HANNIBAL TAVARES
Mayor
TELEPHONE 244-7855

OFFICE OF THE MAYOR
COUNTY OF MAUI
WAILUKU, MAUI, HAWAII 96793

June 9, 1983

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

Gentlemen:

Re: Revised Environmental Impact Statement
Honokahua Well "B"
Lahaina District, Maui

This is to inform you that I have accepted the Revised EIS for the Honokahua Well "B" Project. Attached for your files is a copy of the subject Revised EIS.

Very truly yours,

Hannibal Tavares

HANNIBAL TAVARES
Mayor, County of Maui

Enc.

cc: Dept. of Water Supply
M & E Pacific, Inc.

REVISED

ENVIRONMENTAL IMPACT STATEMENT for

HONOKAHUA WELL "B"

LAHAINA DISTRICT, MAUI, HAWAII

M & E Pacific, Inc.
Consulting Engineers

REVISED

ENVIRONMENTAL IMPACT STATEMENT FOR

HONOKAHUA WELL "B"

LAHAINA DISTRICT, MAUI, HAWAII

Proposing Agency:

Department of Water Supply
County of Maui

THIS STATEMENT WAS DEVELOPED IN ACCORDANCE WITH THE ENVIRONMENTAL IMPACT STATEMENT REGULATIONS, STATE OF HAWAII, AND SUBMITTED PURSUANT TO:

CHAPTER 343
HAWAII REVISED STATUTES

4/13/83
DATE

William S. Haines
WILLIAM S. HAINES, DIRECTOR

HANNIBAL TAVARES
Mayor
TELEPHONE 244-7855

OFFICE OF THE MAYOR
COUNTY OF MAUI
WAILUKU, MAUI, HAWAII 96793

June 9, 1983

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

Gentlemen:

Re: Revised Environmental Impact Statement
Honokahua Well "B"
Lahaina District, Maui

This is to inform you that I have accepted the Revised EIS for the Honokahua Well "B" Project. Attached for your files is a copy of the subject Revised EIS.

Very truly yours,

Hannibal Tavares

HANNIBAL TAVARES
Mayor, County of Maui

Enc.

cc: Dept. of Water Supply
M & E Pacific, Inc.

CONTENTS

TABLES

Page

FIGURES

SUMMARY

PROJECT: Honokahua Well "B"

LOCATION: Lahaina District, Maui, Hawaii

PROPOSING AGENCY: Department of Water Supply
County of Maui

ACCEPTING AUTHORITIES: Governor, State of Hawaii
Mayor, County of Maui

CONTACT: Mr. William S. Haines, Director
Department of Water Supply
County of Maui
P.O. Box 1109
Wailuku, Maui, Hawaii 96793
Phone: (808) 244-7835

I. DESCRIPTION OF PROPOSED ACTION

The development of a basal well is proposed by the Department of Water Supply, County of Maui, to improve the Lahaina-Alaeloa public water system located in the Lahaina District, West Maui. A 1.0 mgd basal well, referred to as Honokahua Well "B", is proposed to be drilled in the Honokahua district in the vicinity of four existing wells. The construction of a 1,200-foot, 12-inch transmission line connecting the new well to the existing Alaeloa water system is also proposed.

The development of the well is proposed in order to promote compliance with federal and state safe drinking water quality standards as well as to assist in providing additional water to satisfy projected water needs to the year 2000.

II. DESCRIPTION OF THE AFFECTED ENVIRONMENT

The Lahaina district is characterized by a relatively dry climate near the coast, which is typical of the leeward side of an island, and higher rainfall in the upper elevations. The economy is dominated by tourism and agriculture. Resort developments are strung along the coastline, while pineapple and sugar cane are cultivated in the mid-elevations. Population growth increased rapidly in the past decade, primarily due to a viable tourist industry. Future growth is anticipated but at a somewhat lower rate. Sufficient developable water is available to support the growth projected by the 208 Water Quality Management Plan.

The site of the proposed well is presently owned by Maui Land and Pineapple Co. and will need to be acquired. The site is located at elevation 900 feet. Scrub vegetation presently exists on the site, with pineapple fields nearby. The site is relatively level, and the soils exhibit a low erosion hazard. No endangered species are known to exist on the site. There may be a possibility of archaeological resources. The site is currently zoned agricultural.

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

The proposed actions are consistent with water development policies and growth policies of the State Plan, State Water Resources Development Plan, County General Plan, Coastal Zone Management Program, and the 208 Water Quality Management Plan. While the land use plan of the Lahaina General Plan is still applicable, the population projection in this plan has been superseded by the more recent projections contained in the 208 Plan.

Several permits will be required: special use permit, source development application, well drilling permit, and subdivision approval.

IV. PROBABLE IMPACT AND MITIGATION MEASURES OF THE PROPOSED ACTIONS

Localized impacts will occur at the proposed well site from the necessary site work. Potential adverse impacts include soil erosion, noise and dust, aesthetics, and traffic. Although unavoidable, these impacts will be mitigated to acceptable levels. No endangered species will be affected. There is a potential impact to archaeological resources at the Honokahua Well "B" site, and therefore, an archaeological survey will be conducted during the design phase of the well.

Potentially significant regional concerns arising from the proposed actions include:

A, Impact to private water users in the region. Private water users will not be adversely affected because there are no private wells in the vicinity of the proposed Honokahua Well "B".

B. Financial impact to the consumers. Estimated unit present worth costs are relatively low for the proposed Honokahua Well "B" (76¢/1,000 gallons).

C. Regional growth implications. The proposed well development is necessary to support the level of growth projected by the 208 Water Quality Management Plan and the State Tourism Plan. These projections considered such factors as the maintenance of environmental standards, financing of other necessary infrastructure and support services, and consistency with state growth projections.

V. UNAVOIDABLE ADVERSE IMPACTS

The unavoidable impacts from the sitework and loss of agricultural lands are insignificant because the magnitude of the impacts is small. Significant unavoidable impacts include the energy cost of operating the Honokahua "B" deepwell pump and the associated financial impact to the consumers. The proposed action, however, was determined to be the most cost-effective solution to the potable water supply problems which relate to both quality and quantity.

VI. ALTERNATIVES TO THE PROPOSED ACTION

Alternatives to the proposed action that were considered included: 1) treatment of water from a surface water source, 2) development of high level groundwater, and 3) development of basal wells in other areas. Alternatives were evaluated in terms of the following criteria: cost, reliability, ease of operation, and environmental impact. The "no action" alternative was not considered viable since it fails to promote compliance with the Safe Drinking Water Act and provide the quantity of water necessary to satisfy projected water needs.

VII. RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

There are no significant tradeoffs between the proposed groundwater withdrawal rate and the long-term productivity of existing and future potable water sources.

VIII. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Natural resources that will be committed include land and water. The amount of committed land is relatively insignificant. The amount of groundwater committed is well within the sustainable yield. Committed man-made resources include construction materials, capital, and manpower.

IX. OFFSETTING CONSIDERATIONS OF GOVERNMENT POLICY

Policies contained in the State Plan, County General Plan, and the Federal Safe Drinking Water Act offset adverse effects associated with growth and financing.

X. UNRESOLVED ISSUES

Limitations in available information make the following issues unresolvable at this time:

A. Archaeological resources. The presence of archaeological resources at the Honokahua Well "B" site will be determined in subsequent stages of the project. Because the well site is relatively flexible, it was not critical to assess the presence of archaeological resources at this time.

B. Construction timetable. The timing of construction of the proposed project has not yet been determined with great certainty due to unresolved issues related to financing and growth. Based on the available information, it is projected that construction of the proposed well will begin in 1985.

CHAPTER I

PROJECT DESCRIPTION

The development of a basal well is proposed by the Department of Water Supply, County of Maui, to improve the Lahaina-Alaeloa public water system located in the Lahaina District, West Maui. The Lahaina-Alaeloa water system presently experiences periodic water quality problems that pose a potential threat to public health. There is also concern about the availability of water to support the future growth projected in the greater Lahaina area.

The objectives of the well development are therefore twofold:

1. To assist in eliminating risks to public health and welfare by providing potable water that fully conforms to the Primary Drinking Water Regulations promulgated pursuant to the 1974 Safe Drinking Water Act and Chapter 20 of Title II of the State of Hawaii Administrative Rules; and
2. To assist in providing the quantity of water necessary to satisfy the projected future water needs.

PROPOSED ACTION

The proposed action determined to be most cost effective in meeting the above objectives consists of developing a basal well in the Honokahua district, hereinafter referred to as Honokahua Well "B".

PROJECT LOCATION

The proposed project is located on the west coast of Maui in the Lahaina district (see Figure I-1). The locations of the major existing water systems are shown on Figure I-2. The publicly-owned Lahaina-Alaeloa system serves Lahaina town, Honokowai, and Alaeloa-Kahana. Kaanapali and Kapalua developments are each served by private water systems.

The proposed site for Honokahua Well "B" is approximately 1,000 feet north of the existing Honokahua Well "A". The site is approximately 900 feet above mean sea level at the fringe of pineapple fields in the Honokahua district. Four wells currently exist in the vicinity (see Figure I-3).

