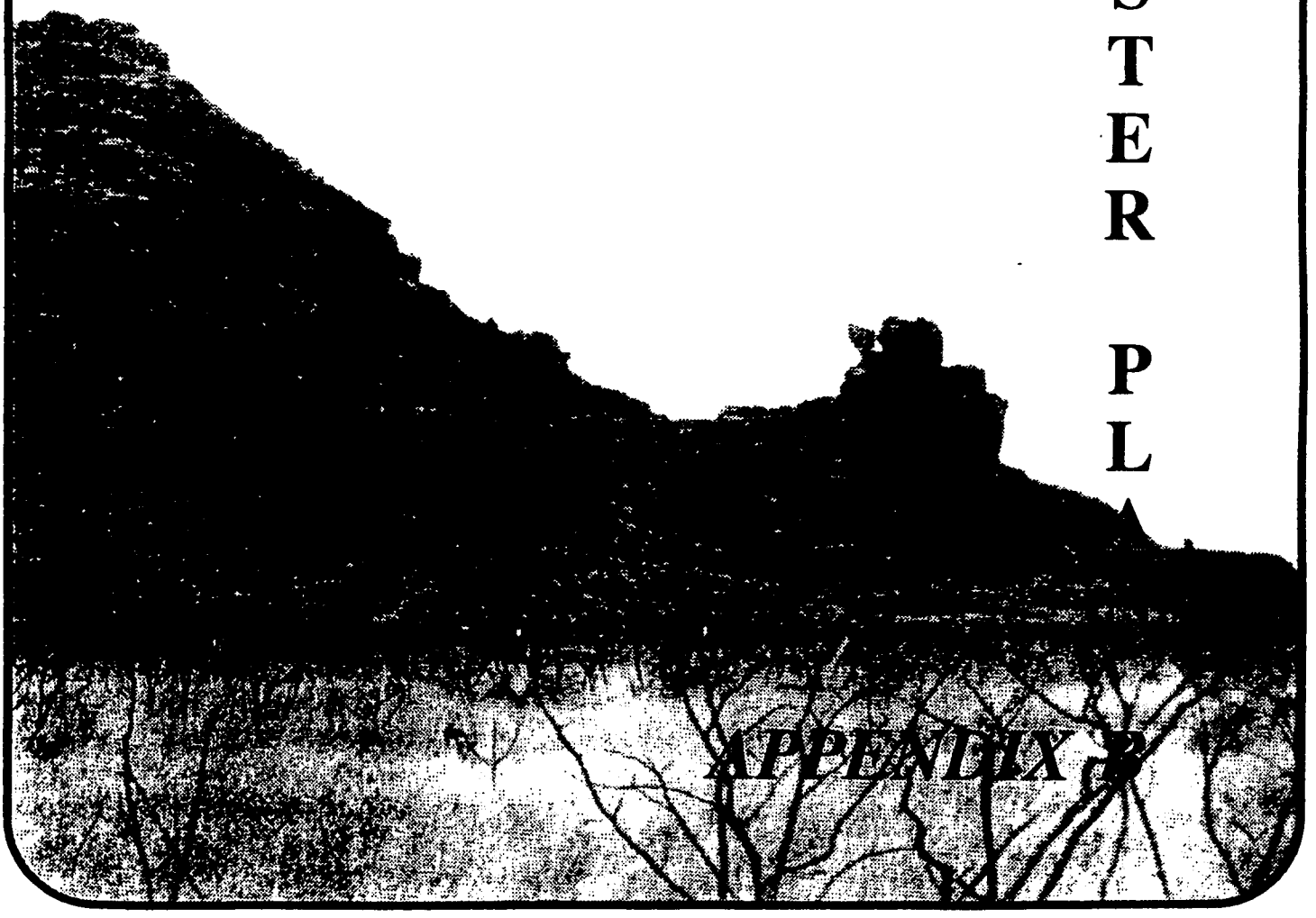
4. The misspelling of *Marsilea villosa* will be corrected throughout the Draft EIS.

We hope that we have adequately responded to your concerns. If you have any questions, please call Mr. Allen Kam of our staff at 946-2277.

Sincerely,

Earl K. Matsukawa, Project Manager
Wilson Okamoto and Associates, Inc.

KAIWI MASTER PL



APPENDIX C

KAIWI BOTANICAL SURVEY REPORT
MAKAPU'U HEADLANDS
1991

FOR
WILSON OKAMOTO AND ASSOCIATES
1150 SOUTH KING STREET, SUITE 800
HONOLULU, HAWAII 96814

BY
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INTRODUCTION

The Makapu'u Headlands are made up of Makapu'u Head and Makapu'u Point and are the the most south-easterly points of the island of Oahu, Hawaii. In October and November, 1991, a botanical survey of this 197.5 acre, rocky point was undertaken. The purpose of the survey was to identify and list all plant species found on the site, to describe the plant communities, and to locate and map any listed or proposed, threatened or endangered species.

METHODS

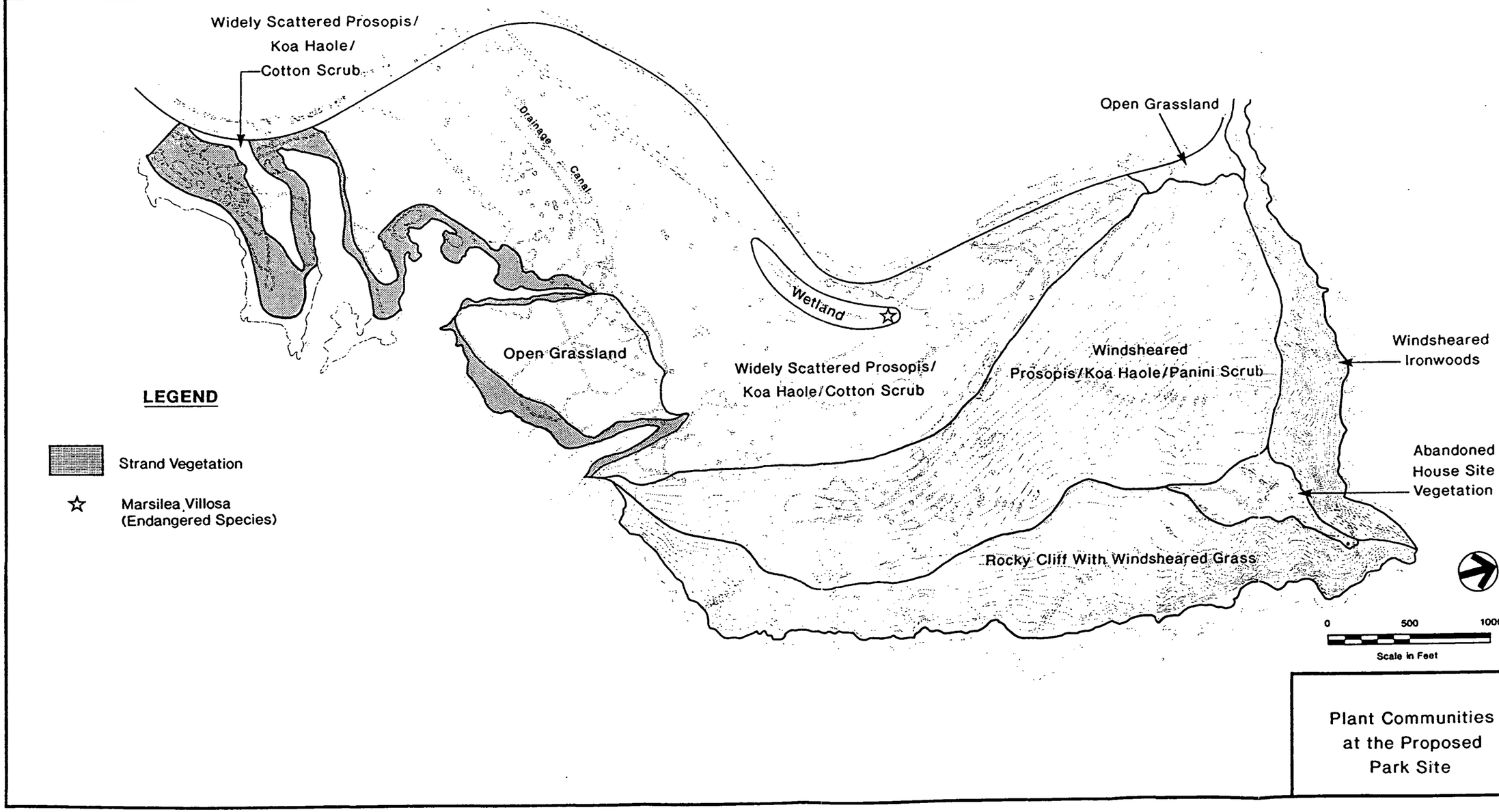
The walk-over transect method of data collection was used during this survey. A team of two botanists visited all parts of the site, either by way of existing roads and trails or by forays into otherwise inaccessable areas. The steep cliffs were surveyed using binoculars. The first fall rains had fallen approximately two weeks prior to the survey, so most of the annual species were in evidence and identifiable.

RESULTS

VEGETATION TYPES

The Makapu'u Headlands are made up of rock outcrops, ledges, and scant soil deposits. This area is part of what Ripperton and Hosaka (1942) referred to as Zone A or coastal flats and slopes, which are generally regarded as areas dominated by introduced or alien species. Rainfall is less than 20 inches per year and the vegetation is classed as xeric (adapted to a dry environment). Four vegetation types are found on this site (Figure 1).

Wind Sheared Ironwoods. The very steep, north facing cliffs, from the Makapu'u Overlook to the Lighthouse are covered with wind sheared ironwood trees (*Casurina equisetifolia*). On the wider ledges there are shrubs of Brazilian pepper (*Schinus terebinthifolius* Raddi) and koa haole (*Leucaena leucocephala* (Lam.) deWit), along with scattered opuntia (*Opuntia ficus-indica* (L.) Mill.), Spanish needle



Plant Communities
at the Proposed
Park Site



Figure 2. Windsheared Ironwoods.



Figure 3. Abandoned House Site Vegetation.

(*Bidens pilosas* L.), 'ilima (*Sida fallax* Walp.), swollen finger grass (*Chloris barbata* (L.) Sw.), and rarely, plants of *Schiedea globosa* H. Mann can be seen.

Needless to say, the vegetation of the north facing slope is scant and limited to the ledges. Only the most tenacious and adaptable taxa have become established in this area.

Abandoned House Site Vegetation. In the small flat area, west of the lighthouse, where the Coast Guard Housing once stood, plants that were part of the planted or landscaped area, have become feral and now form a unique vegetation type. The emergent trees are ironwoods, but sea grape (*Coccoloba uvifera* (L.), tropical almond (*Terminalia catappa* L.), and golden rain tree (*Koelreuteria formosana* Hatata) are thriving (Figure 3). In addition Mexican creeper (*Antigonon leptopus* Hook. & Arnott), panini (*Opuntia ficus-indica* (L.) Mill.), night-blooming cereus (*Hylocereus undatus* (Haw.) Britton & Rose), Bougainvillea, pencil tree (*Euphorbia tirucalli* L.), Queen Emma's lily (*Hymenocallis littoralis* (Jacq.) Salisb.) and various lawn grasses now cover large areas and in most cases are quite attractive. If it is ever decided to provide picnic facilities in this part of the park, this site would make an ideal location in which to do it.

Windsheared Prosopis/Koa haole/Panini Scrub. From approximately the one-hundred foot contour beginning at the Makapu'u Overlook, southward to Pu'u Kipahulu, then northeastward along the ridge to the old Coast Guard Road, along the road to about the five-hundred foot contour, northward to the cliff, then westward along the cliff back to the overlook, the scrub vegetation is made up of windsheared Prosopis with intermittent stands of koa haole, scattered clumps of panini (*Opuntia ficus-indica*) and rock outcrops (Figure 4). In some places weedy patches of garden plants which have escaped into the wild can be found. Mother-of-thousands (*Kalanchoe pinnata* (Lam.) and carrion flower (*Stapelia gigantea* N. E. Brown) are good examples.



Figure 4. Windsheared Prosopis/Koa haole/Panini Scrub.



Figure 5. Rocky Cliffs/Windsheared Grass.

A few native plants still persist on Makapu'u Headlands. Within the Windsheared Prosopis/Koa hole/Panini Scrub community, two species of *Lipocheata* and an occasional individual of *Schiedea globosa* was seen.

Rocky Cliff/Windsheared Grass. The precipitous, eastfacing, rocky slopes of the Makapu'u Headlands are vegetated by a scant cover of wind sheared grasses (Figure 4). Many species of introduced grasses as well as one endemic, *Eragrostis variabilis* (Gaud.) Steud. were found. However, the cover is not all grass. There is a large number of woody plants in this vegetation type, but their growth form is severely affected by the almost constant wind. Even ironwood trees are bent to conform to the rocky face. Koa haole, lantana, klu, opuntia and Brazilian pepper are among the "hangers-on" distributed among the rock outcrops and gravely ledges. None of this vegetation reaches a height of more than one meter. Most of the survey of this part of the site had to be done using binoculars.

ENDANGERED SPECIES

No USFWS (1991) or State of Hawaii proposed or listed threatened or endangered species were found on this site.

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SPECIES LIST

PLANTS OF THE MAKAPU'U HEADLANDS

In the following species list the plant families have been arranged alphabetically within three groups, Ferns, Monocotyledons, and Dicotyledons. The genera and species have been arranged alphabetically within the families. The taxonomy and nomenclature follow that of Wagner, Herbst, and Sohmer (1990), St.John (1973), and Neal (1965). For each taxon the following information is provided:

1. An asterisk before the plant name indicates a plant introduced to the Hawaiian Islands since Captain Cook or by the aborigines.

2. The scientific name.

3. The Hawaiian name or the mostly widely used common name.

4. Species abundance. Abundance ratings are for this site only and they have the following meanings:

Uncommon = a plant that was found less than five times.

Occasional = a plant that was found between five to ten times.

Frequent = a plant that was found in widely scattered parts of the site in low numbers.

Common = a plant considered an important part of the vegetation

Locally abundant = plants found in large numbers over a limited area. For example the plants found in grassy patches.

This species list is the result of an extensive survey of this site completed at the beginning of the rainy season (October and November 1991) and it reflects the vegetative composition of the flora during a single season. Changes in the vegetation will occur due to introductions and losses and a slightly different species list would result from a survey conducted during a different growing season. In addition there maybe environmental factors such as fire which will lead to species composition alteration.

SCIENTIFIC NAME	COMMON NAME	ABUNDANCE
	Ferns and Fern Allies	
Pteridaceae - Pteris Family		
Doryopteris decipiens Hook. J. Sm.	Iwaiwa	Uncommon
	Monocotyledons	
Agavaceae - Agave Family		
**Furcraea foetida* (L.) Haw.	Mauritius hemp	Occasional
Commelinaceae - Spiderwort Family		
**Commelina benghalensis* L	Hairy honohono	Abundant
Liliaceae - Lily Family		
**Aloe vera* L.	Aloe	Locally abundant
**Hymenocallis litoralis*	Queen Emma's lily	Locally abundant
Poaceae - Grass Family		
**Bothriochloa bladhii* (Retz.) S.T.Blake	Bunch grass	Common
**Bothriochloa pertusa* (L.) A Camus	Pitted beardgrass	Locally abundant
**Brachiaria mutica* (Frossk) Staph.	California grass	Locally abundant
**Cenchrus ciliaris* L.	Buffelgrass	Common
**Cenchrus echinatus* L.	Common sandbur	Common
**Chloris barbata* (L.) Sw.	Swollen fingergrass	Locally abundant
**Chloris divaricata* R. Br.	Stargrass	Locally abundant
**Cynodon dactylon* (l.) Pers.	Bermuda grass	Locally abundant
**Digitaria ciliaris* (Retz.) Koeler	Henry's crabgrass	Occasional
**Digitaria insularis* (L.) Mez ex Ekman	Sourgrass	Locally abundant
**Digitaria violascens* Link.	Smooth crabgrass	Locally abundant
**Eleusine indica* (L.) Gaertn.	Wiregrass	Locally abundant
Eragrostis variables (Guad.) Steud.		Occasional
**Heteropogon contortus*	Pili grass	Locally abundant
**Panicum maximum* Jacq.	Guinea grass	Common
**Rhynchelytrum repens* (Willd.) Hubb.	Natal redtop	Common
**Sporobolus virginicus* (L.) Kunth	Seashore rush	Locally abundant
	Dicotlydones	
Acanthaceae - Acanthus Family		
**Asystasia gangetica* (L.)T. Anderson	Chinese Violet	Common
**Barlaria cristata* L.	Philippine Violet	Locally abundant

SCIENTIFIC NAME	COMMON NAME	Abundance
Aizoaceae - Fig-marigold Family		
Sesuvium portulacastrum(L.) L.	Akulikuli	Locally abundant
**Trianthema portulacastrum* L.		Common
Amaranthaceae - Amaranth Family		
**Alternanthera pungens* Kunth	Khaki weed	Locally abundant
**Amaranthus spinosus* L.	Spiny amaranth	Occasional
Anacardiaceae - Mango Family		
**Schinus terebinthifolius* L.	Brazilian pepper	Common
Asclepiadaceae - Milkweed Family		
**Stapelia gigantea* N. E. Brown	Zulu-giant	Locally abundant
Asteraceae - Sunflower Family		
**Ageratum conyzoides* L.	Maile honohono	Occasional
**Bidens alba* (L.) DC		Locally abundant
**Bidens cynapiifolia* Kunth		Common
**Bidens pilosa* L.	Spanish needle	Common
**Calyptocarpus vialis* Less.		Locally abundant
**Emilia sonchifolia* (L.) DC	Flora's paintbrush	Occasional
Lipochaeta integrifolia (Nutt) Gray		Occasional
Lipochaeta lobata (Gaud.) DC		Common
**Pluchea indica* (L.) Lees	Indian Pluchea	Uncommon
**Pluchea symphytifolia* (Mill.) Gillis	Sourbush	Occasional
**Sonchus oleraceus* L.	Sow thistle	Uncommon
**Tridax procumbens* L.	Coat buttons	Occasional
**Verbesina enceliodies* B & H ex Gray	Golden crown beard	Locally abundant
**Vernonia cinerea* (L.) Less	Ironweed	Occasional
**Wedelia trilobata* (L.) Hitchc.	Wedelia	Locally abundant
**Xanthium strumarium* L.	Cockle bur	Occasional
Boraginaceae - Borage Family		
Heliotropium anomalum Hook. & Arnott	Hinahina	Occasional
**Heliotropium procumbens* Mill.		Occasional
**Tournefortia argentia* L. fil.	Tree heliotrope	Uncommon
Brassicaceae - Mustand Family		
Lepidium oblongum Small	Pepper grass	Occasional

SCIENTIFIC NAME	COMMON NAME	Abundance
Cactaceae - Cactus Family		
**Hylocereus undatus* Britton & Rose	Night-blooming cereus	Locally abundant
**Opuntia ficus-indica* (L.) Mill.	Panini	Abundant
Caryophyllaceae - Carnation Family		
Schiedea globosa H. Mann		Uncommon
Casuarinaceae - She-oak Family		
**Casuarina equisetifolia* L.	Ironwood tree	Common
Chenopodiaceae - Goosefoot Family		
**Atriplex semibaccata* R. Br.	Australian saltbush	Occasional
**Chenopodium murale* L.	'Aheahea	Occasional
Combretaceae - Indian almond Family		
Terminalia catappa L.	Tropical almond	Uncommon
Convolvulaceae - Morningglory Family		
**Ipomoea cairica* (L.) Sweet	Koali 'ai	Occasional
**Ipomoea obscura* (L.) Ker-Gawl		Occasional
Jacquemontia ovalifolia (Choisy) H. Hallier	Pa'uohi'iaka	Occasional
**Merremia aegyptia* (L.) Urb.	Hairy merremia	Occasional
Crassulacaeae -Orpine Family		
**Kalanchoe pinnata* (Lam.) Pers	Mother-of-thousands	Locally abundant
Cucurbitaceae - Gourd Family		
**Momordica charantia* L.	Balsam pear	Occasional
Euphorbiaceae - Spurge Family		
Chamaesyce degeneri (Sherff) Croizat & Degerner	'Akoko	Uncommon
**Chamaesyce hirta* (L.) Millsp.	Hairy spurge	Occasional
**Chamaesyce hypericifolia* (L.) Millsp.	Graceful spurge	Uncommon
**Chamaesyce prostrata* (Aiton) Sma.	Prostrate spurge	Uncommon
**Euphorbia cyathophora* J. A. Murray	Mexican fire plant	Locally abundant
**Euphorbia heterophylla* L.	Kaliko	Locally abundant
**Euphorbia tirucalli* L.	Pencil tree	Locally abundant
**Pedilanthus tithymaloides* (L.) Poit	Slipper flower	Locally abundant
**Phyllanthus debilis* Klien ex Willd.	Niruri	Occasional
**Ricinus cummunis* L.	Castor bean	Occasional

