REVISED

ENVIRONMENTAL IMPACT STATEMENT

FOR THE

KAILUA-KONA (SOUTHERN ZONE)

FACILITY PLAN

NORTH KONA DISTRICT, HAWAII

Prepared for:

Department of Public Works
County of Hawaii

Prepared by:

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March 1982

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Proposing Agency:

Department of Public Works
County of Hawaii

THIS STATEMENT WAS PREPARED IN ACCORDANCE WITH THE
ENVIRONMENTAL IMPACT STATEMENT REGULATIONS,
STATE OF HAWAII, AND SUBMITTED PURSUANT TO:
CHAPTER 343, HAWAII REVISED STATUTES

3/22/82
Date

Edward Harada
EDWARD HARADA, CHIEF ENGINEER

SUMMARY

I. DESCRIPTION OF PROPOSED ACTION

The Department of Public Works, County of Hawaii, proposes to construct a regional sewerage facility for Kailua-Kona. The regional system will collect sewage from the southern zone and transport it to the northern zone for treatment and disposal.

Separate facility plans are being prepared for the northern and southern zones. This environmental impact statement addresses only those actions proposed for the southern zone, which is a coastal strip extending from Waiaha to Laaloa, approximately 1 mile wide and 3 miles long. For the southern zone, proposed actions include the construction of interceptors, force mains, and pump stations along Alii Drive. A high-level interceptor to service the mauka areas is proposed for the future (year 2010) beyond the 20-year planning period. Residences in the agricultural district will remain on cesspools.

Sewerage facilities are needed because of the following conditions in the Kailua-Kona southern zone:

A. Land use plans call for intense urbanization along the coastal area, creating potential public health problems with the proliferating cesspools and private sewage treatment plants.

B. The porous nature of the Kona coastline allows cesspool and injection well leachate to seep virtually untreated to the coastal waters, thus causing water quality standards to be exceeded.

II. DESCRIPTION OF THE AFFECTED ENVIRONMENT

A. Physical/Biological

The project area is characterized by a relatively dry climate. Winds are from the southwest since the predominant northeast trades are deflected by Mauna Kea, Mauna Loa, and Hualalai.

Because of the porous substrata, the basal groundwater lens is very thin and has a low gradient of 0.5 to 3 feet per mile. The mixing of fresh groundwater and seawater by ocean tides extends several thousand feet to a few miles inland and results in brackish groundwater in most of the southern zone. There are no perennial streams.

Vegetation in the study area can be classified into three categories: coastal strand, urban landscaping, and dry, lowland vegetation, none of which contain endangered species.

B. Socio-Economic

The economy of the Kona area has evolved from one tied to agriculture to one centered around resort activities. Growth of the visitor sector stimulated a phenomenal population increase of 185 percent over the past decade (1970 to 1980), or 11 percent average annual growth rate. Future growth is anticipated, but at a lower average annual rate of 4 percent.

C. Coastal

Coastal currents exhibit a northwest set during ebb tide and a south-setting component at flood tide.

Water quality sampling of nearshore waters indicates maximum allowable values for certain nutrients are occasionally exceeded.

III. RELATIONSHIP OF THE PROPOSED ACTION TO LAND USE PLANS, POLICIES, AND CONTROLS

The proposed action is consistent with environmental quality and development policies stated in the State Land Use Law, County General Plan, Comprehensive Zoning Code, Coastal Zone Management Act, and 208 Water Quality Management Plan.

The permits required include the Shoreline Management Act permit and Shoreline Setback Variance.

IV. PROBABLE IMPACT AND MITIGATION MEASURES OF THE PROPOSED ACTIONS

There are three potentially significant impacts that could result from the proposed project.

A. Archaeological Resources

The entire project area is within the Kona Field System, a site eligible to the National Register of Historic Places. A qualified archaeologist will be hired to monitor construction. The Historic Sites Section of the Department of Land and Natural Resources will be contacted to determine the proper course of action in the event subsurface remains are encountered.

B. Financial

Property owners will incur initial costs to install laterals, backfill their cesspool, and perhaps pay an improvement district assessment charge for the collection lines. In addition, a monthly user charge will be assessed. Property owners located on the seaward side of Alii Drive may incur higher costs to connect if their property is located at a lower elevation than the sewer line since pumping may be necessary.

C. Growth

The capacity of the proposed wastewater system is based on the 208 Water Quality Plan population projections. The plan anticipated a controlled growth rate which is much lower than the growth rate over the past decade.

V. UNAVOIDABLE ADVERSE IMPACTS

The financial impacts are unavoidable. Growth will be dependent upon other factors, such as water supply and economic conditions. Odor may occasionally emanate from the pump station.

VI. ALTERNATIVES TO THE PROPOSED ACTION

Three alternative wastewater systems were evaluated:

A. No Action

Existing cesspools and private treatment plants along the coastline were determined to be unacceptable, primarily due to the potential adverse impact to coastal water quality from seepage and potential adverse public health impacts. Cesspools in the mauka agricultural-zoned lands would probably have minimal impact due to the distance from the shoreline.

B. Regional System

One sewage treatment facility would be built in the northern zone to serve both the northern and southern zones.

C. Subregional System

Separate treatment facilities would be proposed in the northern and southern zones.

The regional and subregional systems were almost equally cost effective. With a regional system, however, the wastewater effluent would be available in an area where the potential for wastewater reclamation (i.e., irrigation) is greater. Problems with septicity and treatability of sewage may arise, especially in the early, low-flow stages, and there will be less flexibility in phasing construction. It is believed, however, that the benefits to be gained by effluent reclamation by recreational or agricultural reuse outweigh these disadvantages.

VII. RELATIONSHIP BETWEEN LONG- AND SHORT-TERM USES OF MAN'S ENVIRONMENT

The present onsite methods are short-term expedients that will cause public health and water quality problems in the long term. The major reason for the proposed project is to protect the long-term uses of the coastal environment by curtailing the present impact of subsurface disposal methods, including cesspools and injection wells.

VIII. IRREVERSIBLE AND IRRETRIEVABLE RESOURCES COMMITTED

Two resources are irreversibly committed:

A. Land

Pump stations will preempt other land uses; sewers will take up space for utilities.

B. Capital

Labor and materials will be committed for construction and operation and maintenance.

IX. OFFSETTING CONSIDERATIONS OF GOVERNMENT POLICY

Restoration and preservation of water quality for public health, recreation, and other reasons have received high national priority through the Federal Water Pollution Control Act amendment of 1972. Financial resources were committed as necessary. Regional plans were instigated through Section 208 of that act to offset growth and land use impacts. Archaeological and other environmental impacts were offset through coordination in the Step 1, facility planning stage.

X. UNRESOLVED ISSUES

There is only one issue that remains unresolved, the extent of impact to the Kona Field System archaeological site. The resolution of this impact must await the preparation of construction plans and the review of these plans by the State Office of Historic Sites.

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CHAPTER I

PROJECT DESCRIPTION

PROJECT LOCATION

The Kailua-Kona southern zone study area is situated in the western portion of the island of Hawaii (see Figure I-1), the state's largest and geologically youngest island. Specifically, the study area is part of the North Kona judicial district, one of nine judicial districts on the island of Hawaii. The Kailua-Kona southern zone area encompasses an area along the coastal strip from Waiaha to Laaloa, approximately 1 mile wide and 3 miles long (see Figure I-2).

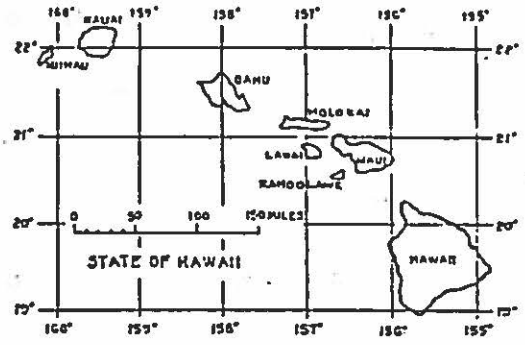
Facility planning is currently being conducted for three of the sub-areas of the North Kona district. These include Kailua-Kona northern zone, Kailua-Kona southern zone, and the Keauhou area. As shown on Figure I-2, the Kailua-Kona northern zone and the Keauhou area flank the Kailua-Kona southern zone, with each having a common boundary with the Kailua-Kona southern zone. Collectively, these three areas encompass most of the area in the North Kona district. The facility plans for the other areas--Kailua-Kona northern zone and Keauhou--are being prepared under separate cover by others.

North Kona District

The North Kona district is the third most populous district in Hawaii County, behind South Hilo and Puna. Major economic activities in this district are agriculture and tourism. Almost 60 percent of the hotel units on the island of Hawaii are located in the North Kona district.

PROBLEM DESCRIPTION

There is currently no municipal sewerage system in the Kailua-Kona southern zone study area. Waste flows are treated and disposed of by numerous small, private treatment facilities (for multi-family or resort developments) or by cesspools (for single family units).



KAILUA - KONA
(SOUTHERN ZONE)
STUDY AREA

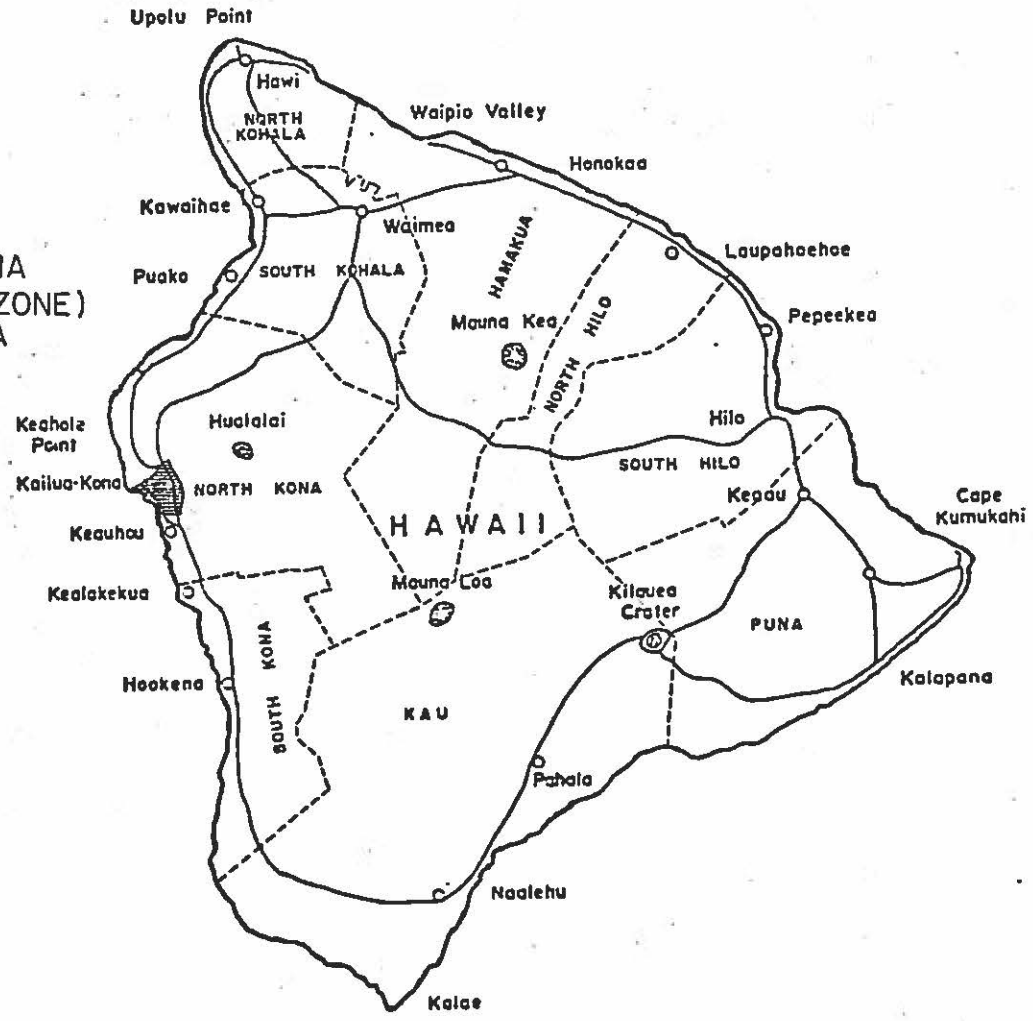


FIGURE I-1
LOCATION MAP

LEGEND

------ JUDICIAL BOUNDARY

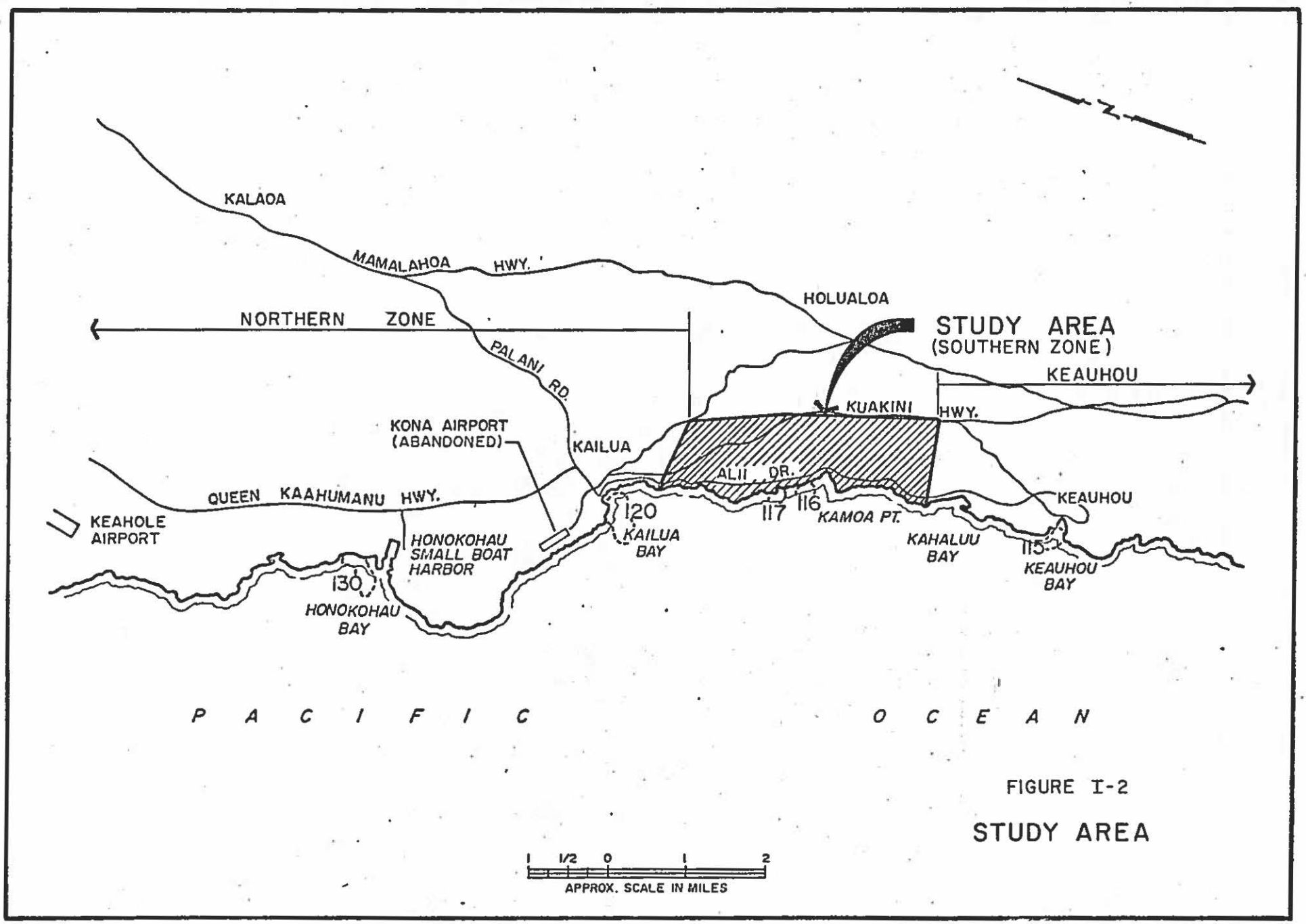


FIGURE I-2

STUDY AREA

Land use plans call for intense urbanization along the coastal areas, especially in the vicinity of Alii Drive. The attendant result of this urbanization would be a proliferation of cesspools and private treatment plants utilizing subsurface means of effluent disposal (e.g., injection wells).

The hydrogeology of the coastal lowlands is not fully conducive to subsurface disposal of effluent. In a recent State Department of Health (DOH) study of seepage of cesspool leachate in the area near Alii Drive, it was observed that fluorescent dye deposited into cesspools entered the shoreline waters shortly after being introduced (DOH, 1981). Based on this observation and the geology of the Kona area, it can be concluded that a portion of the wastewater discharged into cesspools enters the shoreline water virtually untreated. The DOH study recommends that sewers be constructed.

Also, there are numerous small, private treatment plants serving high-density apartment and condominium units. Many of these plants utilize injection wells as the method of disposal. Based on the results of the dye tracking investigation, injected effluent would be discharged to the shoreline waters within a very short time period.

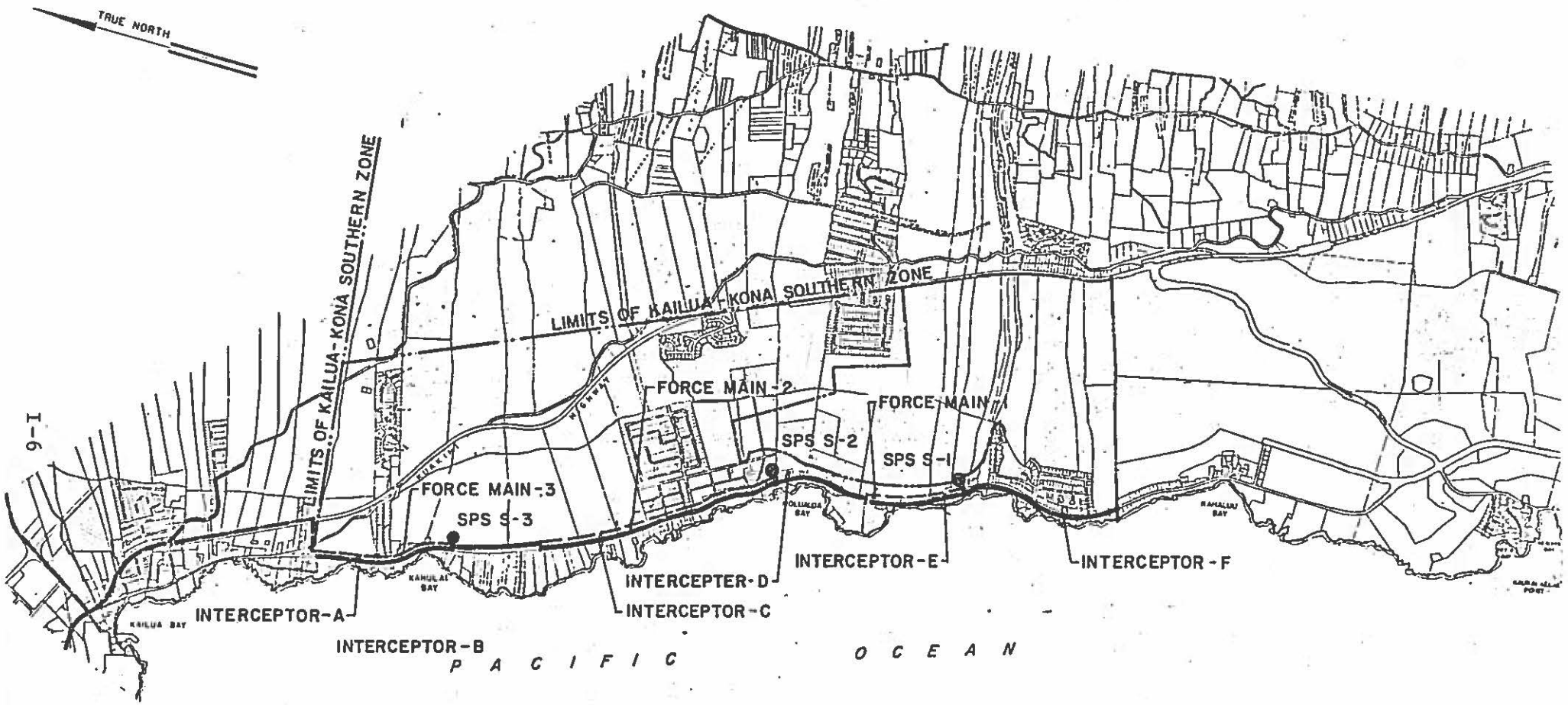
Results of water quality monitoring of the nearshore coastal waters show levels of nitrogen and phosphorus exceeding the levels delineated in Chapter 37A, Public Health Regulations. This would further indicate that cesspool seepage and/or injected effluent is being discharged into shoreline waters.

DESCRIPTION OF THE PROPOSED ACTION

The general objectives of the proposed action are as follows:

1. To eliminate the risks and nuisances to public health and welfare that are attributable to sewage disposal and
2. To preserve the quality of nearshore waters and groundwaters.

To meet these objectives, the proposed action calls for the construction of a sewage collection and transmission system, including pump stations, force mains, and gravity interceptors for the area designated as



LEGEND

- TRIBUTARY AREA BOUNDARY
- GRAVITY SEWER
- FORCE MAIN
- EXISTING SYSTEM
- SEWAGE PUMP STATION

GRAPHIC SCALE

1000' 0 1000' 2000' 3000'

SCALE IN FEET

FIGURE I-3

PROPOSED SEWERAGE SYSTEM FOR THE
KAILUA-KONA SOUTHERN ZONE

TABLE I-1

DESIGN DATA

Sewage Pump Station	Design Flow (mgd)
SPS-1	2.80
SPS-2	8.05
SPS-3	10.10

Force Mains	Design Size
FM-1	1600' @ 14"
FM-2	5750' @ 21"
FM-3	2700' @ 24"

Interceptor Lines	Design Size
A	2650' @ 15"
B	1500' @ 36"
C	1250' @ 18", 2550' @ 21", 1650' @ 24", 250' @ 27"
D	500' @ 18", 1300' @ 21"
E	350' @ 15", 1250' @ 18"
F	1300' @ 15", 1800' @ 18"

requirements and design modifications related to the ultimately high projected quantities of sewage to be handled.

Grading and excavation will be required for each pump station. The largest pump station (SPS-2) will occupy a land area about 50 feet by 60 feet and will be about 22 feet deep.

BASIS OF FLOW PROJECTIONS

Sewage flow projections were based on population projections and on the following design criteria:

Average Per Capita Flow (includes dry weather infiltration)	100 gpcd
Wet Weather Infiltration (sewers above groundwater table)	1,500 gpad
Commercial and Industrial Areas	4,000 gpad
Average Design Flow	Sewage flow + dry weather infiltration
Maximum Daily Flow	(Sewage flow) x (Babbit max factor) + dry weather infiltration
Peak Flow	Maximum daily flow + wet weather infiltration

For the resident population projections, a 4 percent annual growth rate was determined to be the most reasonable based on economic activity forecasts and land use designations. The tourist population projection is based on projected hotel units and anticipated occupancy rates.

As shown in Table I-2, the average design flow generated by a combination of residents and visitors is expected to increase from 0.37 mgd in 1980 to 0.88 mgd in 2000 and 1.92 mgd in 2020.