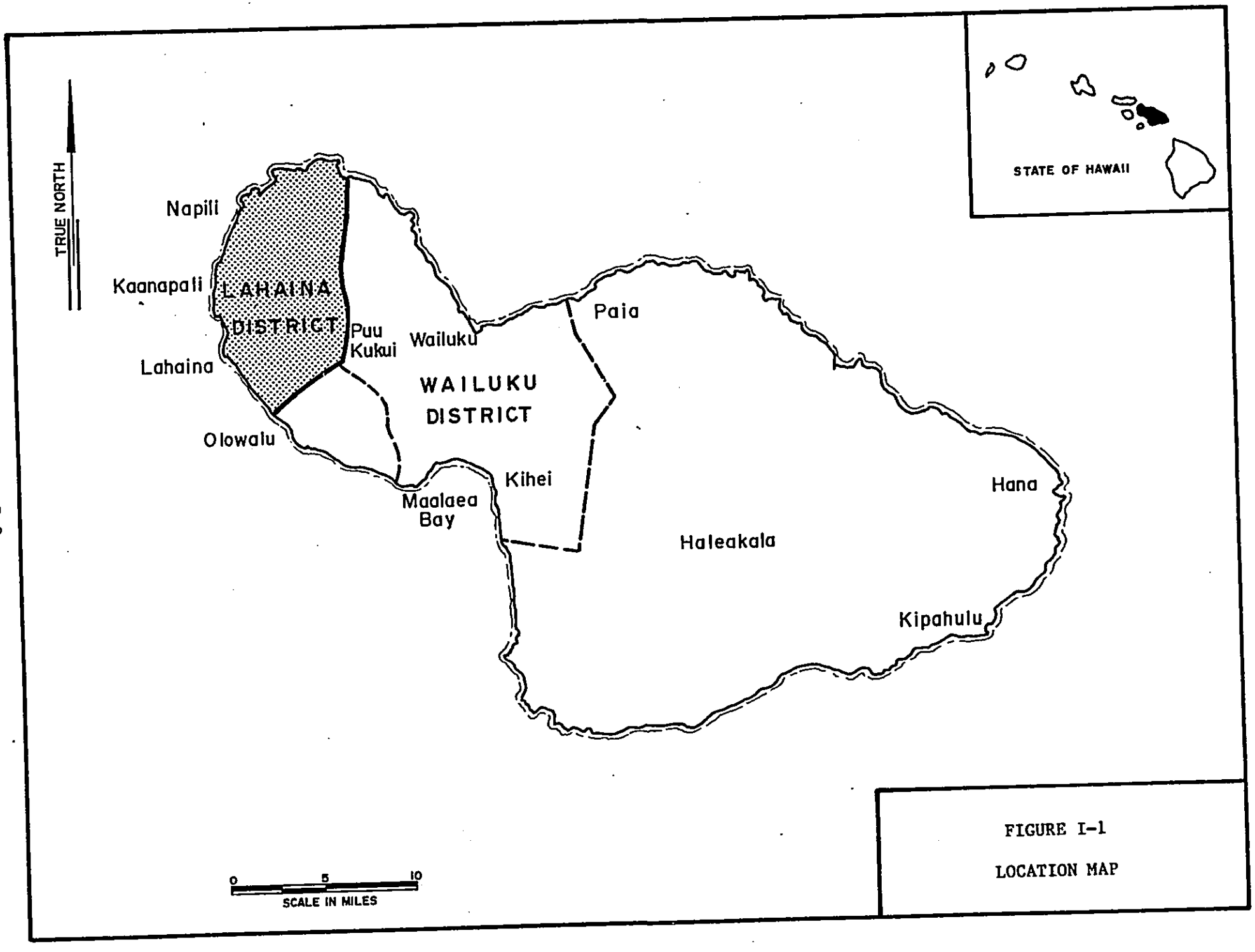
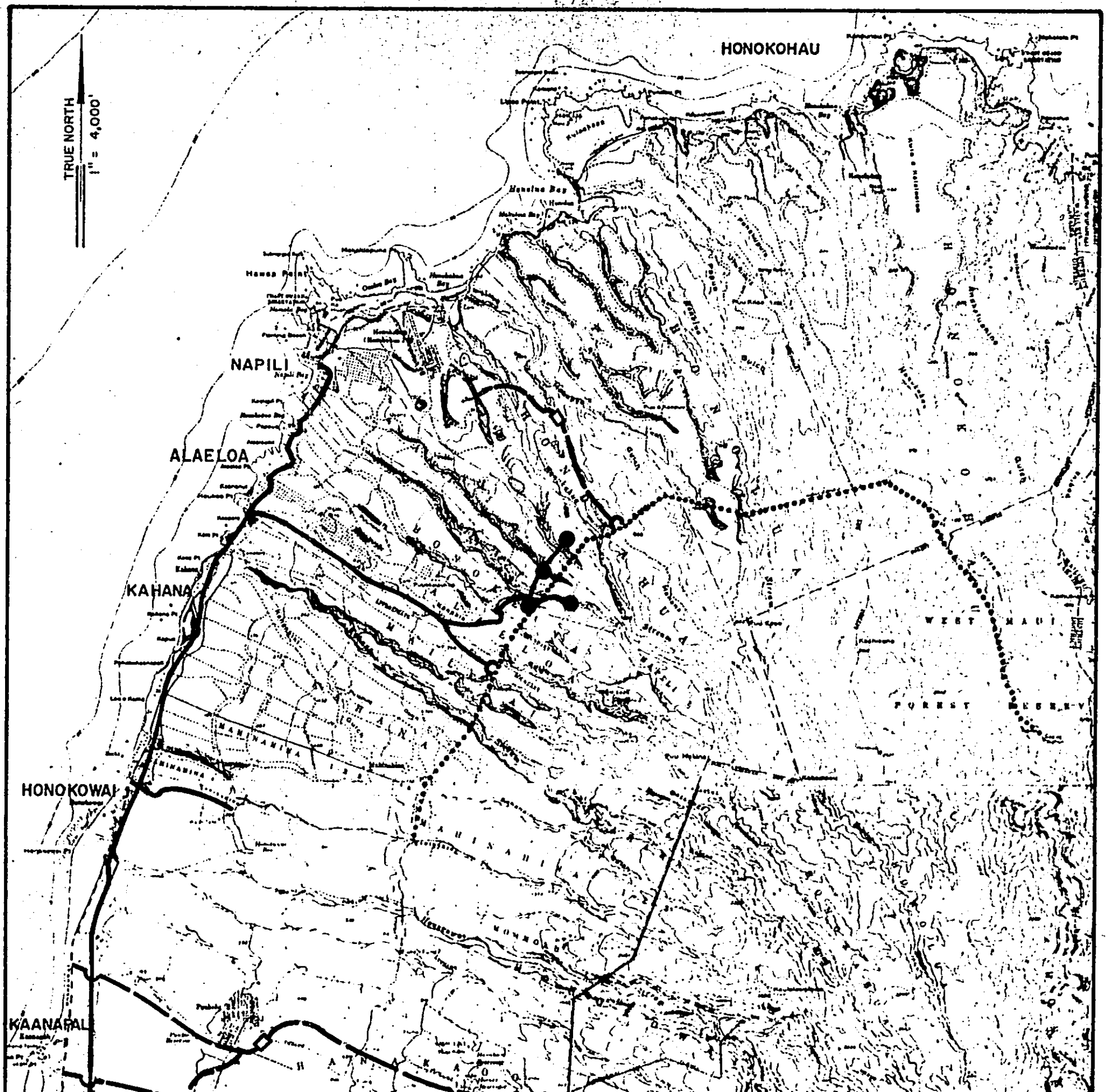


FIGURE I-1

LOCATION MAP


TRUE NORTH
1" = 4,000'
HONOKOHAU
NAPILI
ALAELOA
KAHANA
HONOKOWAI
KAANAPALI
WEST MAUI
FOREST RESERVE

KAANAPALI

LAHAINA

LEGEND

COUNTY OF MAUI WATER SYSTEM (LAHAINA-ALAELOA)