SCIENTIFIC NAME	COMMON NAME	Abundance
Fabaceae - Bean Family		
**Acacia farnesiana* (L.) Willd	Klu	Common
**Cassia leschenaultiana*	Partridge pea	Occasional
**Desmanthus virgatus* (L.) Willd.	Slender mimosa	Occasional
**Indigo spicata* Fossk.	Creeping indigo	Locally abundant
**Indigo suffruticosa* Mill	Indigo	Occasional
**Leucaena leucocephala* (Lam). deWit	Koa haole	Common
**Macroptilium lathyroides*	Wild pea	Locally abundant
**Medicago polymorpha* L.	Bur clover	Locally abundant
**Prosopis pallida* Kunth	Kiawe	Common
Goodenaceae - Goodenia Family		
**Scaevola sericea* Vahl	Naupaka	Locally abundant
Labiatae - Mint Family		
**Hyptis pectinata* (L.) Poit	Comb hyptis	Occasional
**Leonatis nepetifolia*(L.) R. Br.	Lion's ear	Occasional
**Ocimum gratissimum* L.	Wild basil	Locally abundant
Plectranthus parviflorus Willd.	Spur flower	Occasional
Malvaceae - Hibiscus Family		
**Abutilon grandifolium* (Willd.) Sweet	Hairy abutilon	Occasional
Gossypium tomentosum Nutt. ex Seem.	Ma'o	Occasional
**Malvastrum coromandelianum* (L.) Garke	False mallow	Occasional
Sida fallax Walp.	'Ilima	Common
**Thespesia populnea* (L.) Sol ex. Correa	Milo	Uncommon
Myrtaceae - Bayberry Family		
Syzgium cumini (L.) Skeels	Java plum	Uncommon
Nyctaginaceae - Four o'clock Family		
**Boerhavia coccinea* Mill.		Locally abundant
Boerhavia repens L.	Alena	Locally abundant
Bougainvillea sp. Commerson ex Juss.	Bougainvillea	Occasional
Oxalidaceae - Wood sorrel Family		
Oxalis corniculata L.	Yellow wood sorrel	Occasional
Passifloraceae - Passion flower Family		
**Passiflora foetida* L.	Love-in-a-mist	Occasional

SCIENTIFIC NAME	COMMON NAME	1984----1991
Polygonaceae - Buckwheat Family		
**Antigonon leptopus* Hook. & Arnott	Mexican creeper	Locally abundant
**Coccoloba uvifera* (L.) L.	Sea grape	Uncommon
Portulacaceae - Purslane Family		
**Portulaca oleracea* L.	Pigweed	Occasional
**Portulaca pilosa* L.	Akulikuli	Occasional
Portulaca sp.		Occasional
Sapindaceae - Soapberry Family		
**Koelreuteria formosana* Hatata	Golden rain tree	Uncommon
Sterculiaceae - Cacao Family		
Waltheria indica L.	'Uhaloa	Common
Verbenaceae - Verbena Family		
**Lantana camara* L.	Lantana	Common
**Stachytarpheta jamaicensis* (L.) Vahl	Jamaica vervain	Common
**Stachytarpheta urticifolia* (Salisb.)	Occasional	

KAIWI BOTANICAL SURVEY REPORT
QUEEN'S BEACH
1991

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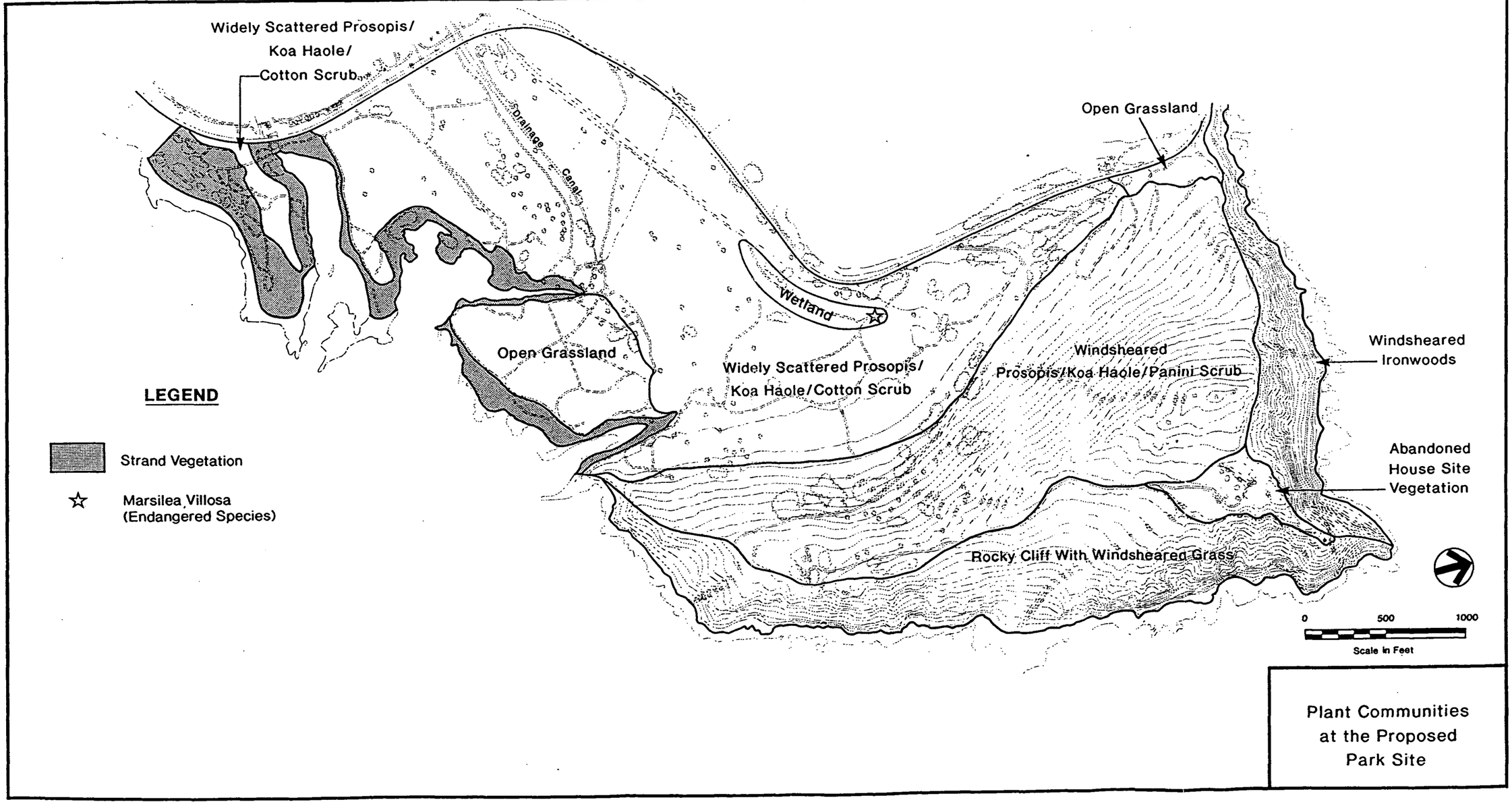
INTRODUCTION

In 1984 a feasibility study of the area then known as the Queen's Beach Park was conducted by VTN-Pacific for the Department of Parks and Recreation, City and County of Honolulu. Included in the information collected at that time were the results of a botanical survey of the area. The survey report included descriptions of the vegetation types, a species list of all taxa present on the site, and a list of native plants suitable for use in landscape plans for a park in the area. That survey was conducted in July 1984, the dry season of a very dry year. This report presents the results of a similar survey conducted in late October 1991, fifteen days after two heavy rains which drenched the site (See Queen's Beach Park Feasibility Study - VTN-Pacific 1984 for Methods).

RESULTS

Since 1984 there has been considerable change in the species composition of the flora of the site although total numbers remain about the same. One-hundred twelve taxa were found in 1984 as compared to one-hundred fifteen in 1991. However, sixteen species found in the earlier survey were absent in the latest one and fifteen taxa not reported were found. The plant family, Liliaceae lost 75% of its species composition, while the grass family, Poaceae, gained four species and lost only one (See Species List). But the most dramatic change can be seen in the shifting vegetation types (Figure 1.). These changes are probably the result of grass fires and the shading out of annual species as the woody plants overtop the ground cover layer which was made up of mostly annual species. Open Grassland now partly occupies the space formerly filled by the Haole-koa-Wild Basil Zone and the Guinea Grass-Haole koa Zone. Evidence of fire was clearly visible in the central part of the site and the Kiawe-Cotton Zone and the Guinea Grass - Haole koa Zone have both been reduced by the proliferation of Koa-haole and native cotton. The new



Plant Communities
at the Proposed
Park Site

terminology more accurately reflects the vegetation of the site as it exists today.

VEGETATION TYPES

Strand Vegetation and Wetlands

These vegetation types have been treated as one (Figure 1) because they are continous along the coast and around the edges of the inlets except for the mauka wetland where the *Marsilia villosa* was found. The species composition of the Strand Vegetation (Figure 2) has not changed since the 1984 study, but it has been damaged considerably by the off-the-road vehicles which constantly plow through the site.

The salt marsh plants, red mangrove, (*Rhizophora mangle* L.) and pickleweed (*Batis maritima* L.) are flourishing along the inlets. Since the earlier survey, another mangrove type tree, buttonwood (*Conocarpus erecta* L.) has become established.

All that remains of the mauka wetland, that at one time occupied an area just below Kalanianaole Highway, is confined to a few deep ruts made by off-the-road vehicles. The area is about 30 feet wide and 600 feet long.

Open Grassland

Open Grassland (Figure 3) is found in two places on the site (Figure 1). The largest concentration is inland from the coastal vegetation between Kaho'ohaihai Inlet and Ka'olo'ili Bay. Although many of the grasses were still vegetative, species of *Cenchrus* were by far the most common. Patches of koa haole (*Leucaena leucocephala* (Lam.) deWit) and klu (*Acacia farnesiana* (L.) Willd.) less than two feet high were frequent. There were also some scattered Hawaiian cotton plants.

The second Open Grassland enclave is located south of the Makapu'u Overlook and above the Coast Guard Road (Figure 1). This Grassland is probably the result of the



Figure 2. Strand Vegetation.

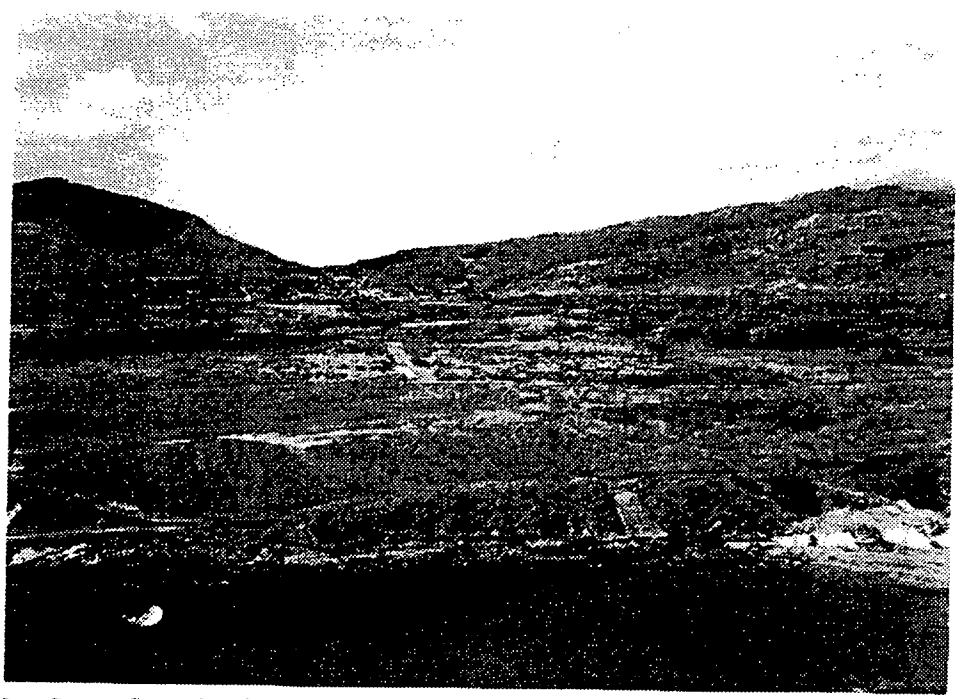


Figure 3. Open Grassland

almost constant wind, burning, and again, off-the-road vehicles. The scant ground cover is mostly buffelgrass (*Cenchrus ciliaris* L. and guinea grass (*Panicum maximum* Jacq.) interspersed with a variety of native plants including Pau'ohi'i'aka (*Jacquemontia ovalifolia* (Choisy) H. Hallier), *Lipochaeta integrifolia* (Nutt.) Gray, *L. lobata* (Gaud.) DC, 'Illima (*Sida fallax* Walp.) and *Portulaca pilosa* L.

Widely Scattered Kiawe with Koa haole/Cotton Understory

The most common vegetation type is Widely Scattered Kiawe with Koa haole/Cotton Understory (Figure 4). It extends from above the Coast Guard Road to just below Pu'u Kipahulu, westward above the Open Grassland to Kalanianaole Highway with a small patch along the ridge to Kaloko Point. There are frequent rock outcrops throughout this area. Some are manmade and some are natural. The ground layer is mixed grasses and forbs (any herb that is not a grass). The kiawe trees vary from six to twenty feet in height and their placement appears to be entirely random. Both Hawaiian cotton and koa haole are summer deciduous (loose their leaves in the driest months) in this area and neither species attains a height of more than eight to twelve feet.

SPECIES OF NOTE

Although reference was made to the endemic water fern, *Marsilea villosa* Kaulf., in the 1984 report, neither the plant nor its habitat were clearly identified. During this survey the habitat and the plant, in very large numbers, were found (Figure 5). *Marsilea villosa* is a proposed endangered species and will probably be listed as endangered before the end of 1991 (Pers. Comm. Derral Herbst Ph.D. USFWS).

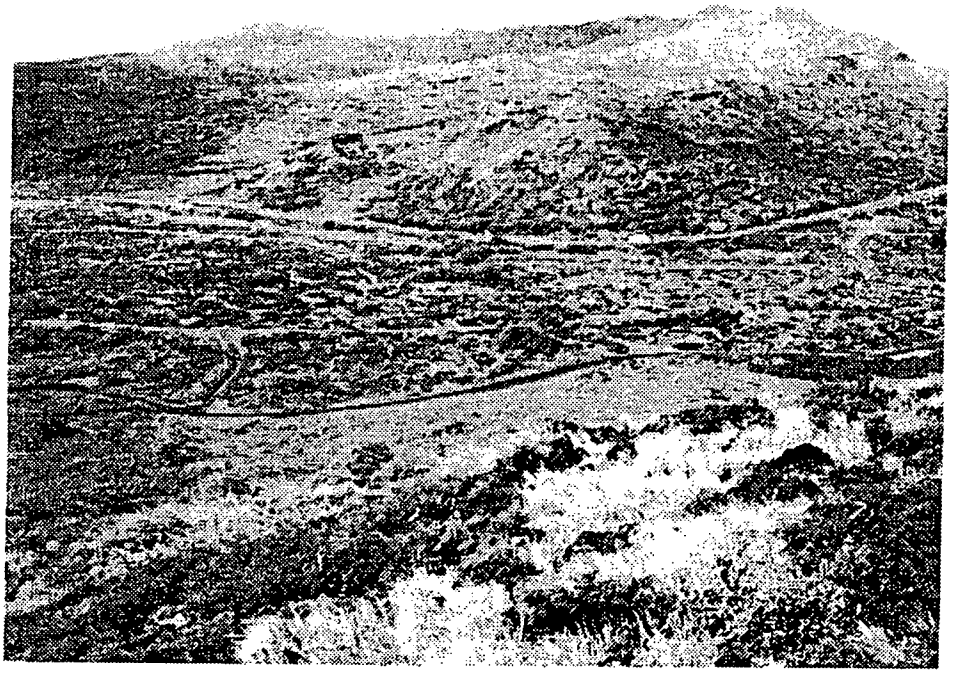


Figure 4. Scattered Prosopis/Koa haole/Cotton Understory.



Figure 5. *Marsilea villosa* Kaulf.

SPECIES LIST

In the following species list the plant families have been arranged been alphabetically within three groups, Ferns and Fern allies, Monocotyledons, and Dicotyledons. The genera and species have been arranged alphabetically within the families. The taxonomy and nomenclature follow that of Wagner, Herbst, and Sohmer (1990), St.John (1973), and Neal (1965). For each taxon the following information is provided:

1. An asterisk before the plant name indicates a plant introduced to the Hawaiian Islands since Captain Cook or by the aborigines.

2. The scientific name.

3. The Hawaiian name or the mostly widely used common name.

4. Survey when the taxon was found, whether in 1984 and or 1991.

This species list is the result of two field surveys, one in July 1984 and one in October 1991. It reflects the vegetative composition of the flora in different growing seasons and in different stages of vegetative progression. The changes in the vegetation have occured due to naturally occuring introductions and losses. In addition there have been some small wild fires on the site since the 1984 survey.

PLANTS FOUND ON QUEEN' BEACH, MAKAPU'U, OAHU

SCIENTIFIC NAME	COMMON NAME	1984	1991
Ferns and Fern Allies			
Marsileaceae - Water Fern Family			
Marsilea villosa Kaulf.			X
Monocotyledons			
Agavaceae - Agave Family			
**Agave sisalana*	Century Plant (Sisal)	X	X
**Furcraea foetida* (L.) Haw.	Mauritius hemp		X

SCIENTIFIC NAME	COMMON NAME	1984	1991
Commelinaceae - Spiderwort Family			
**Commelina benghalensis* L	Hairy honohono		X
**Commolina diffusa* N.L.Burm.	Honohono	X	X
Cyperaceae -Sedge Family			
**Cyperus rotundus* L.	Nut grass		X
**Fimbristylis pynocephala* Hbd.		X	X
Liliaceae - Lily Family			
**Aloe arborescens* Mill.	Tree aloe	X	
**Aloe vera* L.	Aloe	X	X
**Aloe* sp.		X	
**Sansevieria trifasciata* Prain.	Bowstring hemp	X	
Musaceae - Banana Family			
**Musa x paradisiaca* L.	Banana		X
Palmae - Palm Family			
**Cocos nucifera* L.	Coconut	X	X
Pandanaceae - Screwpine Family			
Pandanus tectorius S. Parkinson ex Z	Hala		X
Poaceae - Grass Family			
**Bothriochloa bladhii* S.T.Blake	Fuzzy top	X	X
**Bothriochloa pertusa* (L.) A Camus	Pitted beardgrass	X	X
**Brachiaria mutica* (Frossk) Staph.	California grass	X	X
**Cenchrus ciliaris* L.	Buffelgrass		X
**Cenchrus echinatus* L.	Common sandbur	X	X
**Chloris barbata* (L.) Sw.	Swollen fingergrass	X	X
**Chloris divaricata* R. Br.	Stargrass		X
**Cynodon dactylon* (l.) Pers.	Bermuda grass	X	X
**Dactyloctenium eagyptium* (L.) Willd.	Beach wiregrass	X	X
**Digitaria ciliaris* (Retz.) Koeler	Henry's crabgrass	X	X
**Digitaria insularis* (L.) Mez ex Ekman	Sourgrass	X	X
**Echinochloa colona*	Jungle-rice		X
**Eleusine indica* (L.) Gaertn.	Wiregrass	X	X
**Panicum maximum* Jacq.	Guinea grass	X	X
**Rhynchelytrum repens* (Willd.) Hubb.	Natal redtop	X	X
**Sacciolepis indica* (L.) Chase	Glenwood grass		X
**Sorghum halepense* (L.) Pers.	Johnson grass	X	
**Sporobolus virginicus* (L.) Kunth	Seashore rush	X	X

SCIENTIFIC NAME	COMMON NAME	1984	1991
	Dicotlydones		
Acanthaceae - Acanthus Family			
**Asystasia gangetica* (L.)T. Anderson	Chinese Violet	X	X
**Barlaria cristata* L.	Philipine Violet	X	X
Aizoaceae - Fig-marigold Family			
Sesuvium portulacastrum(L.) L.	Akulikuli	X	X
**Trianthema portulacastrum* L.			X
Amaranthaceae - Amaranth Family			
**Alternanthera pungens* Kunth	Khaki weed	X	X
**Amaranthus spinosus* L.	Spiny amaranth	X	X
**Ameranthus viridus* L.	Slender amaranth		X
Anacardiaceae - Mango Family			
**Schinus terebinthifolius* L.	Brazilian pepper	X	X
Apocynaceae - Dogbane Family			
**Cascabela thevetia* (l.) Lippold	Be-still tree	X	X
Asclepiadaceae - Milkweed Family			
**Stapelia gigantea* N. E. Brown	Zulu-giant	X	X
Asteraceae - Sunflower Family			
**Ageratum conyzoides* L.	Maile hohono	X	X
**Bidens cynapiifolia* Kunth			X
**Bidens pilosa* L.	Spanish needle	X	X
**Calyptocarpus vialis* Less.			X
**Emilia sonchifolia* (L.) DC	Flora's paintbrush	X	X
Lipochaeta integrifolia (Nutt) Gray		X	X
Lipochaeta lobata (Gaud.) DC		X	X
**Pluchea indica* (L.) Lees	Indian Pluchea	X	X
**Pluchea symphytifolia* (Mill.) Gillis	Sourbush	X	X
**Reichardia picroides* (L.) Roth	Picridium	X	
**Sonchus oleraceus* L.	Sow thistle	X	X
**Tridax procumbens* L.	Coat buttons	X	X
**Verbesina enceliodies* (Cav.) B & H ex Gray	Golden crown beard	X	X
**Vernonia cinerea* (L.) Less	Ironweed	X	X
**Wedelia trilobata* (L.) Hitchc.	Wedelia	X	X
**Xanthium strumarium* L.	Cockle bur	X	X