PHASING

Proper phasing of the construction of the recommended wastewater facilities is essential. This will assure that the most serious of the

TABLE I-2

ESTIMATED SEWAGE QUANTITIES FOR THE SOUTHERN ZONE

Description	Year 1980	1985	1995	2000	2005	2015	2020	Ultimate
Population (thousands)								
Resident	2.9	3.6	5.3	6.5	7.9	11.7	14.3	45
Tourist	0.8	1.1	1.8	2.3	2.7	4.0	4.9	11
Average Flow Per Capita (gpd)		100	100		100	100		100
Design Average Flow (mgd)	0.37	0.47	0.71	0.88	1.06	1.57	1.92	5.6
Design Maximum Flow (mgd)	1.40	1.72	2.37	2.85	3.31	4.52	5.32	12.5
Wet Weather Infiltration (mgd)	0.3	0.3	0.4	0.5	0.6	0.8	0.9	2.5
Design Peak Flow (mgd)	1.7	2.0	2.8	3.35	3.9	5.32	6.22	15
Total BOD (lbs/day)	740	940	1420	1760	2120	3140	3840	11,200
Total SS (lbs/day)	740	940	1420	1760	2120	3140	3840	11,200

Notes:
1. Resident population based on four percent annual growth.
2. Average flow per capita includes dry weather infiltration.
3. BOD and SS loads based on 0.20 lbs/capita-day.
4. Ultimate population based on existing land use.

health hazards and water quality problems will be initially considered within the allocation of available funds.

The key factors of the health needs in the project area were identified and the priorities of the facilities were determined according to the urgency of the key factors. The key factors selected were (1) the existing public health conditions, (2) the potential impairment of potable water sources, (3) the present and projected population densities, and (4) past or potential future contamination of nearshore coastal waters.

The priority items for the Kailua-Kona southern zone must be closely coordinated with those established in the northern zone (by R.M. Towill, 1981). In general, the highest priority is given to the sewers and pump stations in the low-lying coastal area. The high-level interceptor is anticipated to be needed in the year 2010, well beyond the planning period.

The priority listing in Table I-3 is based on incrementally serving the areas closest to the northern zone. Construction is tentatively scheduled to begin in 1985, depending on the availability of Federal, State, and County funding.

FINANCING

Construction costs will be proportioned among the federal, state, and local governments and the property owners. Under the Federal Construction Grants Program administered by the Environmental Protection Agency (EPA), the federal share is 75 percent for interceptors, force mains, pump stations, treatment plant, and effluent disposal system. Collection systems are eligible but have very low priority. If federal funding is not available, the county's improvement district mechanism will be implemented, whereby the affected property owners will be assessed for their share of the collector sewer cost. Certain costs are not eligible for federal funding, such as land acquisition costs. These ineligible costs will be shared by the property owners and the county.

Capital costs to be borne by the property owners include the backfilling of cesspools, installing house laterals, and, if necessary, the improvement district assessment charge for the collector sewers. In addition, a monthly user charge will be assessed to partially cover the

TABLE I-3

PRIORITY SCHEDULE

Priority	Item	Quantity
1	SPS S-3	10.1 mgd
	Force Main 3	2,700 lf @ 24"
	Interceptor A	
	Interceptor B	
2	SPS S-2	8.05 mgd
	Force Main 2	5,750 lf @ 21"
	Interceptor C	
	Interceptor D	
3	SPS S-1	2.8 mgd
	Force Main 1	1,600 lf @ 14"
	Interceptor E	
	Interceptor F	

cost of operating and maintaining the wastewater collection and treatment system. For the user charge and improvement district assessments, property owners are categorized into one of three groups: residential, commercial/industrial, or hotel/apartment/resort. Assessment rates differ for each group, as follows:

Property Owner	ID Assessment ($/sq ft)	Monthly User Charge
Residential	$0.08	50% of water bill with $5.00 maximum
Commercial/Industrial	$0.10	50% of water bill
Hotel/Apt/Resort	$0.12	50% of water bill

The proportionate share of the construction costs is summarized in Table I-4.

TABLE I-4

SUMMARY OF PROPORTIONATE SHARE OF TOTAL CONSTRUCTION COST

Item	Total Cost	Federal Share	State Share	County of Hawaii Share	Property Owners Share
Interceptor Sewers, Sewage Pump Station, Force Mains	$5,350,000	75%	10%	15%	-
Collector Sewers (ID)	*	0	-	*	*
Backfill Cesspools	$300-$500	0	-		100%
Install Laterals	$1,500-$3,000	0	-	-	100%

* Variable, depending on pattern of future development.

CHAPTER II

DESCRIPTION OF THE AFFECTED ENVIRONMENT

The physical, socio-economic, and coastal characteristics of the affected environment are described from both a local and a regional perspective.

PHYSICAL

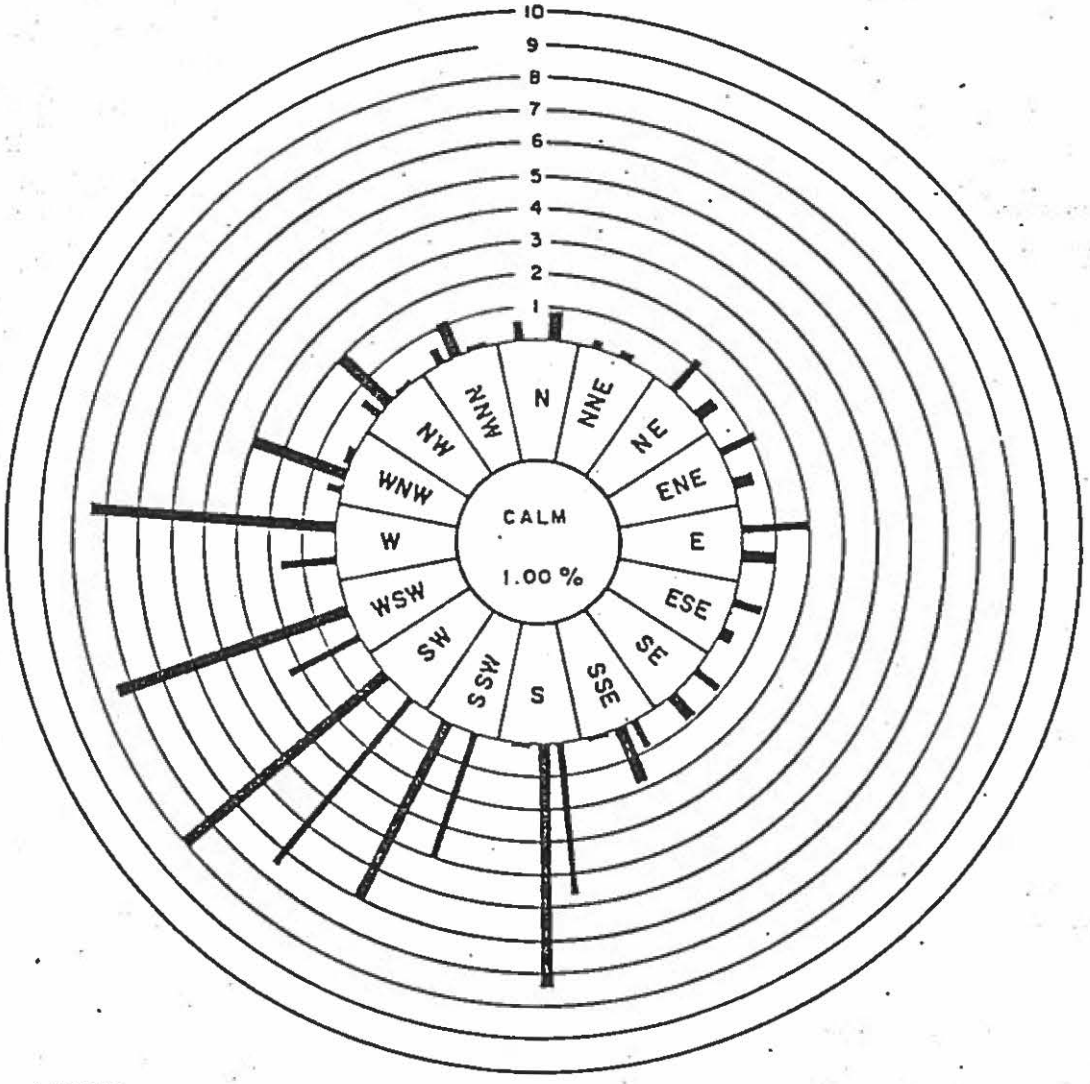
Climate

The climate in the Kona area is generally warm and semi-tropical, which is characteristic of coastal areas located on the leeward side of the Hawaiian Islands. Seasonal changes are mild, and the generally uniform weather is broken only by infrequent cyclonic storms (termed "Kona storms") originating from the north and usually occurring during the winter months. Temperatures are fairly uniform, except at the higher elevations, and skies are clear or partly cloudy 60 to 70 percent of the time.

Temperature. The seasonal variation of the temperature is small due to the tempering effect of the surrounding ocean. The average temperatures of the warmest and coolest months of the year differ by only about 9 degrees F, which is much less than the daily range of 10 to 18 degrees. Mean daily maximum and mean daily minimum temperatures are 83 and 68 ° F respectively.

Winds. In general, the prevailing winds throughout the year in the Hawaiian Islands are the northeasterly trades, but, along the Kona coast, winds are predominantly from the southwest due to the interacting and sheltering effect of the high land masses of Mauna Kea, Mauna Loa, and Hualalai. Diurnal heating and cooling of the island give rise to onshore sea breezes during the day and offshore land breezes at night. Average wind speed is 10 to 15 mph. During "Kona" storms, which occur two to three times per year on the average, winds become gusty, with velocities approaching 30 to 40 mph. The wind rose compiled for Kona Airport is shown on Figure II-1.

NOTE: THE PERCENTAGES AND THE DIRECTIONS ARE AVERAGES DURING THE 9 YEAR PERIOD, 1957 TO 1965, INCLUSIVE.



LEGEND

3.0 - 8.0 MPH

8.0 - 18.0 MPH

18.0 - 24.0 MPH

OVER 24.0 MPH

—8%— TOTAL % OF YEAR

SOURCE: - HONOLULU U S W B

FIGURE II - I

WIND ROSE
KAILUA - KONA AIRPORT

Rainfall. Annual rainfall along the coastal region averages only about 20 inches but increases at higher elevations. At the 3,000-foot elevation on the slopes of Hualalai Mountain, for example, the annual rainfall totals 75 to 100 inches. As shown in Table II-1, the wetter periods of the year usually occur during the months of May to September, generally the dry months for the rest of the state. Rainfall maximums tend to occur in late afternoon and evening from showers that form within sea breezes that move onshore and upslope during the day. Figure II-2 depicts the distribution of annual rainfall for the island of Hawaii in general.

Topography

Lands in the Kona region generally slope shoreward at an eight to ten percent grade. In the lower elevations along the coastline, however, the land is relatively flat or gently sloping. Because of the low rainfall and rocky conditions, the area is marked only by relatively small, normally dry gulches.

Hydrogeology

In the study area, which lies on the slope of Hualalai, the geology is singularly dominated by the Hualalai volcanic series of rocks. Erosion has not yet deeply affected the surface, and no significant drainage pattern has been established. Although some sedimentary rocks may be found in narrow fringes along the coastline, unlike the older islands of the Hawaiian chain, there is no comparatively level coastal plain comprised of a wedge of sediment that acts as a caprock.

The basaltic substrata--consisting of poorly layered, heterogeneous sequences of aa, clinker, and pahoehoe--are generally extremely porous and permeable, but specific areas, such as dense aa flows, may be nearly impermeable.

Because the basaltic rocks are highly permeable and the rainfall is low and of spotty distribution, there are no perennial streams in the area. Overland flows are negligible, except during severe storms when gulches may have heavy discharges.

TABLE II-1

MONTHLY AND ANNUAL PRECIPITATION DATA, KONA AIRPORT

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1951-1960	3.00	1.73	2.27	1.31	2.31	2.25	2.43	2.31	1.88	1.70	1.27	1.96	24.42
1963	4.78	1.63	3.65	10.71	2.52	1.46	2.28	2.86	2.79	0.48	0.48	0.76	34.40
1964	0.54	0.95	3.92	2.15	1.20	3.51	0.77	1.59	1.32	1.20	1.18	2.63	20.96
1965	1.25	1.58	1.15	2.40	3.31	2.23	2.43	5.03	2.04	3.52	4.60	0.06	29.60
1966	0.20	2.54	0.20	0.66	2.92	0.94	2.54	1.39	1.33	4.56	5.17	1.25	23.70
1967	0.71	1.24	1.57	1.66	3.07	1.80	3.39	1.22	2.18	1.31	1.42	3.04	22.61
1968	3.87	3.19	1.70	5.50	2.54	0.85	2.04	2.06	0.86	3.21	0.14	5.91	31.87
1969	5.73	2.56	0.11	1.85	2.14	3.63	4.00	1.76	2.73	0.35	1.21	1.09	27.16
1970	1.51	0.32	0.00	0.39	2.32	3.18	3.15	3.32	3.70	0.33	2.10	0.38	20.70
1971	11.14	0.40	1.70	2.06	1.47	0.53	3.02	0.86	3.42	0.07	2.19	0.42	27.28
1972	2.71	3.11	3.14	1.43	3.61	2.08	4.82	0.84	2.67	0.43	0.09	3.89	28.82
Average	3.12	1.74	1.99	2.10	2.41	2.14	2.64	2.20	2.09	1.63	1.57	1.95	25.58
Years	20	20	20	20	20	20	20	20	20	20	20	20	

Source: U.S. Weather Bureau

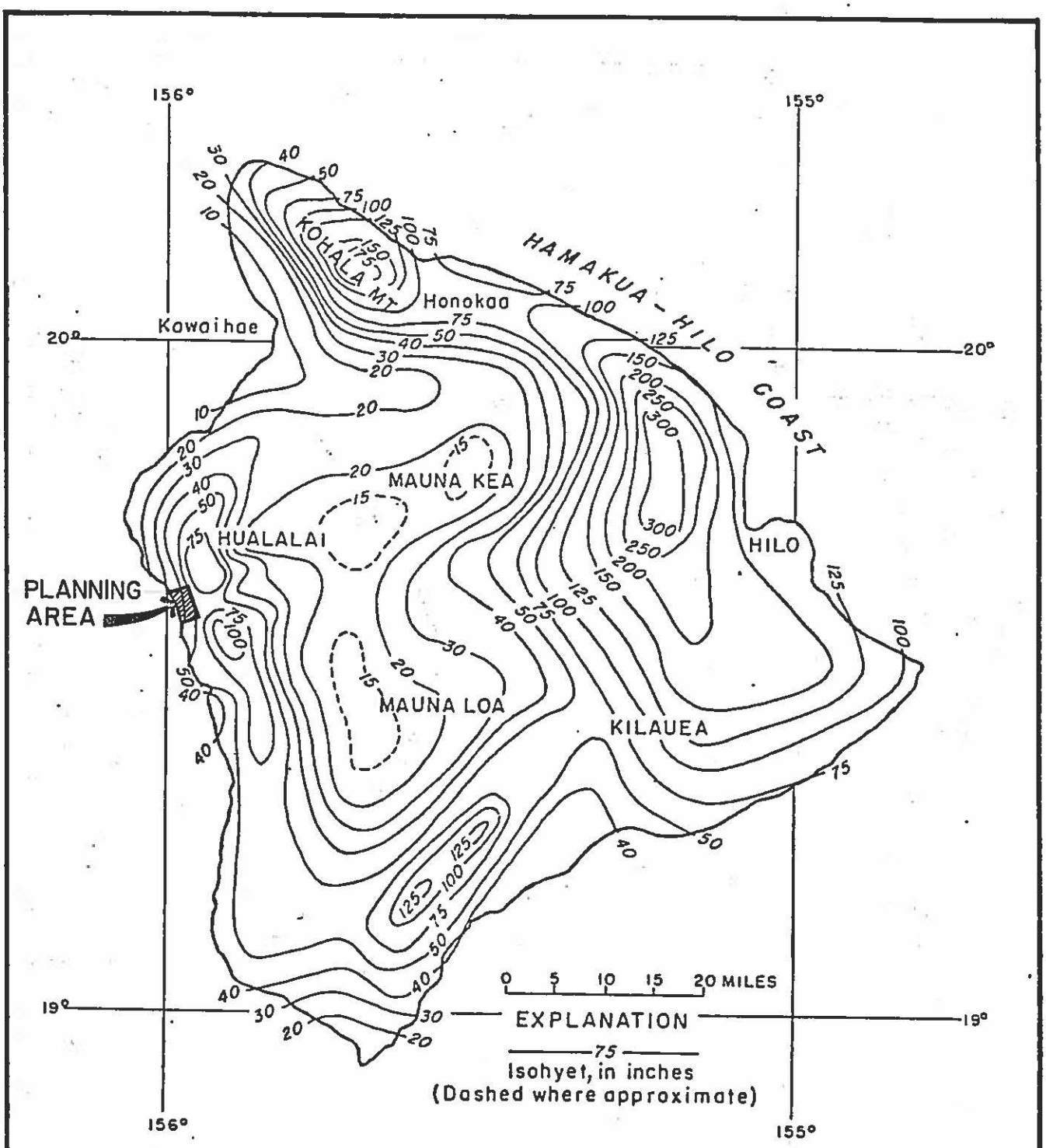


FIGURE II-2

RAINFALL DISTRIBUTION ISLAND OF HAWAII

SOURCE: THE WATER RESOURCES OF THE KONA AREA, U.S.G.S. CIRCULAR C46

Groundwater occurs as a thin, unconfined basal lens with low artesian heads. At the coast, for example, heads approach zero and are about 1 foot or less at a distance 1,000 feet inland. Within 2 to 3 miles from shore, the basal lens rises on a gradient of 1/2-foot to 3 feet per mile. In general, within several thousand feet of the coast, the basal water is brackish, with a chloride content of 1,000 to 2,000 ppm. Extremely low chloride water (10 ppm), however, is currently obtained by the County of Hawaii for domestic use from two wells located 6,000 feet inland from Kahaluu Bay.

Because of the porous character of the substrata and the small groundwater recharge, the possibility of finding large supplies of fresh basal water at depths less than 1,000 to 1,500 feet seems remote. The flow of fresh water through the aquifer probably is not sufficient to offset mixing with sea water, except at considerable distances inland.

Infrared investigations of Fischer et al. (1966) and Adams et al. (1969) revealed only a few points of concentrated freshwater discharges along the coast of the study area (Figure II-3). The largest discharge in the area is located off Kailua Bay. Discharges of lesser magnitude occur north of Kamoa Point, but none were discernible between Kamoa Point and Kahaluu Bay.

Soils

According to the USDA (1973), the soils in the Kailua-Kona southern zone study area have been classified into four soil series: Punaluu (rPYD), Kaimu (rKED), Waiaha (WHC), and Kainaliu (KEC) (see Figure II-4). The Punaluu and Kaimu soils are both well-drained, thin, organic soils. These soils differ in that the Punaluu soils are underlain by pahoehoe bedrock, while the Kaimu soils have an aa lava bedrock. Pahoehoe has very slow permeability, but water moves rapidly through cracks. The organic (peat) topsoil and aa substratum are rapidly permeable.

The Waiaha and Kainaliu soils are both well-drained, rapidly permeable, extremely stony soils formed in volcanic ash. The Waiaha soils have a silt loam texture underlain by pahoehoe substratum. The Kainaliu soils have a fine, silty clay loam texture and are underlain by aa substratum.

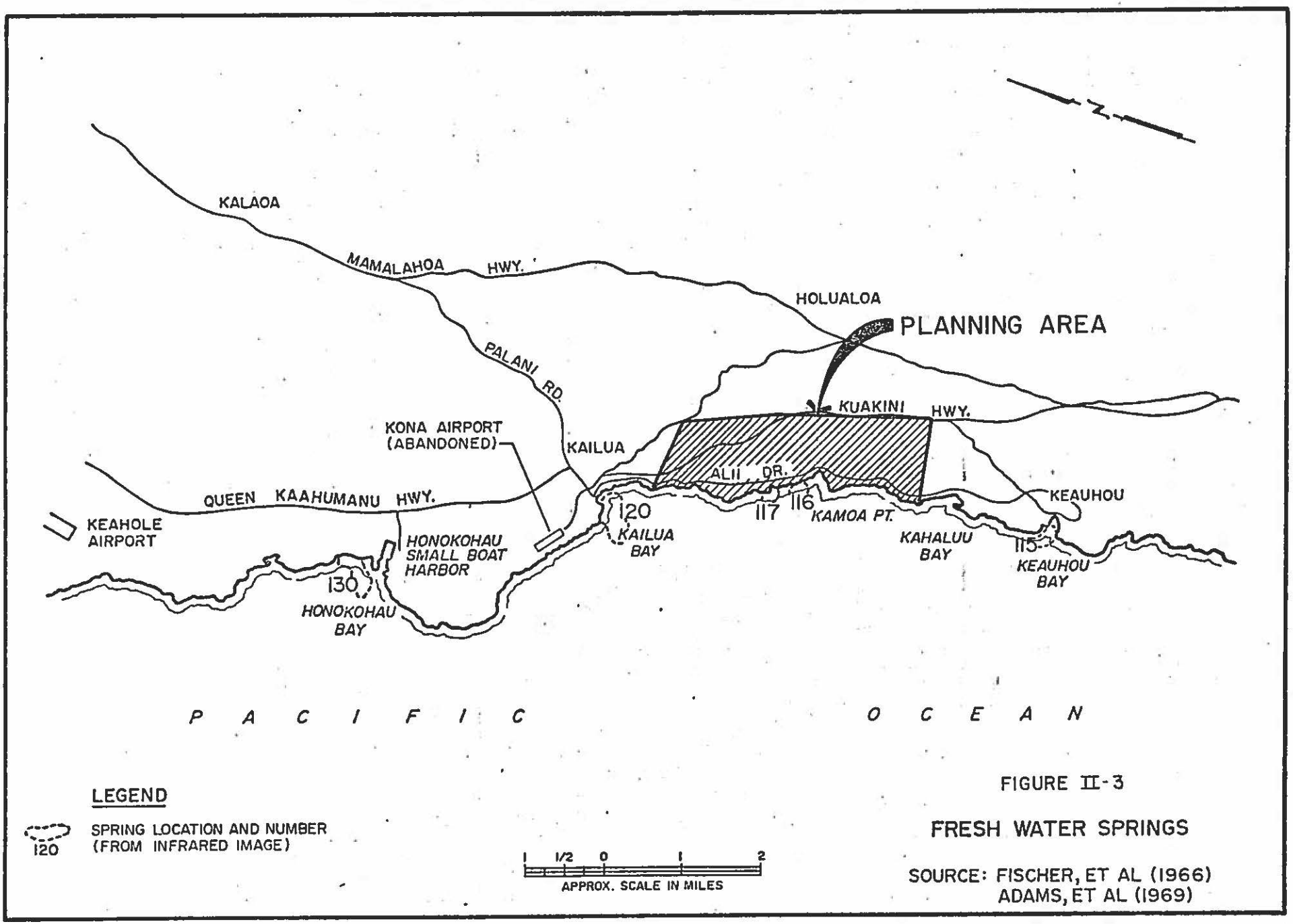
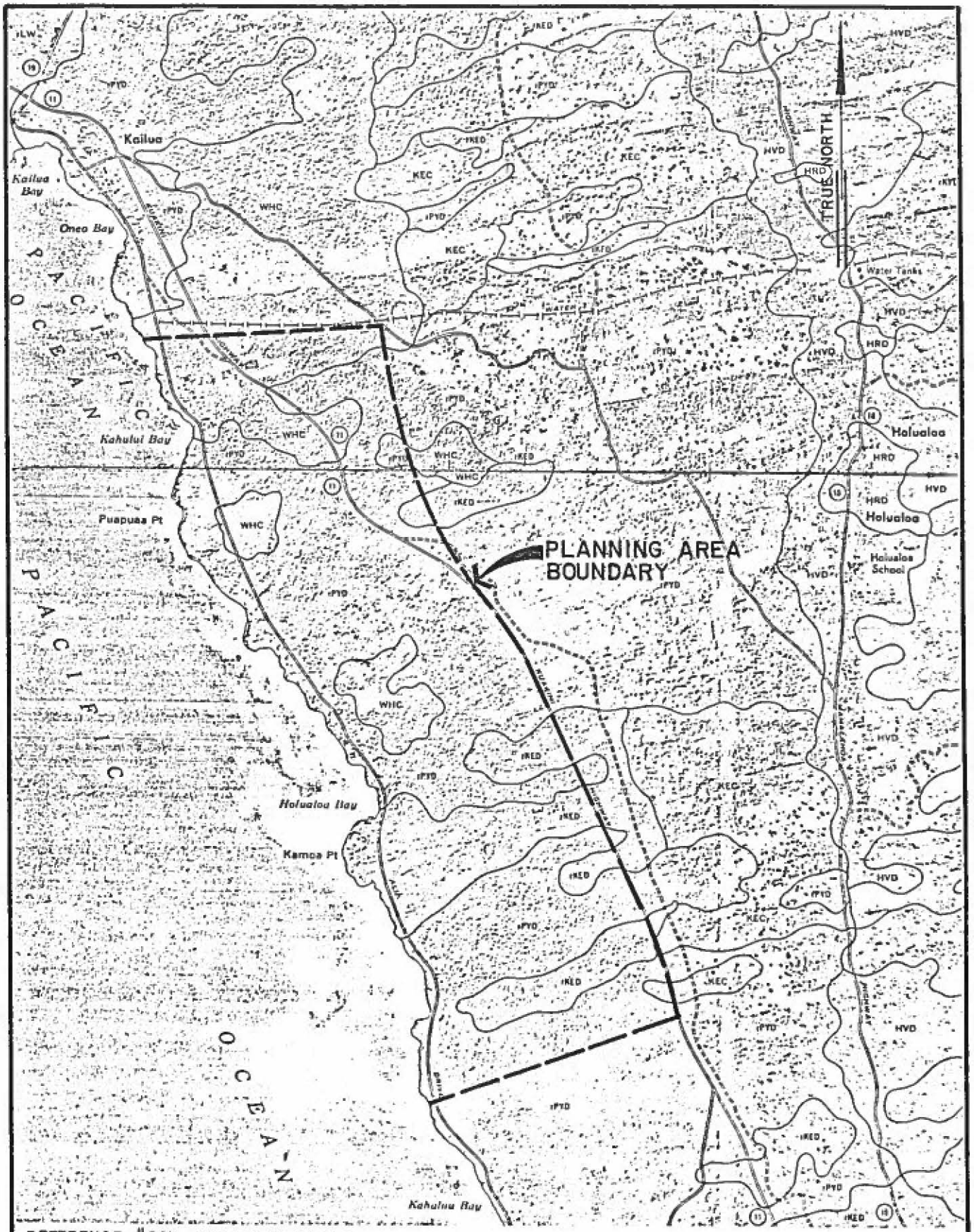