PRIVATE WATER SYSTEM

HONOKOHAU TUNNEL SYSTEM

WELLS

WATER TREATMENT PLANT

WATER DIVERSION

FIGURE I-2

DOMESTIC WATER SYSTEMS
LAHAINA DISTRICT, MAUI

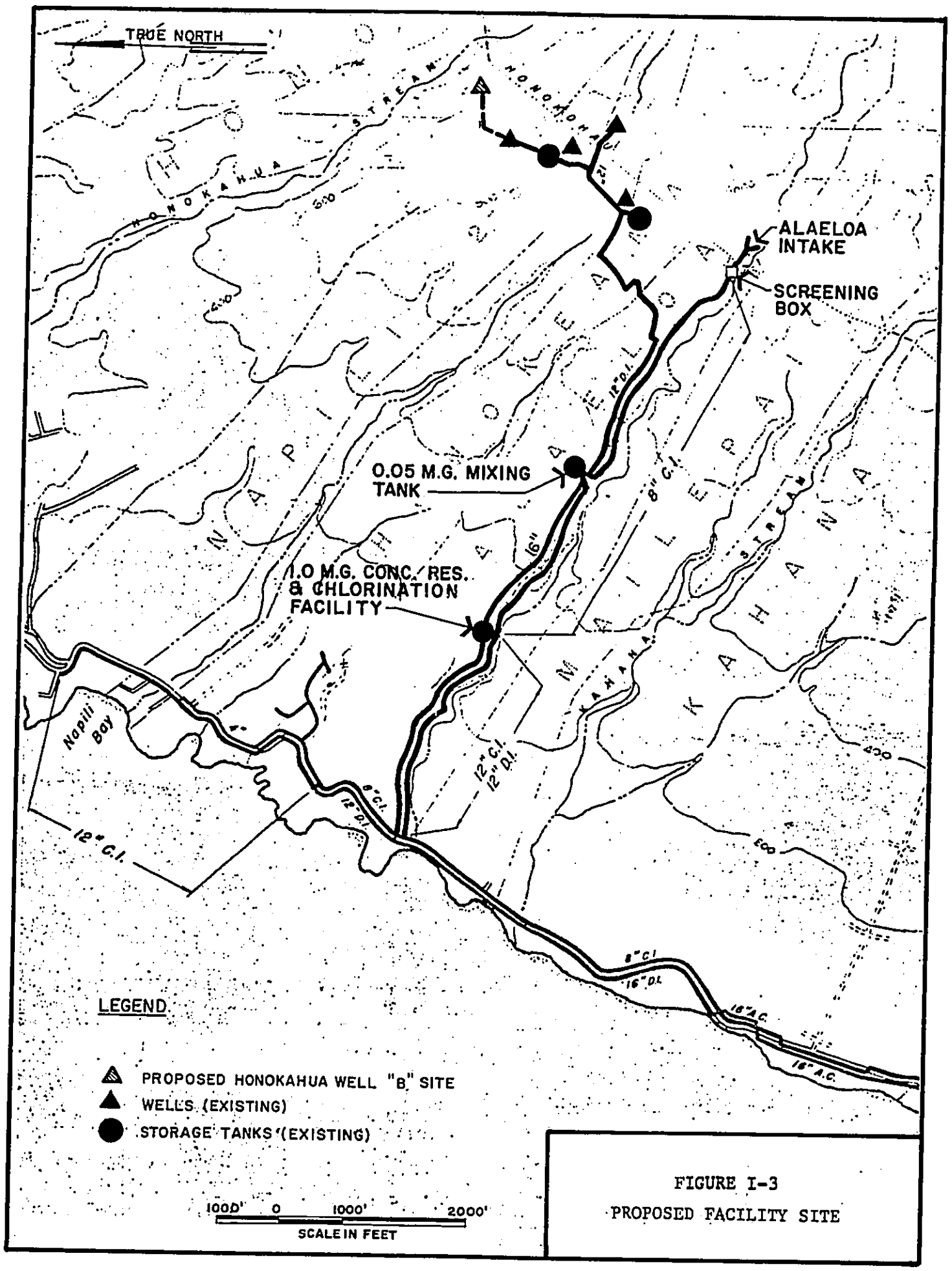


FIGURE I-3
PROPOSED FACILITY SITE

RATIONALE FOR THE PROPOSED ACTION

The proposed action was based on water quality and projected water demand analyses.

Water Quality

Water quality of the Lahaina-Alaeloa system was evaluated in terms of the maximum contaminant levels established pursuant to the Safe Drinking Water Act (P.L. 93-523) and the provisions of Chapter 20 of Title II, State Administrative Rules. Seven major classes of contaminants addressed include turbidity, bacteriological contaminants (coliforms), radiological contaminants, inorganic contaminants, organic contaminants, trihalomethanes (THM), and secondary standard contaminants. Water quality at both the tap and at the sources were evaluated. It was determined that noncompliance of the Lahaina-Alaeloa water system with federal and state drinking water regulations is due primarily to the high turbidity in the Honokohau tunnel surface water withdrawn at the Alaeloa Intake. The proposed action is to develop a new groundwater source that may be used as a substitute to the existing surface water source. The new well is expected to provide potable water that requires no treatment as water from the existing wells presently meets all primary drinking water standards without treatment.

Projected Water Demand

The projected water demand for the Lahaina-Alaeloa system was based on the resident and visitor population projections of the 208 Water Quality Management Plan and the State Tourism Plan. Unit demand coefficients for maximum day consumption that were applied to the resident and visitor projections were 400 gpcd and 920 gpud respectively. For the year 2000, the max-day demand was estimated to be 8.1 mgd, as shown in Table I-1. This represents a 3 percent annual increase in water consumption.

A substantial portion of the demand for the year 2000 can be met by the development of an additional well, which was the basis for recommending Honokahua Well "B". The projected sustainable yield of the system is shown in Table I-2.

TABLE I-1

WATER DEMAND PROJECTIONS
FOR THE LAHAINA-ALAELOA SERVICE AREA[1]

	Unit Demand (max day)	Year 1980	Year 1990	Year 2000
Residents	400 gal/capita/day			
Population		8,600	10,700[2]	14,400[2]
Max-Day Demand (mgd)		3.4	4.3	5.8
Visitors	920 gal/unit/day			
Units (occupied)		1,600	2,000	2,500
Max-Day Demand (mgd)		1.5	1.8	2.3
Total Max-Day Demand (mgd)		4.9	6.1	8.1

[1] The Lahaina-Alaeloa service area includes Lahaina, Honokowai, and Alaeloa-Kahana. It excludes Kaanapali, Kapalua, and Honokahua.

[2] Population projection of the 208 Plan.

TABLE I-2

PROJECTED CAPACITY OF THE LAHAINA-ALAELOA WATER SOURCES

Alaeloa	Max (mgd)	Lahaina	Max (mgd)
Alaeloa Intake	1.5	Kanaha Stream	1.5
Napili A (533801)	1.0	Waipuka 1 & 2 (533901 & 533902)	0.4
Napili B (533802)	1.0		
Napili C (533804)	1.5	Kanaha A & B (533903 & 533904)	0.5
Honokahua A (533803)	0.7		
Honokahua B	1.0		
	6.7		2.4

Total Sustainable Yield of Sources = 6.7 + 2.4 = 9.1 mgd

System Sustainable Yield (total sustainable yield less largest source)
= 9.1 - 1.5 = 7.6 mgd

DESCRIPTION OF PROPOSED HONOKAHUA WELL "B"

This fifth well in the Alaeloa portion of the Lahaina-Alaeloa system, is proposed to be drilled north of the existing Honokahua Well "A". It is expected that the Honokahua "B" well will be similar to the Honokahua "A" well in both construction and operational aspects. The yield from the proposed 14-inch diameter, 930-foot deep well is expected to be 1 mgd. This project also includes the construction of a 1,200-foot, 12-inch transmission line that will connect the new well to the existing distribution network of the Alaeloa system.

Cost estimates developed for Honokahua Well "B" project are summarized in Table I-3. The present worth of the project over a 20-year period was determined to be $2,735,000.

PHASING (Water Development Plan)

Based on population and water demand projections, the Honokahua "B" well will be required to meet the projected water demand. Construction of the well is intended to be the first remedial step in providing the Lahaina-Alaeloa system with water that fully complies with drinking water regulations. It is anticipated that a surface water treatment plant and additional wells will be constructed in the near future as necessary to meet additional water demands. It is expected that installation of the pump, controls, and transmission line for an existing drilled well, Honokahua Well "A", will have been completed by the time Honokahua Well "B" construction begins. From a water quality standpoint, it is desirable to have Honokahua Well "A" in operation as soon as possible. This can allow the Alaeloa intake surface source, which is the cause of turbidity violations, to be shut off during times of high turbidity.

The development of Honokahua Well "B" is "committed" as it is being partially funded by the private sector by a source assessment fee (financing of the project will be discussed in the following section). It is anticipated that the Division of Water and Land Development (DLNR) will be contracted by the Maui Department of Water Supply to assist in the development of this well.

The development of Honokahua "B" well will provide the Lahaina-Alaeloa system with an additional high quality water source. The Alaeloa

TABLE I-3

HONOKAHUA WELL "B" COST ESTIMATE
(Q_{ave} = 1 mgd)

Capital Cost:

Item		Amount
Well Drilling		$ 357,000
Pump and Motor		275,000
Mechanical		54,000
Electrical		88,000
Sitework/Miscellaneous		52,000
Pipeline		144,000
	Subtotal	$ 970,000
	Contingency, 10%	97,000
	Engineering, 10%	97,000
	Total Capital Cost	$1,164,000

Operation and Maintenance Cost:

Energy		$ 158,000
Miscellaneous		10,000
	Total Annual O&M Cost	$ 168,000

Present Worth Cost Summary (20 Years):

Total Capital Cost Less Salvage Value	$1,086,000
Present Worth of Operation and Maintenance Cost $168,000 x 9.8182 (20 years at 8%)	1,649,000
Total Present Worth	$2,735,000
Present Worth/1,000 Gal	76¢

Note: Land acquisition and offsite electrical costs are not included. Chlorination costs are also not included (existing facilities may be utilized).

surface water source may be employed as an emergency standby source until the demand for this additional water arises. The timetable for the construction of the Alaeloa surface water treatment facility will depend to a large extent on such factors as the availability of funds, rate of growth, and enforcement of the 1 NTU turbidity standard by the State Department of Health. Based on a water quality study to be submitted by the Maui County Department of Water Supply, the Department of Health may exercise the option to enforce a less stringent 5 NTU standard for the Lahaina-Alaeloa system. Such an action may allow the use of untreated Alaeloa surface water as part of a controlled shut off or groundwater-surface water blending scheme in lieu of treatment of the surface water by costly and complex conventional filtration treatment. Hence, this is yet another reason for deferring the installation of a treatment plant at Alaeloa and preceeding with the Honokahua Well "B" project.

The development plan for other water sources is anticipated to be flexible enough to accommodate changing conditions in the future. Additional groundwater in the northern Honokahua and Honolua districts may be developed if and when future demands approach the sustainable yield of the system.