SCIENTIFIC NAME	COMMON NAME	1984	1991
Bataceae - Saltwort Family			
**Batis maritima* L.	Pickleweed	X	X
Boraginaceae - Borage Family			
Heliotropium anomalum Hook. & Arnott	Hinahina	X	X
**Heliotropium procumbens* Mill.		X	X
**Tournefortia argentia* L. fil.	Tree heliotrope	X	X
Cactaceae - Cactus Family			
**Hylocereus undatus* (Haw.) Britton & Rose	Night-blooming cereus	X	
**Opuntia cochenillifeeeera* (L.) Mill.	Cochineal cactus	X	
**Opuntia microdasys*		X	
**Opuntia ficus-indica* (L.) Mill.	Panini	X	X
**Opuntia* sp.		X	
Casuarinaceae - She-oak Family			
**Casuarina equisetifolia* L.	Ironwood tree	X	X
Chenopodiaceae - Goosefoot Family			
**Atriplex semibaccata* R. Br.	Australian saltbush	X	X
**Chenopodium murale* L.	'Aheahea	X	X
Combretaceae - Indian almond Family			
**Conocarpus erectus* L.	Bottonwood		X
Convolvulaceae - Morningglory Family			
Cuscuta sandwichiana Choesy	Dodder	X	
**Ipomoea cairica* (L.) Sweet	Koali 'ai	X	X
**Ipomoea obscura* (L.) Ker-Gawl		X	X
Ipomoea pes-caprae (L.) R. Br.	Beach morningglory	X	X
Jacquemontia ovalifolia (Choisy) H. Hallier	Pa'uohi'iaka	X	X
**Merremia aegyptia* (L.) Urb.	Hairy merremia	X	X
Crassulacaeae -Orpine Family			
**Kalanchoe pinnata* (Lam.) Pers	Mother-of-thousands	X	
Cucurbitaceae - Gourd Family			
**Coccinia grandis* (L.) Voigt	Scarlet fruited gourd		X
**Momordica charantia* L.	Balsam pear	X	X

SCIENTIFIC NAME	COMMON NAME	1984	1991
Euphorbiaceae - Spurge Family			
Chamaesyce degeneri (Sherff) Croizat & Degerner	'Akoko	X	X
**Chamaesyce hirta* (L.) Millsp.	Hairy spurge	X	X
**Chamaesyce hypericifolia* (L.) Millsp.	Graceful spurge	X	X
**Chamaesyce prostrata* (Aiton) Sma.	Prostrate spurge	X	X
**Euphorbia cyathophora* J. A. Murray	Mexican fire plant		X
**Euphorbia heterophylla* L.	Kaliko	X	X
**Euphorbia tirucalli* L.	Pencil tree	X	
**Ricinus cummunis* L.	Castor bean	X	
Fabaceae - Bean Family			
**Acacia farnesiana* (L.) Willd	Klu	X	X
**Alysicarpus vaginalis* (L.) DC	Single leafed pea		X
**Cassia leschenaultiana*	Partridge pea	X	
**Clitoria ternata* L.	Butterfly pea	X	X
**Crotalaria incana* L.	Fuzzy rattlepod	X	X
**Desmanthus virgatus* (L.) Willd.	Slender mimosa	X	X
**Erythrina* sp.	Wiliwili	X	X
**Erythrina crist-galli* L.	Coral tree	X	X
**Indigo spicata* Fossk.	Creeping indigo	X	X
**Indigo suffruticosa* Mill	Indigo	X	X
**Leucaena leucocephala* (Lam). deWit	Koa haole	X	X
**Macroptilium lathyroides*	Wild pea	X	X
**Medicago polymorpha* L.	Bur clover		X
**Prosopis pallida* Kunth	Kiawe	X	X
Goodenaceae - Goodenia Family			
**Scaevola sericea* Vahl	Naupaka	X	X
Hydrophyllaceae - Waterleaf Family			
Nama sandwicensis A. Gray	Hinahina kahakai	X	X
Labiatae - Mint Family			
**Hyptis pectinata* (L.) Poit	Comb hyptis	X	X
**Leonatis nepetifolia* (L.) R. Br.	Lion's ear	X	X
**Ocimum gratissimum* L.	Wild basil	X	X
Plectranthus parviflorus Willd.	Spur flower	X	
Malvaceae - Hibiscus Family			
**Abutilon grandifolium* (Willd.) Sweet	Hairy abutilon	X	X
Gossypium tomentosum Nutt. ex Seem.	Ma'o	X	X
**Malvastrum americanum* (L.) Torr.		X	
**Malvastrum coromandelianum* (L.) Garke	False mallow	X	X
Sida fallax Walp.	'Ilima	X	X
**Thespesia populnea* (L.) Sol ex. Correa	Milo	X	X

SCIENTIFIC NAME	COMMON NAME	1984	1991
Myoporaceae - Myoporum Family			
Myoporum sandwicense A. Gray	Naio, bastard sandalwood	X	X
Nyctaginaceae - Four o'clock Family			
**Boerhavia coccinea* Mill.		X	
Boerhavia repens L.	Alena	X	X
Onagraceae - Evening primrose Family			
**Ludwigia octivalvis* (Jacq.) Raven	Primrose willow	X	
Passifloraceae - Passion flower Family			
**Passiflora foetida* L.	Love-in-a-mist	X	X
Polygonaceae - Buckwheat Family			
**Antigonon leptopus* Hook. & Arnott	Mexican creeper	X	
Portulacaceae - Purslane Family			
**Portulaca oleracea* L.	Pigweed	X	X
**Portulaca pilosa* L.	Akulikuli	X	X
Portulaca sp.			
Rhizophoraceae - Mangrove Family			
**Rhizophora mangle* L.	Red mangrove	X	X
Solanaceae - Nigtshade Family			
Lycium sandwicense A. Gray	Ohelo kai	X	X
**Lycopersicon esculentum* Mill.	Tomato	X	X
**Nicandra physalodes* (L.) Gaertn.	Apple of Peru	X	X
**Nicotiana glauca* Graham	Tree tobacco	X	X
Solanum americanum Mill.	Popolo berry	X	X
Sterculiaceae - cacao Family			
Waltheria indica L.	'Uhaloa	X	X
Verbenaceae - Verbena Family			
**Lantana camara* L.	Lantana	X	X
**Stachytarpheta jamaicensis* (L.) Vahl	Jamaica vervain	X	X
**Stachytarpheta urticifolia* (Salisb.)		X	
Zygophyllaceae - Cresote bush Family			
Tribulus cistoides L.	Nohu	X	X

ANNOTATED SPECIES LIST OF TAXA SUITABLE FOR USE IN LANDSCAPING OF THE PROPOSED KA'IWI STATE PARK SITE

The following plant list is divided into two parts. The first section is made up of plants currently found on the site which could be propagated and used much more extensively. The second part consists of names of plants, both native and introduced, which are known to grow in low, xeric habitats and are well adapted to the conditions found on the study site.

The scientific name, the most well known common name and or the Hawaiian name, the growth form and the common flower color have been provided where they are known.

Part I

Marsilea villosa Kaulf. is also known as Hawaiian pepperwort. It is currently found on the site in the wetland in large numbers. In the event the wetland is restored, this plant should be planted much more extensively.

Sesuvium portulacastrum (L.) L. or akulikuli is a prostrate, succulent, herb which grows in coastal areas in many warm countries. It produces small, five parted, pinkish white flowers. It can be reproduced from cuttings and forms an excellent ground cover in hot, dry coastal areas. It is being used by the US Navy in their reforestation effort on Ka'hoolawe and it was extensively planted on the dredge spoil from the deep draft harbor in Ewa by the US Army Corps of Engineers. After it is established, akulikuli requires very little care.

Jacquemontia ovalifolia (Choisy) H. Hallier is also known as Pa'uohi'iaka.This is a prostrate, herbaceous vine which produces pale blue or white, morningglory type flowers. It is abundant on the site and it thrives in hot, dry habitats. It can be reproduced by seed. It makes an excellent ground cover.

Ipomoea pes-caprae (L.) R. Br., commonly called beach morning glory or by its Hawaiian name, pohuehue, is a fleshy vine with long trailing stems which often root at the nodes. This rooting habit makes pohuehue easy to propagate. The flowers are pinkish purple and it foliage is bright green. Pohuehue is indigenous to many Pacific islands and is found from sea level to one-thousand or fifteen-hundred feet. Because this vine withstands hot, lowland, coastal conditions, it has been successfully used in many landscape situations on all of the islands.

Tribulus cistoides L. or nohu is a prostrate or low-spreading, hairy perennial which produces bright yellow, attractive flowers, one inch to one and one half inches in diameter. Its paired leaflets are pearly grey and quite attractive. Nohu reproduces by seed. Because the fruit is spiney, nohu should be planted in places where people and animals should not be expected to walk. It is often found in dry, rocky or sandy locations.

Portulaca pilosa L. or akulikuli is a prostrate, perennial herb with succulent leaves. The flowers are magenta and the seeds are dark blue with a metallic luster. Like most Portulacas, this one would undoubtedly make an excellent ground cover. It is a pantropical herb and is found in large numbers on the site.

Heliotropium anomalum var. *argenteum* Hook. & Arnott or hinahina is a prostrate subshrub which forms dense mats in rocky, sandy coastal areas. Its silky pubescence gives it a soft, silvery appearence, hence the name hinahina which in Hawaiian means, among other things, gray or white-haired. It produces congested bunches of white, fragrant flowers. It has been used as a ground cover in coastal areas.

Scaevola sericea Vahl or beach naupaka (formerly called *Scaevola taccada*) is present on the site and is being destroyed by off-the-road vehicles. It is a well behaved shrub which can withstand most environmental conditions found on the proposed park site. It is used in many ways in landscape plans, from ground cover to privacy screens and will be very useful in the park.

Gossypium tomentosum Nutt. ex. Seem., ma'o or Hawaiian cotton is very common on the site, especially among the boulders where the off-the-road vehicles cannot damage the plants. This is believed to be one of the oldest populations of Hawaiian cotton for it is only here that the seeds are parasatised by endemic beetles.

Ma'o has fairly large, pure yellow, hibiscuslike flowers. The leaves have a dull green appearance caused by the dense tomentum (hairs) on their surfaces. The plant grows easily from cuttings and from seed. It has been used in landscaping at the Honolulu Zoo, Aquarium and at the Hawaii Kai golf course. It withstands hot weather well, but will drop its leaves during drought if denied water.

Lipochaeta spp. There are two species of Lipochaeta on the site, *L. integrifolia* Gray and *L. lobata* (Gaud.) DC, both of which could be used as ground covers. *L. intergrifolia* is presently most abundant along the beach and *L. lobata* is found near the overlook. Both plants produce bright yellow daisy type flowers and both have evolved to withstand the environmental conditions found on this site. Of the two, *L. integrifolia* is by far the most attractive and can be grown in all parts of the park.

Sida fallax Walp. or i'lima is very common on the site from the sandy beach to the overlook. This plant is apparently easily propagated and is being used extensively in landscaping especially along island coasts. The growth habit of i'lima is very variable. It is some times seen as a prostrate, almost viny plant and at other times it is an upright shrub 2 to 3 m in height.

Messerschmidia argentea (L.f.) Johnston or tree heliotrope is found along the beach at the park. It is an old island favorite for planting where salt spray is a problem. It forms a small tree with a dense crown which is often covered with small white flowers. With minimum care, tree heliotrope can attain a height of 5 m or more.

Myoporum sandwicense Gray or naio is a small to large tree distributed from sea level to 10,000 feet. It is grown as an ornamental in mainland US. The wood is hard, dark yellow-green and has a sandalwoodlike odor. The flowers are small, pink to white and five parted. The trunk is dark gray and the leaves are smooth and deep green.

Casuarina equisetifolia Stickm. is also known as iron-wood and she-oak. Ironwood was introduced into the islands in 1882 and the avenues of ironwoods which now line Kapiolani Park were planted in 1890. Ironwood forms a good wind break, it is fire resistant and it withstands salt spray. It is believed to possess allelopatic qualities (prevents other plants from becoming established under its canopy). There

are ironwoods on the site and because of the wind problems that may exist at Makapu'u, it will be very useful.

Prosopis pallida Kunth is also known as kiawe or algaroba. It is common on the site which proves it can withstand prevailing conditions. There are trees of various sizes, all of which can be moved with care. Kiawe provides thin shade, but with some shaping and if planted in groups it is effective. In many parts of Kapiolani Park, the only shade is provided by kiawe trees. Because of its ability to survive harsh conditions, kiawe should not be overlooked.

Thespesia populnea (L.) Sol. ex Correa. A few Milo trees are currently found on the site near the inlets. Because of milo's ability to withstand salt spray and windy conditions, it should be more extensively planted. Milo is a small tree with a fairly dense crown and is prized for the beautiful wood it produces.

Part II

Bougainvillea, of course, is extensively planted in hot, dry locations and should be useful in the park. Because of its ranging habit, it should probably only be planted in more inaccessable places.

Hylocereus undatus (Haw.) Britton & Rose is also known as night-blooming cereus. It is a sprawling, viny cactus which produces spectacular, white flowers during the summer months. There is a healthy, thriving patch of *Hylocereus* in the area where the Coast Guard housing once stood. Night blooming cereus apparently does not require much water and can withstand the xeric conditions of the site.

Capparis sandwichiana DC is known to the Hawaiians as maiapilo. Botanically it is referred to as a decumbent shrub. Native to the Hawaiian Islands, it is found from sea level to 1000 feet elevation. Maiapilo can be found on hot, dry, lava flows on all of the isalnds. It can be grown from seed or cuttings. It was used in the landscaping of the Keahole Airport in Kona. The plant is light green and produces large, fragrant, white flowers. Capparis was probably present on this site prior to the introduction of grazing animals and other lowland disturbances.

Canthium odoratum (G. Forster) Seem. The Hawaiian name for Canthium is alahe'e. It is a small tree or large shrub which produces a thick, dark green canopy and clusters of fragrant, white flowers. Canthium is a favorite among plant lovers who know the Hawaiian flora and its use in this setting would be well received. Like Capparis, Alahe'e was probably once found on this site.

Pandanus tectorus S. Parkinson ex Z, also know as hala or screw pine was probably very common on this site. It is now found as one or two badly damaged individuals. With minimal care, hala would be very attractive and useful in this setting. It withstands wind and salt spray and can be used to provide some shade. It is a very decorative, small tree.

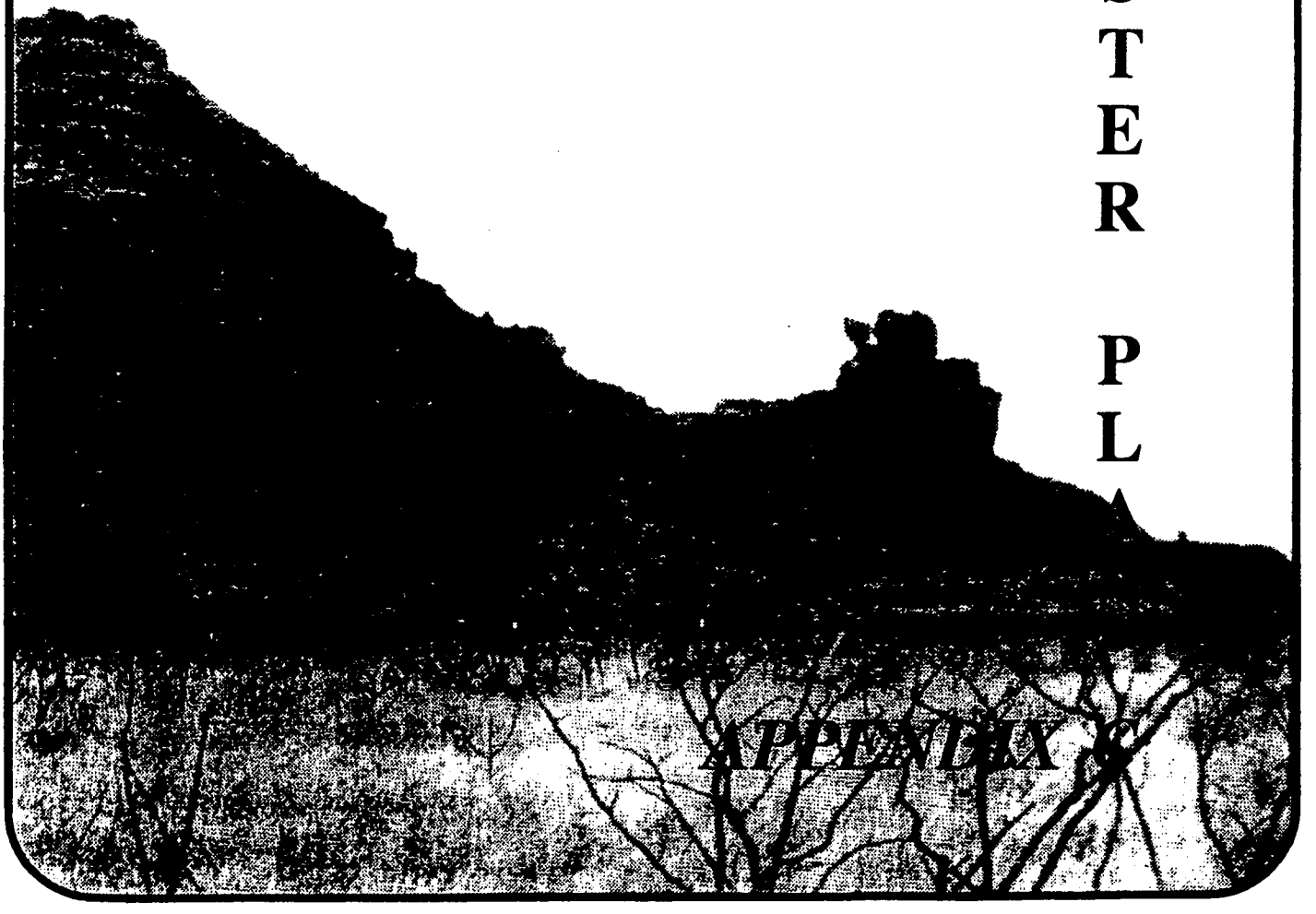
Pritchardia martii (Gaud.) H. A. Wendl or loulu palm may have been present on this site when it was forested. Because loulu palms are such attractive trees, if the native one is not available, one or more of the introduced fan palms should be considered.

Erythrina sandwicensis Deg. or wiliwili tree is a large, native tree which was at one time present on this site. It produces orange, yellow, peach or pale green flowers when the crown is bare of leaves. The wood of wiliwili was used by early Hawaiians in canoe making. There are still many wiliwili trees growing in the canyons above Niu and Aina Hina. There is a large population of wiliwili trees inside Kokohead Crater.

Pithecellobium dulce (Roxb.) Bench or 'Opuima tree is similar to kiawe both in appearence and growth habit and in addition, it keeps its leaves during the dry season. Opuima thrives in hot, dry, disturbed lowland sites. It can be grown from cuttings or seeds and can attain a height of 15 m when fully matured. The small small spines which develop along its trunk and branches maybe an asset or a drawback.

In addition to the plants enumerated here, there are many others that might be of use growing in the xeric garden inside Kokohead Crater. The ones on this list have been suggested because of their demonstrated ability to withstand the extreme environmental conditions which prevail on this site.

KA IWI MASTER PLAN



APPENDIX

JOHN WAIHEE
GOVERNOR OF HAWAII

WILLIAM W. PATY, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DEPUTIES
JOHN P. KEPPELER, II
DONA L. HANAIKE

AQUACULTURE DEVELOPMENT PROGRAM
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STATE PARKS
WATER AND LAND DEVELOPMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF STATE PARKS
P. O. BOX 621
HONOLULU, HAWAII 96809

July 30, 1992

RECEIVED
AUG 04 1992
WILSON OKAMOTO & ASSOC., INC.

Earl Matsukawa
Wilson Okamoto & Associates
P.O. Box 3530
Honolulu, HI 96811

Earl:

I hope this will be of help to you regarding the Makapu`u Point area master plan. Sorry it has taken so long to get it to you. If you have any questions about our findings, please call me (587-0286) or Martha Yent (587-0287).