FIGURE II-3

FRESH WATER SPRINGS

SOURCE: FISCHER, ET AL (1966)
ADAMS, ET AL (1969)



REFERENCE: "SOIL SURVEY OF ISLAND OF HAWAII, STATE OF HAWAII" BY USDA 1973

FIGURE II-4

SOIL SURVEY

0 1/4 1/2 3/4 1

SCALE IN MILES

All four soil series have only slight erosion hazard.

Soils with agricultural value have been identified by the State Department of Agriculture. Within the study area (Kailua-Kona southern zone), there are no prime agricultural lands. Lands with less than prime agricultural value exist in the area mauka of Kamoa Point and Disappearing Sands Beach (Departent of Agriculture, 1977).

Cultural Resources

An inventory of historic and archaeological resources has been compiled by the Department of Land and Natural Resources, Office of Historic Sites (see Figure II-5). Only one of the sites, Kamoa Point complex (2059), is on the State and National Register of Historic Places. Two sites determined to be eligible for the National Register are the Kona Field System (6601) and the Great Wall of Kuakini (6302). The Kona Field System encompasses the entire study area. The Kuakini Wall traverses the length of the study area midway between Alii Drive and Kuakini Highway.

Table II-2 lists the sites that are part of the Department of Land and Natural Resources' inventory.

Flora and Fauna

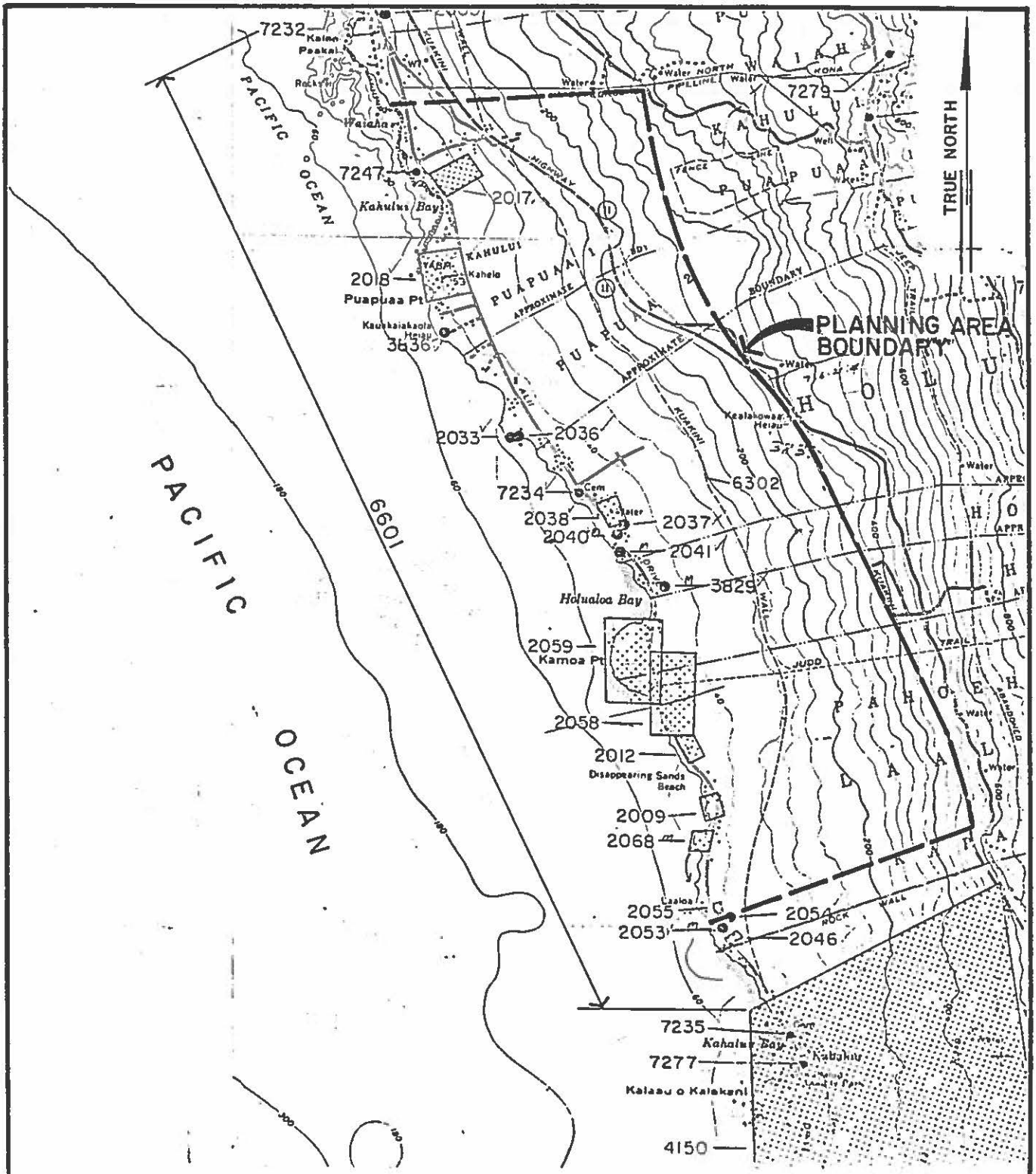
Vegetation in the study area can be classified into three categories: coastal strand, urban landscaping, and dry, lowland vegetation.

The coastal strand fringes the upper reaches of the waves. They include plants typical of that habitat, such as naupaka (*Scaevola taccada*) and pohuehue (*Ipomoea pes-caprae*).

Within the built-up area, natural vegetation has been replaced by introduced ornamental plants such as bougainvillea.

Between Alii Drive and the mauka limits of the study area, there are stretches of undeveloped land characterized by barren lava and lowland vegetation consisting of kiawe, lantana, koa haole, and pasture grasses. Mongoose, rat, and mice can be observed in this area.

There are no endangered plant or animal species in the study area.



REFERENCE: DLNR

FIGURE II - 5

HISTORIC & ARCHAEOLOGICAL RESOURCES

TABLE II-2

INVENTORY OF ARCHAEOLOGICAL AND HISTORIC SITES

10-28 Quad

2005	Auhaukeae Platform	2017	Kahului Complex
7247	Henderson Home		

10-37 Quad

2018	Puapuaa Complex	2058	Kaumalumalu Complex
3836	Kauakaiakaola Heiau	2012	Pahoehoe Complex
2033	Hamakaokahai Ko'a	2009	Kaukalua Heiau
2036	House Platform	2068	Laaloa Complex
7234	Holualoa Stone Church Ruins	2055	Laaloa Burials
2038	Holualoa Complex	2054	Laaloa Housesite
2037	Costa Cave	2053	Laaloa Point Platform
2040	House Site	2046	Kapalaalaea Complex
2041	House Site	6601	Kona Field System*
3829	Heiau Hikapaia	6302	Great Wall of Kuakini*
2059	Kamoa Point Complex**		

* Determined to be eligible for inclusion in the National Register of Historic Places.

** Hawaii, November 2, 1977; National, November 2, 1977.

Wetlands. Wetlands are a special category of flora and fauna because of their large-scale decimation in the past with the consequent loss of this habitat for endangered native species. According to available wetland inventories (Elliott and Hall, 1977; Shallenberger, 1977), there are no wetlands within the study area. The closest wetland is Aimakapa Fishpond, located about 5 miles north of Kailua near Honokohau Bay.

A special type of coastal pond unique to the Kona coast and the island of Maui is called an anchialine pond. These ponds are defined as "shoreline pools without surface connections to the sea, having waters of measurable salinity and showing tidal rhythms" (Maciolek and Brock, 1974). These ponds are habitats for unusual native fauna, such as blind red shrimp. Within the study area there are no anchialine ponds. The closest ponds are just outside the study area near Kahaluu Bay. These ponds are not considered to possess high natural value compared to other ponds found in the region (Maciolek and Brock, 1974).

Natural Hazards

Natural hazards of concern in the study area include tsunami, storm flooding, earthquakes, and volcanic hazards.

Flooding. The coastal high hazard zone from tsunami or storm waves crosses Alii Drive when the road alignment is close to the shoreline. This occurs around Kahului Bay, Holualoa Bay, and Disappearing Sands Beach. The 100-year flood boundary parallels the coastal high hazard boundary. Inland flood hazard areas (100-year flood) consist of four swales, one mauka of Kahului Bay, two mauka of Holualoa Bay, and another above Disappearing Sands Beach (see Figure II-6). These flood limits were defined by the U.S. Army Corps of Engineers for the HUD National Flood Insurance Program. Upon request, the Army Corps of Engineer has evaluated the flood hazard potential for the three pump stations as follows:

a. Site 1. The proposed site is not within a designated flood plain area and is classified a Zone C, or area of minimal flooding. Zone C areas are not considered special flood hazard areas.

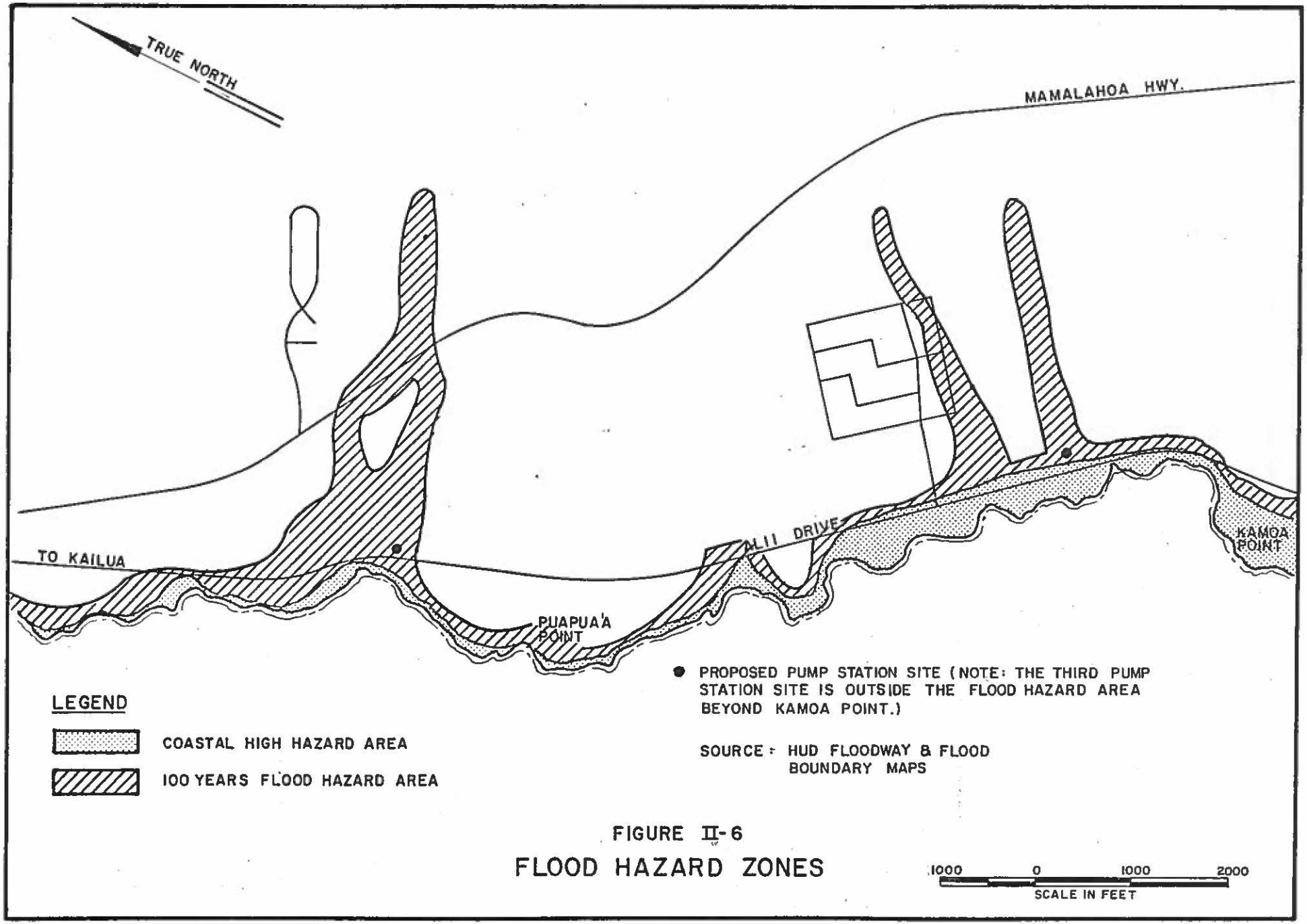


FIGURE II-6

FLOOD HAZARD ZONES

b. Site 2. The proposed site is located within the coastal flood plain and is subject to 100-year tsunami inundation where the approximate tsunami elevation is 11 feet above Mean Sea Level. The 100-year event has a one percent chance of being equalled or exceeded in any given year. A portion of the site may also lie within a designated riverine flood plain area of Zone A designation, or approximate areas of the 100-year flood. Under the FIA flood study, no flood elevation data were established for Zone A areas since detailed stream analyses were not conducted in these areas.

c. Site 3. The proposed site is situated within the Waiaha Springs flood plain of Zone A designation, and is also subject to 100-year riverine flooding.

Proposed public facilities such as sanitary sewer systems should be located and constructed to minimize or eliminate flood damage. They should be designed to prevent the infiltration of flood waters into the system and discharges from the systems into flood waters.

Earthquake. The seismic zone for the Big Island, as indicated in the Uniform Building Code, is zone 3 (potential major damage). Structural design criteria for lateral loads have to be twice those of zone 2.

Volcanic. Volcanic hazard zones have been determined for the island of Hawaii (Mullineaux, 1974). The study area is in a zone of relatively high risk ("D/E" on a scale of "A" to "F" with "F" being the highest).

SOCIO-ECONOMIC ENVIRONMENT

The economic and social profile of the Kona area has evolved from one closely tied to agriculture to one centered around resort activities. While the economic pressure associated with agriculture has caused it to decline in importance, an accelerated growth of tourism has occurred and made the tourist industry a major factor in the area.

Economic Activities

Kona was once an agricultural community concerned primarily with crop production and livestock. In the past much acreage was found to be suit-

able for growing macadamia nuts, coffee, and other tropical fruits and vegetables. For the Kona district, the crop production industry itself accounted for $3.2 million in 1973, with coffee credited for about half that total. It is projected that, by 1985, total income from crops will reach a maximum of $24 million, with macadamia nuts and avocadoes overtaking coffee as the leading income producers. Livestock and poultry revenues will also increase, although at a more moderate rate, from $2 million in 1971 to $5 million in 1985. Agriculture, while still a very viable industry, is declining in economic ranking in relation to tourism. The limited growth of agriculture is due to competition in the world market and increased production and transportation costs.

Tourism, on the other hand, accounted for revenues on the order of $80 million in 1973. During the period 1960 to 1970, tourism was growing at an average rate of 20 percent per year. If one assumes that the growth of tourism parallels projected demands for occupied transient accommodations, it can be said that tourism will increase by a factor of 1.7 between 1973 and 1985. Tourists visit Kona for its historical attractions, scenic points, deep-sea fishing, lifestyle, rest and relaxation accommodations, and convenience as a stopover point in their around-the-island tours.

With the shift from agriculture to tourism and related industries such as construction and retail trade, the median family income has increased. Between 1959 and 1969, for example, the median family income of the North Kona district increased about 104 percent, from about $4,900 to about $10,000 per year, as shown in Table II-3. In general, income in this area compares quite favorably with that of Hawaii and Honolulu counties and the state. Based on past trends and the fact that other areas of the state have been able to support sewerage projects, financing and supporting a sewerage project here are possible.

Employment Characteristics

Within the past decade, agriculture and farm work declined in major proportions in the North Kona district, dipping from 36.5 percent of the employed force in 1960 to 7.3 percent in 1970. The total work force

TABLE II-3

FAMILY INCOME CHARACTERISTICS

(by percent)

Family Income Level (Annual)	North Kona		1969		Hawaii County 1969	Honolulu 1969	Statewide 1969
	1959	1969	Census Tract 215*	Census Tract 216*			
Below $3,000	34.5	11.7	11.2	12.2	8.4	6.3	6.7
3,000-6,999	45.7	20.2	24.3	15.7	23.0	16.0	18.0
7,000-9,999	8.8	18.8	23.4	13.8	20.3	16.5	16.5
10,000-14,999	5.4	25.7	24.4	27.1	25.1	26.1	26.2
15,000-24,999	3.4	16.0	11.3	22.5	18.1	26.5	24.8
25,000 and over	2.2	7.0	5.4	8.7	5.1	8.5	7.8
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Median Family Income in Constant 1969 Dollars**	4900	10,000	8663	12,121	9750	12,035	11,554

* Census Tract 216 extends from Palani Road to Kamoa Point and includes the southern zone and most of the northern zone; most housing subdivisions around Kailua are included here. Census Tract 215 includes the remainder of North Kona.

** Adjusted for a 24.3 percent difference between 1959 and 1969 using Consumer Price Index for Honolulu.

Source: Community Profiles for Hawaii, February 1973 and 1974 State Data Book, Department of Planning and Economic Development, State of Hawaii.

increased 25 percent during this period, with the construction industry experiencing the largest increase.

Table II-4 gives 1970 census information on changes in occupation characteristics for North Kona. More recent data collected for the 1975 OEO census update aggregated North and South Kona; therefore, the data are not comparable to the 1960 and 1970 census data for North Kona. Employment characteristics from the 1980 census were still unavailable at the time of this study.

Land Use

To some extent, county ordinances on land use control population growth, its direction, and the economic and social activities within the region. Population and its related activities, in turn, directly influence the emissions of waste material to the environment.

As shown on Figure II-7 and in Table II-5, land allocated to agriculture accounts for more than half the land use and represents the largest designation. This indicates that agriculture--of which coffee, macadamia nuts, and fresh farm crops are the major commodities--is still a significant part of this community. The Kona Community Development Plan (KCDP) submitted proposals for the preservation of the agricultural economy. One proposal called for the preservation or zoning of land with soil, topography, and rainfall characteristics suitable for agriculture. It also encouraged the government to allow the expansion of macadamia nut and coffee operations.

Although resort land comprises only a small percentage of the total acreage (see Figure II-8), tourism now accounts for the largest share of revenue generated in the Kona area. The income from this source, however, is sporadic, and, because such a large segment of the population is affected by it, the KCDP recommended that any land use decisions affecting the resort industry be tightly regulated. Specifically, the zoning of land for resort facilities should be aimed at permitting only as many resort facilities as are needed to keep up with the demand.

Regarding other urban uses, the KCDP urged a policy aimed at keeping the cost of living at a minimum. For one thing, it recommended that more areas be zoned to encourage development of commercial service centers.