FINANCING

It is anticipated that Maui County funds and funds obtained through the source assessment fee will be used to develop Honokahua Well "B". The source assessment fee is currently $3,400 per unit for new West Maui developments. The fee was established as part of the Maui Department of Water Supply's regulation known as the "Lahaina District Special Rule" and designed to help fund development of new water sources and transmission and storage facilities. Operation and maintenance of the well will be the responsibility of the County of Maui.

CHAPTER II

DESCRIPTION OF THE AFFECTED ENVIRONMENT

The physical and socio-economic characteristics of the affected environment are described in this chapter from both a local and regional perspective. This information is intended to provide an overview of the area's characteristics and the basis upon which impact assessments were derived in the report.

PHYSICAL AND BIOLOGICAL SETTING

Climate

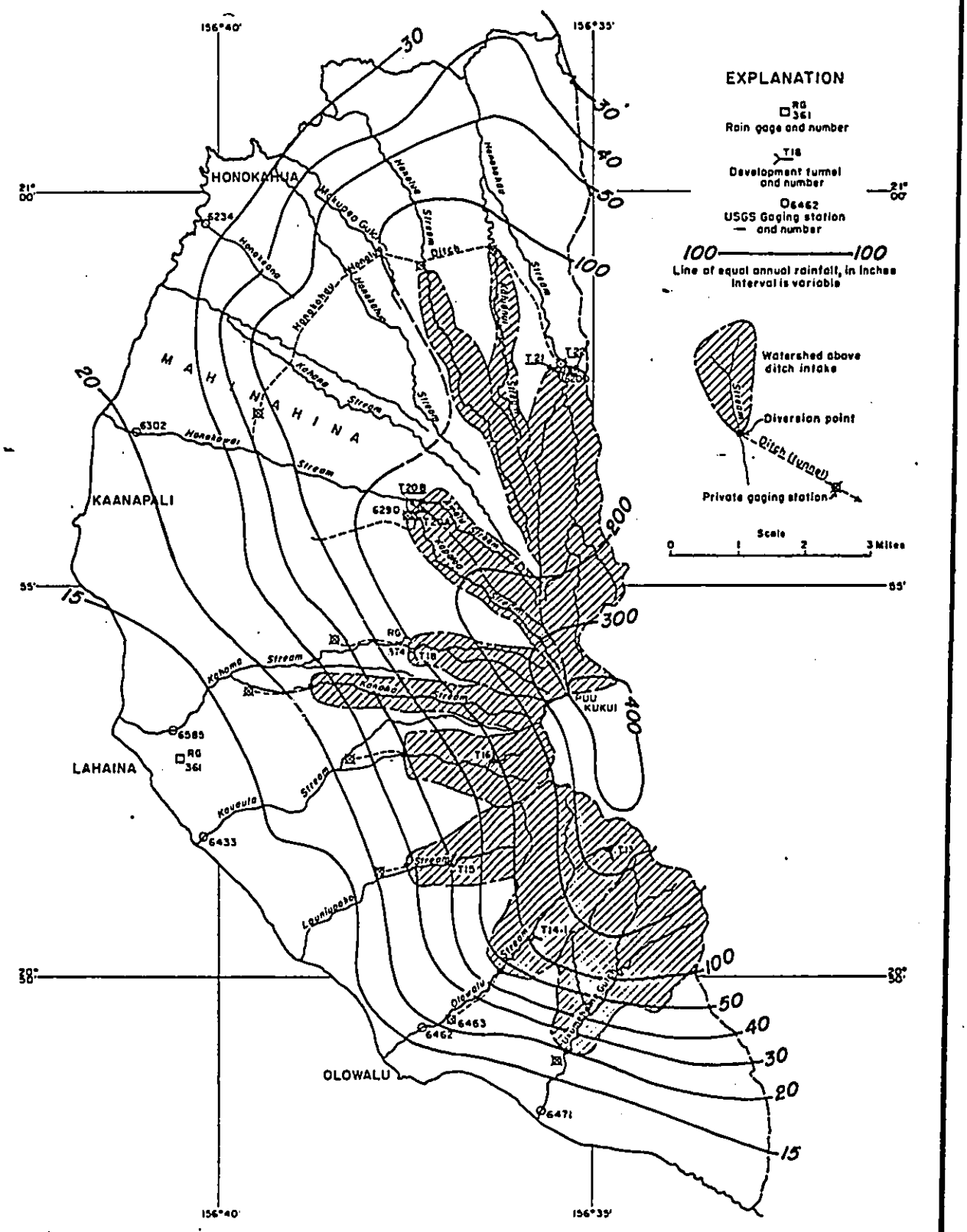
The climate of West Maui is generally mild and pleasant throughout the year, although two distinct seasons occur: winter from October through April and summer from May through September.

The average daily temperature between the two seasons differs by only about 6°F. Large-scale storms occur during the winter, while benign tradewinds are prevalent during the summer. Between May and September tradewinds occur more than 90 percent of the time, with their incidence falling below 80 percent in winter.

Along the sea coast during the hottest month of the year (August or September), the average temperature is 78°F. The temperature lapse rate is about 3 to 4°F per 1,000-foot increase in elevation, so that Puu Kukui in the coldest month of the year has an average temperature ranging between 55 and 60°F. Humidity averages 70 to 80 percent on the windward coast and 60 to 70 percent on the leeward coast, while in the wet mountains it exceeds 80 percent.

The mean annual rainfall in the Lahaina district ranges from less than 15 inches along the low-lying coastal areas to more than 400 inches in the higher elevations (see Figure II-1). Precipitation is least along the western shoreline and greatest near Puu Kukui.

The variation in rainfall between the upland and coastal areas and between the wet and dry seasons was inferred from rainfall data taken at two stations: the "Kahoma intake" (RG-374), typical of the uplands (elevation 2,000 feet) and "Lahaina" (RG-361), representative of the coastal areas (elevation 30 feet).



SOURCE: YAMANAGA & HUXEL, 1969

FIGURE II - 1
DISTRIBUTION OF MEAN ANNUAL RAINFALL & LOCATION OF SELECTED RAINFALL & STREAMFLOW STATIONS, TUNNELS, AND DITCHES

The distance between these stations is less than 4 miles, yet the variation is drastic. The average annual rainfall of the upland station (Kahoma intake) is about seven times greater than the coastal station's (Lahaina) rainfall.

Rainfall varies from year to year. The range in annual rainfall at Lahaina is from 3.20 to 34.78 inches, a ten-fold variation. Rainfall at Kahoma intake is not as extreme, ranging from 33.41 to 154.44 inches, a five fold variation (see Figure II-2).

The monthly variation in rainfall is plotted on Figure II-3. Historically, June is the driest month. At Lahaina, no rain fell during the month of June in 29 years of the data period (1918 to 1966). A month without rainfall is not unique to June, however, since all months except December have been rainless at times. Frequently, no rain has fallen for two consecutive months, and there have been four- and even five-month periods during which no rain was recorded. At Kahoma intake, during a certain year monthly rainfall was less than 1 inch for eight of the twelve months.