Sincerely,

Alan Carpenter

Department of Land and Natural Resources
DIVISION OF STATE PARKS

JULY 14 , 1992

MEMORANDUM

TO: Ralston Nagata, State Parks Administrator

THROUGH: Martha Yent, State Parks Archaeologist

FROM: Alan Carpenter, State Parks Archaeologist

SUBJECT: Fieldcheck of Kealakipapa Valley Road Remnants, Makapu`u Head, Maunalua, Honolulu and Waimanalo, Koolaupoko, O`ahu
State Site #50-80-18-03 TMK: 3-9-11: 02, 4-1-14: 02

Introduction

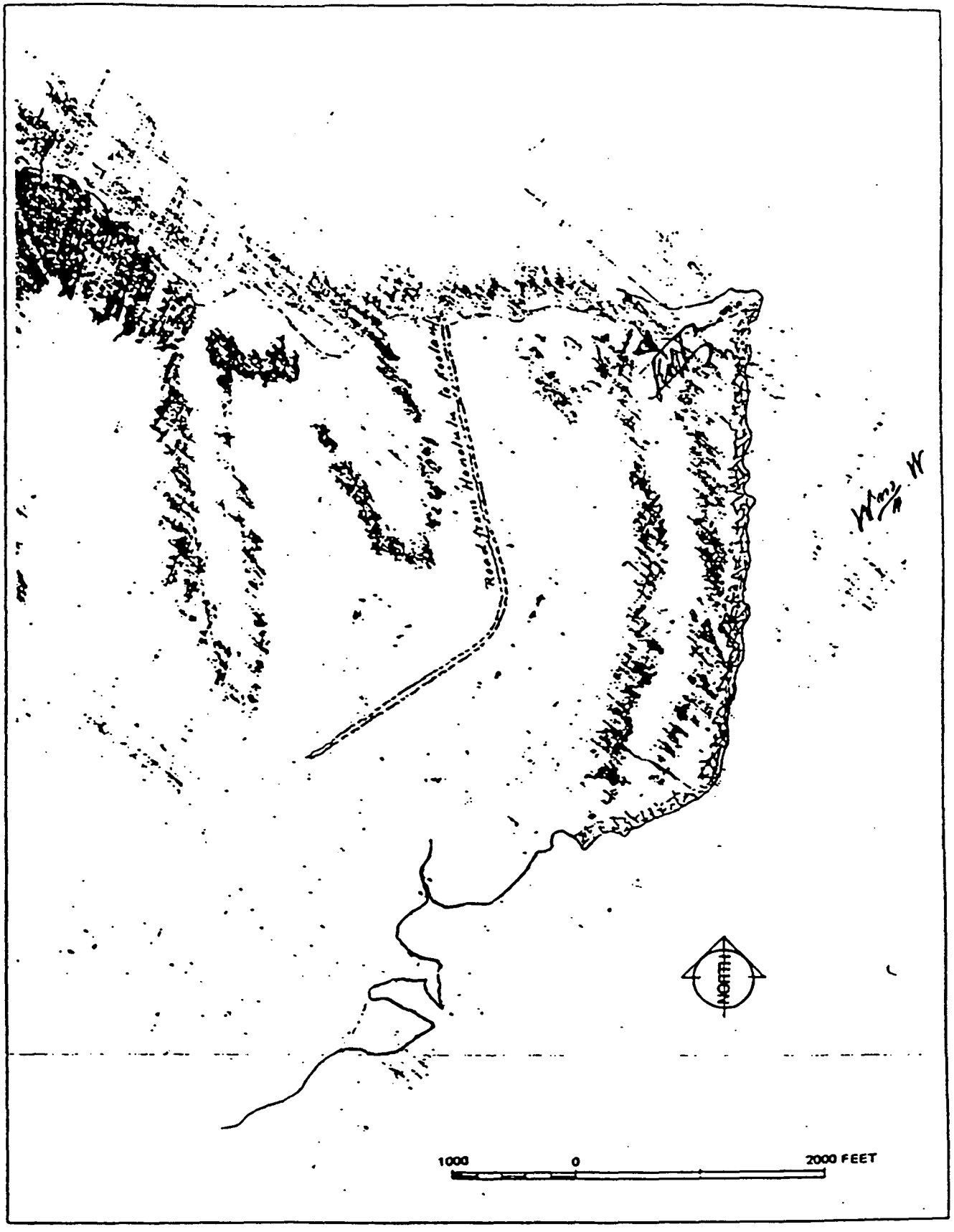
A master plan is presently being prepared by Wilson Okamoto and Associates, Inc. in order to help the State assess whether the Makapu`u Head and Queen's Beach area should be acquired for inclusion within the State Park system. One of the considerations being looked into is the possibility of creating a parking area and access road just south of the present Makapu`u lookout. Remnants of the Kealakipapa Valley Road are located within this area. In order to evaluate the present condition of the road, Bruce Gorst of Wilson Okamoto and Associates requested that State Parks archaeologists conduct a fieldcheck of the road remnants. On May 27, 1992, Martha Yent and Alan Carpenter of State Parks conducted this fieldcheck, accompanied by Bruce Gorst and Allison Fritts of Wilson Okamoto.

Historical Overview

From Levi Chamberlain's *Trip Around Oahu in 1826* we have the following description: (Leaving Makapuu to cross Maunalua) "After descending gradually some distance over a raised walk formed from rocks and pieces of lava brought together for the natives the road took a turn in a west-south-west direction giving me the sea on the left and a ridge of barren hills on the right..."(quoted from Sterling and Summers 1978: 260).

The Kealakipapa Valley Road appeared on the earliest map made of Maunalua by William Webster in 1851 (Figure 1). On this map it is labeled "Road from Honolulu to Koolau", and interestingly it is shown as beginning at the top of the Waimanalo Gap, extending southward through Kealakipapa Valley, and turning westward after it passed the western ridge of the valley.

Fig. 1: PORTION OF 1851 *PLAN OF THE LAND OF MAUNALUA, IN OAHU* BY WILLIAM WEBSTER. MAP REG. NO. 980, STATE SURVEY OFFICE. Note road section labeled "Road From Honolulu to Koolau."



The road also appears on George E. G. Jackson's government map of 1884 (Figure 2). On this map it shows this section of the road passing eastward through Waimanalo, winding its way up to the Waimanalo Gap in a series of eight switchbacks, extending southward through Kealakipapa Valley, then turning westward and heading towards Honolulu.

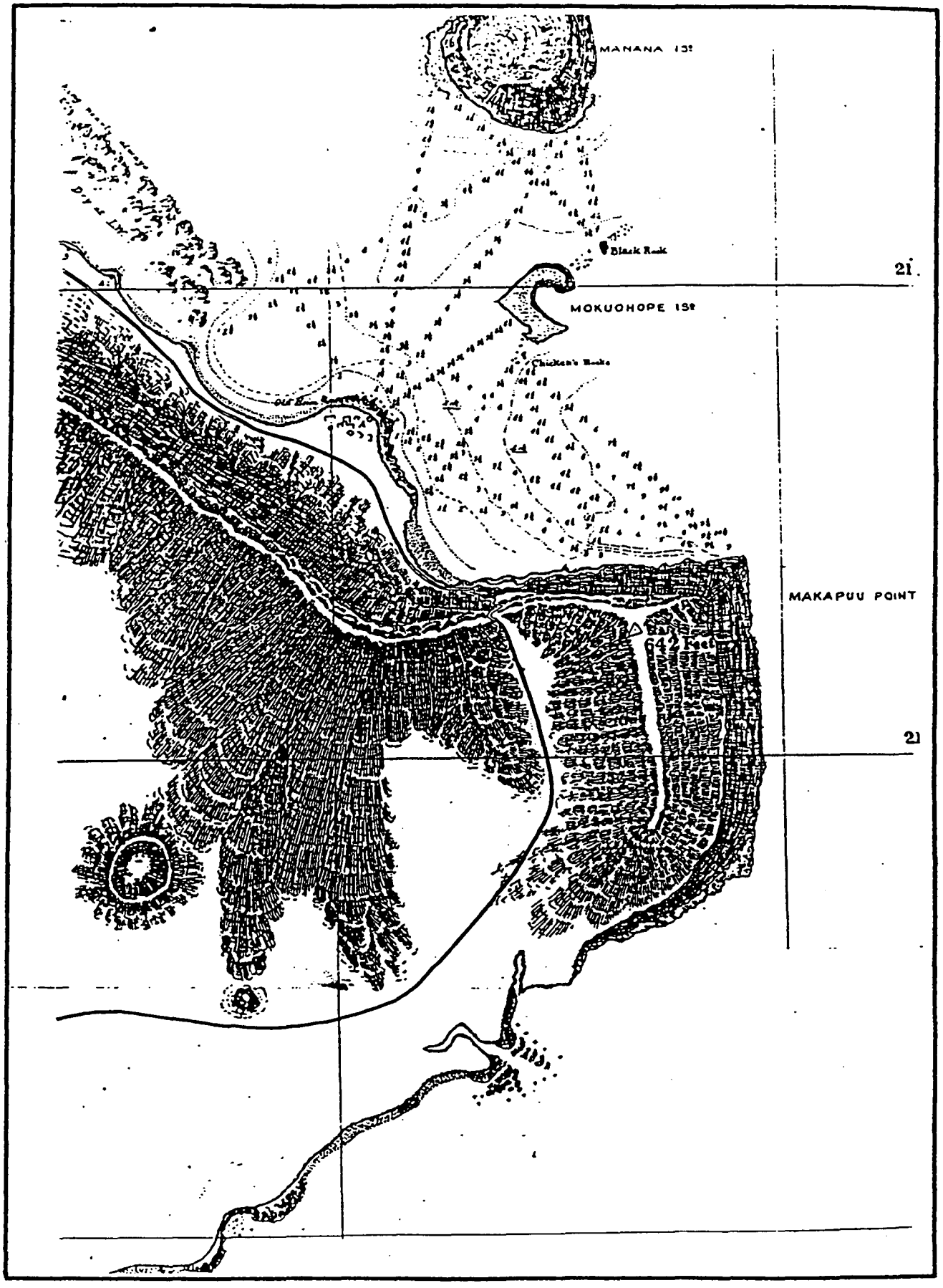
J. Gilbert McAllister described the road in detail in his 1930 survey of Oahu archaeological sites (McAllister 1933: 59). At that time the road extended from the gap southward 1250 feet to the lighthouse road and at its northern end was in good condition with a well-paved surface and edges defined by piled stones. Farther into the valley the road ran into dense kiawe. The southern end was described as being in a poor state of preservation. South of the lighthouse road it could be found, but apparently ended just 140 feet from that point. Near the top of the gap on the Maunalua side was a small enclosure. McAllister also briefly described the winding Waimanalo Gap portion of the road. In contrast to Jackson's map depicting eight switchbacks, McAllister described the road as "making four bends in the descent". The road at that time went through Kaupo Village (site 50-80-18-384) in Waimanalo. His description of the road portion traversing the Village states that it was paved and bordered by walls, construction which to him seemed unnecessary prior to the introduction of pack animals and vehicles by Europeans (ibid: 193-195). McAllister was not certain as to the age of the road. It was his personal feeling that the road was not "old Hawaiian", although the translation of Kealakipapa, "paved roadway", suggests that the road had been there for some time (ibid: 59).

Mrs. M. K. Pukui (1953) is quoted as saying that the road was constructed under the direction of an Alii who had those who annoyed him build the road. Pukui believed the road to be pre-contact (Sterling and Summers 1978: 260).

The Bishop Museum conducted an archaeological survey of the Makapu`u-Kealakipapa area in 1984. They located four new sites during their survey, however none were in the immediate vicinity of the road. Their description of the Kealakipapa Valley Road was very limited, only stating that fragmentary portions of the road pavement were found between the lighthouse road and the lookout (Sinoto and Kurashina 1984).

Historical research was undertaken by Marion Kelly of the Bishop Museum concurrently with the archaeological survey. Kelly suggests that the road may date to the reign of King Kamehameha III, sometime after 1825 but before 1851, when it appears on Webster's map. She also postulates that the road was preceded by an ancient foot trail which would have facilitated communication between Maunalua and Waimanalo (Kelly 1984: 20).

Fig. 2: PORTION OF 1884 *HAWAIIAN GOVERNMENT MAP, EAST COAST OF O'AHU, INCLUDING WAIMANALO, HANAUMA, AND MAUNALUA BAYS,* BY GEORGE E. G. JACKSON. MAP REG. NO. 1019, STATE SURVEY OFFICE. Note road, including eight switchbacks in descent of Waimanalo Gap, and Kaupo Village.



Additional recorded archaeological sites in the immediate area of the Kealakipapa Valley Road remnants include the following:

-50-80-18-1: Image stone, Makapu`u Point, above lighthouse (McAllister 1933).

-50-80-18-2: A Stone pile at the top of the Waimanalo Gap, 200 feet east of the old roadway (McAllister 1933).

-50-80-18-384: Kaupo or Koonapou Village. A small fishing village. Former features included enclosures, lava tube shelters, walls, platforms, offshore ko`a, possible heiau (McAllister 1933). Presently the site is partially occupied by Sea Life Park (Sterling and Summers 1978: 254).

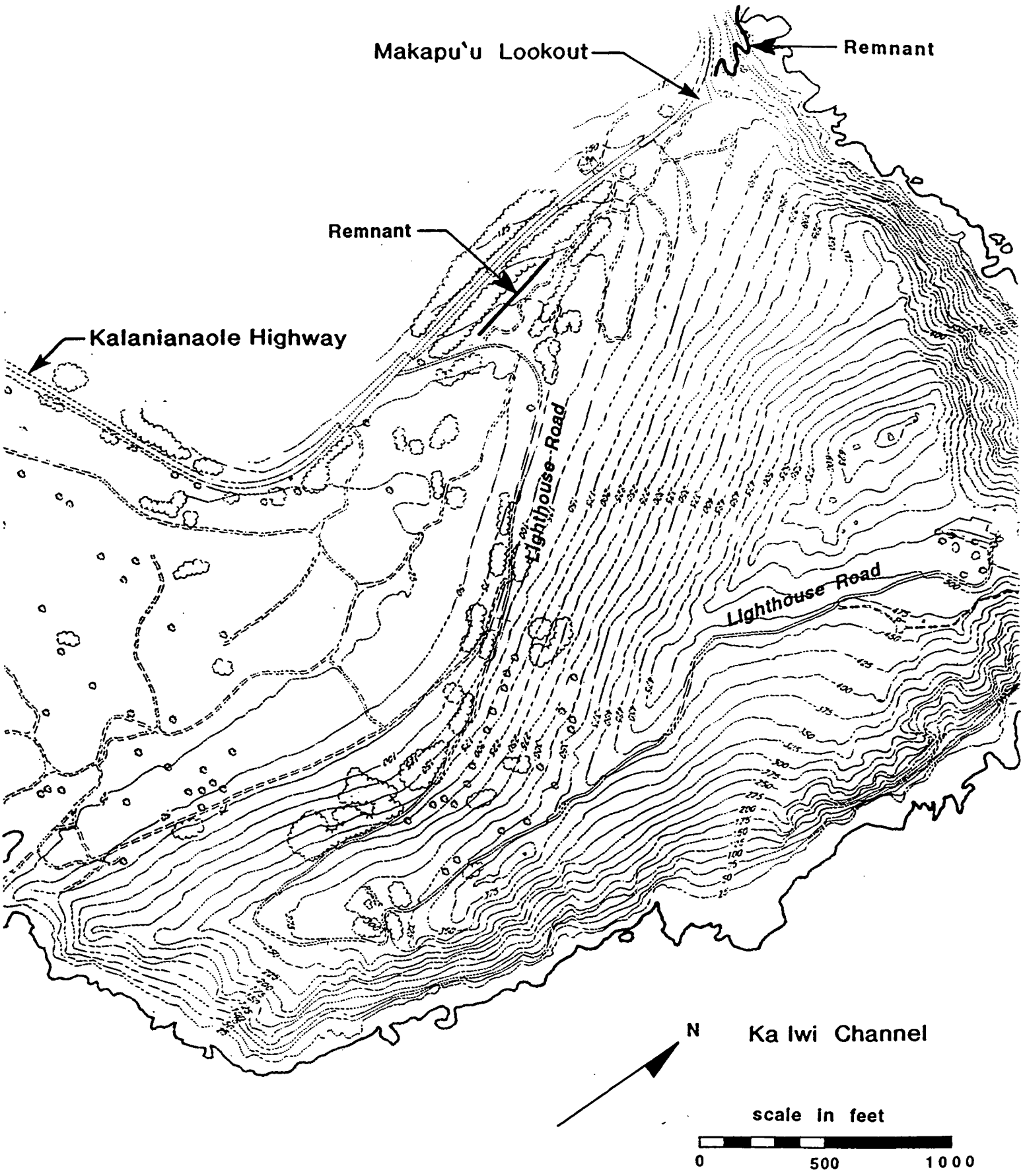
Site Location and Description

There are presently two recognizable sections of the old road in the project area (Figure 3). One section closely parallels the east side of the Kalanianaole Highway between the Makapu`u Point lighthouse road and the Makapu`u lookout (TMK: 3-9-11: 02, Bishop Estate owned). The other section begins just north of the lookout and winds its way down the cliffs through the Waimanalo Gap in a series of switchbacks (TMK 4-1-14: 02, City and County Of Honolulu owned). The present highway has destroyed a section of the road between these two remnants. No recognizable trace of the road was located south of the lighthouse road.

The road sections are in relatively poor condition. The straight section between the lighthouse road and the lookout was identified because it is conspicuously clear of large rocks and is very level. Unfortunately, it is nearly devoid of flat paving stones which apparently once were characteristic of much of its length (McAllister 1933: 59). A recent reference can be found attesting to the fact that "moss-rock" hunters have removed the paving stones of the road (Kelly 1984). Additionally this road section has apparently been utilized by four-wheel drive vehicles, as suggested by the placement of some large concrete columns across the southern end of this remnant, perhaps in an attempt to prevent this activity. The sides of the road are roughly defined on the west by a border of stones and on the east by a rough boulder alignment modifying a natural ledge. The surface of the road in this area is densely overgrown with grasses and shrubs making complete evaluation of the remaining paving stones rather difficult. The total length of this recognizable remnant is approximately 120 meters (394 ft.). Along this length the road ranges between 4.4 and 5.5 meters in width. It may extend further northward, but the vegetation changes to dense kiawe in that area, making survey extremely difficult without vegetation clearing.

The winding road remnant north of the Makapu`u lookout is very fragmented. The remaining sections are easily recognizable as there is very little vegetation on the cliffs. At the upper (southern) end, the road has been covered over by slump from the highway construction, but some facing remains. A map of this area was made

Fig. 3: LOCATION OF KEALAKIPAPA VALLEY ROAD REMNANTS
State site #50-80-18-03



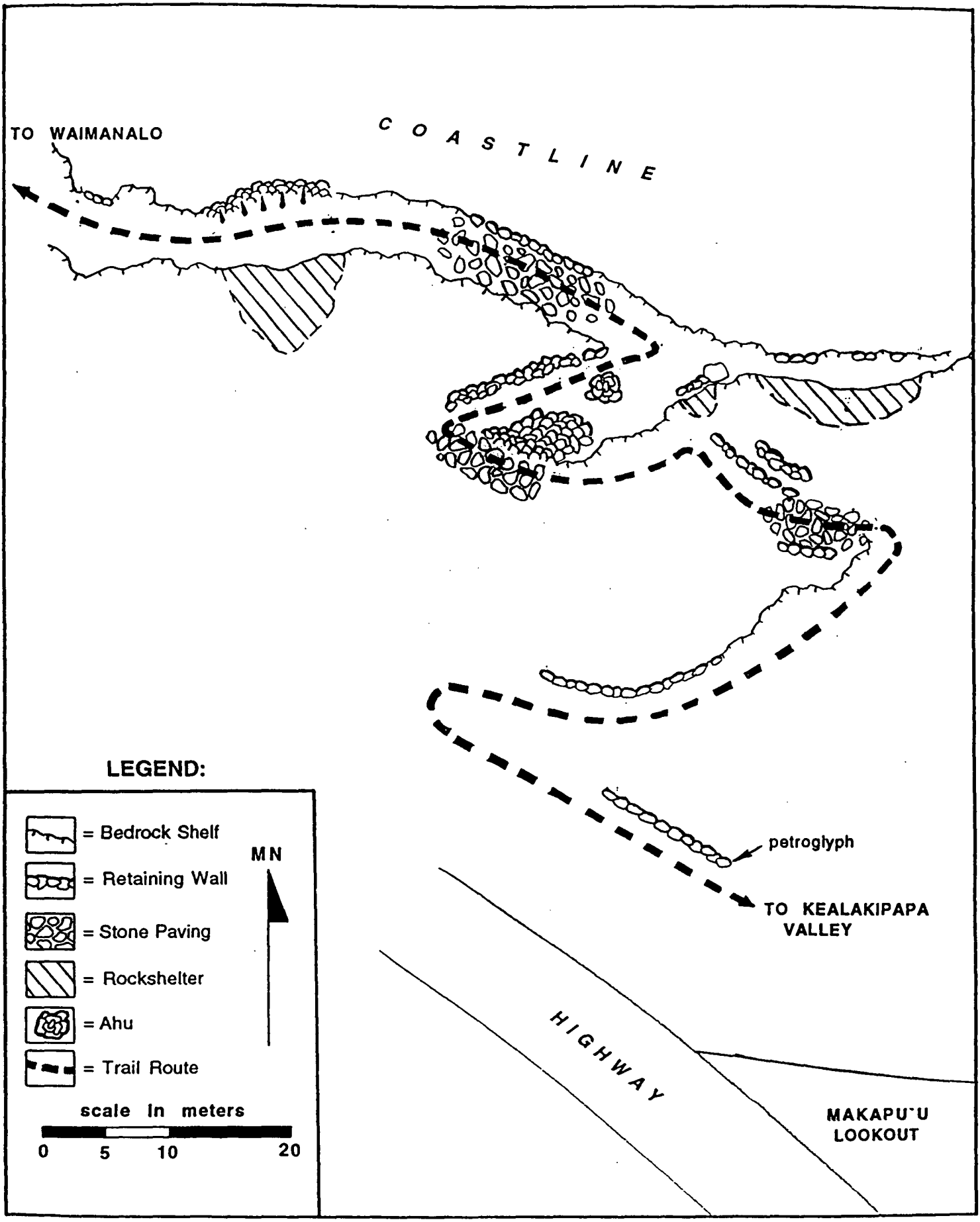
using tape and compass and the results are reflected in Figure 4. The total length of this section is approximately 150 meters (492 ft.), and it contains four switchbacks. Jackson's map of 1884 shows eight switchbacks here, so it can be assumed that the missing upper four switchbacks have been completely covered by the highway. At its lower (northern) end, the road is approximately 15 feet above sea level, winding up the cliffs to an elevation of approximately 130 feet above sea level at its upper(southern) end. The road presently consists of low (.6m) to very high (4.5m) boulder facings built on the downslope side of the cliffs which support fill and flat boulder paving stones. This winding section averages 2.5 meters in width. Some natural shelves along the route have been incorporated into the road, apparently without being modified.

There are three rockshelters along the present trail route, all exhibit some modification, in the form of retaining walls, across their entrances. The westernmost of the three is fronted by the road, consisting of a very substantial facing which has been covered by a gravel fill, perhaps from the highway construction. None of them contain any visible evidence of prehistoric use, and it is possible that the modifications to these shelters were made by modern fishermen. Further evidence for this fact is the omission of the rockshelters by McAllister in his 1933 site survey. Additionally, a small ahu (three boulders high) is situated along the lower end of this road section. At the southern end of the uppermost visible facing is a large boulder which has a historic petroglyph inscribed upon it. This petroglyph consists of the following letters: ST, followed by a space, then WP, followed by an indistinguishable letter. Some portions of the petroglyph appear to be missing due to damage of the boulder. Damage has been sustained along this upper road section in the form of rockslides, wall collapse and possible modern modification of the road (this trail provides shoreline access to fishermen and adventurous hikers). While the above mentioned straight road remnant could have served as a wagon road, this winding section would seem unsuitable for anything other than foot or horse travel.