TABLE II-4

OCCUPATION CHARACTERISTICS

(North Kona)

	1960 (%)	1970 (%)	Difference
Professional & Technical Workers	7.5	8.5	+ 1.0
Managers & Administrators	7.3	4.2	- 3.1
Sales Workers	4.0	5.5	+ 1.5
Clerical	4.7	16.6	+11.9
Craftsmen	9.4	19.9	+10.5
Operatives & Transportation	7.2	11.1	+ 3.9
Laborers	4.7	4.9	+ 0.2
Farm Workers	36.5	7.3	-29.2
Service Workers	15.6	18.6	+ 3.0
Private Household Workers	3.1	0.6	- 2.5
	100.0	100.0	

Source: U.S. Bureau of the Census, Census of Population, 1960, 1970

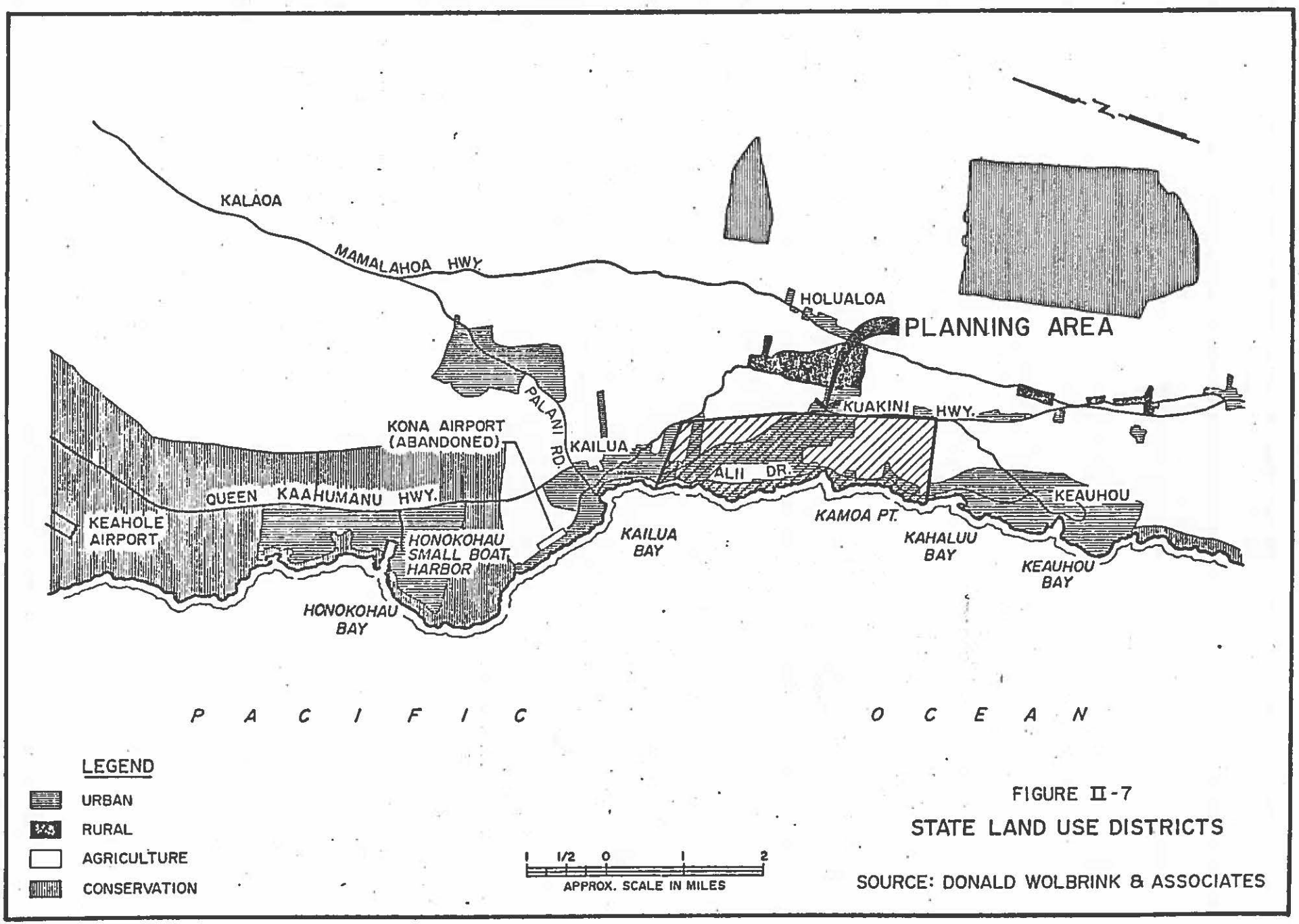


FIGURE II-7

STATE LAND USE DISTRICTS

SOURCE: DONALD WOLBRINK & ASSOCIATES

TABLE II-5

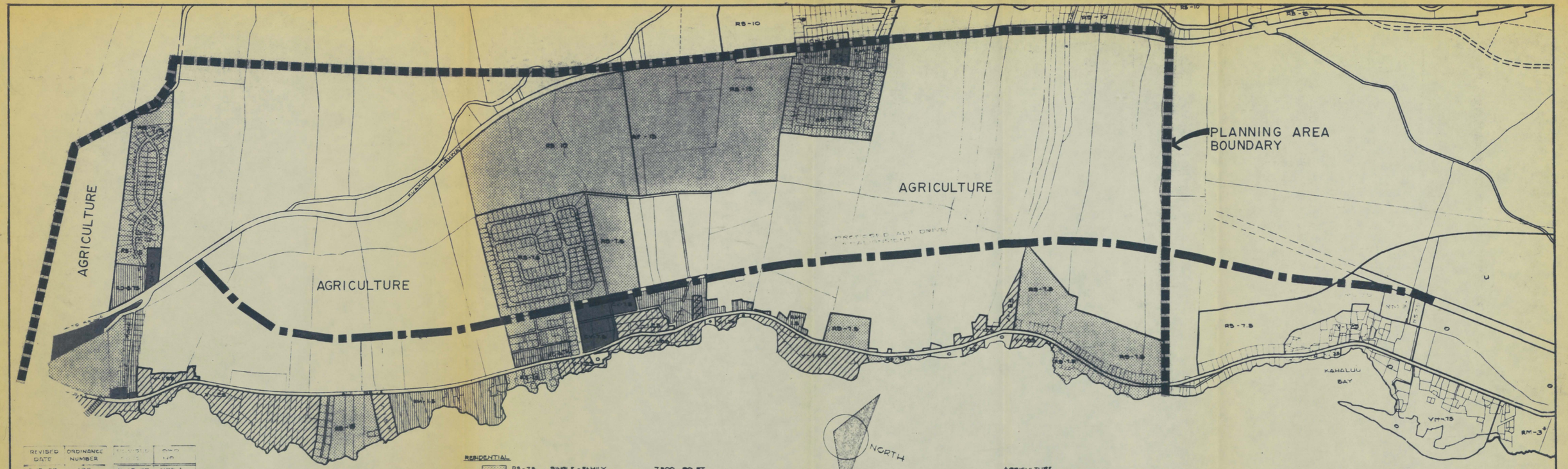
STATE LAND USE DISTRICTS*

(Acres)

Subarea	Urban	Rural	Agriculture or Open	Conservation	Total
Northern Zone	2,830	--	13,200	8,470	25,500
Southern Zone	850	--	740	--	1,590
Keauhou Area "A"	960	--	1,900	40	2,900
Keauhou Area "B"	--	50	1,290	--	1,340

* As of December 1971

Source: Land Use Report, Volume II, 1971, Planning Department, County of Hawaii



REVISED DATE	ORDINANCE NUMBER
5-15-68	126
8-7-68	141
11-20-68	168
11-20-68	176
9-22-69	220
10-22-69	227
2-5-70	238
8-31-71	419
8-31-71	420
3-27-73	475
6-27-78	558*
6-20-74	598
8-30-74	598*
11-19-79	702*
7-7-78	678*
7-7-78	679*

	ORD. NO.
5-10-77	576*
11-21-78	600*
5-12-80	681*
3-A-80	690
9-30-80	688*

RESIDENTIAL

RS-7.5	SINGLE-FAMILY	7,500 SQ. FT.
RS-10	SINGLE-FAMILY	10,000 SQ. FT.
RS-15	SINGLE-FAMILY	15,000 SQ. FT.
RM-7.5	MULTIPLE-FAMILY	750 SQ. FT./UNIT
RM-1.5	MULTIPLE-FAMILY	1,500 SQ. FT./UNIT
RM-2	MULTIPLE-FAMILY	2,000 SQ. FT./UNIT
RM-3	MULTIPLE-FAMILY	3,000 SQ. FT. UNIT
RD-3.75	DOUBLE-FAMILY	3,750 SQ. FT. UNIT

COMMERCIAL

V-.75	RESORT-HOTEL	750 SQ. FT./UNIT
V-1.25	RESORT-HOTEL	1,250 SQ. FT./UNIT
V-1.5	RESORT-HOTEL	1,500 SQ. FT. UNIT
CV-7.5	VILLAGE-COMMERCIAL	7,500 SQ. FT.
CV-10	VILLAGE-COMMERCIAL	10,000 SQ. FT.
CN-7.5	NEIGHBORHOOD-COMMERCIAL	7,500 SQ. FT.
CN-10		10,000 SQ. FT.

KAILUA-HONOLO URBAN ZONE MAP

(SECTION 705)

PORTION OF ORDINANCE NO. 74

AMENDING THE COMPREHENSIVE ZONING ORD. "65, REVISED ORDINANCES OF THE COUNTY OF HAWAII 1967, BY ADOPTING THIS KAILUA-HONOLO URBAN ZONE MAP, NORTH KONA, HAWAII.

DATE OF PUBLIC HEARING: JAN. 20, 1967
DATE ADOPTED BY PLANNING COMMISSION: FEB. 17, 1967
DATE ADOPTED BY BOARD OF SUPERVISORS: MAY 24, 1967

PREPARED BY: PLANNING COMMISSION
COUNTY OF HAWAII

TAX MAP KEY: ZONE 7

AGRICULTURE

RA-5a	RESIDENTIAL-AGRICULTURE .5 ACRE
[illegible]	AGRICULTURAL 1 ACRE

UNPLANNED

U	UNPLANNED

OPEN

O	OPEN

CIRCULATION

ENCLOSED SECONDARY ARTERIAL (MINIMUM 100 FT. WIDE RIGHT-OF-WAY)

FIGURE V-2

COUNTY LAND USE ZONING

In summary, future land use policies seem to be directed toward preserving the agricultural economy while at the same time attempting to maintain a healthy tourist industry. Tourism will remain, but land use zoning should control the expansion of resort facilities to limit the supply of hotels according to tourist demand.

Recreation and Beneficial Uses of Waters

The abundance of parks along the Kona coastline is depicted on Figure II-9. These parks are used primarily for swimming and picnicking. In addition, the Kona coast is the center for deep-sea fishing, diving, and boating activities. Compared to rates of total recreational activity for the state (9 percent) and the county (12 percent), particularly offshore sports, Kona is considered to be very active (32 percent). According to the State Comprehensive Outdoor Recreaton Plan (SCORP) for 1975, a ranking of activities within the district revealed that swimming/sunbathing, diving, fishing, and boating account for 4 of the 6 most popular activities. Out of the more than 15 activities surveyed, moreover, these 4 accounted for more than 50 percent of the total.

It was determined that more recreational areas and facilities are needed to satisfy the existing and future needs of the public, particularly in the areas of swimming/sunbathing and camping. SCORP recommended that more of these facilities be built, largely north of Kailua Bay and south of Kealakekua.

Population Projections

The North Kona district (with a 1980 population of 13,793) accounts for approximately 15 percent of the county's population. During the past decade (1970 to 1980), the district has experienced about a 185 percent increase in population, or an average annual compound growth rate of 11 percent. This growth rate is in marked contrast to the 9 percent increase during the previous decade (1960 to 1970) at an average annual growth rate of only 0.9 percent (DPED, 1980).

For planning purposes, population projections are formulated based on (1) the "economic activity-population approach" discussed as the best

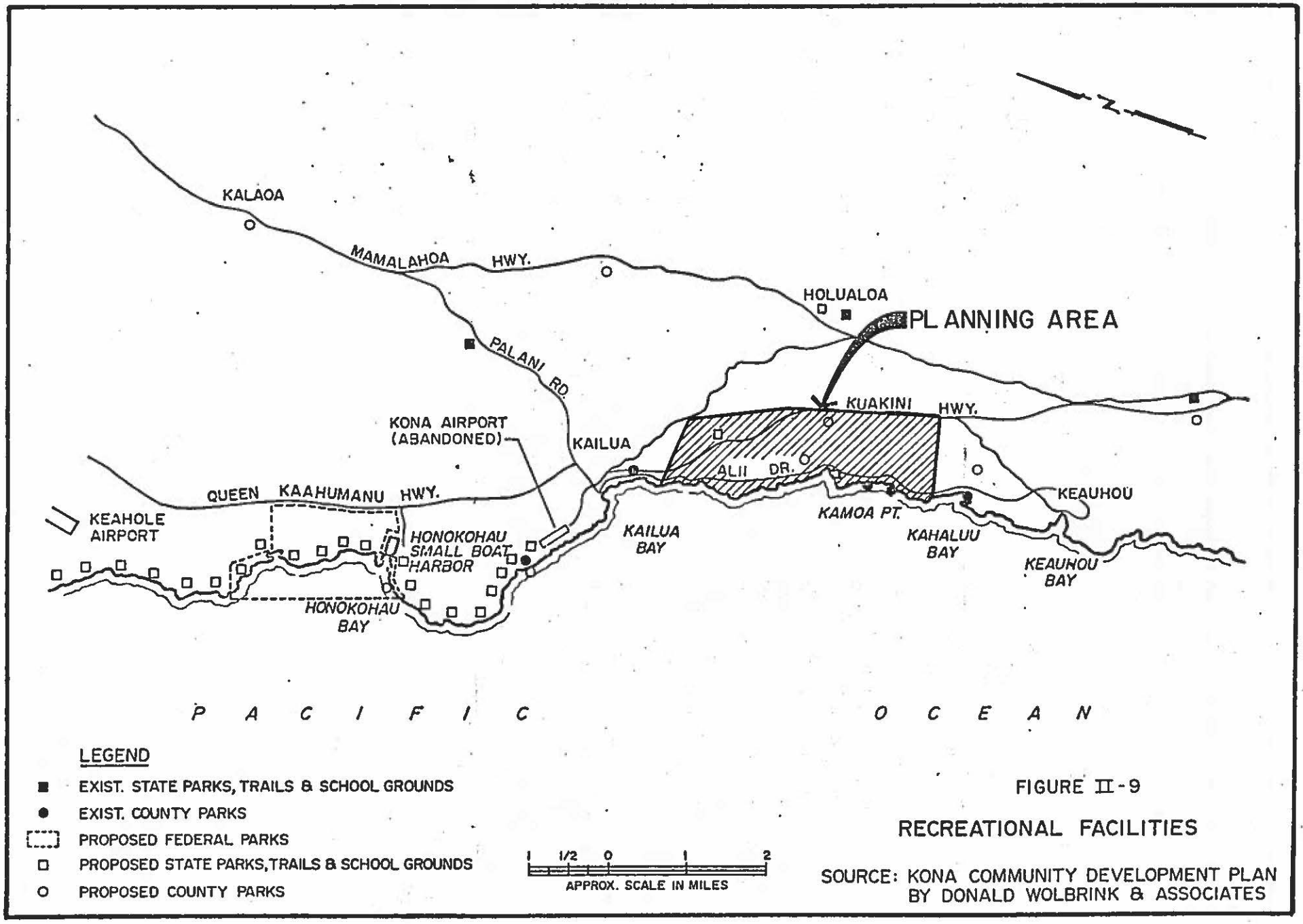


FIGURE II-9

RECREATIONAL FACILITIES

SOURCE: KONA COMMUNITY DEVELOPMENT PLAN BY DONALD WOLBRINK & ASSOCIATES

approach in the Hawaii County General Plan and (2) land use designations established for areas considered for urban development.

Difficulties in forecasting the study area population arise, however, due to the region's unique employment situation in which three basic industries--tourism, construction, and agriculture--have cyclic employment requirements. This difficulty is best illustrated by projections formulated in previous planning studies (1958, 1960, and 1971), all of which predicted nearly 70 percent more people in 1975 than actually materialized. According to the Hawaii Tourism Impact Plan of the State Department of Planning and Economic Development (DPED), factors contributing to this discrepancy were: (1) the number of jobs expected was greater than the number of jobs actually created; (2) many residents held second jobs; and (3) due to the high cost of living in Kona, many families found it necessary to have more than one breadwinner.

Recognizing that previous studies were overly optimistic in predicting employment activity, the KCDP incorporated adjustments in the standard planning formula to reflect data and findings of the Hawaii Tourism Impact Plan. Annual compound growth projected for the whole Kona district for the period 1975 to 1990 ranges from 3.7 percent in the initial years to 1 percent in the last five years. The average rate for the 15-year period is about 2.8 percent.

The DPED, in its Growth Policies Plan: 1974-1984, recommends instituting policies to curb the neighbor island growth rate to approximately 2 to 3 percent.

For the northern and southern Kona zones, a 4 percent annual growth rate is assumed for the residential population because most of the district's growth will be concentrated initially in the low-lying coastal areas. The tourist population projection is based on visitor demand and hotel units.

The population projection for the southern zone is shown on Figure II-10. The ultimate population derived for the southern zone is about 45,000.

Community Facilities

Water. The bulk of the water for the North Kona system is supplied by four wells at Kahuluu. These wells are located at the 800-foot elevation, which is considerably above existing and proposed subsurface effluent disposal sites. The capacities of these wells are as follows:

		Capacity 24Hour Pumping (mgd)	Cumulative Total Capacity (mgd)	Cumulative Safe Capacity (Based on Breakdown of One Pump) (mgd)
Under Operation	Well A	1.0	1.0	-
	Well B	1.0	2.0	1.0
	Well C	1.0	3.0	2.0
	Well D	1.4	4.4	3.0
	Kahaluu Shaft	6.0	10.4	8.4

The present average water usage is about 3.1 mgd, with a maximum demand as high as 4.7 mgd. It is anticipated that, by 1990, the average day usage will be 5.3 mgd, with a maximum day usage of about 8.0 mgd (County of Hawaii, Department of Water Supply, 1981).

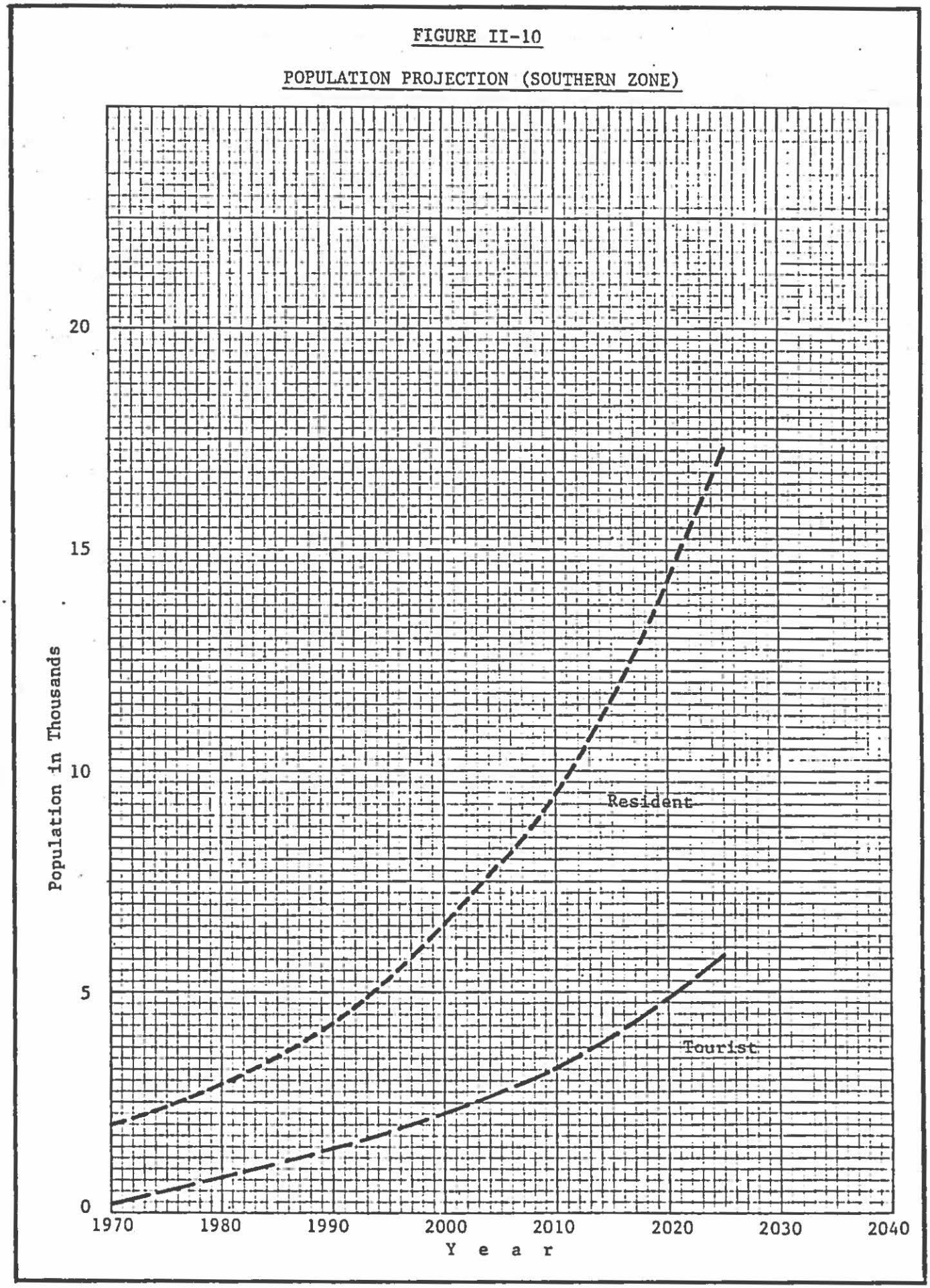
Solid Waste. The nearest landfill site to Kailua-Kona is about 5 miles north of the town. It has a service life of about five more years.

Drainage. The need for storm drainlines is minimized by requiring developers to provide their own facilities. For parcels that are traversed by a stream, the developer is required to improve that section within his parcel to safely convey the runoff. For parcels away from streams, storm runoffs generated by the developments are required to be disposed of on-site, usually by installing a sufficient number of drywell sumps.

Other Community Facilities and Services. The county provides such services as fire protection, law enforcement, sanitation, recreation, and transportation, while the state provides schools, libraries, and health facilities. The federal government provides postal service and the services of the weather station at Keahole Airport.

FIGURE II-10

POPULATION PROJECTION (SOUTHERN ZONE)



COASTAL ENVIRONMENT

Ocean Currents

Previous Studies. Offshore ocean currents along the west coast of Hawaii are essentially unidirectional and parallel the coast with a net permanent flow generally to the northwest (Laevastu et al. June 1964).

Float observations off Kailua-Kona by the State Department of Health (May 1961) appear to confirm the generally northwest current. There is also some evidence of a south-setting component, or at least a slackening of the northwest current, with the flood tide.

Current rips are frequent north of Keahole Point, suggesting that the northerly current, which follows the coast south of Keahole Point, sets offshore from the coast north of that point. Figure II-11 illustrates present data on offshore current patterns of the study area.

Present Study. Nearshore current measurements were conducted between 300 and 1,500 feet off the Kona coastline during flood and ebb conditions. It was found that the nearshore currents are tide-related, with reversing longshore currents that flow in a northerly direction during flood conditions and in a southerly direction during ebb conditions (see Figure II-11). There is a shoreward component of the drogue vectors that indicates sewage effluent would be transported toward the shoreline and could impact the quality of the Class AA coastal waters.

Water Quality of Nearshore Waters

The quality of the nearshore coastal waters is highly influenced by the mass emissions from land as a normal part of the hydrologic cycle and from urban and agricultural discharges. Another consideration is the mixing and dispersive characteristics of the coastal waters themselves. The net effect of the input-output phenomenon is the observed water quality.