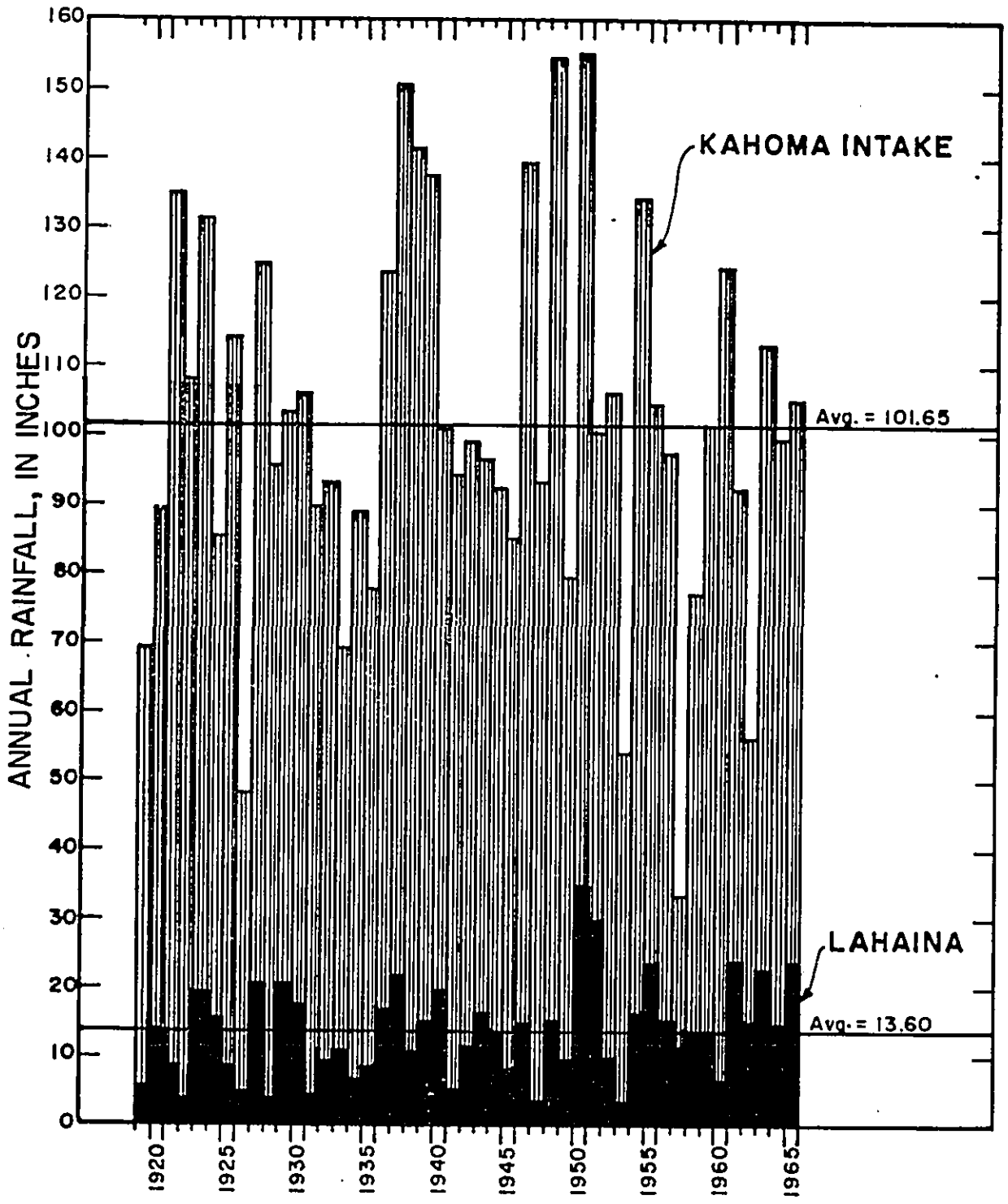
Geology and Topography

The Lahaina district lies on the west side of a deeply dissected, dome-shaped volcano called West Maui Mountain. The dome has been reduced by erosion from a summit altitude estimated to have been 7,000 to 5,788 feet at Puu Kukui (Stearns, 1942).

Deeply incised into the dome are several long, narrow valleys attributable to stream erosion. Between the valleys are sloping plains, which are eroded remnants of the volcanic flank. These form valuable agricultural land. Along the coastline and at the foot of the valleys are relatively level land attributable to sediment deposition by the streams or recent emergence and deposition of marine formations.

The distribution of the sediment and rocks is shown on Figure II-4. Sedimentary deposits consist of consolidated marine, alluvial, and colluvial deposits. Rock formations differ in character and are differentiated into the Wailuku, Honolua, and Lahaina volcanic series.

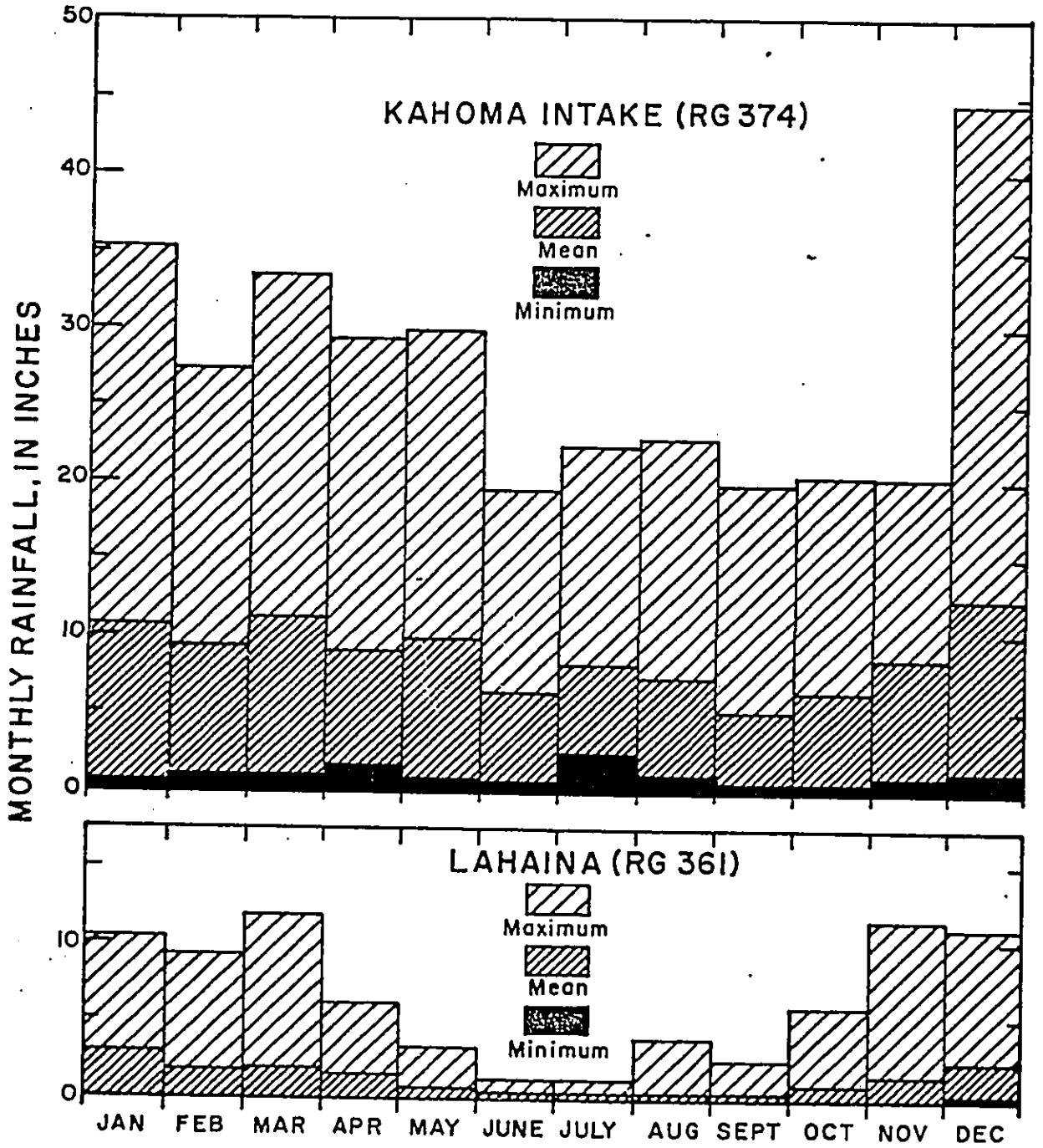
The Wailuku series was the original formation of the West Maui Mountain. A relatively short period of quiescence followed the completion of



SOURCE: YAMANAGA & HUXEL, 1969

FIGURE II - 2

ANNUAL VARIATIONS IN RAINFALL AT KAHOMA INTAKE (RG-374)
AND AT LAHAINA (RG-361)

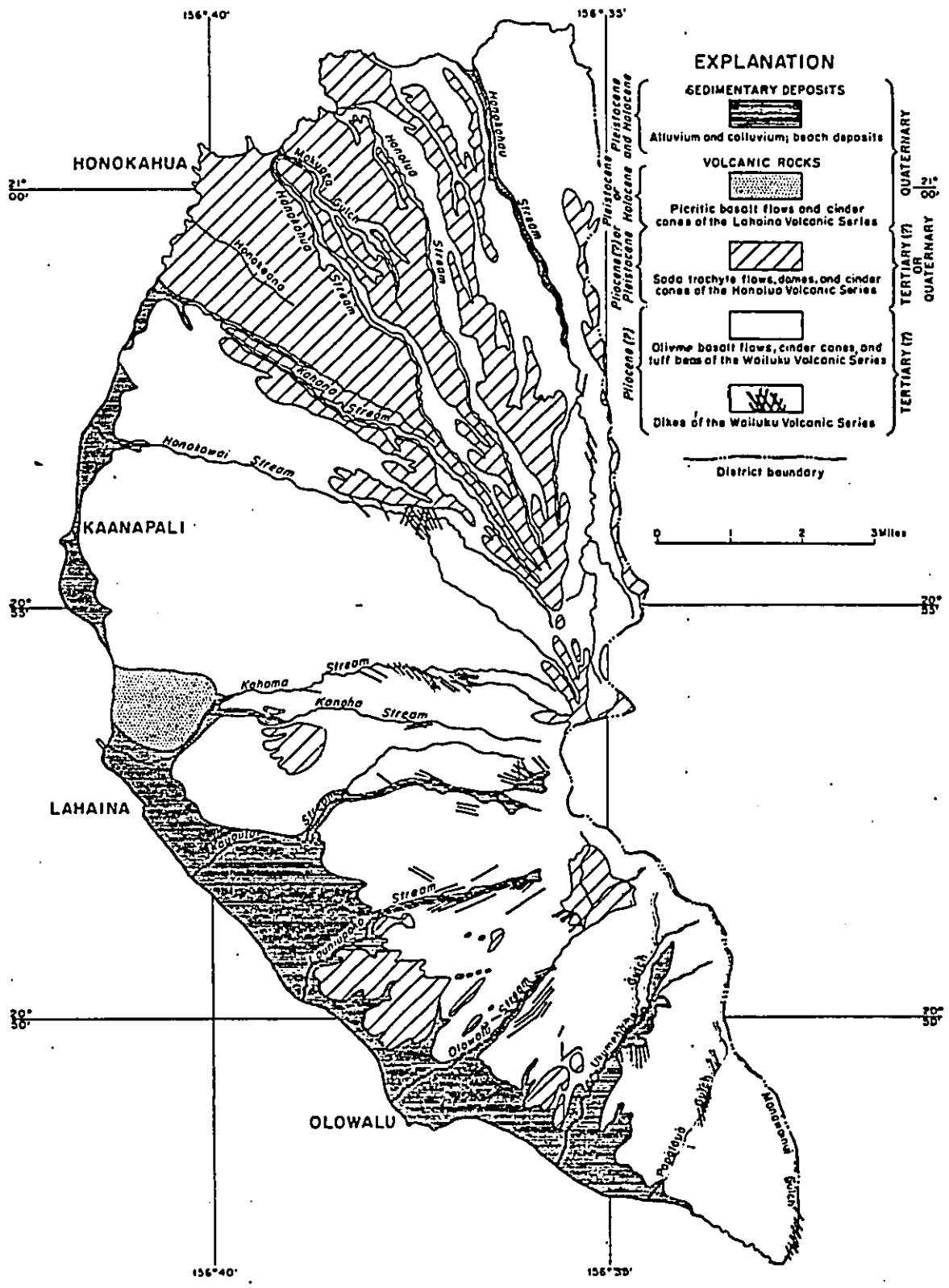


SOURCE: YAMANAGA & HUXEL, 1969

FIGURE II - 3

MAXIMUM AND MINIMUM MONTHLY RAINFALL AT KAHOMA INTAKE AND AT LAHAINA

(Minimum monthly rainfall at Lahaina is zero for all months except December; December minimum is 0.02 inches.)