Recommendations

While the Kealakipapa Valley Road has obviously suffered considerable deterioration since it was first described by McAllister in 1933, it is encouraging that easily recognizable sections of the road still remain. In light of this fact, it is recommended that any planned developments in the areas of the remnant road sections be preceded by further archaeological investigation, especially in the area of the southern straight remnant paralleling the highway. Vegetation clearing in this area may reveal relatively undisturbed paved sections not apparent during this rather cursory survey. Furthermore, any construction in this area should be planned with preservation of the road remnants in mind, as the remaining sections

Fig. 4: WAIMANALO GAP PORTION OF KEALAKIPAPA VALLEY ROAD
State site #50-80-18-03



appear to be short enough to be easily circumvented by an access road. Additional consideration could also be given to including the road remnants as an interpretive feature of the trail system of the Makapu`u head area.

cc: State Historic Preservation Division
Wilson Okamoto and Associates

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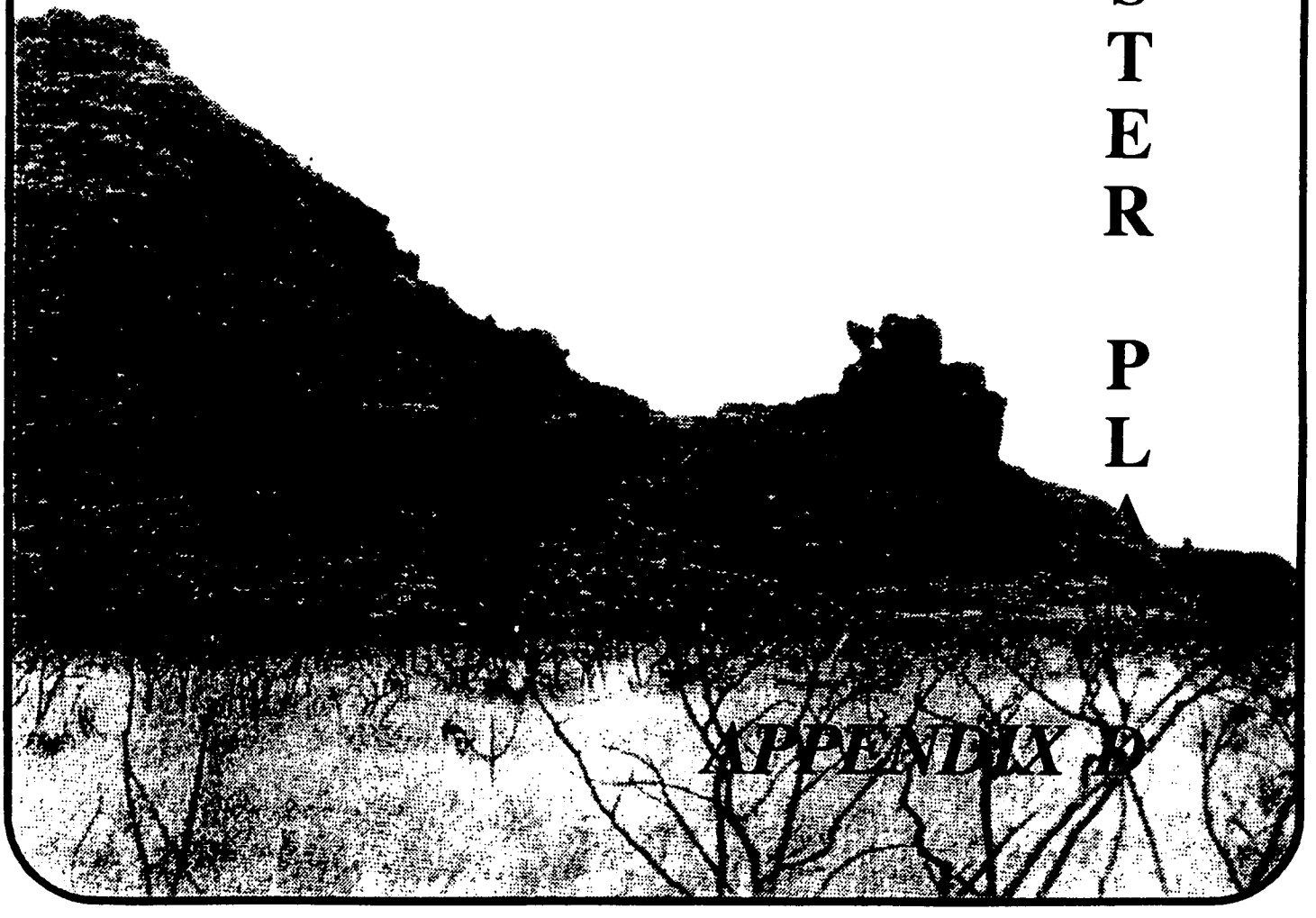
KAIWI MASTER PLAN



APPENDIX B

2974-01

MINUTES OF THE FIRST PUBLIC INFORMATION MEETING FOR THE KA IWI STATE PARK MASTER PLAN

DATE: June 21st, 1993

PLACE: Hawaii Kai Public Library

IN ATTENDANCE: See Attachment

PRESENTATION

(Refer to agenda and outline handout)

QUESTION/ANSWER PERIOD

Question: Do you envision having uniformed park ranger type personnel?
Response: This is a possibility but hasn't been decided at this stage. If the State intends to have a visitor center, they will need to decide whether it will be a manned or unmanned type of facility. If manned, there would certainly be the opportunity for personnel of this type.

Question: Other than the bike trails shown in Alternative #3, are all trails shown on the plans foot trails?
Response: Yes. However, some trails in the lower section could be golf cart compatible to facilitate maintenance.

Question: This is a large area. Won't it require many personnel?
Response: Yes. It is a large area, and for maintenance purposes, the number of personnel will have to reflect this.

Question: Aside from the volunteer groups you mentioned, would this park be completely State controlled?
Response: Yes. Park access and control would begin at the entrance gate, under State mandated hours. Even camping would be managed by the State, probably on a permitting basis as is done at other State Parks. Even if campers are within the park, the gate would be closed after hours.

Question: As a State Park, would there be an entrance fee?
Response: No, we are not contemplating any entrance fees. There are no State parks which currently require an entrance fee. Even camping permits do not require one.

Question: At Level #1, would you consider mountain bicycling? The use of mountain bikes is escalating in Hawaii, though conflicts are not as bad as on the mainland. The Hawaii Bicycling League in Honolulu is very pro-active and has tried to work

out compromises with Na Ala Hele to use State trails. The area behind Queen's Beach would be ideal for them since it is wide open space with few blind turns which commonly create safety concerns for hikers. Also, since it is a dry area, there is less possibility of erosion. The bicycling league should be consulted about the possibility of using the area.

Response: We have not ruled bicycling out, but we think there may be some conflicts with bicycles speeding down trails, creating a possibly hazardous mix with walkers/hikers. We have designated a separate area for bicycling in Alternative #3.

Comment: I don't think that the emphasis for most mountain bicyclers is on speed but on careening off rocks and such. I'd like to see bicycling in certain areas but I'd like to see as much separation as possible.

Question: What is the difference between a comfort station and a rest area?

Response: The comfort station is a shelter that has toilets. Rest areas take advantage of scenic spots by creating shade and places to sit and have lunch or a drink. The area is very hot, so the rest areas are provided for visitor's relief. In the higher alternatives we present the option of upgrading these areas to include picnic benches and trash receptacles.

Comment: I think I'd like to see a lot more rest areas and a lot fewer comfort stations, especially in light of some of the other issues such as water quality.

Response: It comes down to a matter of accommodating users. If a family takes a day outing to the area, it's tough to do that in an area which doesn't have comfort stations.

Comment: But the area is rough, which is what keeps it, and continues to keep it, natural.

Response: To get the level of usage for public appreciation, and to accommodate school groups and teach them about this valuable resource, you need adequate parking and comfort stations. It becomes a question of how much we want to limit people from experiencing this resource.

Question: Do you need to have comfort stations to carry on interpretation?

Response: It will probably depend on the user group which is targeted.

Question: Has a carrying capacity been established for the park?

Response: No, we have not identified a carrying capacity per se. Our suggestion is to start with a low level of usage and see how things are going. Its very difficult to predict how people are going to behave. Carrying capacity models are very complex and I don't think we can nail down the level of anticipated usage for this area. Usage must be controlled by

the allocation of parking and the location of comfort stations.

Question: Is it your recommendation, then, to start with Alternative #1 and gauge its receptiveness and then go on to Alternative #2, but not really Alternative #3 yet?

Response: Our recommendation is that the State begin at the low level, whether or not the State aims for a high level. We are presenting a rational progression for park development. If the State wants a recreational area, eventually they will get there. By the nature of State funding, beginning with a low level is more realistic. As funds become available, further development can take place.

Question: How much will it cost to purchase the land?

Response: We really don't know at this point. Due to the downzoning to preservation, there are still some legal challenges which are alive in court, and the outcome could affect the eventual acquisition cost. There are past examples where the State acquired undeveloped preservation lands through a land swap for developable urban lands.

Comment: Bishop Estate transferred the Koko Head Regional Park area to the County in 1928 with the understanding that if they provided water infrastructure to Hawaii Kai, they could have the Koko Head/Koko Crater area as long as it remains in park use. Bishop Estate actually still owns the City and County land, as is evidenced by private users above Hanauma Bay, who pay a lease rent not to the City, but to Bishop Estate.

Question: Regarding the development of the Makapu'u Lookout area, is the new lookout meant to let cars drive right up to the cliff edge?

Response: No. The parking area will be in the lower portion, and sight-seers will have to walk up to the lookout. We envision a wide viewing area, possibly split-level or tiered like the Nuuanu Pali or Halona Blowhole lookouts.

Question: Will passengers arriving at the new parking area by bus be allowed to use the shuttle service?

Response: Yes, however since time limits on parking will be enforced, it may be necessary for passengers to be dropped off and buses would have to return later to pick them up after they've completed the tour of Makapu'u Head.

Comment: A bicycle trail would be good. As someone already commented, technical riding rather than speed is the thrill. However, there are certainly some irresponsible mountain bicyclists.

Comment: The plan should have a definitive recommendation. As it reads now, it sounds like a phased Master Plan. Once you allow a use, its impossible (nearly) to disallow it. The State should

be definitive and say the park will be used for such and such, and that's it.

Question: When will the EIS be prepared?
Response: First, a recommended plan will have to be approved by the BLNR. This won't take place until the Master Plan process is finished. Some alternatives will also have to be chosen.

Comment: There must be a comfort station in order to accommodate school groups. Bicycling would be OK.

There was a general consensus at this point that Alternative #3 goes too far. An unofficial show of responses indicated that attendees would prefer Alternative #1, supplemented by the interpretive aspects of Alternative #2.

Comment: According to the Koko Head Park Master Plan prepared by Belt Collins, the Sandy Beach/Wawamalu Beach area may be developed in the future to accommodate more picnicking area with comfort stations. If this is implemented, then the Ka Iwi site could remain more of a wilderness environment, without comfort stations. There is a comfort station on the other side of Ka Iwi, at Makapu'u Beach Park, which people can already use as well.

Comment: In the long-term, it should be considered whether the offshore waters and islands off Makapu'u Beach and the rocky shoreline just past Sea Life Park can be incorporated into the integrated scenic shoreline park. It should be viewed as one whole unit.

CLOSING

Thank you all for your interest and participation.

PUBLIC INFORMATION MEETING

Project: KA IWI STATE PARK MASTER PLAN
Date: JUNE 21, 1993 Time: 7:00 P.M.
Location: HAWAII KAI LIBRARY

ATTENDANCE SHEET

	NAME	ORGANIZATION	MAILING ADDRESS	PHONE #
1	ALAN HONG	HAW. KAI RESIDENT	321 HANAMAULU ST	395-1900
2	LORETTA MARTIN	Haw Kai Resident	PO Box 25533 Hon HI 96825	395-0542
3	Pat Hanzi	" " "	6270 Upolo Pl 98625	396-8552
4	Sue Rutka	Haw Kai Resident No Ala Hele	378 Hanamaulu St Hon, Hi 96825	521-5361
5	Phil Esterman	Sandy Beach Coalition	PO Box 25473 Honolulu 96825	395 5909
6	Shirley & Tom Lum	Friends of Queen's Beach	7[illegible]5 [illegible] Hon Hi 96825	39[illegible] [illegible]
7	Eve J. Anderson	Kaiwi Parks Committee	41-505 Kalanianaole Hwy Waimanalo	259-7706

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PUBLIC INFORMATION MEETING

Project: KA IWI STATE PARK MASTER PLAN
Date: JUNE 21, 1993 Time: 7:00 P.M.
Location: HAWAII KAI LIBRARY

A T T E N D A N C E S H E E T

	NAME	ORGANIZATION	MAILING ADDRESS	PHONE #
8	Patricia Hopkins	Friends of Queens Beach	1025 Kipapaka Loop Honolulu 96825	395-1037
9	Bob Franco		300 Kipuuni	396-0765
10	[illegible]	[illegible]	[illegible]	[illegible]
11	BOB VOEGE	SELF	6710 HAWAII KAI DR. 96825	395-2526
12	GARY BARBANO	NPS	300 ALA MOANA BLVD	541-2693
13	BARRY HOPKINS	~~Home Owner~~	1025 Kipapaka Loop Hon 96825	395-1037
14	Rusty WEAVER	Friends of Q.B.	555-7 Pepeekeo St. 96825	395-7465

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2974-01

MINUTES OF THE SECOND PUBLIC INFORMATION MEETING FOR THE KA IWI STATE PARK MASTER PLAN

DATE: June 23rd, 1993

PLACE: Maunawili Elementary School

IN ATTENDANCE: See Attachment

PRESENTATION

(Refer to agenda and outline handout)

QUESTION/ANSWER PERIOD

Question: What is the botanical garden and where is it located?
Response: The purpose of the botanical garden is to show common and native plants that grow in the area. It is an educational tool. It is intended to be the location where the signs for native plants are located, so that the rest of the park is left in a natural state. It is located near the highway in Alternatives #2 and #3. This way the public can walk through it on their way to the shoreline.

Comment: It seems that there is a void for other types of recreation such as off-road vehicles and jogging. It also seems that there is a need for more parks that can accommodate the elderly and handicapped. The park should be opened up to people and made smooth, accessible, paved, more slick and streamlined like many new parks on the mainland. It should be really planned.
Response: The park would have to accommodate maintenance vehicles, so some of the loop trails will probably be reasonably accessible. Also, any park development will have to take place in accordance with the Disabilities Act. However, this won't mean that access must be provided to areas such as the coastal bench trail, but to areas with a reasonable equivalent of recreational value. As for the Headland Road, that is why we added shuttle service in Alternative #3.

Comment: The shuttle service is a good idea. Drip irrigation to keep the area landscaped should also be added.

Comment: (Bob Barrel) I would like to commend Wilson Okamoto on a job well done. The consultant has put together a very sensitive manageable plan. However, politics notwithstanding, the park study should be expanded to the entire study area. It may be a naive suggestion, but the State and the City should

cooperate on this, get past the "them and us" mentality, because it represents a great opportunity. One last point: good interpretation helps preserve park values. Even if Alternative #1 is as far as development goes, people must learn about the area's natural and cultural history in order to safeguard it.

Comment: (Bumpy Kanahele) The planning effort is missing something, and that is talking to Hawaiian sovereignty groups. You talk about endangered species, but the Hawaiian people and way of life is also endangered. If the City and State are unreliable and can't do a good job, then the area should be held for the people to come together. I'm with the Ohana Council, and we understand that there was a big wrong done. The U.S. had trust obligations which they didn't fulfill. You should get together with sovereignty groups, kupuna, and people like the Kamakau's who lived in the lighthouse. They can tell you about the area.

Response: (State) We have agreed to sit down with the Ohana Council and work out an agreement, incorporate more of their ideas, with the understanding that the park will still be public, no matter what.

Comment: I'm not comfortable with Alternative #3, although the bike trails would be OK. But individuals and families should be allowed to camp, regardless of whether they're with a group. I like what was done with the new Makapu'u Lookout and roadway concept. Its very well thought out.

Question: How did you determine your management area boundaries?

Response: They were determined by our observations of the way people move through the area. Primarily, the drainage channel at Queen's Beach has a big impact. Queen's Beach and the other boundaries are all our own designations.

Question: This park ought to incorporate the other cultural and natural features along the Windward coastline out to Mokapu Point. There are features in Waimanalo and at Bellows, and Maunawili and Kawai Nui Marsh etc. My question is could it? Or why doesn't it? And what about cost? We should be examining the possibility of linking features into one park to save money, or at least to know that all the money should be put into one concentrated area. Will you have cost considerations?

Response: The Legislature specified our study area and appropriated the money to study just this area and for this purpose. We have already prepared cost estimates on an item by item basis for the Master Plan. They will be included in the Final Master Plan.

Question: You mentioned you consulted SCORP. Is that the 1967 plan?

Response: The SCORP is updated every 5 years. We used the most current SCORP of 1990, which came out in 1992.

Comment: (David Takaki) I agree that the mangroves are a dilemma. In one sense, they are useful because they trap siltation and could be used to manage silt, but they grow very fast and choke out native and other species. The drainage has been channelized and siltation basins make sense, but they will require maintenance. You should look at the impact of pesticide and herbicide runoff and see if changes in maintenance of the golf course are necessary. I like the fact you are looking at restoring the estuaries. People think overfishing is the reason there's no more fish, but we've channelized all our streams and destroyed fish nurseries that way. This should be addressed in the EIS. Also, there is some groundwater hydrology in the area. The Alan Davis Ranch had water pumps. Tree reforestation is also a good idea, as is reintroducing endemic vegetation, but without restricting ORV's through enforcement, they <u>will</u> get in and tear up the vegetation. Also, you need to have a contingency plan to deal with the increase in fires which will accompany increased use of the area. The botanist was correct to go during both the summer and winter months because there are many species, including native Hawaiian fern (Lobelia ?) species along the cliffs, which are only evident for a couple of months out of the year. The bunkers should be removed for safety. I suggest that you look at resources in the community. Archaeology needs to be performed in the area before it is all lost.

Comment: The City and County has been planning parks which are more like the mainland. We need a park that emphasizes Hawaii.

Question: (Ursula) What is the status of the National Park Service report?

Response: The final is due in August. Basically, it says that the study area meets that criteria for a National Park, and the NPS will take the management of the area if it is given to them. If not, fine.

Comment: I feel that minimal use is best. Too much parking and people will destroy what is special about the area; its pristine quality.

Question: What was the appropriation for the study and how much is left?

Response: The contract amount was $230,000, and three-quarters of it has been spent.

Comment: (Andrew Yanoviak) The plan's approach entirely misses the mark. You should use the systems approach, looking at the relationship of the park to the entire east end of Oahu. Your firm is also involved in the preparation of the Kawai Nui Master Plan, and the approach of this plan is twice as good as the Kawai Nui team's. But on a scale of 1 to 10, their plan is only a 2, which means yours is a 4. What you should've

done was to consult with the native Hawaiians. Their culture should be the leading force in the preparation of the plan. This plan isn't bold. Its approach is entirely from a western perspective and culture. The way you've divided it into management areas is a western concept, as is archaeology or anthropology. We need to stop superimposing western values onto every aspect of life in Hawaii. That's why you need to go to the source. Look at Camp Kailua. At the Kailua meeting all the Hawaiian groups showed up, but no one listened to them, and they never came back. This plan's features would add more concrete to the area. Instead, try curvilinear shapes. Stay away from rectangular shapes and the "penitentiary modern" look. Makapu'u is a site sacred to the Hawaiian people. If you had consulted with the appropriate people, they may have recommended closing the highway at Makapu'u Lookout, and that might be a good lesson. I suggest that the State stop all work right now and use the plan as a vehicle to purchase the land. Then proceed from there to create a new plan with input from Hawaiian groups through oral histories and research. Now is the time to bring in the Hawaiian community to tell us what they want to see.

Comment: There are other untapped community resources that have not been taken advantage of. Waimanalo School is having a reunion soon which would be a good place to begin interviewing kupuna in the community and collecting oral histories. Could use UH students.

Comment: With the highway going right by the area, the park will be under tremendous pressure from tourists. This must be considered.

Comment: These issues should certainly be discussed, but Bishop Estate is planning a golf course for the area right now, and if we don't do something to stop it, then this park has no future. (Ursula)

Comment: (Bumpy Kanahele) Most of you may not be aware, but the Ohana Council was given a right-of-entry by the State for access to the top of Makapu'u to create a healing center for Hawaiians. What you call Makapu'u Head was formerly known as "Medicine Mountain" because of all the medicinal herbs that were cultivated there. We are currently trying to get started with the planning, and we need help. The Ohana Council is trying to reach the community and kupuna to get help. We think the most important thing for us right now is to bring back the water. This is needed for sanitary measures. There is a pipeline which goes from the water tunnel across from the Makapu'u lookout over the mountain to where the lighthouse cabins used to be. This area is also the site of a 3-acre spring. We think if we can bring water to the area, we can do lots with it.

Question: What do you, as a Hawaiian, think about the plans you've seen tonight. Do you *like* Alternative No. 1?

Response: Actually, I just like the idea of working together. I'm encouraged by any interest in the area. Most important is that we come together and do something for the community.