Surface runoff is generally a significant component affecting water quality, especially on the windward side of the island; however, in this leeward region where rainfall is lower by a factor of ten and where the basalt is highly pervious, surface runoff can be deemed insignificant and groundwater seepage in the nearshore waters the greater concern.

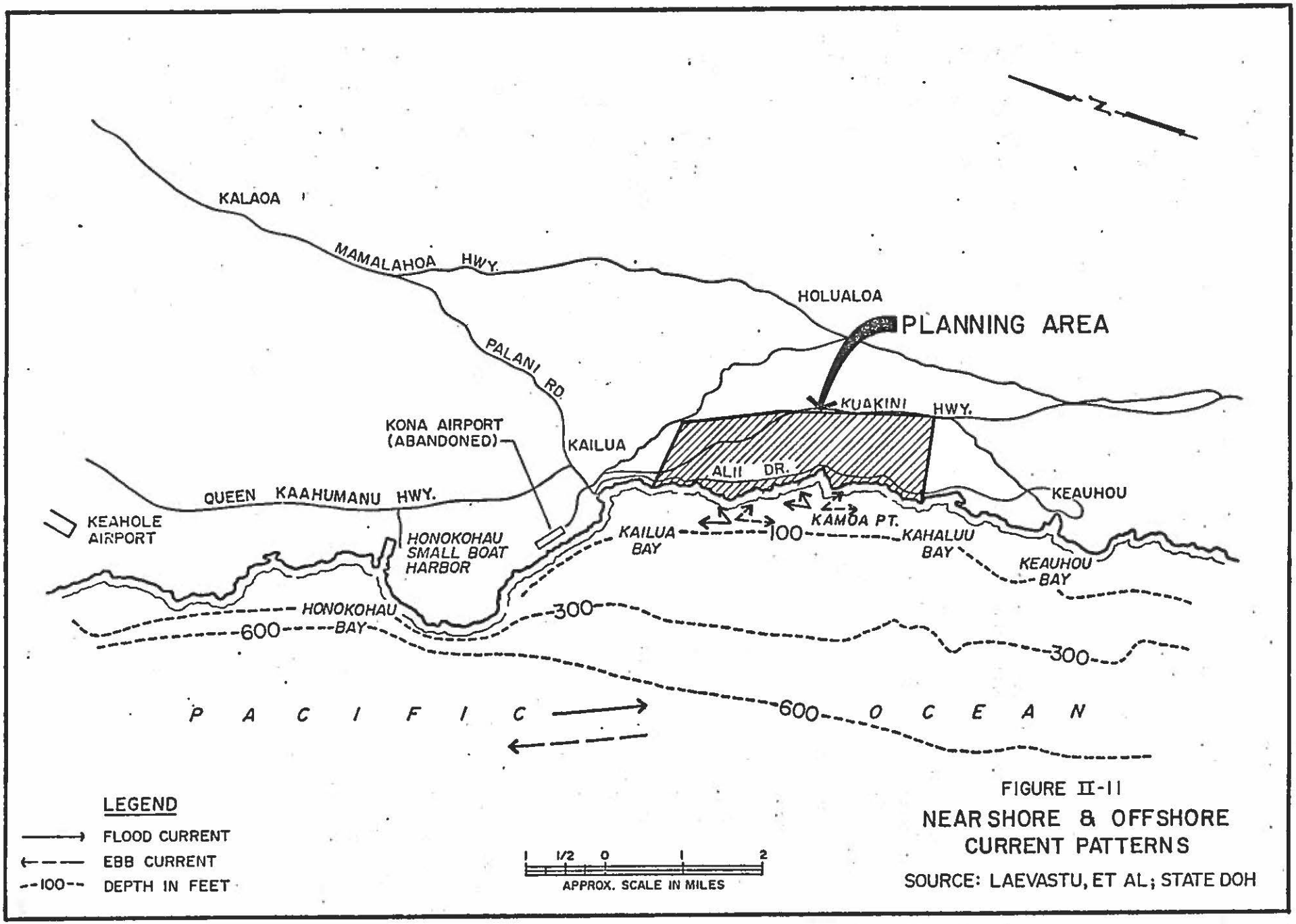


FIGURE II-11

NEAR SHORE & OFFSHORE CURRENT PATTERNS

SOURCE: LAEVASTU, ET AL; STATE DOH

In keeping with mandates of the Federal Water Quality Act of 1965, the State Department of Health (SDOH) established the State of Hawaii Water Quality Standards, which designated the nearshore waters of the study area as Class AA, the highest classification in the standards (see Figure II-12).

A general comparison of the water quality data with the recently adopted water quality standards shows that the water quality standards were exceeded at the time of the monitoring trip. Specifically, several instances were observed where the measurements exceed the standards for total kjeldahl nitrogen, nitrate plus nitrite nitrogen (at the shoreline), orthophosphate phosphorus, and total phosphorus. The significantly higher nitrate plus nitrite nitrogen levels at the shoreline may be indicative of the groundwater discharge. Nitrate is easily transported through the ground while total kjeldahl nitrogen and especially phosphorus are generally retained in the soil or granular material.

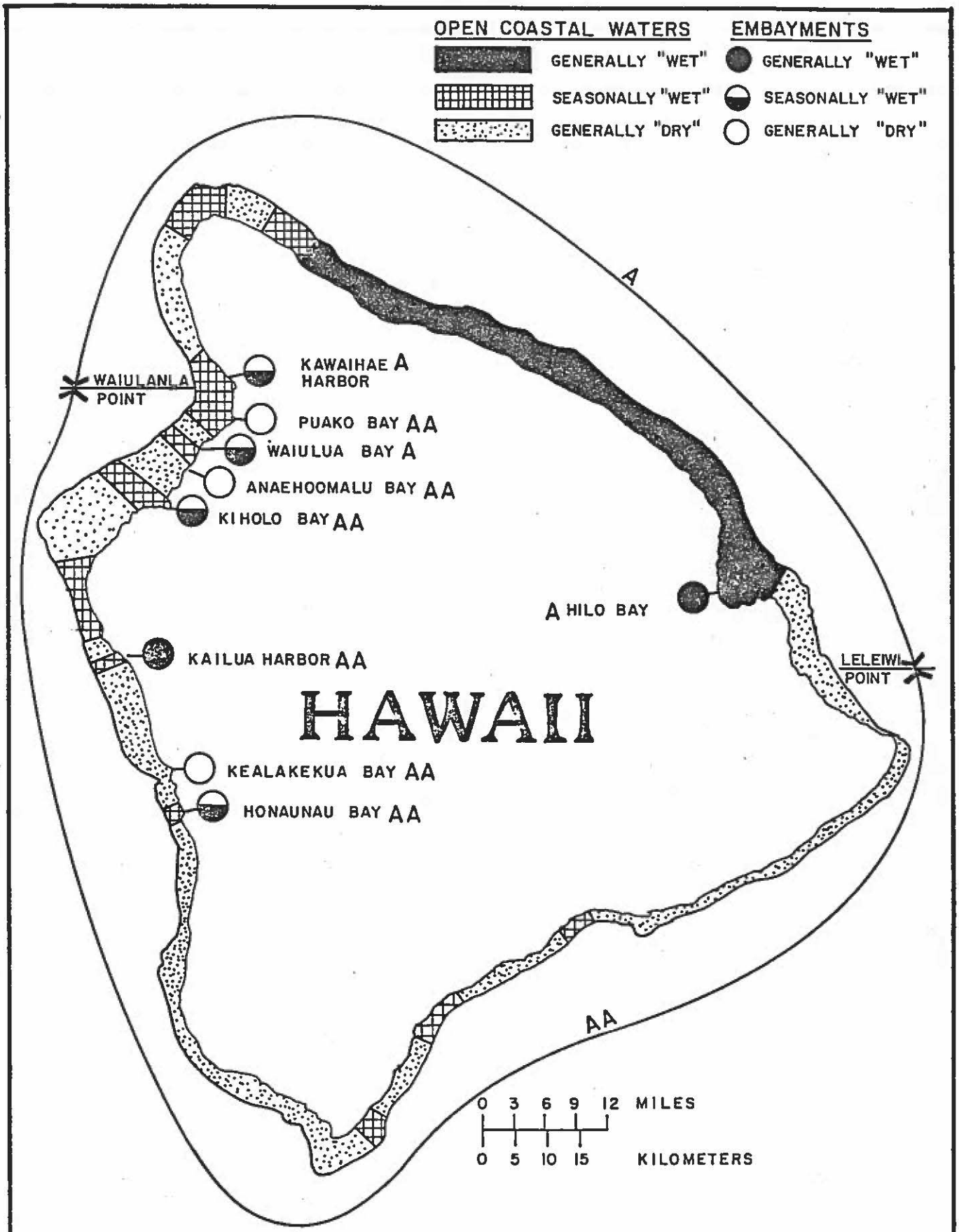
It should be noted that comparison of the results of this one monitoring trip with the water quality standards is statistically weak. Ideally, the geometric mean value should also be based on data spanning a year or more. This value, however, was computed with the available data in order to have some point of reference, recognizing that the values are statistically weak. There were instances, however, where maximum allowable values were exceeded.

Fecal coliform and total coliform tests were also performed on water samples from the surface of each sampling station and at the shoreline but are not shown because all results were negative (none detected).

Marine Biology

During the period November 11 to 13, 1978, marine biological observations and quantitative measurements were completed at six nearshore (60 feet greatest depth) stations on the seaward reef slope at Kona, Hawaii (see Figure II-13 for station locations).

Data collected during the present study help to document the existing marine biological conditions at the sites studied and provide a basis for assessment of possible future biological impacts (both positive and negative) that may result from the sewage effluent discharge.



SOURCE: DOH, 1980

FIGURE II-12

WATER QUALITY CLASSIFICATION

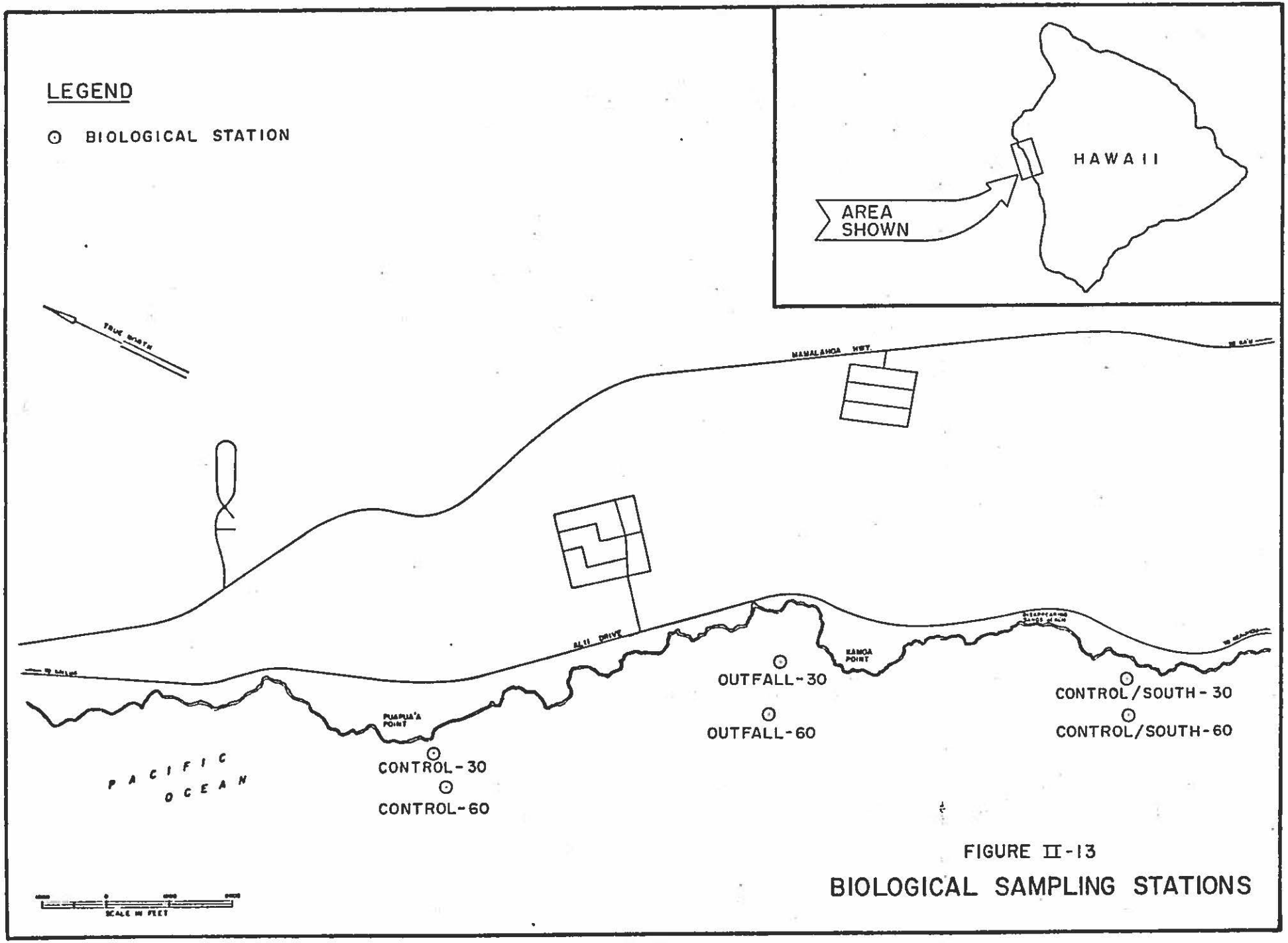


FIGURE II-13

BIOLOGICAL SAMPLING STATIONS

The following parameters were observed:

1. Zooplankton density. The density of zooplankton indicates the productivity of the area; it is the food source for some species and the next generation (larvae) for others.

2. Substratum coverage. The percent live coral coverage of the substratum indicates the favorableness of the area as a reef community habitat. Corals provide shelter for many species.

3. Fish count. Fish counts indicate the biological richness of the area; fish have aesthetic, economic, and recreational value.

4. Sea urchin count. Sea urchins are scavengers and appear in greater densities where the environment is stressed by high nutrient input and subsequent increases in deposited organic matter.

Zooplankton. In general there appears to be little variation in the zooplankton populations collected at the three sites. The two collections taken on different days at the control station are quite similar. Although there is an approximate fourfold decrease in the numbers of copepods in the second collection, this is a common observation and the number of organisms falls well within the range of variability noted for copepods in Hawaiian waters.

Variation by as much as eight types (13 types at Outfall Station and 21 types at the Control South Station) is common in Hawaiian waters and has been observed in similar zooplankton studies completed seaward of the Honolulu Reef Runway and in Hilo Harbor.

Substratum. With the exception of Outfall station-30-foot, similar live coral coverages were noted at each of the remaining five stations (coral coverage ranged from 60.9 to 82.0 percent). At the Outfall station-30-foot, where the substratum is 47.6 percent live coral and 52.4 percent sand and dead coral, sand abrasion generated by storm waves most probably is responsible for the reduced levels of live coral coverage.

There were only four genera of hard corals noted along the transect lines and, of those genera, Porites was the most abundant at each station.

Other genera of hard corals are undoubtedly present at the six transect sites but occur only rarely and were not noted with the transect-quadrat method used in the present study.

Fish. The greatest number of fishes were noted at the control-60-foot and control south-60-foot stations (1,022 and 927 fishes respectively). Both of these stations were dominated by the coral, Porites compressa, which is a branching coral that provides much habitat space for small fishes.

The number of fishes observed at each of the six stations was strongly influenced by the presence of damsel fishes (Pomacentridae), which accounted for 35 to 54 percent of the fishes counted. Although a combined total of 68 species were noted, only 13 species were common to each station.

Sea Urchin. The small sea urchin, Echinometra mathaei, was abundant (131 to 199 individuals) at the control-30-foot, control-60-foot, and control south-30-foot stations where the substratum characteristics (many small holes and crevices) provide optimum habitat space. Variation in the number of the other four species of sea urchins observed is possibly due to subtle changes in the ecosystem that are not readily apparent without further study.

Summary. In summary, with the possible exception of outfall-30-foot station, the reefs studied appear to be in good condition with rich coral growth. The relatively clear water and reduced wave surge provide optimum conditions for the growth of Porites corals, the most abundant genera at each of the six sites studied.

Waste Discharges

Current discharges into nearshore waters now stem from cesspool seepage, shipboard and related waste discharges in the small boat harbors, seepage from effluent disposal wells of small treatment facilities, and occasional flows in ephemeral streams.

Effluent from the existing municipal wastewater treatment plant serving Kailua town is presently used to irrigate a park development in the abandoned Kona Airport area or disposed in a seepage pit.

The effluent from the existing Heeia wastewater treatment plant near Keauhou is now used to irrigate an adjacent private golf course or is disposed of in an injection well.

CHAPTER III

RELATIONSHIP OF THE PROPOSED ACTION TO LAND USE PLANS, POLICIES, AND CONTROLS

Wastewater facilities can influence the type, rate, and intensity of growth. To ensure that these facilities do not foster undesirable growth, the location and capacities of these facilities are planned in conformance with land use plans, policies, and controls.

Both the state and county are involved in guiding land use. The state controls overall land use patterns by districting all lands in the state into conservation, urban, agricultural, and rural zones under the authority of the State Land Use Law (Chapter 205, HRS). The county develops a general plan for all lands within the county. The county, however, has regulatory control only within the urban districts, where it controls development through the Comprehensive Zoning Code. The state and county share control over the rural and agricultural districts, while the state controls land use within the conservation district.

A number of functionally specific policies and plans also control land use. Two of the more significant of these for the proposed action are the 208 Water Quality Management Plan and the Coastal Zone Management Program.

The pertinence of these policies, plans, and controls is discussed in this chapter as they apply to the proposed actions and the study area.

STATE LAND USE DISTRICTS

Lands within the study area have been designated as urban or agriculture. There are no rural designations. Conservation land exists only seaward of the vegetation line. Only developments within the urban district have been considered for sewering; residences in the agricultural district will remain on cesspools because of the low-density restriction on development.

COUNTY GENERAL PLAN

The County General Plan sets forth long-term policies in respect to physical development through the general plan land use allocation maps. Within the study area, designated land uses include residential (high-, medium-, and low-density), resort, agriculture, and open area.

COMPREHENSIVE ZONING CODE

The zoning code implements the County General Plan by regulating land use at the parcel level. The type, use intensity, bulk, and placement of structures are subject to these controls. The capacity of the proposed sewer line along Alii Drive was designed to accommodate the existing zoning pattern consisting predominantly of resort, single-family residential, and commercial uses.

208 WATER QUALITY MANAGEMENT PLAN

The recommended pollution abatement measure in the 208 plan for the Kailua-Kona southern zone is to sewer developments along Alii Drive. The present wastewater facility plan implements that recommendation.

COASTAL ZONE MANAGEMENT

Nearly the entire planning area is within the special management area and are thus subject to the Shoreline Protection Ordinance. The proposed action must be consistent with policies stated in the Coastal Zone Management Act (Chapter 205A, HRS). The policies address recreational resources, archaeological resources, scenic and open space resources, coastal ecosystems, economic uses, and coastal hazards. The relationship of the proposed action to these policies is discussed below.

Recreational Resources

By providing sewers along Alii Drive, the recreational value of the coastal waters is protected as a result of curtailing subsurface wastewater seepage.

Archaeological Resources

Two significant sites that are eligible to the National Register of Historic Places exist within the study area. None of the surface remains will be affected. Any subsurface remains, if encountered, will be salvaged by a trained archaeologist.

Scenic and Open Space Resources

Scenic and open space resources will not be affected.

Coastal Ecosystem

The highly valued coral reef ecosystem will be protected by controlling wastewater emissions. The water quality standard for nutrients, which has been exceeded in the past, should be met with the sewer system in operation.

Economic Uses

Visitor facilities are considered coastal-dependent uses. The sewerage system will enable the expansion of resort and other visitor facilities within the study area. Because Kailua-Kona is considered a visitor destination area by the County, visitor facilities are planned to be concentrated in that area.

Coastal Hazards

The flood insurance map prepared for HUD was used to identify flood hazard areas. Design and construction of wastewater facilities will comply with requirements contained in the County's flood insurance ordinance.

SUMMARY

The proposed action conforms to state and county land use plans, policies, and controls. The alignment and capacity of the wastewater facilities support existing and planned growth patterns and are consistent with the regional 208 Water Quality Management Plan.

CHAPTER IV

PROBABLE IMPACT AND MITIGATION MEASURES OF THE PROPOSED ACTION

Kailua-Kona (southern zone) has grown from a quiet rural community to a burgeoning resort area. It is situated on porous lava, with relatively dry climate. A prime attraction is the clear, inviting coastal waters with abundant coral and fish life.

The proposed action to provide wastewater facilities is intended to protect the coastal water quality and to ensure the public health of the increasing number of residents and visitors. While providing beneficial impacts to the environment, certain adverse impacts will be generated as a consequence of construction and operation of these facilities.

This chapter discusses the tradeoffs inherent in the proposed action. Impacts that stem directly from the proposed action have physical, socio-economic, and financial aspects that are primarily local in their effects. Secondary impacts are discussed from a regional perspective in terms of whether the proposed action induces undesirable growth. Many of the potentially adverse impacts can be mitigated, while others are unavoidable. Mitigation measures that have been incorporated into the design of the project are discussed in this chapter. Unavoidable adverse impacts are discussed in Chapter V.

DIRECT IMPACTS - PHYSICAL AND SOCIO-ECONOMIC

Interceptor Sewers

Short-Term Impacts. The construction of the new collectors and interceptors to convey sewage to the proposed treatment plant in the northern zone will involve the excavation of trenches, installation of the interceptor and collection sewers, and backfill operations. The construction of the sewer system will proceed in segments until the completion of the system. Impacts associated with the sewer construction are primarily short-term and can be mitigated. The primary impacts and mitigation measures are as follows:

The proposed interceptor alignment occurs in the Kona Field System (site no. 6601), a site determined eligible for placement on the National Register of Historic Places. Because it is highly probable that subsurface sites will be discovered during the trenching operation, the following mitigation measures will be undertaken:

1. A detailed plan and profile of the proposed pipe alignment will be submitted to the Historic Sites Section of the Department of Land and Natural Resources, prior to construction;
2. For any construction activity outside of any existing roadway corridor (e.g., pump stations), an archaeological reconnaissance will be done by a qualified archaeologist and a report sent to the Historic Sites Section of the Department of Land and Natural Resources, to determine, if necessary, appropriate mitigation measures; and
3. A qualified archaeologist will be hired to monitor construction activities for subsurface artifacts.

Because construction activity will generally be limited to existing roadways or government land, no encroachment will be made on any wetlands or known habitats of endangered species, nor will any household, business, or service be displaced.

The provision of sewers will eliminate the need for cesspools and private treatment plants along Alii Drive. Long-term beneficial impacts to the coastal water quality will result from the termination of the present practice of subsurface disposal. Instead, wastewater emissions will be conveyed to an area where it will do some good (e.g., irrigation) or where it will do the least harm (e.g., deep ocean).

Potential failures of cesspools or private treatment plants will also be avoided, thus protecting the public health and minimizing nuisances from odor.

Pump Stations

Short-Term Impacts. Construction of the pump station facilities will have short-term impacts, such as noise and dust, on the surrounding areas.

These short-term, construction-related impacts will be similar to those discussed in the previous section dealing with the interceptor sewers.