SOURCE: YAMANAGA & HUXEL, 1969

FIGURE II - 4

GENERALIZED GEOLOGIC MAP
OF LAHAINA DISTRICT

the Wailuku dome, and a thin soil formed in many places. After this rest period, magma of more silicious type erupted and formed a veneer 50 to 500 feet thick over most of the Wailuku dome. This silicious group of rocks is called the Honolua volcanic series. Geological inactivity reigned for a long time following the eruption of the Honolua volcanics, during which erosion, submergence, and emergence prevailed. Feeble eruptions then followed, building isolated cones and pouring out short flows along the western shores. This group of rocks is named the Lahaina volcanic series.

The different characteristics of the rocks result in different water-bearing properties. The principal aquifer is the Wailuku series because of its high permeability and numerous dikes. The dikes confine water at levels far above sea level. The massive rocks of the Honolua formation are much less permeable and are generally too discontinuous to function as aquifers. The deposits of the Lahaina series are not extensive enough to be important as water-bearing formations.

The consolidated sedimentary rocks are unimportant as aquifers because they are poorly permeable and are generally above the basal water lens. Unconsolidated alluvial deposits in perennial stream valleys yield small quantities of freshwater to wells, but alluvial and beach deposits near the coast yield moderate to large amounts of brackish water.

The general character and water-bearing properties of the rocks and sediment are given in Table II-1.

Soils

The soils in the upland area, where the proposed well is situated, is generally a deep, well-drained soil exhibiting a fine-textured subsoil. At the well site, the soil is classified as the Honolua soil series (USDA, 1972). This soil series is in the Ultisol order, indicating that it is a highly weathered soil that has an accumulation of silicate clays and low base saturation (McCall, 1975).

Engineering Interpretations. Soil characteristics for the Honolua soil series identified above are summarized in Table II-2 as they relate to foundation support for structures and pipe corrosivity. The Honolua soil series has moderate shrink-swell capacity with high corrosivity potential for uncoated steel pipes. Concrete pipes have moderate corrosivity potential.

TABLE II-1

GEOLOGIC UNITS AND THEIR WATER-BEARING CHARACTERISTICS

Geologic Unit		Age	Maximum Thickness (ft)	Lithology	Water-Bearing Characteristics
Sedimentary Deposits		Pleistocene & Holocene	200+	Unconsolidated beds of alluvial silt, sand, and gravel in stream valleys; beach sand and gravel near the coast. Consolidated rocks consist of dune sand, weathered alluvial conglomerate and colluvium, and cemented alluvial and marine conglomerate.	Consolidated alluvial, colluvial, dune, and beach deposits are poorly permeable and unimportant as sources of water supply. They may form a caprock in some areas. Unconsolidated beach deposits may yield large amounts of brackish water to wells; unconsolidated alluvium in perennial stream valleys may yield small amount of fresh water to wells.
Volcanic Deposits	Lahaina Volcanic Series	Pleistocene or Holocene	150±	Lava flows of picritic basalt and nepheline basanite; cinder and spatter cones.	Small in areal extent and unimportant as a source of fresh water.
	Honolua Volcanic Series	Pliocene(?) or Pleistocene	1,000±	Massive lava flows and domes of soda trachyte; cinder cones; dikes.	Lava flows are massive and thick-bedded and are permeable only along interflow clinker zones; of little value as an aquifer.
	Wailuku Volcanic Series	Pliocene(?)	5,500±	Thin-bedded lava flows of primitive olivine basalt; cinder and spatter cones and thin tuff beds; numerous dikes.	Lava flows constitute the main aquifer and are highly permeable. Yields from skimming tunnels as much as 10 mgd. Pyroclastic deposits are not extensive and are unimportant as aquifers. Thin, impermeable tuff beds in several valleys support perched groundwater bodies that supply small, high-level springs. Dikes are dense and of low permeability and retard or divert groundwater movement in the lava beds they cut.

Source: Yamanaga & Huxel, 1969.

TABLE II-2

SOIL CHARACTERISTICS OF THE
HONOLUA SOIL SERIES
(HwC, HwD)

Depth	
To Bedrock (ft)	5
To Seasonal High Water Table (ft)	5
Depth from Surface (inches)	0 - 70
Permeability (inches/hr)	2.0 - 6.3
Shrink-Swell Potential	Moderate
Corrosivity	
Uncoated Steel Pipe	High
Concrete Pipe	Moderate
Erodibility	Low

Source: USDA, 1972.

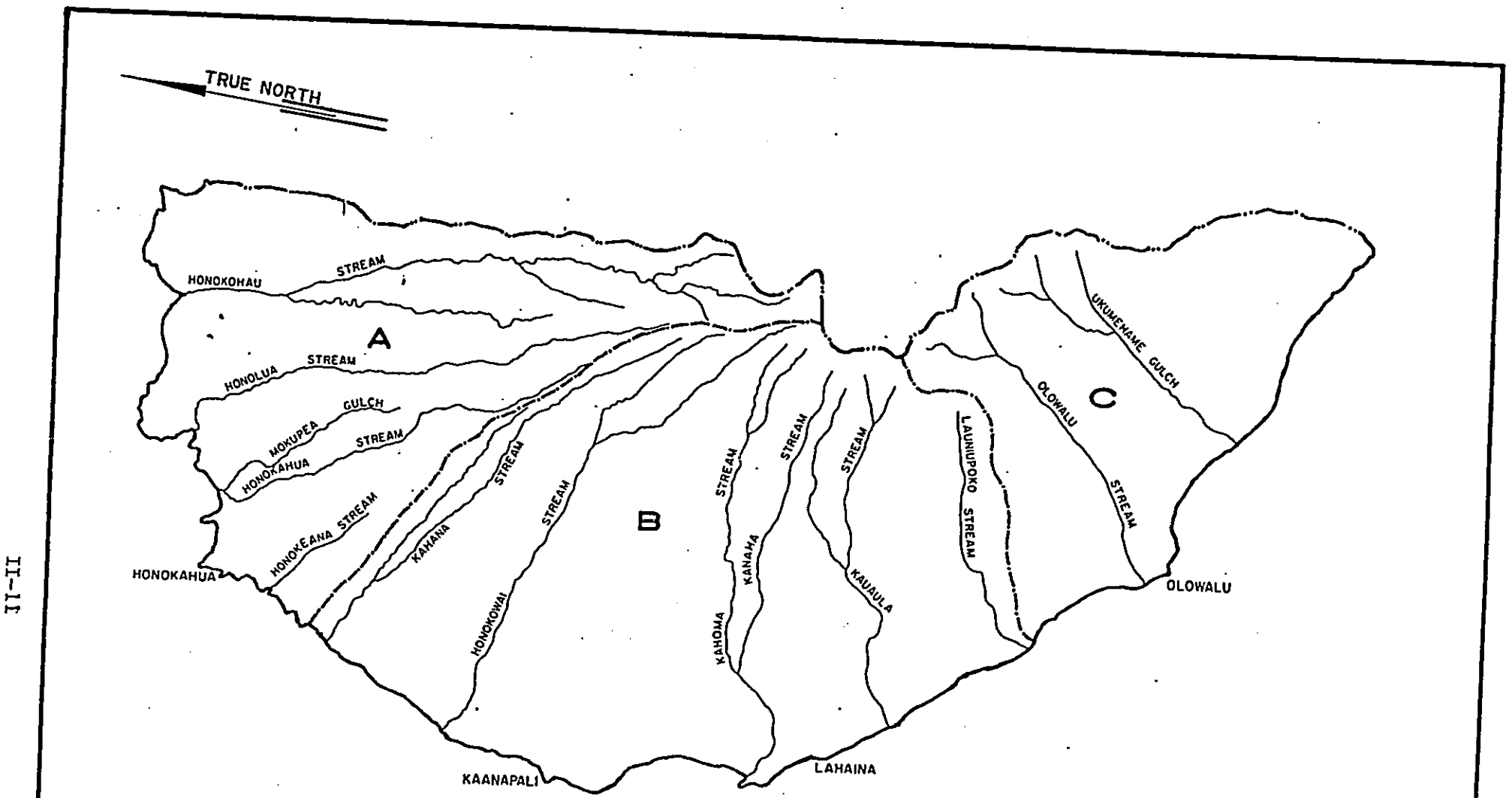
Agricultural Interpretations. The State Department of Agriculture has identified agricultural lands of importance to the state (DOA, 1977). The classification consists of three categories: prime, unique, and other. There are over 3,000 acres of "prime" agricultural land in the Lahaina district. The proposed well site falls on "prime" agricultural land.