Comment: There should be a concern about the environmental degradation and impacts that are occurring *now*. Change has taken place at the tidal pools due to erosion; we have fire hazards...

Comment: The golf course should be part of the planning, especially holes 5 and 6.

Comment: The slide presentation should use two projectors, one to show the slides, and the other to show the site map to help orient people.

Response: This was considered, but based on the unknowns about audience size and the facility amenities, we did not try it at this meeting.

Comment: You need public overseers, such as many of the people in this meeting. You need more community input, outreach.

Response: There is an advisory committee which was assembled by the State to review the plan.

Comment: If you go forward with this plan, more security will be necessary, and more comfort stations. I don't like the bike paths idea.

CLOSING

Thank you all for your interest and participation.

PUBLIC INFORMATION MEETING

Project: KA IWI STATE PARK MASTER PLAN
Date: JUNE 23, 1993 Time: 7:00 P.M.
Location: MAUNAWILI ELEMENTARY SCHOOL

ATTENDANCE SHEET

	NAME	ORGANIZATION	MAILING ADDRESS	PHONE #
1	Keith Krueger		PO Box 61038 Hon Hi 96839	239-5558
2	Mary A Damski	Star Bulletin		525864
3	Wendy GORMAINE		673 Ululani St Kailua	8614926
4	Aznay Hayes		[illegible]	
5	Dave Takaki	Land & water resource Comm. Hee's Waimanalo N. Board	41-910 KAKAINA St 96795	259-8461
6	Ursula Rutherford	self	42 N. Kainalu Dr Kailua 96734	261-4537
7	Dorothy Rose Babinzau	KMB	143 Pauahilani Pl.	261-0493

Wilson Okamoto & Associates, Inc.

PUBLIC INFORMATION MEETING

Project: KA IWI STATE PARK MASTER PLAN
Date: JUNE 23, 1993 Time: 7:00 P.M.
Location: MAUNAWILI ELEMENTARY SCHOOL

ATTENDANCE SHEET

	NAME	ORGANIZATION	MAILING ADDRESS	PHONE #
8	Barbara Locricchio	Maunawili Com. Ass	903 Maunawili Circle Kailua	261-8372
9	Kelikini Brown	OHANA Council	41-275 Nakini St. Waimanalo 96795	259 5049
10	Robert L. Barrel	Kaiwi Shoreline Study	202 PAUAHILANI PL. KAILUA, HI 96734	261-2541
11	Meaghan + Chantis Fukunaga	Kokocrater Equestrian Center	823 21ST Ave Hon. 96816	—
12	BRENY KALUA	OHANA Council	P.O. Box 547 Kailua Hi 96734	Pagger 287-4086
13	MARK HASTERT	Helber Hastert & Fee	733 Bishop St #2590 Hon'l. HI 96813	545-2055
14	Brenda Lumeng	—	1205 LOLA WAY KAILUA, HI 96734	262-6400

Wilson Okamoto & Associates, Inc.

PUBLIC INFORMATION MEETING

Project: KA IWI STATE PARK MASTER PLAN
Date: JUNE 23, 1993 Time: 7:00 P.M.
Location: MAUNAWILI ELEMENTARY SCHOOL

ATTENDANCE SHEET

	NAME	ORGANIZATION	MAILING ADDRESS	PHONE #
15	Gordon & Pat Wood	H.C.T.A. & HHSA Hawaii Combined Horse Assn	2439 Kapiolani Blvd #1602 Hono. Hi.	9421549
16	CLARA OLDS	Save Our Bays & Beaches	[illegible]	[illegible]
17	R. Miller	Self	185 [illegible] St	
18	Candace P. Hemmy	HHSA HCTA Koko Crater Equestrian	868 [illegible] Hawaii Hi. 96821	[illegible] 8604
19	Andrew Yanoviak	SMOA	Pres 261-1168	
20	[illegible]	[illegible]	[illegible]	[illegible]
21	Terry Carlow	Kailua [illegible]	[illegible]	[illegible]

Wilson Okamoto & Associates, Inc.

PUBLIC INFORMATION MEETING

Project: KA IWI STATE PARK MASTER PLAN
Date: JUNE 23, 1993 Time: 7:00 P.M.
Location: MAUNAWILI ELEMENTARY SCHOOL

A T T E N D A N C E S H E E T

	NAME	*ORGANIZATION*	*MAILING ADDRESS*	*PHONE #*
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Wilson Okamoto & Associates, Inc.

2974-01

MINUTES OF THE THIRD
PUBLIC INFORMATION MEETING
FOR THE
KA IWI STATE PARK MASTER PLAN

DATE: June 29th, 1993

PLACE: Moiliili Community Center

IN ATTENDANCE: See Attachment

PRESENTATION

(Refer to agenda and outline handout)

QUESTION/ANSWER PERIOD

Question: I heard rumours that a golf course was being planned by Kaiser Development in the Queen's Beach area. How will it affect this plan?

Response: Well, Bishop Estate still owns the land. This plan recommends that the State of Hawaii acquire the land. In order to build the golf course, Bishop Estate needs to get a Plan Review Use permit from the City and County of Honolulu, as well as a Special Management Area permit. It is my opinion that those permits would be fairly difficult to get. The City has made it known that it would like to see this area downzoned to conservation, and the State has suggested a land use boundary amendment to conservation as a priority #2 consideration. If this does happen, there will be more hurdles to jump before such a development can take place. However, if Bishop Estate wants to submit an application....they own the land. They can do that.

Comment: First of all, I'd like to thank you for doing this. I'm a member of the Sandy Beach group and we've worked so hard to do something for this area. If we only had the kind of information that you folks have. It's just fabulous. You've done a remarkable job. This is the second time I've been exposed to your firm and, as I've said before, I'll say now...if the rest of the state came through the way you did, we wouldn't be in this kind of pickle.

Comment: Well usually, I disagree with the previous speaker, but in this case I second his opinion. Totally! I have a daughter who's very active in Save Sandy Beach, and I've also been active with them.

Comment: I was also very active and I wrote letters many years ago. But I need to find out what initiated this planning process.

It's been twenty years and, at this point, I need to be brought up to date.

Response: The legislature passed a House Concurrent Resolution in 1988 calling for the study of a possible scenic shoreline park and the state appropriated money for that. The State DLNR was charged with carrying out the resolution, and then we were hired.

Comment: We became involved in 1975 and we had meetings down in Hawaii Kai, although we were living in Manoa. So we were pretty far removed. But even then, we could see the value of keeping this place wild and free. Away from development and the urban influence. This site needs to be protected. So go with at least Alternative 1, maybe 2, but not 3.

Response: It's true that a lot has changed, and, indeed much progress has been made by the City. Downzoning is not an easy thing to accomplish. It's taken twenty years, but slowly its being brought down.

Comment: I've been listening to every thing that's been said tonight, and I thought I would tell you a little bit about how this all got started. This group started as "Friends of Queen's Beach" and that was when the seven hotels were scheduled for development. They scrapped that, and then three hotels and condominiums, and houses up on the mountainside. Then at Makapu'u Wayside, it was gonna be a two-story building with a restaurant on top and tourist shops underneath. So, we came unglued, and that's how Friends of Queen's Beach got started. And then after that we opposed golf course development at Sandy Beach. And then after that, we started hearing people say things like, "Oh, its such an ugly area. It's too dry. Let them build something there, like hotels. It should be developed into something useful." Hawaii Kai Neighborhood Board and community members were saying this! So I wanted to say "Well, take a look at Diamond Head next summer. It's the same kind of dry vegetation that you'd find at Makapu'u, but it gets twice as bad". So some members of the Friends of Queen's Beach and Save Sandy Beach groups felt like we had better form another group to protect Ka Iwi park. We really wanted to change the name from "Queen's Beach" to get away from the name that Kacor (Kaiser Corporation) had chosen. Anyway, Maivan Lam, one of our foremost leaders, took the name "Ka Iwi" from the neighboring "Ka Iwi Channel". So, we felt we had to dream a little bit to kind of show the public that the area is not as dismal as they might think. Instead we could have something like this! *(Points to MP Alts)* And we could clean it up and really enjoy it. So we presented the resolution to the legislature, and after a time, Wilson Okamoto came on board. Ka Iwi Parks Committee has met closely with WOA to formulate these plans. We're just delighted with the way it's turning out.

Question: Who's administering this? Who's gonna be on site to enforce regulations and monitor park usage?

Response: (State) State Parks, DLNR. We haven't worked out anything like a caretaker for this park, but it's possible that having someone on site may be necessary.

Comment: I live on the 18th hole of Hawaii Kai Golf Course, the second house from Queen's Beach. Anything that you do like this would enhance the value of my property. I'm asking you to <u>not</u> enhance the value of my property. *(Laughter)* But, in any case, let me give you one word, "Hurry". This is, in my opinion, too much already. Don't overdevelop. And don't wait so long that somebody else moves in and builds up the area. My concern is that Kaiser might build on the mauka side of the highway. I would like something left for those of us who live here. We're going to need environmental studies done. There will almost certainly be environmental impacts, so we're going to need an Environmental Impact Statement. If we implement too many changes, we'll lose it. We've lost Hanauma Bay. I haven't been to Hanauma Bay in five years, and as far as I'm concerned, it's lost to the people of Hawaii. You can't park there; you can't get up close. Now if you do this *(pointing to Makapu'u Lookout modifications)*, we're going to lose it to the tour buses. Now, I have nothing against tour buses, but I'd like to have something left for us to enjoy. We need to preserve the natural wilderness area and that wilderness feeling. We don't need a bunch of cleared-out rest areaslike we have at Kapiolani Park in Waikiki. What we need are improved trails and adequate park management to prevent too many people from roaming around. Just pare it down to the minimum.

Comment: When I moved here about 20 years ago, that was the place Iused to go to get away from it all. It was always quiet, peaceful. A place away from people. Now a parking lot right there *(pointing at Wawamalu)* is going to detract from that. Why not expand the parking lot at Sandy Beach, which is much more recreational anyway, and force people to park their cars there and walk the extra quarter mile or so. This way, you can leave Queen's Beach and Makapu'u as wild as possible. Also, that area on the mauka side of Kal Highway needs to be managed carefully because Kaiser may have plans to develop there. We may need to study further and extend our range of vision a little bit.

Comment: I'd like to say that I first fot interested in this area when I was teaching environmental education to sixth graders at Punahou School in th 1970s. Now of all the things I taught my kids, there was one exercise that made the most lasting impression on them. Each youngster was assigned a 3 X 3' parcel of land out at Queen's Beach to watch over during a week. We'd return every day to identify rocks, plants and

animals, and take note of changes. Just from our presence, we noticed that the bugs disappeared, the plants were gone and we began seeing signs of erosion. My point is that we can't stop change. We can't stop growth. But no matter what happens, no matter what we do, we still need to have places where bugs can live and weeds can thrive.

Comment: I would have to agree that this area is an excellent educational resource because it's accessible; it's small enough to contain educational groups. The DOE doesn't allow such groups in right now. But if we can make certain areas safe and accessible, we might be able to utilize it in a well-managed and controlled way for conveying educational resource values.

Comment: Something we mustn't overlook here is that tourists love this place! The Ka Iwi shoreline is spectacular. We've got to make it accessible to them as well.

Response: The parking scheme will be one of the primary mechanisms for balancing park usage while keeping the lots and traffic circulation as unobtrusive as possible.

Question: Have Hawaiian groups expressed interest? What kind of input are you getting from the Native Hawaiian community?

Response: We had representatives from the Ohana Council at a prior meeting in Waimanalo and we're planning to coordinate with Bumpy Kanahele and his group at some later date. The input from the Native Hawaiian community thus far has been positive. There has been a lot of emphasis on working together; the community, the State, and private interests. We are interested in making it happen.

Comment: I'm a little concerned about the lack of publicity for this meeting...

Response: Well, we relied solely on press releases to announce this round of meetings. We could have used a little more publicity... Next time, we plan to issue public service announcements in addition to the press releases. We were quite fortunate to have had the media coverage of two television stations and the two dailies as well.

Comment: Be careful about <u>where</u> you put those rest areas, because they may turn into picnic sites with trash and pest problems. These rest areas should be designated for places which are not highly sensitive and won't be at risk of spoilage. Also, I would like to suggest providing more detail about sensitive vegetation and landscape management. Ma'o should have extra special value due to its botanical significance.

Comment: You might consider contacting Mrs. Alan Davis. I'm not sure what her last name is now...I know she remarried awhile back. But she would have a lot of historical information; maybe some

anecdotes. She probably has old pictures of the house and grounds before the tsunami. And the families who occupied the homes at the wayside...You know, the lighthouse keepers families? They might be good sources of information.

Comment: Where do we stand in the EIS process? In which legislative session will the master plan be presented? How will the land be acquired from Bishop Estate?

Response: Well, the EIS is funded. We have to complete the draft and final master plans before we can proceed with the EIS. We anticipate approaching the Legislature with the EIS in 1994. Regarding acquisition, land swaps may be an option. As you may recall, that was how the State acquired land at Heeia. We swapped the land for several parcels here in town.

Comment: What happened to the National Park Service?

Response: NPS has been studying the Ka Iwi shoreline for over two years now. Evidently, they are supposed to be coming out with a final management plan of the Ka Iwi Scenic Shoreline Study.

Comment: Why not have Kam Schools manage the fishpond at Kaloko Inlet? After its restoration, it could be adopted by a class at Kam; say, for example, the Freshman class. Every succeeding Freshman class would be charged with the responsibility of maintaining the fishpond. And what is this with Bishop Estate anyway? Their lands at Koko Head were leased to the City for $1, provided the City would manage the water supply. There always has to be something in it for them. Bishop Estate is neglecting its responsibility to the Hawaiian people.

Comment: We want a Hawaiian-style, rugged-outdoor-wilderness laboratory. Not a manicured mainland park. The less physical change you make, the more viable a vehicle for education the place will be.

CLOSING

Thank you all for your interest and participation.

PUBLIC INFORMATION MEETING

Project: KA IWI STATE PARK MASTER PLAN
Date: JUNE 29, 1993 Time: 7:00 P.M.
Location: MOILIILI COMMUNITY CENTER

ATTENDANCE SHEET

	NAME	ORGANIZATION	MAILING ADDRESS	PHONE #
1	Mike Weidenbach	Self	PO Box 90541 Honolulu 96815	946 2903
2	JAN BAPPE	SELF	2957 KALAKAUA AVE 96815	
3	DAVID MATTHEWS	Friends of Queens Beach Save Sandy Beach	7909 MAKAAOA PL Honolulu 96825	395 7600
4	RAY TABATA	UH SEA GRANT	1000 POPE RD. MSB 226 HONOLULU HI 96822	956 2866 956 2858 FAX
5	Sam Lankford	UH Recreation & Leis Science	1337 Lower Campus Rd U of Hawaii · Honolulu, HI 96822	956 3809 988 5795 Fax
6	Karen Winton	SELF	PO Box 26347 Hon 96825	395 7522
7	TOM HEINRICH	SIERRA CLUB, O'AHU GROUP; SELF	3159 OAHU AVE. HNL 96822-1247	988-3469

Wilson Okamoto & Associates, Inc.

PUBLIC INFORMATION MEETING

Project: KA IWI STATE PARK MASTER PLAN
Date: JUNE 29, 1993 Time: 7:00 P.M.
Location: MOILIILI COMMUNITY CENTER

ATTENDANCE SHEET

	NAME	ORGANIZATION	MAILING ADDRESS	PHONE #
8	Eve G. Anderson	Waimanalo	P.O. Box 25550 Hono. 96825	259-7706
9	MARY GASPER		729 12th Ave Honolulu Hi 96816	732-3681
10	Janet P. Rowan	Manoa Neighborhood Board	2142 Atherton Rd Honolulu	~~[illegible]~~ 949.6216
11				
12				
13				
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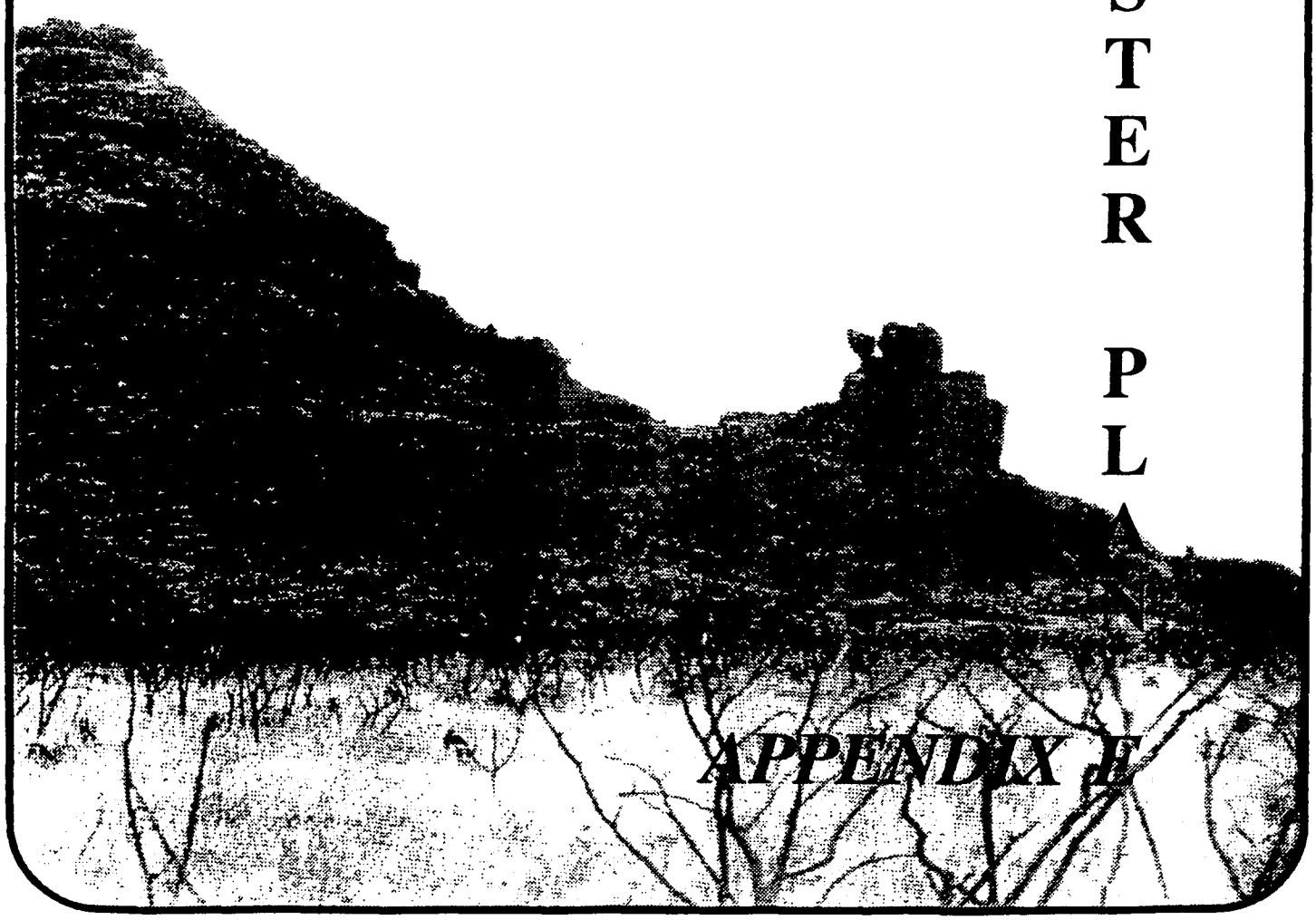
KAIWI MASTER PLAN



APPENDIX E

APPENDIX E
ACTIVITY SURVEY

An activity survey was conducted at the Ka Iwi site in the summer of 1992. The survey was conducted on two separate days: Wednesday, June 24, 1992 - a weekday, suggesting potentially less intensive use and Saturday, July 4, 1992 - a long weekend, to examine, presumably, more intensive use. The survey was conducted in three parts. The first part recorded recreational activities that occurred in the various areas of the site. The second part recorded arrival and departures from parking areas. The third part recorded activities at the Makàpu'u Lookout.

RECREATIONAL USE COUNTS

Methodology

The Ka Iwi site was divided into seven smaller units based on the different recreational experiences offered, with smaller units on the Queen's Beach side of the site, since it is, presumably, more accessible and has a greater range of recreational opportunities. The units were as follows: the three inlets, Kaloko, Ka'ili'ili and Kaho'ohaihai; the area near Kalanianaole Highway; the Coastal Bench Trail; Kealikipapa Valley; and, the Makapu'u Headland, which includes the State Wayside.

Every half hour, the number of people and the activities they were engaging in were logged for each unit. The categories of activities recorded were as follows:

ORV - off-road vehicles (including 4-wheel drives, trucks and cars, and two- and three-wheeled cycles) which enter the area as transportation or for recreation.
Fishing - pole fishing, thrown net and surfcasting.
Swimming/Sunbathing - sunbathing, swimming, snorkeling and diving. These activities were combined because most sunbathers eventually enter the water.
Hiking - hikers, beachcombers, tidepool explorers and mountain bikes. Mountain biking was included in this category because their impact is minimal when compared to powered ORVs.
Surfing - surfing and boogie-boarding

Conclusions

Surprisingly, the amount of public use was similar on both days. This may be because the survey was conducted in the summer when school was not in session; hence, the amount of weekday users may be higher than during other times of the year. The patterns of use, however, differed. On the weekday, the number of users gradually increased through the day, reaching a peak of 63 users around 4:00 PM. On the weekend, the number of users remained fairly constant, with a peak of 35 users at 12:00 noon.