Long-Term Impacts. Long-term impacts are related to the operation and maintenance of this facility and include the following:

1. Aesthetics. The facility site will consist of concrete buildings surrounded by a chain link fence. Proper site landscaping, especially in areas that are visible from roadways, will aid in alleviating any unpleasant aesthetic nature of the pumping facility.

2. Noise. Noise emanating from the pump station facilities will be attributable to the pump equipment; however, noise levels are not expected to significantly exceed normal background levels. All noise-generating equipment will be enclosed within a building.

3. Odor. Odors may emanate at the pump station facility from time to time. These odors are inherent in the handling of sewage itself and cannot be totally avoided. The design will incorporate all odor control techniques such as sealing the wet wells and nearby manholes. Operational controls (such as physical and/or chemical treatment) will also be implemented to minimize the occurrence of these odors.

The design of the pump stations will incorporate the necessary flood-proofing since the pump stations are located in the 100-year flood hazard zone. Studies will have to be conducted to determine the flood elevations. Vents and windows will be raised above that elevation. Portions of the exterior walls will be treated to prevent seepage. The door(s) will be provided with fiberglass stop gates that would minimize leakage during the short-term duration of a tsunami flood. Since there will inevitably be some seepage, all mechanical and electrical equipment will be raised upon a pedestal.

DIRECT IMPACTS - FINANCIAL

Property owners, including residents, businesses, and resorts, will incur the following costs as a result of the proposed action:

Backfilling cesspools:	$300 to $500
Installing laterals:	$1,500 to $3,000
Improvement district assessment:	$0.08/sq ft (residential)
	$0.10/sq ft (comm/indus)
	$0.12/sq ft (hotel/apt/resort)

In addition, a monthly user charge will also be assessed to help pay for the operation and maintenance costs. The user charge will not exceed $5.00 for residents and 50 percent of the water bill for commercial and resort establishments.

To illustrate, a resident with an 8,000 sq ft lot can expect to pay about $2,500 initially and $5.00 monthly. If this same resident had to build a new cesspool because his present one failed, the cost would be about $2,000. Each time the cesspool requires pumping, an additional cost of about $65 could be incurred. Considering that cesspools usually do fail in time, the cost incurred from the proposed action compares favorably in the long run with the alternative of doing nothing and keeping the cesspool.

A resort or condominium with package treatment plant would save on the high operation and maintenance costs. Annual cost presently amounts to about $6,000 for a small, 0.01 mgd plant. The cost for labor, power, chemicals, and materials is continually rising, so the operation and maintenance cost can expect to increase concomitantly. If a new establishment had to install a package plant, the cost for a 0.01 mgd plant would be at least $40,000. In terms of financial impact, the proposed action would therefore be a more favorable alternative to existing and future resort or condominium establishments than the alternative of doing nothing and using private treatment plants.

Property owners located on the seaward side of Alii Drive may incur higher costs to connect to the interceptor. If their property is at a lower elevation than the sewer line, pumping will be necessary, with its

associated capital and operational costs. Connection costs will therefore differ widely among property owners, depending primarily on tpographic factors.

SECONDARY IMPACTS

The economic and social profile of Kona has evolved from one based on an agricultural environment to one centered around resort activities. An accelerated growth in tourism has occurred and has made the tourist industry a major factor in the area. The direction and character of development of the area will be influenced largely by two major factors (1) available water supply and (2) land use policies of the area.

As mentioned previously, the water supply in the Kailua-Kona area is limited due to the extent of the distribution system and the lack of wells. Implementation of the wastewater reclamation facilities could relieve a significant portion of the water demands that would be exerted by the irrigation of planned golf courses, outdoor recreational areas, and agricultural developments. Thus, implementation of the wastewater management proposals in the study could be the impetus for accelerated expansion of the tourist and resort industries.

This expected growth, however, is not left uncontrolled. The direction and character of development of the area should be controlled largely by the land use policies for the area. The prominent effect of land use policies is the control of the population growth rate, type of lifestyle, and the economic activity of the area. Hence, the secondary impact of population growth is a direct result of land utilization policies, which, in turn, lead to the need for a wastewater management system.

Thus, the wastewater management proposals presented in this study, while necessary for the development of safe public health practices and for the preservation of water quality, should also be viewed as a tool for maintaining the scenic beauty of the physical environment. The wastewater management plan developed in this report is intended to accommodate growth resulting from the orderly development of the area.

CHAPTER V

UNAVOIDABLE ADVERSE IMPACTS

Probable adverse and beneficial impacts from the proposed actions were identified in Chapter IV. This chapter summarizes the unavoidable adverse impacts and discusses the rationale for proceeding despite these impacts.

SHORT-TERM IMPACTS

Traffic, Noise, Dust, and Aesthetics

The sitework necessary to install the sewer and construct the sewage pump station will disrupt traffic, increase noise levels, increase dust, and degrade the aesthetics. Although these effects will be mitigated to minimize the impacts as much as possible, the local area will nevertheless be affected. These adverse impacts, however, are temporary. Once construction is completed, these impacts will no longer be of consequence.

LONG-TERM IMPACTS

Odor

Odor may occasionally emanate from the pump station. Physical or chemical remedies can be applied, when necessary, to eliminate the odor.

Financial

Property owners hooking up to the sewerage system will incur initial and monthly costs. These costs, although quite substantial, compare favorably in the long run with the alternative of doing nothing and using cesspools and private sewage treatment plants. Private sewage treatment plants are expensive to construct and maintain; cesspools are expensive if the existing ones require pumping or new ones need to be built.

Growth

Continued growth of the Kona area will be enhanced by this project since new condominiums and resorts will no longer be burdened with the

cost of providing a private treatment plant and more people can be accommodated without jeopardizing the public health or water quality. The alignment and capacity of the lines, however, were designed on the basis of the existing zoning to ensure that disorderly growth is not generated.

Volcanic Hazards

There are no effective mitigation measures to prevent damage from volcanic eruption. However, because the recurrence interval of these events is very low, it is highly unlikely for such an event to occur during the expected life span of the sewerage facilities.

CHAPTER VI

ALTERNATIVES TO THE PROPOSED ACTION

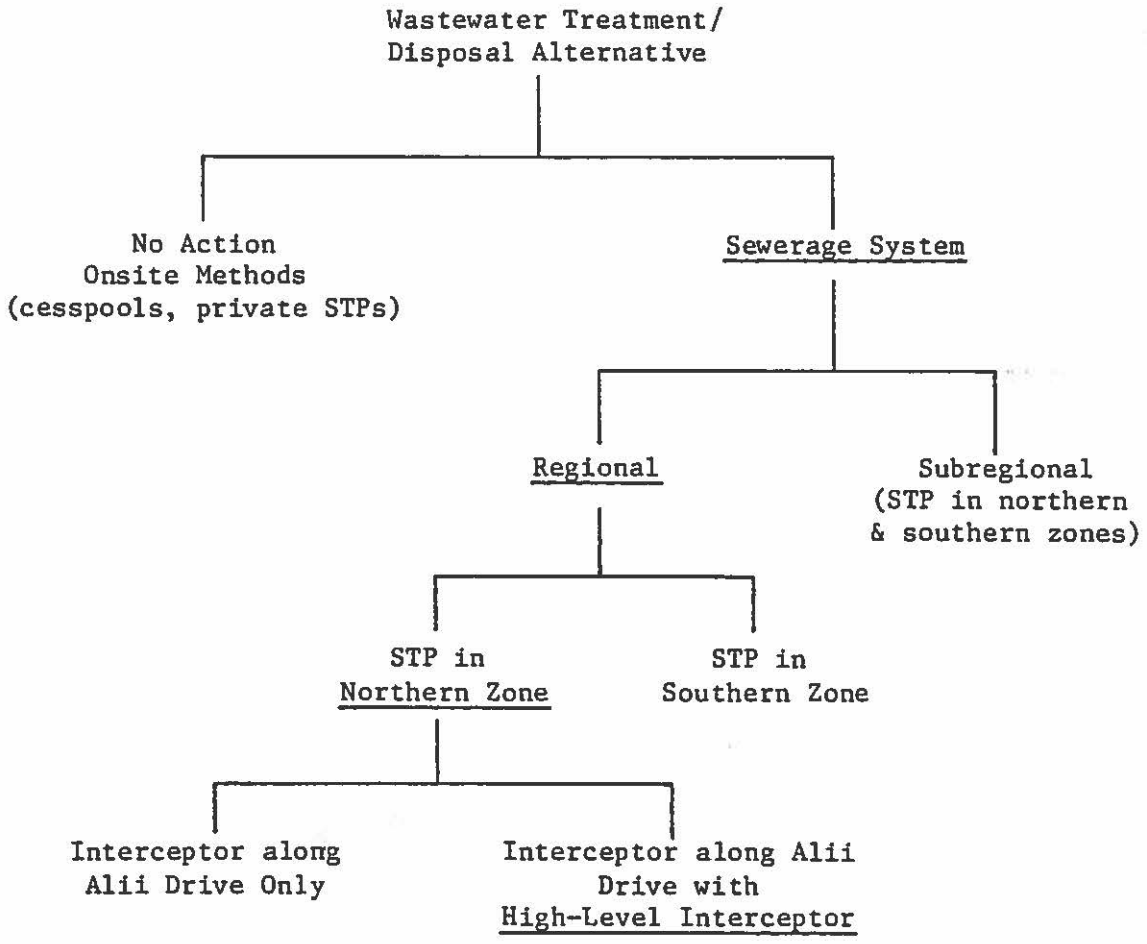
The choice of alternative systems is based on cost effectiveness, which is determined by establishing the desired or required objectives, developing alternate plans of achieving the objectives effectively, and comparing these alternatives on the basis of cost.

The sewerage systems and treatment facilities evaluated in this section can meet the following objectives:

1. To eliminate risks to public health and welfare from raw sewage disposal;
2. To preserve and improve the quality of nearshore coastal waters; and
3. To implement the best practicable control technology mandated by law.

There are several alternative ways of achieving these objectives. The overriding constraint is the secondary treatment guidelines of EPA, which mandate a minimum of secondary treatment, whether there is an environmentally sound alternative to this level of treatment or not. Besides this, the State Public Health Regulations, Chapters 37, 37A, and 38, impose additional constraints on the disposal of effluent.

There is a logical order to the consideration of alternatives that proceeds from general to specific concerns (see Figure VI-1). The most general concern is whether to sewer or to do nothing and continue using cesspools and private sewage treatment plants. Once the decision is made to sewer, there is a choice of whether to provide a regional system to service the combined northern and southern zones or to provide a subregional system, with the northern and southern zones having separate systems. The most specific concern is the alignment of the interceptors. For each alternative, the pertinent factors are identified and the reasons supporting the choice explained.



Note: Selected choices are underlined.

FIGURE VI-1

ALTERNATIVE WASTEWATER SYSTEMS FOR THE SOUTHERN ZONE

NO ACTION VS. SEWERAGE SYSTEM

The residents and resort-hotels in the southern zone are currently using some type of onsite disposal. Near the coast, the disposed waste is transported by groundwater to the nearshore coastal waters. Coastal water quality is thereby degraded by the emitted nutrients and microbiological contaminants. In the mauka areas, however, individual onsite disposal units are recommended for lands zoned agriculture. These lands are concentrated in the southeastern portion of the study area. By law, lands zoned agriculture have a minimum area of 1 acre. Installing a sewer collection system for lots this large would not be cost effective. The seepage from these individual onsite disposal systems would probably receive adequate treatment due to the distance from the shoreline.

A sewerage system is therefore recommended for the urban-zoned lands due to the anticipated growth and associated increase in emissions. Lands zoned agriculture can continue using cesspools without adversely affecting water quality.

REGIONAL VS. SUBREGIONAL SYSTEM

The alternative systems for the Kailua-Kona southern zone are as follows:

1. One treatment facility located in the northern zone to serve both the southern and northern zones
2. Each zone, northern and southern, with its own treatment facility

In alternative 1, the sewage from the southern zone would be conveyed to a new pond treatment and disposal facility at site "N" in the northern zone. In alternative 2, each zone would be served by a separate treatment and disposal facility at sites "N" and "S". The total capacity of the two facilities combined is about the same as that of the regional facility, although small differences may occur because of construction phasing. Treatment in the southern zone facility will be done by the activated sludge method, largely because land constraints would make ponds unfeasible.

New developments in the North Kona district and recent changes in federal and state policies call for a reevaluation of the recommendations contained in the "Areawide Wastewater Management Plan for North Kona" (M&E Pacific, Inc., 1976). These recent developments and changes are discussed in detail below.

In order to develop to its fullest potential and to form a stable economic base, the North Kona district must plan for parks, golf courses, and other recreational amenities to serve as tourist attractions. The State Comprehensive Outdoor Recreation Plan (SCORP) recommends that recreational areas and facilities be located in the northern zone, specifically in the area north of Kailua Bay. Accordingly, the County of Hawaii is formulating plans to develop a sports complex in this area. A privately developed golf course is also planned. Further, because much of this land is owned by the state, the probability of other recreational areas and facilities being developed here is greater than for other areas since it is keeping with the state's policy of preserving lands for the use of future generations.

Since the county is interested in reclamation as a means of conserving the potable water supply, it will very likely utilize effluent, if available, for irrigation of its proposed outdoor recreational facilities. It is also probable that the golf courses would adopt a similar plan. Without reclamation, irrigation of these broad facilities would impose a significant demand on the water system and water resources of the area. To implement a reclamation system of such size in the southern zone would require a long-term commitment of several landholders (an unlikely prospect) or the land would have to be purchased or leased, which would be costly. In the northern zone, however, because plans are being formulated to develop the abovementioned recreatonal facilities that concomitantly have the potential to utilize the effluent, the situation is favorable for effluent disposal.

The areawide plan analysis indicated that, for either method of effluent disposal, the regional and subregional systems are almost equally cost effective. With a regional system, however, the wastewater effluent

would be available in an area where the potential for wastewater reclamation is the greatest. Problems with septicity and treatability of sewage may arise, especially in the early, low flow stages, and there will be less flexibility in phasing construction. It is believed, however, that the benefits to be gained by effluent reclamation by recreational or agricultural reuse outweigh these disadvantages.

ALTERNATIVE SEWER SYSTEM LAYOUTS FOR THE KAILUA-KONA SOUTHERN ZONE

Based on the results of the areawide plan for the North Kona district, the wastewater management plan for the Kailua-Kona southern zone will be limited to the collection of waste flows within the southern zone and the conveyance of such flows to the northern zone for treatment.

The alternative layouts for a sewer system for the Kailua-Kona southern zone are rather limited due to the following factors:

1. Most of the high density urbanization is situated in the low-lying, relatively flat area along the coast (Alii Drive).
2. The general topography of the tributary area is sloping from the mountain to the shore, with a coast "plain."

Two alternatives were considered: (1) a sewer interceptor system along Alii Drive and (2) a sewer interceptor system along Alii Drive, with a high level interceptor system.

Alternative 1 calls for one large interceptor line to serve the Alii Drive area and the proposed development area mauka of Alii Drive. The entire southern zone would then be serviced through one main interceptor line. Alternative 2 would divide the sewage flow of the southern zone into two main interceptor lines. These lines would be sized smaller since the flow would be reduced. One line would be located on Alii Drive, serving the adjacent area, and the other line, located mauka of Alii Drive, would service an area presently undeveloped.

Alternative 2, which includes a high level interceptor sewer, was selected for the following reasons:

1. Because the high level interceptor will use gravity flow, this system eliminates the need to pump a portion of the waste flows (the other alternative requires all waste flows to be pumped).

2. Since sewering of the coastal plain (Alii Drive) is the high priority of this study area, phasing of construction is more conducive to the recommended system. Smaller interceptor sewers and pump stations can be constructed along Alii Drive, resulting in lower front-end cost and reduction in the septicity of sewage. Construction of the high level interceptor can be delayed since development is presently sparse in the mauka area. High density development of this area is anticipated to occur beyond the 20-year study period.

CHAPTER VII

THE RELATIONSHIP BETWEEN LONG- AND SHORT-TERM USES OF MAN'S ENVIRONMENT

The practice of implementing individual sewerage systems is a short-term expedient, but proliferation of these systems can lead to problems in the long term that would then cost more to correct. Part of the problem is that these systems rely entirely on land disposal facilities that are close to or within the populated areas. Malfunctions in the treatment process would have an immediate impact on the populace in the form of health and nuisance problems or nearshore water quality impairment.

In contrast, the regional system possesses the factors of economy of scale, reliability of performance, and management effectiveness, which are absent in the individual system. To take advantage of these factors, facilities must be stage-constructed now, with adequate capacity for the future. Although this means that larger initial expenditures must be made in the short run, the total cost to society in terms of tangible and intangible values would be less in the long run .

High expenditures required at one time often lead to problems of insufficient funds because other competing demands for municipal services must also be satisfied. The result is a delay in construction or, because of the more manageable financing, the implementation of small, individual systems to satisfy immediate needs. The issue of long-term beneficial use of the environment therefore reduces itself to financing of the regional concept, recognizing that those agencies influencing the appropriation of funds must weigh factors on a broader scale of satisfying the many requests and demands for municipal funds.

CHAPTER VIII

IRREVERSIBLE AND IRRETRIEVABLE RESOURCES COMMITTED BY THE PROPOSED ACTION

The project would basically involve two irreversible and irretrievable commitments of resources. First and most prominent is the commitment of land space for the collection and transmission facilities. Construction of the sewer lines will mean that this space will not be available for use by other utilities; construction of the sewage pump station will preempt any other use of these parcels. Second, capital investments in the sewerage facilities result in operation and maintenance expenses requiring the commitment of labor and materials.

CHAPTER IX

GOVERNMENTAL POLICIES THOUGHT TO OFFSET ADVERSE ENVIRONMENTAL EFFECTS

Water pollution, especially of drinking water sources and coastal waters, is of special concern because of its potential threat to public health. Outbreaks of waterborne diseases and skin irrigations are direct results of contaminants being introduced into these waters. Less hazardous, but just as repugnant, are nuisances such as odors and unsightliness that are also caused by pollution.

Public clamor and the sweeping environmental movement of the 1960s and 1970s instigated public policy and governmental regulations to control pollution sources. Restoring and protecting the water quality were of such high priority that billions of dollars were spent, and development was more strictly regulated.

The federal government took the lead in these actions with the passage of the Federal Water Pollution Control Act (FWPCA) of 1972. The objective of the FWPCA is to "restore and maintain the chemical, physical and biological integrity of the Nation's waters." To achieve this objective, the FWPCA mandated that the discharge of pollutants into the nation's navigable waters be eliminated by 1985 and that a water quality be attained by July 1, 1983 that provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water. The National Pollutant Discharge Elimination System (NPDES) was established to issue permits for the discharge of all effluents into the nation's waters. One condition of this permit is that all effluents must receive at least secondary treatment before they can be discharged.

Public policy on water quality at the state level is expressed in Chapter 342, HRS. This statute enables the State Department of Health to promulgate regulations to protect the water quality. Pertinent regulations that have been effected include Chapter 37, "Water Pollution Control" (contains the NPDES requirements to control point sources), Chapter 37A, "Water Quality Standards," and Chapter 38, "Private Wastewater Treatment Works and Individual Wastewater Systems."

The resources committed at the federal and state levels exemplify the importance of clean water. Any adverse, short-term effects or long-term effects such as occasional odors or financial impact that result from actions to restore or protect water quality are offset by the objective expressed in public policy to protect an important resource upon which we all depend--clean water.

CHAPTER X

UNRESOLVED ISSUES

There is only one issue that remains unresolved at this time--the extent of impact on one of the two archaeological sites eligible to the National Register of Historic Places; namely, the Kona Field System. The significance of this impact cannot be determined until the detailed construction plans are drawn and a site survey undertaken. The Office of Historic Sites, Department of Land and Natural Resources (DLNR), will review the construction plans, and a qualified archaeologist will be hired to monitor the construction, if deemed necessary by the DLNR.

The other eligible site, the Great Kuakini Wall, will not be affected by the proposed action.

CHAPTER XI

LIST OF NECESSARY APPROVALS

The following approvals and permits are required for the proposed action. None have been obtained to date, but all are required prior to construction.

Approval/Permit Required	Responsible Agency
Special Management Area Permit	Planning Dept., County of Hawaii
Shoreline Setback Variance	Planning Dept., County of Hawaii

CHAPTER XII

ORGANIZATIONS AND PERSONS CONSULTED

The following organizations and persons were consulted in the preparation of this environmental impact statement. Those marked with an asterisk sent written comments. The letters and responses are reproduced on the following pages.

1. Federal
   - a.+ Department of Agriculture, Soil Conservation Service
   - b.*+ Department of the Interior, Fish and Wildlife Service
   - c. Department of the Interior, U.S. Geological Survey
   - d.*+ Department of the Army, Corps of Engineers
   - e.+ Department of the Navy
   - f.+ Department of the Air Force
2. State
   - a.* Department of Health
   - b.*+ Department of Land and Natural Resources, Division of Water and Land Development, Chairman's Office
   - c.*+ Department of Agriculture
   - d.*+ Department of Planning and Economic Development
   - e.*+ Department of Transportation
   - f.+ Office of Environmental Quality Control
   - g.+ University of Hawaii, Water Resources Research Center
   - h.+ Department of Defense
   - i.+ Department of Accounting and General Services
3. County of Hawaii
   - a.* Department of Planning
   - b.* Department of Water Supply
   - c.+ Department of Parks and Recreation
   - d.+ Department of Research and Development
4. Private and Community Organizations
   - a.* Kona Historical Society
   - b.+ Maia Joan Marx

* Preparation Notice

\+ Draft EIS

Preparation Notice

Comments and Responses

United States Department of the Interior

FISH AND WILDLIFE SERVICE
300 ALA MOANA BOULEVARD
P. O. BOX 50167
HONOLULU, HAWAII 96850

IN REPLY REFER TO:
ES
Room 6307

SEP 16 1981

Re: EIS Preparation Notice - Kailua - Kona (Southern Zone) Wastewater Facility Plan, Hawaii County, Hawaii

Mr. James S. Kumagai
M & E Pacific, Inc.
Pacific Trade Center, Suite 600
190 South King Street
Honolulu, Hawaii 96813

Dear Mr. Kumagai:

We have reviewed the referenced material and find that due to its nature, the proposed project will have no significant deleterious impact on fish and wildlife resources. Please do not hesitate to call on us if we may be of further assistance.

We appreciate this opportunity to comment.

Sincerely yours,

for Ernest Kosaka
Project Leader
Office of Environmental Services

cc: NMFS
HDF&G
EPA, San Francisco

CONSERVE AMERICA'S ENERGY

Save Energy and You Serve America!

M&E Pacific, Inc.

Environmental Engineers

Pacific Trade Center, Suite 600
190 South King Street
Honolulu, Hawaii 96813
(808) 521-7051 Telex 7430065

October 13, 1981

Mr. Ernest Kosaka, Project Leader
Office of Environmental Services
U.S. Department of the Interior
Fish and Wildlife Service
P. O. Box 50167
Honolulu, Hawaii 96850

SUBJECT: Kailua-Kona (Southern Zone) Wastewater Facility Plan
North Kona District, Hawaii

Thank you for reviewing the preparation notice for the subject environmental impact statement.

The draft environmental impact statement will be available shortly through the Environmental Quality Commission should you desire to further examine and comment on the proposed project.