Water Resources in the Lahaina District (This section, pp. II-10 to II-25, was prepared with the assistance of hydrogeologic consultant John Mink.)

In the last two decades, numerous studies have been undertaken to evaluate the feasibility of developing additional water sources in the Lahaina district. Stearns and Macdonald (1942) conducted the basic studies on the geology and hydrology of the Lahaina district, and their work is the foundation of all subsequent water supply evaluations. In 1964, Stearns recommended that Pioneer Mill Co. develop additional high level and basal groundwater supplies, on the order of 25 mgd, and shortly afterward the U.S. Geological Survey (Yamanaga and Huxel, 1969) and Belt, Collins & Associates (1969) offered much the same suggestion to the state and county. The most recent and comprehensive assessment of the total water resources between Honokowai and Honokohau was published by the Department of Land and Natural Resources, Division of Water and Land Development, as Report R-54, The Kahakuloa Water Study (Wilson, Okamoto & Assoc., 1977).

The whole of the Lahaina district embraces 96 square miles, but only in the region north of Launiupoko has it been realistic to seek water supplies for the urban population centers of Lahaina, Kaanapali, and the communities lying between Honokowai and Honolua. All reports since Stearns (1964) divide the district into three sectors for descriptive and planning purposes (see Figure II-5). Sector A extends from the limit of the Honokohau drainage to the northern boundary of the Kahana drainage and includes the major stream valleys of Honokohau, Honolua, and Honokahua. Sector B extends southward from Kahana to the limit of the Launiupoko drainage and includes the major valleys of Kahana, Honokowai, Kahoma, Kanaha, Kauaula, and Launiupoko. Sector C consists of the Olowalu and Ukumehame regions.

No sugar cane is grown in Sector A, and only a small portion of the total population resides there. Pineapple agriculture and the Kapalua



Source: Belt, Collins & Associates, 1967

FIGURE II-5

HYDROLOGIC SECTOR BOUNDARIES

resort development are the principal activities in the sector. Irrigated sugar cane covers the slopes of Sector B, while the major West Maui resort area of Kaanapali and the principal town of Lahaina dominate the coastal area. In Sector C, the only important activity is irrigated sugar cane agriculture. The water supply assessments made in this report focus primarily on Sector A and secondarily on Sector B; Sector C is not considered.

Overview of Hydrology. The Lahaina district is a prime tourist destination because of its generally semiarid climate in the lowlands. The rainfall in the highlands, however, is quite heavy, resulting in a relatively high average rainfall for the area. On the district's 96 square miles, total rainfall volume computed as a daily average amounts to 340 mgd, equivalent to an annual average rainfall of 74 inches. The southern coast is among the driest areas in the state, receiving less than 15 inches of rain per year; in the mountainous interior, an annual average of greater than 300 inches is normally attained. All sugar cane fields are heavily irrigated, except during winter periods of substantial rainfall, and pineapple, although capable of surviving dry weather, is occasionally irrigated to improve growth. Only in the winter months, from November through March, does appreciable rain fall in the irrigated areas.

The geology of the district favors the accumulation of groundwater in easily exploited aquifers. The primary aquifer formation is the Wailuku volcanic series, a highly transmissive basalt. All major groundwater developments obtain production from this formation. The Honolua series, a relatively dense, much less transmissive andesite-trachyte, overlies some areas of the Wailuku formation, especially between Kahana and Honokohau, but is neither thick enough nor properly located to form important aquifers. Unfortunately, Sectors A and B are not bounded by a continuous wedge of caprock sediments along the coast that would act to retard groundwater discharge to the sea, forcing a thickening of the fresh water lens as in the Waiehu aquifer of the Wailuku district and in southern Oahu. In Sector C, a reasonably effective caprock occurs where Olowalu and Ukumehame Streams discharge to the sea.

Surface Water. In all three regions, perennial streams are found in high level regions where valleys cut into dike aquifers. Under natural, predevelopment conditions, the perennial flow of some of these streams, in particular Honokohau, reached the sea. As a rule, most perennial flow is

lost to percolation in the long reach between dike water seepages and the coast. Since the turn of the century, all streams showing perennial flow have been diverted for irrigation and some domestic use. The largest, most productive perennial stream is Honokohau in Sector A, followed by Honokowai, Kahoma, Kauaula, and Kanaha in Sector B. The large valleys of Honokahua and Honolua in Sector A do not carry perennial streams in their reaches where diversions are practical.

Honokohau Stream, fed by voluminous high level groundwater seepage and high rainfall headwaters, yields an average of about 30 mgd above elevation 800 feet, of which about 25 mgd is diverted by the Honokohau transmission tunnel. Production of other streams in the Lahaina district averages less than 6 mgd each. In Sector A, the total diverted for use is about 29 mgd (25 mgd from Honokohau and 4 mgd combined from Honolua and Kaluanui); in Sector B, it is about 19 mgd.

All of the stream flow divertable with intake systems now in operation is allocated, principally for sugar cane irrigation. Over the last decade, however, a significant fraction of perennial flow has been reallocated to domestic use, especially from the Honokohau tunnel system. This withdrawal has created some difficulties for Pioneer Mill Co. in meeting its irrigation needs and in maintaining the salinity of the basal lens in balance. Utilization of surface water for irrigation is believed to assist in stabilizing basal lens salinity levels since this practice recharges aquifers with low salinity waters.

Groundwater Occurrence. In all three sectors, both basal groundwater and high level dike groundwater occur. The boundary between the basal and high level waters lies several miles inland. Basal groundwater underlies the more arid region; high level water, the wetter mountainous areas. The high level water accumulates in dike compartment aquifers from direct infiltration of rainfall and surface runoff, while the basal lens is recharged principally by leakage from dike aquifers.

In the high level region, the depth to groundwater is variable. Where it is shallow, development by wells of up to 1 mgd each can take place. At favorable locations where stream valleys cut below the water table, the groundwater is developable by tunnels and quasi-horizontal borings in increments on the order of 2 mgd. The distance of the dike

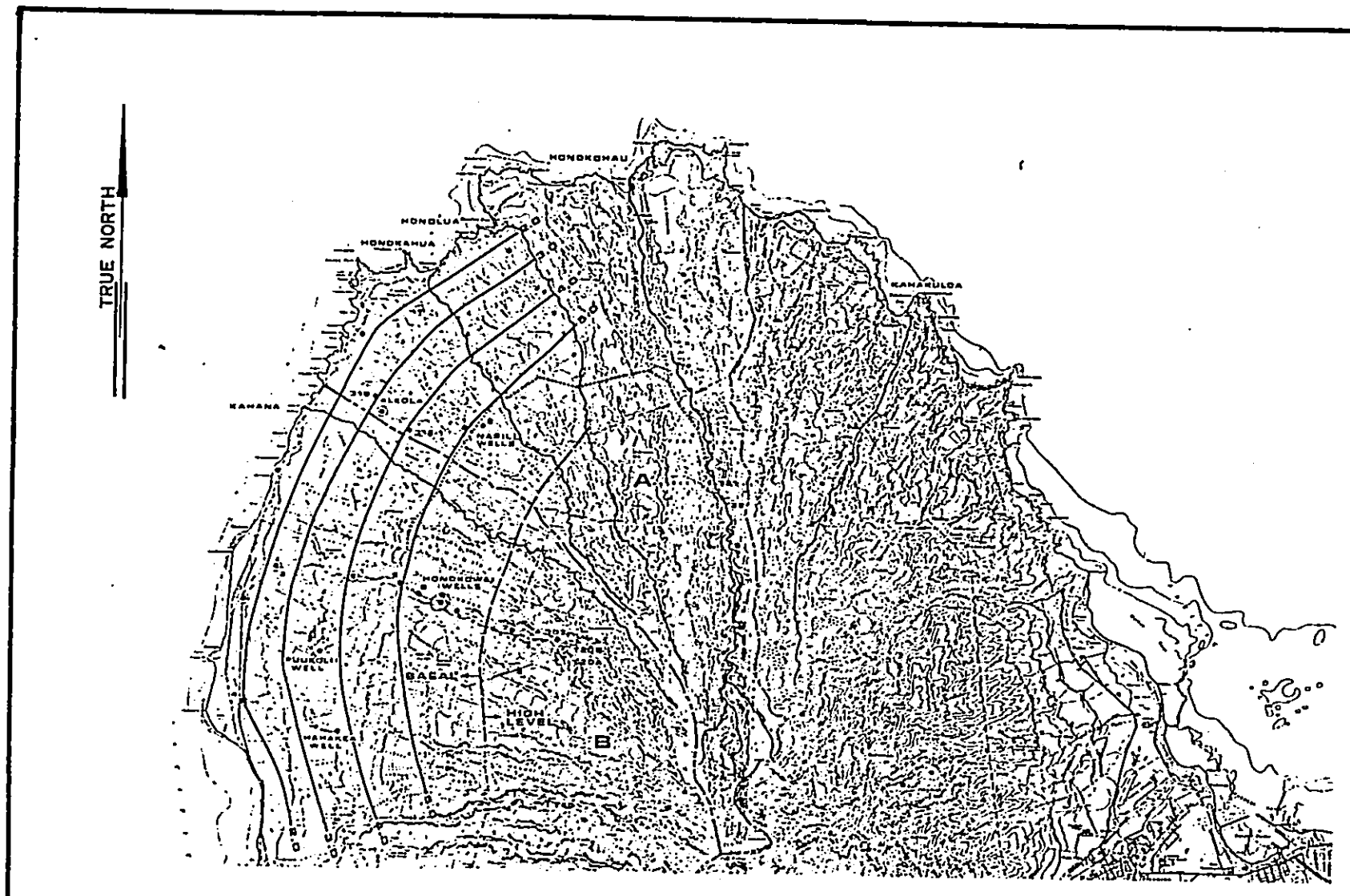
zone from consuming centers, the ruggedness of the terrain, and the relatively small production expectable from each extration unit, however, limit the overall feasibility of exploiting this resource.