The most popular activity during the survey period was swimming/sunbathing, followed by fishing. As many as 21 people participated in each of these activities within the site at the same time during the survey. The peak time for swimming/sunbathing occurred on the weekday after 2:30 PM. The peak time for fishing occurred on the weekend at 11:30 in the morning. On the weekday, the frequency of the other activities recorded were consistent with the overall pattern of greater use in the afternoon. During the weekend, hiking, fishing and swimming/sunbathing peaked in the late morning to noon. ORV activity was notably greater on the weekday with the greatest number of vehicles, 12, recorded in the last observation of the day. Even more were seen arriving as the observation team was leaving the site. ORV activity during the weekend was surprisingly low by comparison. An informal observation on a previous weekend had indicated more than 20 vehicles on the site during the late afternoon.

Of all the areas, the Kaloko and Ka'ili'ili Inlets were utilized most, probably because these areas are the most accessible from parking areas near the Wawamalu wall and along Kalanianaole Highway. During the survey, only fishing was recorded on the Coastal Bench Trail, although previous informal observations noted that the area is also used for hiking. Kealakipapa Valley was used mainly by ORVs and hikers, while the Makapu'u Headland was used only for hiking.

KA IWI STATE PARK MASTER PLAN

RECREATIONAL USE COUNT
JUNE 24, 1992

TIME	KALOKO	KA'ILI'ILI	KAHO'O-HAIHAI	KALANI-ANAOLE	COASTAL BENCH TRAIL	KEALA-KIPAPA	MAKAPU'U HEADLAND	TOTAL
9:00	Fishing 1 Hiking 1	ORV 1 Fishing 2 Swim/Sun 3	ORV 1		Fishing 1			ORV 2 Fishing 4 Swim/Sun 3 Hiking 1
9:30	Fishing 1 Swim/Sun 1 Hiking 1	ORV 1 Fishing 2 Swim/Sun 3	ORV 1 Fishing 1					ORV 2 Fishing 4 Swim/Sun 4 Hiking 1
10:00	Fishing 1 Swim/Sun 4	ORV 1 Fishing 2 Swim/Sun 3	ORV 1 Fishing 1					ORV 2 Fishing 4 Swim/Sun 7
10:30	Fishing 4 Swim/Sun 4 Hiking 1	ORV 1 Fishing 2 Swim/Sun 3						ORV 2 Fishing 6 Swim/Sun 7 Hiking 1
11:00	ORV 2 Fishing 4 Swim/Sun 7 Hiking 2	ORV 1 Fishing 2 Swim/Sun 3				ORV 2		ORV 5 Fishing 6 Swim/Sun 10 Hiking 2
11:30	ORV 1 Fishing 1 Swim/Sun 7 Surfing 1	ORV 1 Fishing 4 Swim/Sun 3		ORV 1				ORV 3 Fishing 5 Swim/Sun 10 Surfing 1
12:00	ORV 2 Fishing 1 Swim/Sun 5 Surfing 3	ORV 1 Fishing 4 Swim/Sun 3		ORV 1				ORV 4 Fishing 5 Swim/Sun 8 Surfing 3
12:30	ORV 1 Fishing 1 Swim/Sun 6 Surfing 5	ORV 1 Fishing 4 Swim/Sun 3		ORV 1				ORV 3 Fishing 5 Swim/Sun 9 Surfing 5
1:00	ORV 1 Fishing 4 Swim/Sun 4 Hiking 2 Surfing 5	ORV 1 Fishing 4 Swim/Sun 3		ORV 1				ORV 3 Fishing 8 Swim/Sun 7 Hiking 2 Surfing 5
1:30	Fishing 4 Swim/Sun 2 Hiking 3 Surfing 4	ORV 5 Fishing 7 Swim/Sun 11		ORV 1				ORV 6 Fishing 11 Swim/Sun 13 Hiking 3 Surfing 4

KA IWI STATE PARK MASTER PLAN

RECREATIONAL USE COUNT (CONT.)
JUNE 24, 1992

TIME	KALOKO	KA'ILI'ILI	KAHO'O-HAIHAI	KALANI-ANAOLE	COASTAL BENCH TRAIL	KEALA-KIPAPA	MAKAPU'U HEADLAND	TOTAL
2:00	ORV 2 Fishing 4 Swim/Sun 11 Hiking 3 Surfing 4	ORV 5 Fishing 7 Swim/Sun 8		ORV 1	Fishing 1			ORV 8 Fishing 12 Swim/Sun 19 Hiking 3 Surfing 4
2:30	Fishing 3 Swim/Sun 10 Hiking 4 Surfing 7	ORV 5 Fishing 7 Swim/Sun 11 Hiking 4 Surfing 2		ORV 1	Fishing 1			ORV 6 Fishing 11 Swim/Sun 21 Hiking 8 Surfing 9
3:00	ORV 2 Fishing 3 Swim/Sun 6 Hiking 4 Surfing 7	ORV 5 Fishing 5 Swim/Sun 11 Surfing 8	Swim/Sun 4		Fishing 1			ORV 7 Fishing 9 Swim/Sun 21 Hiking 4 Surfing 15
3:30	ORV 4 Fishing 5 Swim/Sun 9 Hiking 4 Surfing 7	ORV 4 Fishing 3 Swim/Sun 8 Surfing 7	ORV 1 Swim/Sun 4		Fishing 1			ORV 9 Fishing 9 Swim/Sun 21 Hiking 4 Surfing 14
4:00	ORV 5 Fishing 5 Swim/Sun 9 Hiking 4 Surfing 6	ORV 6 Fishing 3 Swim/Sun 8 Surfing 6	ORV 1 Swim/Sun 4		Fishing 1		Hiking 5	ORV 12 Fishing 9 Swim/Sun 21 Hiking 9 Surfing 12

KA IWI STATE PARK MASTER PLAN

RECREATIONAL USE COUNT
JULY 4, 1992

TIME	KALOKO	KA'ILI'ILI	KAHO'O-HAIHAI	KALANI-ANAOLE	COASTAL BENCH TRAIL	KEALA-KIPAPA	MAKAPU'U HEADLAND	TOTAL
8:30	Fishing 5 Swim/Sun 5 Surfing 3	Fishing 5	ORV 1 Hiking 4					ORV 1 Fishing 10 Swim/Sun 5 Hiking 4 Surfing 3
9:00	Fishing 3 Swim/Sun 4 Hiking 3 Surfing 1	Fishing 6	ORV 1 Hiking 5					ORV 1 Fishing 9 Swim/Sun 4 Hiking 8 Surfing 1
9:30	Fishing 3 Swim/Sun 7 Surfing 1	Fishing 6	ORV 1 Hiking 5				Hiking 5	ORV 1 Fishing 9 Swim/Sun 7 Hiking 10 Surfing 1
10:00	Fishing 6 Swim/Sun 7 Surfing 1	Fishing 5 Hiking 1	ORV 1 Hiking 6				Hiking 3	ORV 1 Fishing 11 Swim/Sun 7 Hiking 10 Surfing 1
10:30	Fishing 2 Swim/Sun 8 Hiking 4	Fishing 4 Hiking 2	ORV 1 Hiking 7					ORV 1 Fishing 6 Swim/Sun 8 Hiking 13
11:00	Fishing 2 Swim/Sun 11 Hiking 4 Surfing 5	Fishing 4 Hiking 2	ORV 1 Fishing 9 Hiking 5				Hiking 1	ORV 1 Fishing 6 Swim/Sun 11 Hiking 12 Surfing 5
11:30	Fishing 12 Swim/Sun 2 Surfing 4	Fishing 4	ORV 1 Fishing 5 Hiking 5					ORV 1 Fishing 21 Swim/Sun 2 Hiking 5 Surfing 4
12:00	Fishing 2 Swim/Sun 13 Hiking 2 Surfing 4	Fishing 4	ORV 1 Fishing 5 Hiking 5					ORV 1 Fishing 11 Swim/Sun 13 Hiking 7 Surfing 4

KA IWI STATE PARK MASTER PLAN

RECREATIONAL USE COUNT (CONT.)
JULY 4, 1992

TIME	KALOKO	KA'ILI'ILI	KAHO'O-HAIHAI	KALANI-ANAOLE	COASTAL BENCH TRAIL	KEALA-KIPAPA	MAKAPU'U HEADLAND	TOTAL
12:30	Fishing 2 Swim/Sun 10 Surfing 4	Fishing 4	ORV 1 Fishing 5 Hiking 5					ORV 1 Fishing 11 Swim/Sun 10 Hiking 5 Surfing 4
1:00	Fishing 4 Swim/Sun 2 Hiking 2 Surfing 4	Fishing 4	Fishing 6					Fishing 14 Swim/Sun 2 Hiking 2 Surfing 4
1:30	Fishing 3 Swim/Sun 6 Surfing 3	Fishing 4	Fishing 6			ORV 1 Hiking 2		ORV 1 Fishing 1 Swim/Sun 6 Hiking 2 Surfing 3
2:00	Fishing 4 Swim/Sun 4 Hiking 2 Surfing 4	Fishing 2	Fishing 8			ORV 1		ORV 1 Fishing 14 Swim/Sun 4 Hiking 2 Surfing 4
2:30	Fishing 4 Swim/Sun 6 Hiking 4 Surfing 8	Fishing 4 Hiking 1	Fishing 6 Hiking			ORV 1		ORV 1 Fishing 14 Swim/Sun 6 Hiking 5 Surfing 8
3:00	Swim/Sun 5 Hiking 4 Surfing 7	Fishing 5 Hiking 1	Swim/Sun 4					Fishing 5 Swim/Sun 9 Hiking 5 Surfing 7
3:30	ORV 1 Fishing 1 Swim/Sun 3 Hiking 1 Surfing 7	Fishing 10 Hiking 1 Surfing 1	ORV 1 Swim/Sun 4					ORV 2 Fishing 11 Swim/Sun 7 Hiking 2 Surfing 8
4:00	ORV 1 Swim/Sun 4 Hiking 1 Surfing 3	Fishing 14	ORV 1 Swim/Sun 4			Hiking 2		ORV 2 Fishing 14 Swim/Sun 8 Hiking 3 Surfing 3

PARKING ARRIVAL/DEPARTURE

Methodology

People using the Ka Iwi site generally parked in two areas. The larger of these is the unpaved area near the remnant of the former Wawamalu wall off of the highway, just beyond Sandy Beach. The second parking area is along the shoulders of Kalanianaole Highway. Vehicles using these parking areas were logged during the activity survey.

Conclusions

Vehicles tend to utilize the larger parking area near the Wawamalu wall more than the shoulder of Kalanianaole Highway. During the weekday survey, 35 vehicles parked at the area near the ranch wall during the course of the day, while 12 parked along Kalanianaole Highway. During the weekend survey, the numbers were significantly higher with 84 vehicles parked near the ranch wall during the course of the day, and 25 parked along the shoulders of Kalanianaole Highway.

Vehicle visits fell into four categories: those that drove in and drove out, those that stayed for less than ten minutes, and those that remained parked for over an hour. During the weekday, a total of 29 vehicles (in both areas) drove in, then drove out; 13 vehicles remained for less than ten minutes; 11 vehicles stayed for the interim period of ten minutes to an hour; and, 25 vehicles remained over an hour.

On the weekend, the patterns were different. A total of 16 vehicles (in both areas) drove in, then drove out; 13 vehicles remained for less than ten minutes; 42 vehicles stayed from ten minutes to one hour; and, 25 vehicles remained over an hour. It was surmised that those cars remaining less than ten minutes involved people who checked-out surfing conditions and decided to leave.

KA IWI STATE PARK MASTER PLAN

PARKING ARRIVAL/DEPARTURE
AT THE AREA NEAR THE FORMER ALAN DAVIS RANCH
JUNE 24, 1995

TIME IN	TIME OUT	DURATION OF VISIT
10:00 PM	11:43 AM	13 h 43 m
8:54 AM	drove in, then turned out	---
8:54 AM	drove in, then turned out	---
8:57 AM	10:56 AM	1 h 59 m
9:35 AM	9:45 AM	10 m
9:47 AM	10:05 AM	18 m
9:50 AM	drove in, then turned out	---
9:50 AM	drove in, then turned out	---
9:50 AM	drove in, then turned out	---
10:10 AM	10:15 AM	05 m
10:51 AM	drove in, then turned out	---
10:55 AM	drove in, then turned out	---
10:55 AM	11:20 AM	25 m
11:11 AM	drove through to Kaloko	---
11:15 AM	12:47 PM	1 h 32 m
11:18 AM	drove in, then turned out	---
11:20 AM	11:27 AM	07 m
11:22 AM	11:29 AM	07 m
11:34 AM	11:36 AM	02 m
11:36 AM	11:38 AM	02 m
11:38 AM	11:41 AM	03 m
11:38 AM	12:05 PM	27 m
11:40 AM	1:50 PM	2 h 10 m
11:43 AM	drove in, then turned out	---
11:44 AM	1:09 PM	1 h 25 m
11:48 AM	drove in, then turned out	---
11:59 AM	12:07 PM	08 m
12:25 PM	drove in, then turned out	---
12:31 PM	1:47 PM	1 h 16 m
12:34 PM	drove in, then turned out	---
12:57 PM	drove in, then turned out	---
1:03 PM	3:12 PM	2 h 09 m
1:14 PM	2:55 PM	1 h 41 m
1:26 PM	1:31 PM	05 m
1:31 PM	4:05 PM	2 h 34 m

KA IWI STATE PARK MASTER PLAN
PARKING ARRIVAL/DEPARTURE
AT THE AREA NEAR THE FORMER ALAN DAVIS RANCH
(CONT.)

JUNE 24, 1995

TIME IN	TIME OUT	DURATION OF VISIT
1:37 PM	drove in, then turned out	---
1:37 PM	drove in, then turned out	---
1:39 PM	3:31 PM	1 h 52 m
1:40 PM	1:49 PM	09 m
1:54 PM	drove in, then turned out	---
1:57 PM	drove through to Kaloko	---
1:58 PM	3:59 PM	2 h 01 m
2:10 PM	drove in, then turned out	---
2:20 PM	drove through to Kaloko	---
2:25 PM	drove in, then turned out	---
2:55 PM	3:05 PM	10 m
3:00 PM	3:15 PM	15 m
3:10 PM	drove in, then turned out	---
3:13 PM	drove through to Kaloko	---
3:15 PM	drove in, then turned out	---
3:21 PM	3:46 PM	25 m
3:24 PM	beyond 4:30 PM	> 1 h 06 m
3:26 PM	beyond 4:30 PM	> 1 h 04 m
3:34 PM	4:30 PM	1 h 01 m
3:36 PM	drove in, then turned out	---
3:38 PM	3:48 PM	10 m
3:44 PM	beyond 4:30 PM	> 46 m
3:45 PM	drove in, then turned out	---
3:51 PM	4:11 PM	> 20 m
3:59 PM	4:20 PM	21 m
4:10 PM	4:19 PM	09 m
4:10 PM	drove in, then turned out	---
4:15 PM	drove through to Kaloko	---

KA IWI STATE PARK MASTER PLAN
PARKING ARRIVAL/DEPARTURE
ALONG KALANIANAOLE HIGHWAY

JUNE 24, 1995

TIME IN	TIME OUT	DURATION OF VISIT
9:22 AM	12:04 PM	2 h 42 m
10:05 AM	12:06 PM	2 h 01 m
10:45 AM	12:11 PM	1 h 26 m
10:54 AM	11:14 AM	20 m
11:01 AM	11:56 AM	55 m
11:31 AM	1:51 PM	2 h 20 m
12:35 PM	3:27 PM	2 h 52 m
12:36 PM	drove in, then turned out	---
1:21 PM	4:17 PM	2 h 56 m
1:53 PM	drove in, then turned out	---
1:55 PM	drove in, then turned out	---
1:57 PM	3:27 PM	1 h 30 m
2:25 PM	4:15 PM	1 h 50 m
2:41 PM	beyond 4:30 PM	> 1 h 49 m
3:50 PM	beyond 4:30 PM	> 40 m
3:51 PM	drove in, then turned out	---
4:15 PM	drove in, then turned out	---
4:25 PM	drove in, then turned out	---

KA IWI STATE PARK MASTER PLAN

PARKING ARRIVAL/DEPARTURE
AT THE AREA NEAR THE FORMER ALAN DAVIS RANCH
JULY 4, 1995

TIME IN	TIME OUT	DURATION OF VISIT
before 8:30 AM	beyond 4:30 PM	> 8 h 00 m
before 8:30 AM	8:50 AM	> 20 m
before 8:30 AM	9:50 AM	> 1 h 20 m
8:57 AM	9:12 AM	15 m
9:03 AM	9:27 AM	24 m
9:04 AM	drove in, then turned out	---
9:07 AM	9:15 AM	8 m
9:08 AM	12:06 PM	2 h 58 m
9:12 AM	drove in, then turned out	---
9:14 AM	9:18 AM	04 m
9:18 AM	10:14 AM	56 m
9:24 AM	drove in, then turned out	---
9:27 AM	10:47 AM	1 h 20 m
9:40 AM	drove in, then turned out	---
9:42 AM	10:09 PM	27 m
9:45 AM	12:11 PM	2 h 26 m
10:04 AM	11:31 AM	27 m
10:17 AM	beyond 4:30 PM	> 6 h 13 m
10:19 AM	beyond 4:30 PM	> 6 h 11 m
10:20 AM	1:21 PM	3 h 01 m
10:21 AM	10:29 AM	08 m
10:25 AM	1:06 PM	2 h 41 m
10:35 AM	drove in, then turned out	---
10:37 AM	drove in, then turned out	---
10:39 AM	12:52 PM	2 h 13 m
10:40 AM	10:45 AM	05 m
10:43 AM	11:55 AM	1 h 02 m
10:56 AM	drove in, then turned out	---
10:56 AM	drove in, then turned out	---
11:01 AM	3:33 PM	4 h 32 m
11:04 AM	drove in, then turned out	---
11:05 AM	drove in, then turned out	---
11:07 AM	11:29 AM	22 m
11:08 AM	11:12 AM	04 m
11:14 AM	drove in, then turned out	---

KA IWI STATE PARK MASTER PLAN
PARKING ARRIVAL/DEPARTURE
AT THE AREA NEAR THE FORMER ALAN DAVIS RANCH
(CONT.)

JULY 4, 1995

TIME IN	TIME OUT	DURATION OF VISIT
11:26 AM	3:49 PM	4 h 23 m
11:28 AM	12:44 PM	1 h 16 m
11:29 AM	beyond 4:30 PM	> 5 h 01 m
11:31 AM	beyond 4:30 PM	> 4 h 59 m
11:31 AM	1:07 PM	1 h 36 m
11:32 AM	drove in, then turned out	---
11:34 AM	drove in, then turned out	---
11:40 AM	beyond 4:30 PM	> 4 h 50 m
11:40 AM	3:29 PM	3 h 49 m
11:44 AM	beyond 4:30 PM	4 h 46 m
11:47 AM	drove in, then turned out	---
11:48 AM	12:09 PM	21 m
11:51 AM	1:12 PM	1 h 21 m
12:12 PM	1:46 PM	1 h 26 m
12:14 PM	12:35 PM	21 m
12:14 PM	12:36 PM	22 m
12:20 PM	12:49 PM	29 m
12:21 PM	12:29 PM	08 m
12:36 PM	3:37 PM	3 h 01 m
12:44 PM	3:52 PM	3 h 08 m
12:47 PM	1:35 PM	48 m
12:52 PM	beyond 4:30 PM	> 3 h 38 m
1:10 PM	2:40 PM	1 h 30 m
1:10 PM	2:26 PM	1 h 16 m
1:16 PM	3:21 PM	2 h 05 m
1:18 PM	1:31 PM	33 m
1:20 PM	1:49 PM	29 m
1:21 PM	1:55 PM	34 m
1:23 PM	1:50 PM	27 m
1:28 PM	beyond 4:30 PM	> 3 h 02 m
1:28 PM	3:33 PM	2 h 05 m
1:54 PM	4:27 PM	2 h 33 m
1:54 PM	beyond 4:30 PM	> 2 h 36 m
1:56 PM	beyond 4:30 PM	> 2 h 34 m
1:59 PM	3:20 PM	1 h 21 m

KA IWI STATE PARK MASTER PLAN
PARKING ARRIVAL/DEPARTURE
AT THE AREA NEAR THE FORMER ALAN DAVIS RANCH
(CONT.)