JAMES S. KUMAGAI, Ph.D.
Vice President

RRT/bs

DEPARTMENT OF THE ARMY
U. S. ARMY ENGINEER DISTRICT, HONOLULU
FT SHAFTER, HAWAII 96858

PODCO-O

2 July 1981

Dr. James S. Kumagai
Vice President
M&E Pacific, Inc.
190 South King Street, Suite 600
Honolulu, HI 96813

Dear Dr. Kumagai:

This is in response to your 9 June 1981 letter concerning Department of the Army permit requirements for the proposed Kailua-Kona Facility Plan, Southern Zone, Island of Hawaii.

Based on the information furnished, we have determined that the proposed facility does not involve any discharge of dredged or fill material into the waters of the United States. Consequently, a Department of the Army permit is not required for the proposed improvements.

Your efforts in complying with our permit program are appreciated. Thank you for your cooperation in this matter.

Sincerely,

ALFRED J. THIEDE
Colonel, Corps of Engineers
Commander and District Engineer

KENNETH E. SPRAGUE
LTC, Corps of Engineers
Deputy District Engineer

M&E Pacific, Inc.
Environmental Engineers

Pacific Trade Center, Suite 600
190 South King Street
Honolulu, Hawaii 96813
(808) 521-3051 Telex 7430065

October 13, 1981

Alfred J. Thiede, Colonel
Corps of Engineers
Commander and District Engineer
U.S. Army Engineer District
Fort Shafter, Hawaii 96858

SUBJECT: Kailua-Kona (Southern Zone) Wastewater Facility Plan
North Kona District, Hawaii

Thank you for reviewing the preparation notice for the subject environmental impact statement.

The draft environmental impact statement will be available shortly through the Environmental Quality Commission should you desire to further examine and comment on the proposed project.

JAMES S. KUMAGAI, Ph.D.
Vice President

RRT/bs

GEORGE R. ARIYOSHI
GOVERNOR OF HAWAII

STATE OF HAWAII
DEPARTMENT OF HEALTH
P O BOX 3378
HONOLULU, HAWAII 96801

September 14, 1981

GEORGE A. L. YUEN
DIRECTOR OF HEALTH

JOHN F. CHALMERS, M.D.
DEPUTY DIRECTOR OF HEALTH

HENRY N. THOMPSON, M.A.
DEPUTY DIRECTOR OF HEALTH

MELVIN K. KOIZUMI
DEPUTY DIRECTOR OF HEALTH

ABELINA MADRID SHAW, M.A., J.D.
DEPUTY DIRECTOR OF HEALTH

In reply, please refer to:
File: EPHS-SS

Dr. James S. Kumagai
Vice President
M&E Pacific, Inc.
190 S. King St., Suite 600
Honolulu, Hawaii 96813

Dear Dr. Kumagai:

Subject: Request for Comments on Proposed Environmental Impact Statement (EIS) for Kailua-Kona (Southern Zone) Wastewater Facility Plan, N. Kona District, Hawaii

Thank you for allowing us to review and comment on the subject proposed EIS. Please be informed that we do not have any comments or objections to this project at this time.

We realize that the statements are general in nature due to preliminary plans being the sole source of discussion. We, therefore, reserve the right to impose future environmental restrictions on the project at the time final plans are submitted to this office for review.

Sincerely,

Brian M. Choy

For MELVIN K. KOIZUMI
Deputy Director for
Environmental Health

M&E Pacific, Inc.

Environmental Engineers

Pacific Trade Center, Suite 600
190 South King Street
Honolulu, Hawaii 96813
(808) 521-3051 Telex 7430065

October 13, 1981

Mr. Melvin Koizumi
Deputy Director for
Environmental Health
Department of Health
P. O. Box 3378
Honolulu, Hawaii 96801

SUBJECT: Kailua-Kona (Southern Zone) Wastewater Facility Plan
North Kona District, Hawaii

Thank you for reviewing the preparation notice for the subject environmental impact statement.

The draft environmental impact statement will be available shortly through the Environmental Quality Commission should you desire to further examine and comment on the proposed project.

JAMES S. KUMAGAI, Ph.D.
Vice President

RRT/bs

GEORGE R. ARIYOSHI
GOVERNOR OF HAWAII

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF WATER AND LAND DEVELOPMENT
P. O. BOX 373
HONOLULU, HAWAII 96809

DIVISIONS:
CONSERVATION AND RESOURCES ENFORCEMENT
CONVEYANCES
FISH AND GAME
FORESTRY
LAND MANAGEMENT
STATE PARKS
WATER AND LAND DEVELOPMENT

September 17, 1981

Dr. James S. Kumagai
Vice President
M&E Pacific, Inc.
Pacific Trade Center, Suite 600
190 South King Street
Honolulu, Hawaii 96813

Dear Dr. Kumagai:

Kailua-Kona (Southern Zone) Wastewater
Facility Plan, North Kona District, Hawaii

Thank you for sending us the EIS Preparation Notice for the subject project.

We have no objections with the project. The sewering of the Southern Zone will eliminate potential cesspool contamination of coastal waters along Alii Drive.

Effluent reclamation for irrigating recreational areas and forage and related crops are strongly encouraged. The Kona area will certainly benefit from this "new" water supply.

Very truly yours,

Robert T. Chuck

ROBERT T. CHUCK
Manager-Chief Engineer

MT:ko

M&E Pacific, Inc.
Environmental Engineers

Pacific Trade Center, Suite 600
190 South King Street
Honolulu, Hawaii 96813
(808) 521-3051 Telex 7430065

October 13, 1981

Mr. Robert T. Chuck
Manager-Chief Engineer
Division of Water and Land Development
Department of Land and Natural Resources
P. O. Box 373
Honolulu, Hawaii 96809

SUBJECT: Kailua-Kona (Southern Zone) Wastewater Facility Plan
North Kona District, Hawaii

Thank you for reviewing the preparation notice for the subject environmental impact statement.

The draft environmental impact statement will be available shortly through the Environmental Quality Commission should you desire to further examine and comment on the proposed project.

JAMES S. KUMAGAI, Ph.D.
Vice President

RRT/ba

GEORGE R. ARIYOSHI
GOVERNOR OF HAWAII

STATE OF HAWAII

P. O. BOX 621
HONOLULU, HAWAII 96809

SUSUMU ONO, CHAIRMAN
BOARD OF LAND & NATURAL RESOURCES

EDGAR A. HARRIS
DEPUTY TO THE CHAIRMAN

DIVISION:
CONSERVATION AND RESOURCES ENFORCEMENT
CONVEYANCES
FISH AND GAME
FORESTRY
LAND MANAGEMENT
STATE PARKS
WATER AND LAND DEVELOPMENT

JUN 29 P2:

Dr. James Kumagai, Vice President
M & E Pacific, Inc.
Pacific Trade Center, Suite 600
190 South King Street
Honolulu, Hawaii 96813

Dear Dr. Kumagai:

SUBJECT: Kailua-Kona Facility Plan, North Kona, Hawaii
TMK: 7-5-var.; 7-6-var.; 7-7-var.; 7-8-var.

Thank you for your letter of June 9, 1981 apprising us of your revisions to the Kailua-Kona Facility Plan's Southern Zone which included dividing of the proposed action into Phases I and II.

A review of our records shows that the proposed route of the subject sewerage system will occur in areas where known archaeological sites are located, including those sites listed on the National Register of Historic Places and the Hawaii Register of Historic Places.

The proposed route occurs in the Kona Field System (site #6601), a site determined eligible for placement on the National Register of Historic Places. The Kona Field System is an area characterized by the numerous agricultural sites/features associated with the prehistory of North and South Kona. The extent of this agricultural system is such that many sites have not yet been recorded and it is highly probable that the applicant/developer will encounter unrecorded sites if the proposed route diverges from within the existing highways and roadways. It is also highly probable that subsurface sites will be discovered during the trenching operation.

In consideration with the above comments, we have the following recommendations for Phase I and II.

1) That the applicant/developer submit a detailed copy of the proposed route to us prior to construction.

2) That any construction activity outside of any existing roadway corridor (e.g., pump stations) will require an archaeological reconnaissance done by a qualified archaeologist and a copy of this report be sent to us for review and evaluation prior to the start of construction. At such time, determinations can be made on the measures taken to mitigate or negate adverse effects to the resources.

3) As it is highly probable that subsurface features will occur during construction, the developer should contract with a qualified archaeologist to monitor the construction activities, as may be necessary.

4) The project must conform to 36 CFR 800 (Protection of Historic and Cultural Properties) since federal monies will be utilized.

If there are further questions, please contact Mr. Ralston Nagata at 548-7460).

Sincerely yours,

Susumu Ono
Chairman of the Board and
State Historic Preservation
Officer

M&E Pacific, Inc.

Environmental Engineers

Pacific Trade Center, Suite 600
190 South King Street
Honolulu, Hawaii 96813
(808) 521-3051 Telex: 7430065

October 13, 1981

Mr. Susumu Ono, Chairman
Board of Land and Natural Resources
Department of Land and Natural Resources
P. O. Box 621
Honolulu, Hawaii 96809

SUBJECT: Kailua-Kona (Southern Zone) Wastewater Facility Plan
North Kona District, Hawaii

A draft environmental impact statement will be available shortly through the Environmental Quality Commission. Your recommendations to mitigate potential impacts to the Kona Field System (site no. 6601) have been incorporated in their entirety into the draft environmental impact statement. These recommendations were contained in your letter dated June 29, 1981.

Thank you for your assistance in identifying and mitigating impacts to the archaeological and historic resources. The draft environmental impact statement will enable your office to further review and comment on the proposed project.

JAMES S. KUMAGAI, Ph.D.
Vice President

RRT/bs

GEORGE R. ARIYOSHI
GOVERNOR

JACK K. SUWA
CHAIRMAN, BOARD OF AGRICULTURE

State of Hawaii
DEPARTMENT OF AGRICULTURE
1428 So. King Street
P. O. Box 22159
Honolulu, Hawaii 96822

September 23, 1981

M&E Pacific, Inc.
Pacific Trade Center, Suite 600
190 South King Street
Honolulu, Hawaii 96813

SUBJECT: Kailua-Kona (Southern Zone) Wastewater Facility Plan,
North Kona District Hawaii, EIS Preparation Notice

The Department of Agriculture has reviewed the subject EIS Preparation Notice and offers the following comments.

Secondary impacts which may be generated by the project should be thoroughly discussed. We are particularly concerned with the increase urban development allowable with a sewerage system and the possible effects on agricultural activities.

The use of treated effluent for agricultural or other irrigation purposes should also be addressed in the subject EIS.

Thank you for the opportunity to comment.

Jack K. Suwa
JACK K. SUWA
Chairman, Board of Agriculture

cc: Dept. of Public Works
County of Hawaii

"Support Hawaiian Agricultural Products"

M&E Pacific, Inc.

Environmental Engineers

Pacific Trade Center, Suite 600
190 South King Street
Honolulu, Hawaii 96813
(808) 521-3051 Telex: 7430065

September 30, 1981

Mr. Jack K. Suwa, Chairman
Board of Agriculture
Department of Agriculture
P. O. Box 22159
Honolulu, Hawaii 96822

SUBJECT: Kailua-Kona (Southern Zone) Wastewater Facility Plan
North Kona District, Hawaii

Thank you for your review of the subject document. The following are in response to your comments:

1. Secondary impacts. Only those areas zoned urban are planned to be serviced by the proposed sewerage system. Land currently zoned "agricultural" will remain on cesspools. Any urban growth that could be accommodated by the sewerage system should therefore not encroach on agricultural lands.

2. Effluent reclamation. Two separate wastewater facility plans are being prepared for Kailua-Kona, one for the northern zone and another for the southern zone. The plan for the southern zone calls for transporting the raw wastewater to the northern zone for treatment and disposal. The issues related to effluent disposal are more appropriately addressed in the EIS for the northern zone facility plan. The northern zone EIS, prepared by R.M. Towill Corp., is being finalized.

The draft EIS for the southern zone facility plan will be available shortly. Any further comments you may have will be appreciated.

JAMES S. KUMAGAI, Ph.D.
Vice President

RRT/bs

DEPARTMENT OF PLANNING
AND ECONOMIC DEVELOPMENT

GEORGE R. ARIYOSHI
Governor

HIDETO KONO
Director

FRANK SKRIVANEK
Deputy Director

Kamamalu Building, 250 South King St., Honolulu, Hawaii • Mailing Address: P.O. Box 2359, Honolulu, Hawaii 96804

September 23, 1981

Ref. No. 3649

Dr. James S. Kumagai
M&E Pacific, Inc.
Pacific Trade Center
Suite 600
190 South King Street
Honolulu, Hawaii 96813

Dear Dr. Kumagai:

Subject: Environmental Impact Statement Preparation Notice for Kailua-Kona (Southern Zone) Wastewater Facility Plan, North Kona District, Hawaii

We have reviewed the subject preparation notice and offer the following comments.

Since the Hawaii Coastal Zone Management (CZM) Program's statutory concerns incorporate water quality of coastal ecosystems, scenic and historic resources, and economic uses in the coastal zone, we recommend that the EIS include a discussion of the relevant CZM objectives and policies of Chapter 205A, Hawaii Revised Statutes. This will assist the agencies having functional CZM responsibilities in their evaluation of the project's consistency and compliance with the Hawaii CZM policies.

We have no further comments to offer at this time, but would appreciate the opportunity to review the completed EIS.

Sincerely,

Frank Skrivanek
for Hideto Kono

cc: Office of Environmental Quality Control

M&E Pacific, Inc.
Environmental Engineers

Pacific Trade Center, Suite 600
190 South King Street
Honolulu, Hawaii 96813
(808) 521-3051 Telex 7430865

October 13, 1981

Mr. Hideto Kono, Director
Department of Planning and
Economic Development
P. O. Box 2359
Honolulu, Hawaii 96804

SUBJECT: Kailua-Kona (Southern Zone) Wastewater Facility Plan
North Kona District, Hawaii

Thank you for reviewing the preparation notice for the subject project.

Since the proposed project is entirely within the shoreline management area, the coastal zone management policies contained in Chapter 205-A, HRS, were examined. Briefly, our findings indicate that the policies addressing recreational resources, economic uses, and coastal ecosystem are directly supported by the proposed project. Wastewater facilities will curtail the existing subsurface seepage of wastewater into the coastal waters, thus protecting the highly valued coral reef ecosystem and its inherent recreational value. Visitor facilities, which are considered coastal dependent, will be allowed to expand without degrading the water quality. The proposed project will not conflict with other policies addressing historic resources, scenic and open space resources, or coastal hazards.

The draft environmental impct statement will be available shortly through the Environmental Quality Commission should you desire further information and input.

JAMES S. KUMAGAI, Ph.D.
Vice President

RRT/bs

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION

RYOKICHI HIGASHIONNA, Ph.D.
DIRECTOR

DEPUTY DIRECTORS
Wayne J. Yamasaki
JAMES R. CAMRAS
JAMES B. McCORMICK
JONATHAN K. SHIMADA, Ph.D.

IN REPLY REFER TO:

September 22, 1981

STP 8.7629

Mr. James S. Kumagi
Vice President
M & E Pacific, Inc.
190 South King Street
Honolulu, Hawaii 96813

Dear Mr. Kumagi:

Kailua-Kona (Southern Zone) Wastewater
Facility Plan, North Kona District, Hawaii,
EIS Preparation Notice

Thank you for the opportunity to express our concern on the subject preparation notice.

We have no substantive comments to offer to assist you in developing your environmental statement.

Very truly yours,

Ryokichi Higashionna

Ryokichi Higashionna
Director of Transportation

M&E Pacific, Inc.
Environmental Engineers

Pacific Trade Center, Suite 600
190 South King Street
Honolulu, Hawaii 96813
(808) 521-3051 Telex 7430065

October 13, 1981

Dr. Ryokichi Higashionna
Director of Transportation
Department of Transportation
869 Punchbowl Street
Honolulu, Hawaii 96813

SUBJECT: Kailua-Kona (Southern Zone) Wastewater Facility Plan
North Kona District, Hawaii

Thank you for reviewing the preparation notice for the subject environmental impact statement.

The draft environmental impact statement will be available shortly through the Environmental Quality Commission should you desire to further examine and comment on the proposed project.

JAMES S. KUMAGAI, Ph.D.
Vice President

RRT/bs

RECEIVED SEP 16 1981

PLANNING DEPARTMENT

25 AUPUNI STREET • HILO, HAWAII 96720

COUNTY OF HAWAII

HERBERT T. MATAYOSHI
Mayor

SIDNEY M. FUKE
Director

DUANE KANUHA
Deputy Director

September 14, 1981

Mr. James S. Kumagai, Vice President
M & E Pacific, Inc.
Pacific Trade Center, Suite 600
190 South King Street
Honolulu, HI 96813

Dear Mr. Kumagai:

Kailua-Kona (Southern Zone) Wastewater Facility Plan
North Kona District, Island of Hawaii

Thank you for the opportunity to provide comments on the EIS now being prepared for the proposed subject project.

There should be some discussion within the EIS of the land use designations, both the zoning designations as well as those of the County General Plan. The discussions should also relate to the potential/projected population density and the "sizing" of the wastewater system.

Additionally, should federal funds be utilized for this project, the EIS should discuss the impacts of the system on sites which are both listed on or declared eligible for the National Register of Historic Places. Please be advised that two such sites are within the Southern Zone. These are the Kona Field System and the Kuakini Wall, both of which have been declared eligible for the National Register of Historic Places. In addition, there are numerous archaeological sites within the area. We suggest you contact the Historic Sites Section of the Department of Land and Natural Resources for further information.

Should you have questions or need more information, please do not hesitate to contact our office again.

Sincerely,

SIDNEY FUKE
Planning Director

VKG:jrh

M&E Pacific, Inc.

Environmental Engineers

Pacific Trade Center, Suite 600
190 South King Street
Honolulu, Hawaii 96813
(808) 521-3051 Telex 723-8063

October 13, 1981

Mr. Sidney Fuke, Planning Director
Planning Department
County of Hawaii
25 Aupuni Street
Hilo, Hawaii 96720

SUBJECT: Kailua-Kona (Southern Zone) Wastewater Facility Plan
North Kona District, Hawaii

Thank you for reviewing the environmental impact statement preparation notice for the subject project.

Your comments have been addressed in the environmental impact statement as follows:

1. Land use designations. Both the zoning and County General Plan designations have been discussed. The zoning was used to determine the service area for wastewater facilities.

2. Sizing of facilities. The sizing of the facilities is based on the projected population. Since the development plan is not yet available, the projections were based on a 4 percent annual increase. This growth rate seems reasonable, considering past trends, vacant urban lands, and possible economic activity.

3. Archaeological resources. We have been communicating with the Office of Historic Sites, Department of Land and Natural Resources. They have advised us of the presence of the eligible National Register sites and of possible mitigation measures to minimize impact.

The environmental impact statement will be available shortly through the Environmental Quality Commission.

JAMES S. KUMAGAI, Ph.D.
Vice President

RRT/ba

DEPARTMENT OF WATER SUPPLY • COUNTY OF HAWAII
25 AUPUNI STREET • HILO, HAWAII 96720

October 2, 1981

M&E Pacific, Inc.
190 S. King St., Suite 600
Honolulu, HI 96813

ENVIRONMENTAL IMPACT STATEMENT
KAILUA-KONA (SOUTHERN ZONE) WASTEWATER FACILITY PLAN
NORTH KONA, HAWAII

The Department of Water Supply is supportive of the proposed wastewater facility inasmuch as it will greatly reduce the potential of potable groundwater contamination in the area.

During the construction design stage of the proposed project, plans should be submitted for our review and approval to insure that the construction will not affect the existing public water system facilities.

Thank you for the opportunity to comment on the project.

H. William Sewake
Manager

QA

...Water brings progress...

M&E Pacific, Inc.
Environmental Engineers

Pacific Trade Center, Suite 600
190 South King Street
Honolulu, Hawaii 96813
(808) 521-3051 Telex: 7430065

October 13, 1981

Mr. H. William Sewake, Manager
Department of Water Supply
County of Hawaii
25 Aupuni Street
Hilo, Hawaii 96720

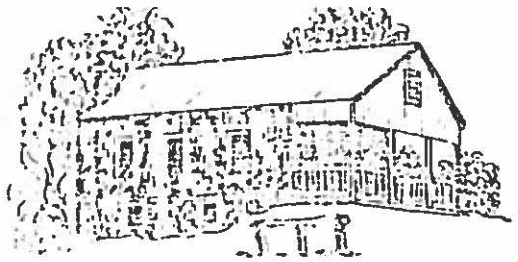
SUBJECT: Kailua-Kona (Southern Zone) Wastewater Facility Plan
North Kona District, Hawaii

Thank you for reviewing the preparation notice for the subject environmental impact statement.

The draft environmental impact statement will be available shortly through the Environmental Quality Commission should you desire to further examine and comment on the proposed project.

JAMES S. KUMAGAI, Ph.D.
Vice President

RRT/bs



KONA HISTORICAL SOCIETY
POST OFFICE BOX 398 • CAPTAIN COOK HAWAII 96704

September 4, 1981

James S. Kumagai
M & E Pacific Trade Center, Suite 600
190 South King St.
Honolulu, Hi. 96813

Dear Mr. Kumugai:

Re: Kailua-Kona, (Southern Zone) Wastewater Facility Plan North Kona District, Hawaii

Thank you for your letter of August 31, 1981 regarding the Wastewater Facility Plan. At the present time we have no archeological interest in the area but, should you find something of historic significance, we would appreciate your contacting the Bishop Museum for further consideration.

Sincerely,

KONA HISTORICAL SOCIETY

Sherwood R. H. Greenwell
President

SRHG:jo

M&E Pacific, Inc.

Environmental Engineers

Pacific Trade Center, Suite 600
190 South King Street
Honolulu, Hawaii 96813
(808) 521-3051 Telex 7430065

October 13, 1981

Kona Historical Society
P. O. Box 398
Captain Cook, Hawaii 96704

ATTENTION: Mr. Sherwood R.H. Greenwell, President

SUBJECT: Kailua-Kona (Southern Zone) Wastewater Facility Plan
North Kona District, Hawaii

Thank you for reviewing the environmental impact statement preparation notice for the subject project.

We have been communicating with the Office of Historic Sites, Department of Land and Natural Resources, regarding possible mitigation measures to minimize impacts on historic and archaeological resources.

An environmental impact statement containing an expanded and more detailed discussion is being compiled and will be available shortly through the Environmental Quality Commission.

JAMES S. KUMAGAI, Ph.D.
Vice President

RRT/bs

Draft EIS

Comments and Responses

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
P. O. BOX 621
HONOLULU, HAWAII 96809

EDGAR A. HAMASU
DEPUTY TO THE CHAIRMAN

DIVISIONS:
AQUACULTURE DEVELOPMENT PROGRAM
AQUATIC RESOURCES
CONSERVATION AND RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
LAND MANAGEMENT
STATE PARKS
WATER AND LAND DEVELOPMENT

December 18, 1981

Office of Environmental
Quality Control
Room 301
550 Halekauwila St.
Honolulu, HI 96813

Gentlemen:

Thank you for the opportunity to review the EIS for sewer facilities for the southern zone of the Kailua-Kona area.

Please be advised that any work in a Conservation District will require a permit from the Board of Land and Natural Resources. This would include work such as an ocean outfall.

We concur with the developer that the probable impact on archaeological and historical resources has not yet been identified.

"The project area is within the Kona Field System, a site eligible to the National Register of Historic Places. A qualified archaeologist will be hired to monitor construction. The State Office of Historic Sites will be contacted to determine the proper course of action in the event subsurface remains are encountered." (EIS Summary, Section IV-A)

Please note that the phrase "State Office of Historic Sites" should be changed to read "Historic Sites Section of the Department of Land and Natural Resources."

Sincerely,

SUSUMU ONO, Chairman
Board of Land and Natural Resources

M&E Pacific, Inc.
Environmental Engineers

Pacific Trade Center Suite 600
190 South King Street
Honolulu, Hawaii 96813
(808) 521-3051 Telex 7430065

March 18, 1982

Mr. Susumu Ono, Chairman
Board of Land and Natural
Resources
State of Hawaii
P.O. Box 621
Honolulu, Hawaii 96809

SUBJECT: Kailua-Kona (Southern Zone) Facility Plan EIS

Thank you for reviewing the subject EIS. Based on current condition, no work is anticipated within the Conservation District. The ocean outfall referred to in the report is part of another project--the facility plan for the Kailua-Kona Northern Zone. Wastewater generated in the southern zone will be conveyed to the northern zone for treatment and disposal.

Probable impacts on archaeological and historic resources will be resolved with the Historic Sites Section of your department in the design and construction phases of this project, as noted in the EIS.

Please call if you have any further comments.

JAMES S. KUMAGAI, Ph.D.
Vice President

RRT/jn

University of Hawaii at Manoa

Water Resources Research Center
Holmes Hall 283 • 2540 Dole Street
Honolulu, Hawaii 96822

16 December 1981

Office of Environmental Quality Control
550 Halekauwila Street, Room 301
Honolulu, Hawaii 96813

Gentlemen:

Subject: Draft EIS for the Kailua-Kona (Southern Zone) Facility Plan (sewerage), North Kona District, Hawaii, November 1981

We have reviewed the subject DEIS and have no comments to offer at this time.

On a somewhat related matter, is there any existing or planned storm drainage system for this area? Since trenching in this lava rock area will be a major cost item, putting a storm drain in the same trench as the sewer, insofar as possible, would reduce future excavating costs. While the subject area has high permeability at the present time, intense urbanization with heavy paving and buildings will greatly reduce infiltration and result in substantial runoff.

Similarly, urbanization mauka of the subject area will reduce infiltration. It is not just the pavement and buildings; putting a few inches of soil on the rocky surface to grow a lawn will substantially reduce infiltration. In effect storm waters will reach the intensely urbanized makai areas much more frequently than in the past. This together with the sloping characteristic of the area would indicate a need for a storm drainage system fairly soon.

This material was reviewed by WRRC personnel. Thank you for the opportunity to comment.

Sincerely,

Edwin T. Murabayashi
EIS Coordinator

ETM:jm

cc: Y.S. Fok
H. Gee
Env. Center, UH

AN EQUAL OPPORTUNITY EMPLOYER

M&E Pacific, Inc.

Environmental Engineers

Pacific Trade Center, Suite 600
190 South King Street
Honolulu, Hawaii 96813
(808) 521-3051 Telex: 7430065

March 19, 1982

Mr. Edwin T. Murabayashi, EIS Coordinator
Water Resources Research Center
University of Hawaii
Holmes Hall 283
2540 Dole Street
Honolulu, Hawaii 96822

SUBJECT: Kailua-Kona (Southern Zone) Facility Plan EIS

Thank you for reviewing the subject EIS.

A drainage system at Kailua-Kona is of low priority because of the high permeability of the area. Even if storm drains were to be installed, the cost savings to install them simultaneously with the sewer system would not necessarily be substantial. This is because the sewer lines and the storm drains would be generally perpendicular to each other. Furthermore, in the instances when lines do run parallel to each other, they would not necessarily occupy the same trench. An additional width of the right-of-way would still have to be excavated. The major advantage to installing drain and sewer lines simultaneously would be that traffic disruption would occur only once.

Because drainage is not a major problem, the county policy is to have private developers install any facilities, such as drywells (see attached letter).

JAMES S. KURAGAI, Ph.D.
Vice President

RRT/jn

Enclosure

DEPARTMENT OF PUBLIC WORKS
COUNTY OF HAWAII - 25 AUPUNI STREET - HILO, HAWAII 96720 - TELEPHONE (808) 961-8321

EDWARD K. HARADA
Chief Engineer
ARTHUR T. ISEMOTO
Deputy Chief Engineer

March 10, 1982

M & E PACIFIC
Pacific Trade Center, Suite 600
190 South King Street
Honolulu, HI 96813

Attention: Mr. Ken Ishizaki

SUBJECT: Draft E.I.S. for the Kailua-Kona (Southern Zone) Facility Plan (Sewerage), North Kona District, Hawaii, November 1981

Reference is made the December 16, 1981 letter from the Water Resource Research Center, UH-Manoa to OEQC with regard to storm drainage systems in the subject area. The Department of Public Works policy on handling storm water runoffs is twofold: (1) For developments which is traversed by or adjoins a stream, the developer is required to improve the section of the stream within his parcel such that it is capable of safely conveying runoff from mauka area through his parcel. Although stream improvements done in this fashion is on a piecemeal basis, it is the only practical way of funding these costly projects. (2) For parcels away from streams, storm runoffs generated by these developments are required to be disposed of on-site, usually by installing a sufficient number of drywell sumps. With the above method of storm water disposal, the need to install storm drain lines within County road right-of-way is minimal.

for EDWARD HARADA
Chief Engineer

DEPARTMENT OF THE ARMY
PACIFIC OCEAN DIVISION, CORPS OF ENGINEERS
FT. SHAFTER, HAWAII 96858

PODED-PV

16 December 1981

Office of Environmental Quality Control
550 Halekauwila Street, Room 301
Honolulu, Hawaii 96813

Dear Sir:

This letter provides our comments on the Environmental Impact Statement (EIS) for the Kailua-Kona (Southern Zone) Facility Plan, North Kona District, Hawaii. Our earlier comments about Department of the Army permit requirements in our 2 July 1981 letter still applies. We have determined that the proposed facility does not involve any discharge of dredged or fill material into waters of the United States. Consequently, a Department of the Army permit is not required for the proposed improvements.

Figure I-3 (referred to on page I-5 of the EIS) was not included in the copy of the EIS we reviewed. We are unable to determine the sites of the three proposed sewage pump stations along Alii Drive. We recommend that proposed sewage facilities be located outside of tsunami-prone or riverine flood hazard areas, whenever there is a practicable alternative. There are four riverine flood plains within the planning area, and all coastal areas are subject to tsunami inundation according to the preliminary Flood Insurance Study for the Island of Hawaii prepared by the Federal Insurance Administration.

We appreciate the opportunity to review the EIS.

Sincerely,

KISUK CHEUNG

KISUK CHEUNG
Chief, Engineering Division

Copy Furnished:
Department of Public Works
County of Hawaii
25 Aupuni Street
Hilo, Hawaii 96720

M&E Pacific, Inc.
Environmental Engineers

Pacific Trade Center, Suite 600
190 South King Street
Honolulu, Hawaii 96813
(808) 521-3051 Telex: 7430065

March 19, 1982

Mr. Kisuk Cheung, Chief
Engineering Division
Department of the Army
Corps of Engineers
Building 230, Fort Shafter
Honolulu, Hawaii 96858

SUBJECT: Kailua-Kona (Southern Zone) Facility Plan EIS

Thank you for reviewing the subject EIS.

The figure showing the location of the three sewage pump stations (Figure I-3) was inadvertently omitted. Upon consultation with your Flood Plan Management Section, it was determined that two pump stations are located within the 100-year flood-prone areas. Because it is not practical to locate the pump stations outside of the flood-prone areas, flood elevation studies will be conducted during the design stage. Further, the pump stations will be water-proofed to withstand the expected flood inundation levels.

Please call if you have any further comments.

JAMES S. KUMAGAI, Ph.D.
Vice President

RRT/jn

GEORGE R. ARIYOSHI
GOVERNOR

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL
550 HALEKAUWILA ST.
ROOM 301
HONOLULU, HAWAII 96813

George Yuen
Director
TELEPHONE NO.
548-6915

December 23, 1981

Mr. Edward Harada
Chief Engineer
Department of Public Works
County of Hawaii

Dear Mr. Harada:

Subject: Environmental Impact Statement for the Kailua-Kona (Southern Zone) Facility Plan, North Kona District, Hawaii

We have reviewed the subject statement and offer the following comments:

The location of the proposed sewage pump stations should be shown on a figure.

Page I-9. The time frame for construction of the three phases should be discussed. Traffic impacts during project construction would be lessened if the realigned Alii Drive was in-place prior to this project construction.

Page II-12. The subject area is prone to volcanic hazards as indicated by the U.S. Geological Survey in their report, Volcanic Hazards on the Island of Hawaii.

Page II-24. The future availability of potable water will probably be a controlling factor on population growth in addition to land use controls.

Page II-32. The last two paragraphs do not appear to be connected with the proposed project since no outfall is being proposed.

Page IV-2. The traffic tie-ups and resultant increases in automotive emissions should be discussed in greater detail. This especially so if the project will proceed before the opening of the new alignment of Alii Drive.

There should be discussion of what mitigation measures will be employed to control fugitive dust and noise during project construction.

We have enclosed comments not previously forwarded to you.

The EIS Regulations allow the accepting authority or his authorized representative to consider responses received after the fourteen day response period. This Office will exercise that option and will consider responses after the fourteen day period.

Thank you for the opportunity to review this statement.

Yours truly,

George Yuen
Director

Enclosures

M&E Pacific, Inc.

Environmental Engineers

Pacific Trade Center, Suite 600
190 South King Street
Honolulu, Hawaii 96813
(808) 521-3051 Telex: 7430065

March 18, 1982

Mr. George Yuen, Director
Department of Health
State of Hawaii
550 Halekauwila Street, Room 301
Honolulu, Hawaii 96813

SUBJECT: Kailua-Kona (Southern Zone) Facility Plan EIS

Thank you for reviewing the subject EIS. The following responses to your comments have been incorporated into the revised EIS:

1. Location of pump stations. The map showing pump station locations (Figure I-3) was inadvertently omitted in the draft and will be included in the revised EIS.

2. Phasing (p. I-9). The tentative timetable is to begin construction in 1985 and complete the project within two to five years. This schedule is dependent on the timing and availability of federal funding and the county capital improvement program.

3. Volcanic hazards (p. II-12). The report was corrected by identifying the volcanic hazards, as determined by the U.S. Geological Survey. Although there are no known mitigation measures, the occurrence probability is very low.

4. Population growth (p. II-24). The capacity of the proposed wastewater system was based on the 208 Water Quality Plan population projections. Land use zoning and potable water development plans should also be based on the same projections.

5. Outfall (p. II-32). Reference to the outfall has been deleted since proposed actions within the southern zone do not include an outfall.

6. Construction-related impacts (p. IV-2). Local traffic disruption and the resultant increase in automotive emissions are unavoidable. These impacts could be lessened if the Alii Drive realignment project were completed, but the uncertain timetable of that project does not make it a dependable

alternative. In the event the wastewater facilities project precedes the Alii Drive realignment, then the only mitigation measure is to restrict traffic to local traffic. Construction hours will be regulated to avoid peak traffic hours. Resulting increases in automotive emissions will be temporary, only during construction hours, and occurring only during construction period. Standard construction practices will be followed to minimize dust and noise. These include regulating construction hours and watering.

Please call if you have further comments.

JAMES S. KUMAGAI, Ph.D.
Vice President

RRT/jn

Maia Joan Marx, architect
76-6195 Pakalana Road
Kailua-Kona Hi. 96740

Dec. 17, 1981

STATE ENVIRONMENTAL QUALITY COMMISSION
550 Halekauwila St.
Honolulu, Hawaii 96813

Dear Sirs:

In response to the enclosed article which appeared in the newspaper West Hawaii Today, I would like to make the following comments:

1. If the numerous condominium units along Alii Drive, including those presently under construction, are even 50% occupied traffic will be almost impossible.

2. Alii Drive is the only escape route for residents of Alii Kai Subdivision and White Sands Beach Estates Subdivision, as well as the aforementioned high density developments.

3. I wish to plead the case that the proposed sewer line along Alii Drive not be constructed until the proposed Alii Drive realignment is operational or until alternate routes out of the low lying area are available.

4. Where pumping stations are required, such as the existing one at Kahalpa Beach Park, no expense should be spared to eliminate the odor of raw sewerage. The condition at Kahalua Beach Park is already a detriment to one of the most attractive recreational areas in Kailua.

Sincerely,

Maia Joan Marx

cc: Hawaii County Dept. of Public Works

M&E Pacific, Inc.
Environmental Engineers

Pacific Trade Center, Suite 600
190 South King Street
Honolulu, Hawaii 96813
(808) 521-3051 Telex: 7430065

March 18, 1982

Mr. Maia Loan Marx
76-6195 Pakalana Road
Kailua-Kona, Hawaii 96740

SUBJECT: Kailua-Kona (Southern Zone) Facility Plan EIS

Thank you for your comments regarding the proposed wastewater facilities in Kailua-Kona. You expressed concern over traffic disruption along Alii Drive and potential odor problems from the sewage pump stations. As the engineering consultant for the Department of Public Works, County of Hawaii, we offer the following responses to your concerns:

1. Traffic disruption along Alii Drive. It would be ideal if the Alii Drive realignment project could precede the sewer project. The phasing of the sewer project, however, is controlled by the availability of funding, especially federal funds. The funding could lapse if there was an extended waiting period for the Alii Drive realignment project. Therefore, if the sewer project begins prior to the realignment project, then traffic disruption is inevitable but will be mitigated by restricting traffic to local traffic and regulating construction hours to avoid peak traffic hours.

2. Sewage pump station odors. Odor prevention will be one of the prime considerations in designing the pump stations. Techniques such as sealing the wet wells and nearby sewer manholes will be utilized.

If you have further comments, please contact us.

JAMES S. KUMAGAI, Ph.D.
Vice President

RTT/jn

HEADQUARTERS
NAVAL BASE PEARL HARBOR
BOX 110
PEARL HARBOR, HAWAII 96860

IN REPLY REFER TO:
002A:vjy
Ser 2374

9 DEC 1981

Office of Environmental Quality Control
550 Halekauwila Street, Room 301
Honolulu, Hawaii 96813

Gentlemen:

Environmental Impact Statement
Kailua-Kona (Southern Zone) Facility Plan

The Environmental Impact Statement for the Kailua-Kona (Southern Zone) Facility Plan, Kailua-Kona, Hawaii has been reviewed and the Navy has no comments to offer. As this Command has no further use for the EIS, the EIS is being returned.

Thank you for the opportunity to review the EIS.

Sincerely,

R. L. ELSBERND
Lieutenant Commander, CEC, USN
Deputy Facilities Engineer
By direction of the Commander

Encl

Copy to: (w/o encl)
✓Department of Public Works
County of Hawaii
25 Aupuni Street
Hilo, Hawaii 96720

DEPARTMENT OF WATER SUPPLY • COUNTY OF HAWAII
25 AUPUNI STREET • HILO, HAWAII 96720

November 30, 1981

Office of Environmental Quality Control
State of Hawaii
550 Halekauwila Street, Room 301
Honolulu, HI 96813

ENVIRONMENTAL IMPACT STATEMENT (EIS) FOR THE
KAILUA-KONA (SOUTHERN ZONE) FACILITY PLAN
NORTH KONA, HAWAII

Thank you for the opportunity to comment on the EIS for the proposed project.

We have no comments to offer at this time and are returning the EIS to you.

H. William Sewake
Manager

CS

Enc.

cc - ✓Department of Public Works

... Water brings progress...

STATE OF HAWAII
DEPARTMENT OF PLANNING AND
ECONOMIC DEVELOPMENT
P. O. Box 2359
Honolulu, Hawaii 96804

December 23, 1981

Ref. No. 4038

Office of Environmental Quality Control
550 Halekauwila Street, Room 301
Honolulu, Hawaii 96813

Attention: Mr. Melvin Koizumi

Dear Sir:

Subject: Kailua-Kona (Southern Zone) Wastewater Facility Plan,
North Kona District, Hawaii, Draft EIS

We have reviewed the draft EIS for the Kailua-Kona (Southern Zone) Wastewater Facility Project and have no comments to offer.

Thank you for the opportunity to review this document.

Sincerely,

Hideto Kono

cc: Department of Public Works
County of Hawaii

GEORGE R. ARIYOSHI
GOVERNOR

STATE OF HAWAII
DEPARTMENT OF DEFENSE
OFFICE OF THE ADJUTANT GENERAL
3949 DIAMOND HEAD ROAD, HONOLULU, HAWAII 96816

VALENTINE A. SIEFERMANN
MAJOR GENERAL
ADJUTANT GENERAL

DANIEL K. C. AU
COLONEL
DEPUTY ADJUTANT GENERAL

HIENG

14 DEC 1981

Office of Environmental Quality Control
550 Halekauwila Street, Room 301
Honolulu, Hawaii 96813

Gentlemen:

Kailua-Kona (Southern Zone) Facility Plan

Thank you for providing us the opportunity to review your proposed project, "Kailua-Kona (Southern Zone) Facility Plan" Environmental Impact Statement.

We have completed our review and have no comments to offer at this time.

Yours truly,

JERRY M. MATSUDA
Captain, HANG
Contr & Engr Officer

cc: Department of Public Works
Hilo, Hawaii
EIC w/EIS

GEORGE R. ARIYOSHI
GOVERNOR

JACK K. SUWA
CHAIRMAN, BOARD OF AGRICULTURE

STATE OF HAWAII
DEPARTMENT OF AGRICULTURE
1428 SO. KING STREET
HONOLULU, HAWAII 96814

December 16, 1981

MEMORANDUM

To: Office of Environmental Quality Control

Subject: Environmental Impact Statement
Kailua-Kona (Southern Zone) Facility Plan
TMK: 7-5,6,7,8 var.

The Department of Agriculture has reviewed the subject statement and finds that our concerns have been adequately addressed.

Thank you for the opportunity to comment.

Jack K. Suwa

JACK K. SUWA
Chairman, Board of Agriculture

cc: Dept. of Public Works
County of Hawaii

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS [illegible]
HICKAM AIR FORCE BASE, HAWAII

DEC 11 1981

REPLY TO ATTN OF: DEEV (Mr Yamada, 449-1831)

SUBJECT: Environmental Impact Statement for the Kailua-Kona (Southern Zone) Facility Plan

TO: Office of Environmental Quality Control
550 Halekauwila Street, Room 301
Honolulu, HI 96813

1. This office has reviewed the subject EIS and has no comment to render relative to the proposed project.

2. We greatly appreciate your cooperative efforts in keeping the Air Force apprised of your project and thank you for the opportunity to review the document.

Kenneth W. Cozan

KENNETH W. COZAN, Colonel, USAF
Director of Civil Engineering

Cy to: Dept of Public Works
County of Hawaii
25 Aupuni Street
Hilo, HI 96720

United States Department of Agriculture

Soil Conservation Service

P. O. Box 50004
Honolulu, Hawaii
96850

December 17, 1981

Mr. Roy Takemoto, Chairman
Office of Environmental Quality Control
550 Halekauwila St., Room 301
Honolulu, HI 96813

Dear Mr. Takemoto:

Subject: EIS for the Kailua-Kona (Southern Zone) Facility Plan

We have reviewed the subject environmental impact statement and have no comments to offer.

Thank you for the opportunity to review this EIS.

Sincerely,

JACK P. KANALZ
State Conservationist

cc:
Department of Public Works
County of Hawaii
25 Aupuni St.
Hilo, HI 96720

SCS-AS-1

HERBERT T. MATAYOSHI, MAYOR
H. STUART KEARNS, JR.
Director

DEPARTMENT OF RESEARCH AND DEVELOPMENT
COUNTY OF HAWAII • 25 AUPUNI STREET • HILO, HAWAII 96720 • TELEPHONE (808) 961-8366

December 3, 1981

Office of Environmental Quality Control
550 Halekauwila Street Room 301
Honolulu, Hawaii 96813

SUBJECT: Kailua-Kona (Southern Zone) Facility Plan
Environmental Impact Statement

Thank you for the opportunity to review the above document.
We do not have any comments on this matter.

H. STUART KEARNS, JR.
DIRECTOR

GEORGE R. ARIYOSHI
GOVERNOR

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813

RYOKICHI HIGASHIONNA, Ph.D.
DIRECTOR

DEPUTY DIRECTORS
WAYNE J. YAMASAKI
JAMES R. CARRAS
JAMES B. McCORMICK
JONATHAN K. SHIMADA, Ph.D.

IN REPLY REFER TO
STP 8.7923

December 16, 1981

MEMORANDUM

TO: Office of Environmental Quality Control

FROM: Director of Transportation

SUBJECT: ENVIRONMENTAL IMPACT STATEMENT
KAILUA-KONA (SOUTHERN ZONE) FACILITY PLAN

Thank you for the opportunity to review and comment on the subject EIS.

We have no substantive comments to offer to improve the document.

Ryokichi Higashionna

Ryokichi Higashionna

United States Department of the Interior

FISH AND WILDLIFE SERVICE
300 ALA MOANA BOULEVARD
P. O. BOX 50167
HONOLULU, HAWAII 96850

IN REPLY REFER TO:
ES
Room 6307

DEC 8 1981

Office of Environmental Quality Control
550 Halekauwila Street, Room 301
Honolulu, Hawaii 96813

Re: EIS - Kailua-Kona (Southern Zone) Facility Plan, Hawaii County, Hawaii

Gentlemen:

We have reviewed the subject Environmental Impact Statement (EIS) and offer the following comments.

The proposed project will have little, if any, adverse impact on terrestrial resources in the project area. The proposed outfall, however, may have an impact on aquatic resources; therefore, we would like to be kept advised of the details of that portion of the project so that we may provide appropriate comments at a later date.

We appreciate this opportunity to comment.

Sincerely yours,

Ernest Kosaka

Ernest Kosaka
Project Leader
Office of Environmental Services

cc: NMFS
HDF&G
EPA, San Francisco

CONSERVE AMERICA'S ENERGY

COPY

DEPARTMENT OF PARKS & RECREATION
COUNTY OF HAWAII
HILO, HAWAII 96720

December 1, 1981

Office of Environmental Quality Control
550 Halekauwila Street, Room 301
Honolulu, Hawaii 96813

Subject: Kailua-Kona (Southern Zone) Facility Plan EIS

We have reviewed the subject document and have no adverse comments to offer.

Thank you for the opportunity to review the report.

Milton T. Hakoda
Director

MTH:GM:ai

cc: Dept. of Public Works

(P)2029.1

DEC 17 1981

Office of Environmental
Quality Control
550 Halekauwila Street, Rm. 301
Honolulu, Hawaii 96813

Gentlemen:

Subject: Environmental Impact Statement for the Kailua-Kona (Southern Zone) Facility Plan

Thank you for this opportunity to review and comment on the subject project.

The project will not have any adverse environmental effect on any existing or planned facilities serviced by our department.

Very truly yours,

RIKIO NISHIOKA
State Public Works Engineer

MI:jm

cc: √ Department of Public Works
County of Hawaii

REFERENCES

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