JULY 4, 1995

TIME IN	TIME OUT	DURATION OF VISIT
2:07 PM	2:29 PM	22 m
2:13 PM	beyond 4:30 PM	> 2 h 17 m
2:18 PM	2:41 PM	23 m
2:24 PM	3:36 PM	1 h 12 m
2:39 PM	3:10 PM	31 m
2:39 PM	3:10 PM	31 m
2:41 PM	3:05 PM	24 m
2:45 PM	beyond 4:30 PM	> 1 h 45 m
2:46 PM	beyond 4:30 PM	> 1 h 44 m
2:49 PM	3:09 PM	20 m
2:50 PM	3:15 PM	25 m
2:50 PM	3:22 PM	32 m
3:12 PM	3:47 PM	35 m
3:18 PM	3:38 PM	20 m
3:18 PM	3:38 PM	20 m
3:18 PM	3:38 PM	20 m
3:24 PM	3:57 PM	33 m
3:37 PM	4:10 PM	33 m
3:39 PM	4:18 PM	39 m
3:44 PM	beyond 4:30 PM	> 46 m
3:46 PM	beyond 4:30 PM	> 44 m
3:46 PM	beyond 4:30 PM	> 44 m
3:50 PM	4:17 PM	27 m
3:51 PM	4:12 PM	21 m
4:05 PM	4:20 PM	15 m
4:07 PM	beyond 4:30 PM	> 23 m
4:15 PM	beyond 4:30 PM	> 15 m
4:21 PM	beyond 4:30 PM	> 09 m

KA IWI STATE PARK MASTER PLAN
PARKING ARRIVAL/DEPARTURE
ALONG KALANIANAOLE HIGHWAY

JULY 4, 1995

TIME IN	TIME OUT	DURATION OF VISIT
before 8:30 AM	9:10 AM	> 40 m
before 8:30 AM	10:10 AM	> 1 h 40 m
before 8:30 AM	9:00 AM	> 30 m
8:55 AM	11:10 AM	> 2 h 15 m
9:00 AM	12:50 AM	> 3 h 50 m
9:32 AM	10:25 AM	53 m
9:45 AM	drove in, then turned out	---
9:50 AM	10:45 AM	55 m
10:25 AM	drove in, then turned out	---
10:46 AM	11:15 AM	29 m
10:53 AM	10:55 AM	02 m
11:00 AM	12:05 PM	1 h 05 m
11:15 AM	1:55 PM	2 h 40 m
11:45 AM	11:48 AM	03 m
12:20 PM	1:13 PM	53 m
12:20 PM	beyond 4:30 PM	> 4 h 10 m
12:20 PM	beyond 4:30 PM	> 4 h 10 m
12:28 PM	12:32 PM	04 m
12:30 PM	12:58 PM	28 m
12:35 PM	1:30 PM	55 m
1:06 PM	1:09 PM	03 m
1:50 PM	3:50 PM	2 h 00 m
1:55 PM	3:30 PM	1 h 35 m
1:56 PM	2:26 PM	30 m
2:00 PM	beyond 4:30 PM	> 2 h 30 m
2:00 PM	3:05 PM	1 h 05 m
2:10 PM	beyond 4:30 PM	2 h 20 m

MAKAPU'U LOOKOUT

Methodology

The Makapu'u Lookout observations recorded the number of vehicles stopped at the Lookout and noted if viewers walked to the area above the lookout to get a better view over the cliff where there is no guardrail. At intervals of ten minutes during the survey period, photographs were taken of the Makapu'u Lookout parking area. The types of vehicles and number of each type were recorded, as well as observations of the passengers sightseeing in the area, especially those that walked to the edge of the cliff for better viewing.

If a vehicle arrived and left in a ten minute period between photographs, it would not have been recorded. Inasmuch as most visits were less than ten minutes, the number of missed vehicles may be significant. Nevertheless, the logs offer an indication of the level and nature of activity.

Conclusion

Car traffic tended to peak around the 11:00 AM and 3:00 PM hours on both days, with an obvious lull in traffic around 1:00 PM. Car traffic was greater on the weekend, but also accounted for a significant portion of traffic on the weekday.

Bus and tour van traffic peaked in the morning hours and was virtually non-existent after 11:00 AM on both days. Weekdays generated significantly greater bus and tour van traffic, which is as expected since fewer tours are conducted on weekends.

On each day, seven to eight groups of people, with as many as 54 people in a group, were observed walking from the parking area to the edge of the cliff for better viewing.

KA IWI STATE PARK MASTER PLAN

MAKAPU'U LOOKOUT
JUNE 24, 1992

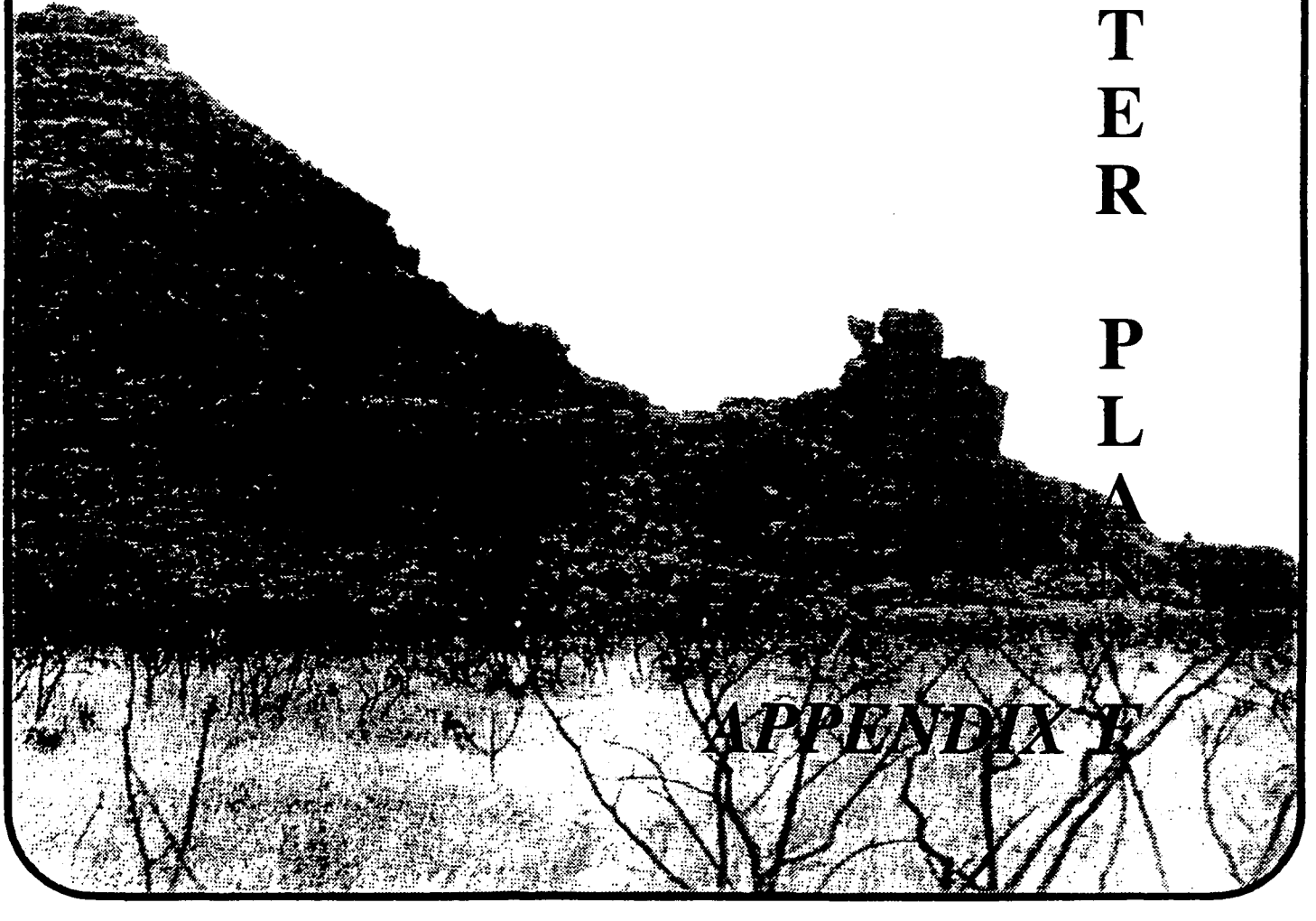
TIME	CARS	TOUR VANS	TOUR BUSES	OTHER	COMMENTS
9:10 AM	1				
9:20 AM	2	2	1		
9:30 AM	1	3		1 police	
9:40 AM	3	1	1		
9:50 AM	3	1	2		
10:00 AM	1			1 moped	3 people on edge of cliff
10:10 AM		2	2		34 people on edge of cliff
10:20 AM	6	2	1		54 people on edge of cliff
10:30 AM	6	2			17 people on edge of cliff
10:40 AM	2	2			
10:50 AM	3	2			
11:00 AM	6	2			
11:10 AM	3	1			
11:20 AM	1				
11:30 AM	2				
11:40 AM	3				20 people on edge of cliff
11:50 AM	6	1			3 people on edge of cliff
12:00 PM	4				
12:10 PM	3				
12:20 PM	2			1 ambulance	
12:30 PM	5				
12:40 PM	6				
12:50 PM	5				
1:00 PM	5				
1:10 PM	1				
1:20 PM	1				
1:30 PM	5				
1:40 PM		1			
1:50 PM	1				
2:00 PM	2				
2:10 PM	1				
2:20 PM	2	1			
2:30 PM	3				
2:40 PM					
2:50 PM					
3:00 PM	4				
3:10 PM					
3:20 PM	2				
3:30 PM	6				
3:40 PM	2				
3:50 PM	11				
4:00 PM	8				
4:10 PM	8				
4:20 PM	6				3 people on edge of cliff
4:30 PM	6	1			8 people on edge of cliff
4:40 PM	10				
TOTAL	158	24	7	3	142

KA IWI STATE PARK MASTER PLAN

MAKAPU'U LOOKOUT
JULY 4, 1992

TIME	CARS	TOUR VANS	TOUR BUSES	OTHER	COMMENTS
8:30 AM	2				
8:40 AM	1				
8:50 AM	1				1 person on edge of cliff
9:00 AM	2				
9:10 AM	1				
9:20 AM					
9:30 AM	1	1	1		
9:40 AM	4				
9:50 AM					4 people on edge of cliff
10:00 AM	6				
10:10 AM	10	2			8 people on edge of cliff
10:20 AM	9	1			
10:30 AM	6				
10:40 AM	8	1			
10:50 AM	5				
11:00 AM	5	1			8 people on edge of cliff
11:10 AM	10				11 people on edge of cliff
11:20 AM	10				
11:30 AM	13				10 people on edge of cliff
11:40 AM	10				
11:50 AM	10				5 people on edge of cliff
12:00 PM	10				
12:10 PM	5				
12:20 PM	8				
12:30 PM	6				
12:40 PM	7				
12:50 PM	4				
1:00 PM	5			1 motorcycle	
1:10 PM	5			3 mopeds	
1:20 PM	4				
1:30 PM	7				
1:40 PM	10				
1:50 PM	9				
2:00 PM	7				
2:10 PM	6				
2:20 PM	8				
2:30 PM	9				
2:40 PM	10				
2:50 PM	11				
3:00 PM	10				
3:10 PM	8				
3:20 PM	7				
3:30 PM	5				
3:40 PM	4				
3:50 PM	5				
4:00 PM	8	1			
4:10 PM	9				
4:20 PM	7				
4:30 PM	6				
4:40 PM	6				
4:50 PM	4				
TOTAL	324	7	1	47	47

KAIWI MASTER PLAN



APPENDIX F

CONCERNING AN INTEGRATED SCENIC SHORELINE PARK IN EAST OAHU EXTENDING FROM KOKO HEAD TO MAKAPUU POINT

East Honolulu, Island of Oahu

Prepared by

Department of Land and Natural Resources
State of Hawaii

in response to

House Concurrent Resolution No. 261, H.D. 1, S.D. 1
Fourteenth Legislature, 1988 Session

November 1989

PRELIMINARY PLAN IN RESPONSE TO HOUSE CONCURRENT RESOLUTION No. 261 H.D.1, S.D.1 of The Fourteenth Legislature, Concerning An Integrated Scenic Shoreline Park In East Oahu Extending From Koko Head to Makapuu Point

PURPOSE

House Concurrent Resolution No. 261 H.D. 1, S.D.1 directs the Department of Land and Natural Resources to conduct a study of the establishment of a continuous scenic shoreline park from Koko Head to Makapuu with the basic objective of retaining the area, particularly the area makai of Kalanianaole Highway, in open space in perpetuity. The study shall address but not be limited to the following items:

(1) The necessity or desirability of state acquisition of lands owned by the United States, City and County of Honolulu, and Bishop Estate.

(2) The various recreational uses which should be accommodated within the potential park.

(3) The appropriate managing agency or agencies for the potential park.

(4) The necessity, desirability, and cost implications of removing or relocating nonrecreational uses from the area.

(5) The identification of subareas which should be retained in pristine condition because of historical, cultural, or ecological value.

The resolution also asked the Department to include an appropriation for park planning in the next biennial budget and submit a preliminary plan to the Regular Session of 1990 and a final report to the Regular Season of 1991.

STATUS REPORT

The Department supported companion appropriation bills, Senate Bill No. 540 and House Bill No. 975, initiated by the Fifteenth Legislature and Act 316 of the 1989 session, Item H-27 appropriated $250,000 for "Master Planning For A Shoreline Park from Hanauma Bay to Makapuu Point, Makai of Kalanianaole Highway." This appropriation has been given a high priority, Priority 23, in the Department's expenditure plan.

A scope of work has been developed for a master plan contract and reviewed by the Ka Iwi Park Committee. This informal committee represents a variety of community and potential park user interests and has been working with the Department since 1988. The proposed study will encompass the requested shoreline and any associated scenic and geologic features which can be viewed from this area. However, park site planning is expected to focus on the area known as "Queens Beach" the only remaining privately owned parcel along this shoreline and the former federal property at Makapuu Point which was recently turned over to the State. The planning would therefore include close coordination with the County without pre-empting the County's responsibilities on that part of the study area currently under their jurisdiction. Appropriate managing agencies will be considered as part of the general study. Because of the strong public interest expressed for this area, a community consultation and public presentation process will be established. The planning contract will also include an environmental impact statement as well as the master plan and will therefore go through the established environmental impact public review process.

The consultant's contract process is underway and it is estimated that the consultant will be hired during the first quarter of 1990. The contract is expected to take twenty-four months but may vary considerably depending on public response, research essential to planning or other unforeseen planning needs.

SP 917

DIVISION OF
STATE PARKS
JUN 8 9 12 AM '88

HOUSE OF REPRESENTATIVES
THE FOURTEENTH LEGISLATURE

STATE OF HAWAII
STATE CAPITOL
HONOLULU, HAWAII 96813

June 5, 1988

Mr. William Paty, Chairman
Dept. of Land and Natural
Resources
Kalanimoku Building
1151 Punchbowl Street
Honolulu, HI 96813

Dear Mr. Paty:

I transmit herewith a copy of House Concurrent Resolution No. 261 HD1,SD1, which was adopted by the House of Representatives and the Senate of the Fourteenth Legislature of the State of Hawaii, Regular Session of 1988.

Very respectfully,

Gerald I. Miyoshi
Clerk, House of Representatives

HOUSE OF REPRESENTATIVES
FOURTEENTH LEGISLATURE, 1988
STATE OF HAWAII

H.C.R. NO. 261 H.D. 1 S.D. 1

HOUSE CONCURRENT RESOLUTION

CONCERNING AN INTEGRATED SCENIC SHORELINE PARK IN EAST OAHU EXTENDING FROM KOKO HEAD TO MAKAPUU POINT.

WHEREAS, one of the basic planning determinations already made in the Coastal Zone Management Act is that the State will, whenever possible, preserve the natural condition of the coastal zone; and

WHEREAS, the Act specifically lists scenic, recreational, ecological, historic, and archaeological, as well as economic values associated with the coastal zone as reasons for its preservation; and

WHEREAS, the open coastline from Koko Head to Makapuu embodies all these values in a strikingly spectacular and integrated fashion, thereby providing Oahu, the State, and the entire nation with a rare resource; and

WHEREAS, the City and County of Honolulu has determined, in its 1987 Coastal View Study, that the Koko Head to Makapuu coastline is deserving of the highest degree of scenic conservation and enhancement; and

WHEREAS, the State's Comprehensive Outdoor Recreation Plan of 1971 determined that the Hanauma Bay/Koko Head/Sandy Beach/Makapuu Area possessed high seashore recreational value and the 1975 State Coastal Zone Management Program Technical Document No. 8, identified the entire area as one of high scenic value; and

WHEREAS, the Natural Landmarks Survey of the Hawaiian Islands prepared for the U.S. National Park Service in 1981 recommended that the Koko Rift Zone be accorded the highest priority for designation as a nationally significant landscape, and ecologically valuable resource; and

WHEREAS, the ecological value of the area -- known for its rare indigenous plants, a unique strand ecosystem, and teeming tidepool life -- is important to educators who conduct frequent field trips for students to the area; and

WHEREAS, the various parts of such a precious resource, if they are to be preserved, will need to be integrated and managed in a coherent and consistent manner; now, therefore,

BE IT RESOLVED by the House of Representatives of the Fourteenth Legislature of the State of Hawaii, Regular Session of 1988, the Senate concurring, that the Department of Land and Natural Resources is requested to conduct a study of the establishment of a continuous scenic shoreline park, stretching from Koko Head to Makapuu and demarcated by tax map key numbers 1-3-9-11, 1-3-9-12, and 1-3-9-15-1; and

BE IT FURTHER RESOLVED that the study have as the basic objective the retention of the area, particularly the area makai of Kalanianaole Highway, in open space forever; and

BE IT FURTHER RESOLVED that the Department develop, for the potential continuous scenic shoreline park, an overall plan, which shall address, but not limited to:

(1) The necessity or desirability of state acquisition of lands owned by the United States, City and County of Honolulu, and Bishop Estate;

(2) The various recreational uses which should be accommodated within the potential park;

(3) The appropriate managing agency or agencies for the potential park;

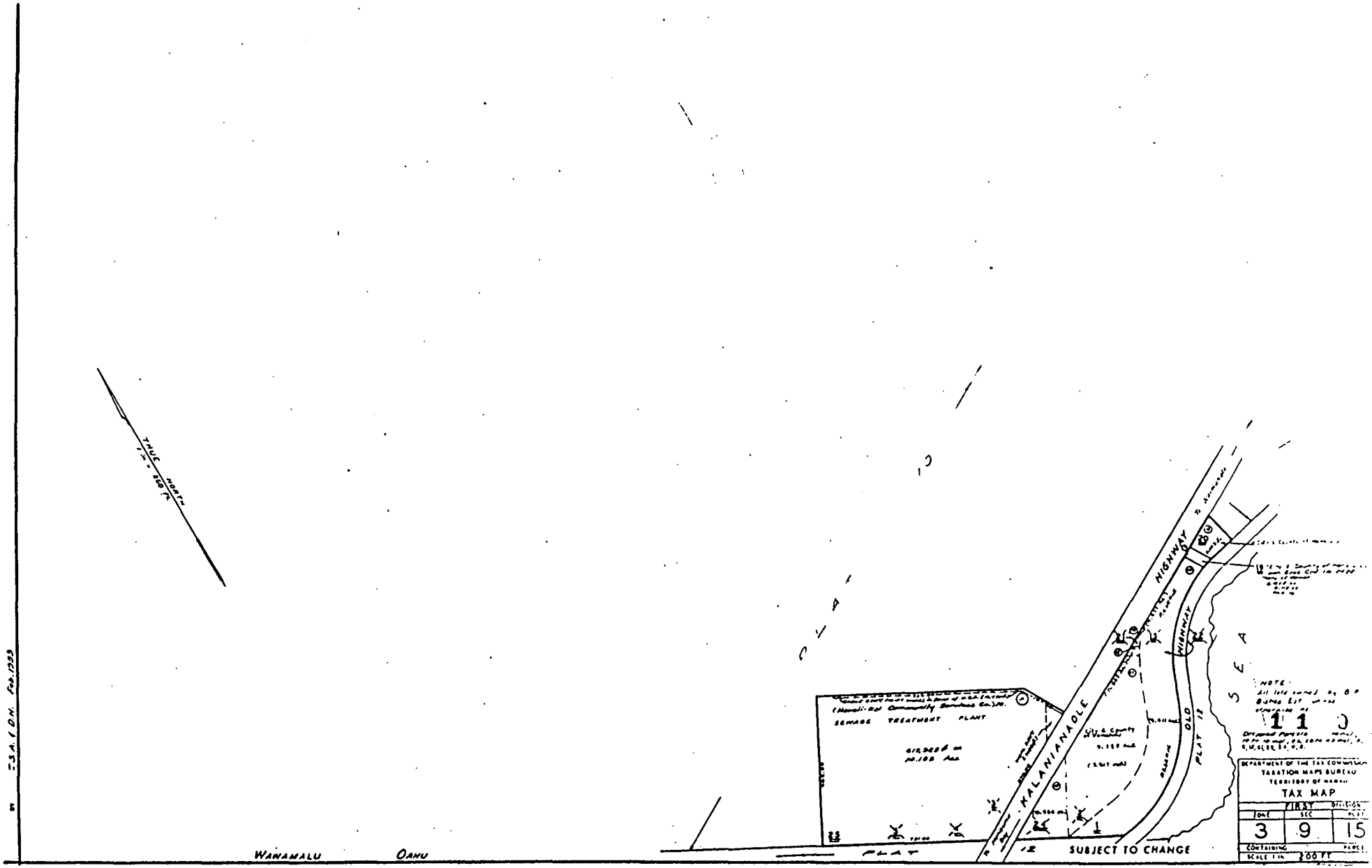
(4) The necessity, desirability, and cost implications of removing or relocating nonrecreational uses from the area; and

(5) The identification of subareas which should be retained in pristine condition because of historical, cultural, or ecological value;

and

BE IT FURTHER RESOLVED that the Department include in its next biennial budget a request for an appropriation to fund a plan for the park and submit a preliminary plan to the Legislature not later than twenty days prior to the convening of the Regular Session of 1990 and a final plan not later than twenty days prior to the convening of the Regular Session of 1991; and

BE IT FURTHER RESOLVED that certified copies of this Concurrent Resolution be sent to the Governor, the Office of State Planning, the Department of Land and Natural Resources, the Mayor, Council, and the Department of Parks and Recreation of the City and County of Honolulu, the United States National Park Service, and Hawaii's congressional delegation.



THUE NORTH
WAWAMALU
OAHU
SEWAGE TREATMENT PLANT
KALANIANAOLE HIGHWAY
OLD HIGHWAY
PLAT 12
SUBJECT TO CHANGE
SEA
NOTE
11
DEPARTMENT OF THE TAX COMMISSION
TAXATION MAPS BUREAU
TERRITORY OF HAWAII
TAX MAP
FIRST DIVISION
ZONE
SEC
PLAT
3
9
15
CONTAINING
PARCEL
SCALE 1 IN 200 FT