Basal groundwater underlies more than 60 percent of Sectors A and B. The Ghyben-Herzberg lens, unretarded by continuous caprock along the coast, has the classic parabolic shape between the free discharge line at the shore and the relatively abrupt high level margin approximately 3.5 miles inland. Heads are low compared to those where caprock is effective. The maximum head in Sectors A and B is probably less than 7 feet at the inland terminus of the lens. The 5-foot head contour lies about 2 miles inland and the 3-foot contour about 3/4-mile inland (see Figure II-6). It should be noted that fresh potable water at rates considered economically acceptable is not ordinarily developable where the head is less than 4 feet.

The present average unit outflow of basal groundwater from Sector A is about 755 gallons per day per foot of coastline, while that of Sector B is about 700 gallons. The natural flows before exploitation started were approximately 1,000 and 800 gallons per day per foot of coastline respectively. These relationships are derived from hydrologic budgeting, the subject of the following section. A substantial flow of groundwater continues to leak to the sea in both sectors.

Hydrological Balances. The disposition of rainfall from the moment it hits the ground until it finds its way back to the atmosphere as water vapor is described in the hydrologic budget. Rainfall is evaporated from ground and water surfaces, is transpired by plants, flows to the ocean by way of streams, or infiltrates below the subsoil to eventually become groundwater in aquifers. By casting balances in terms of these components, estimates are made whether either surface water or groundwater accumulates to the extent that feasible exploitation is reasonable. The hydrologic budget is not meant to be employed in the details of water development; it suggests only the magnitude of the amount of water that might be obtained.

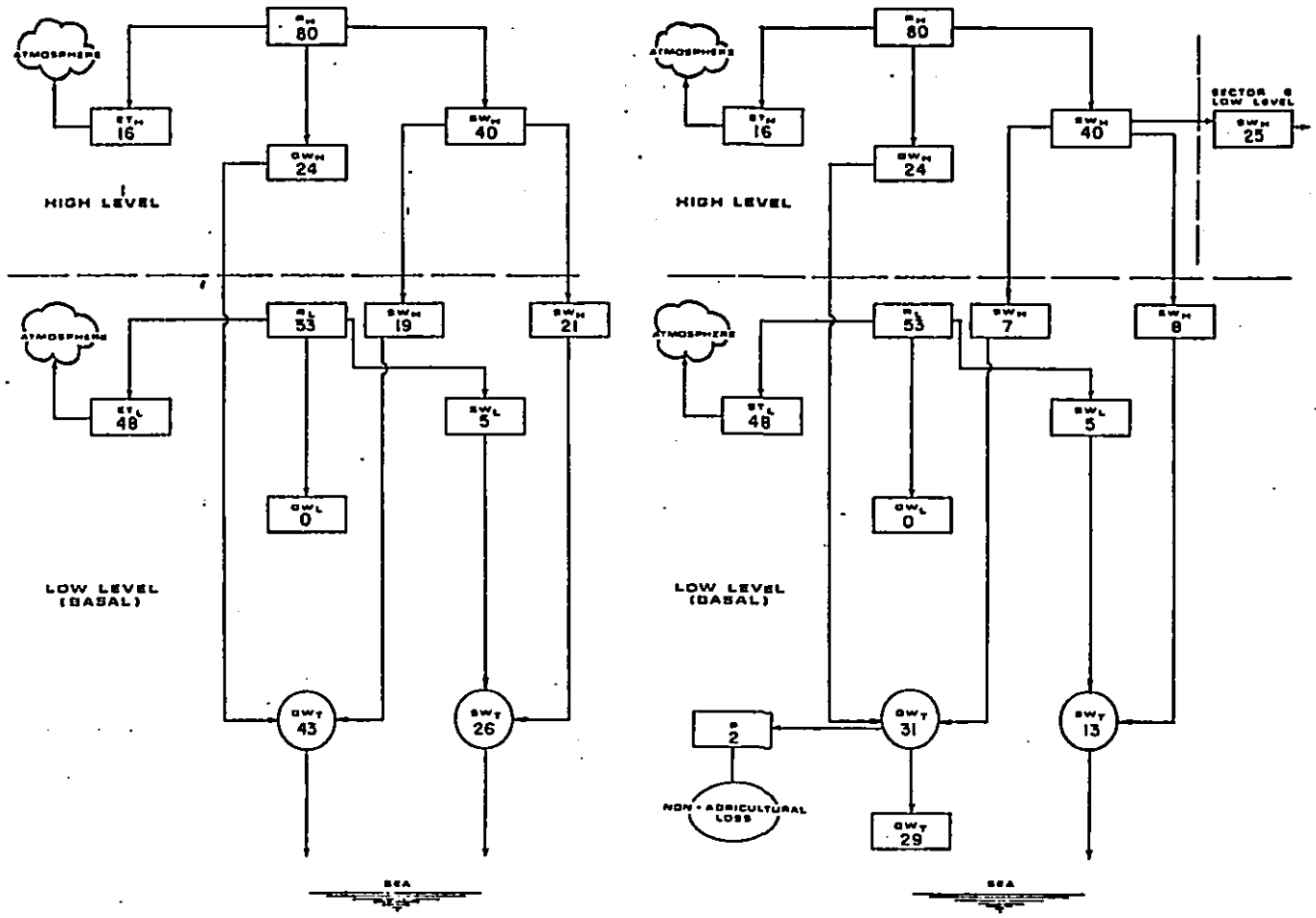
The "Kahakuloa Water Study" (Report R-54, Wilson Okamoto and Associates, 1977) includes a comprehensive discussion of the hydrologic balances in Sectors A and B. The report served as the basis for the balances given on Figures II-7 and II-8. The diagrams have been modified from



Source: Wilson Okamoto & Associates, 1977

FIGURE II-6

WATER HEAD CONTOURS OF
BASAL LENS IN NORTHERN WEST MAUI



KEY TO BUDGET SYMBOLS IN FLOW DIAGRAMS

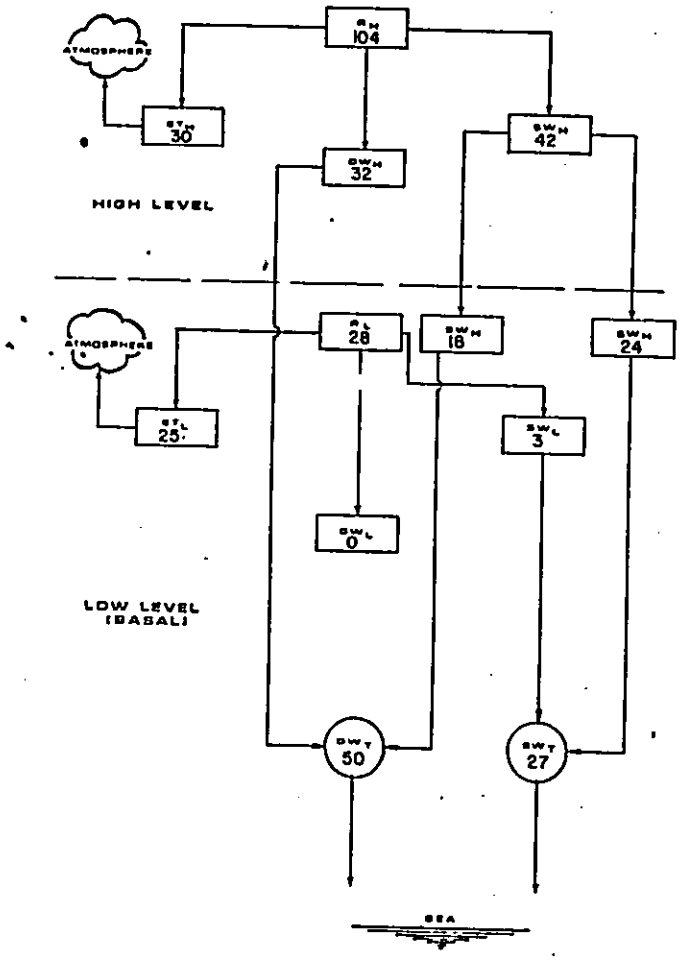
- R : RAINFALL
- ET : EVAPOTRANSPIRATION
- SW : SURFACE WATER
- GW : DEEP GROUNDWATER PERCOLATION
- P : PUMPAGE OF GROUNDWATER, BASAL
- H : HIGH LEVEL
- L : LOW LEVEL, BASAL
- T : TOTAL

Source: Wilson Okamoto & Assoc., 1977

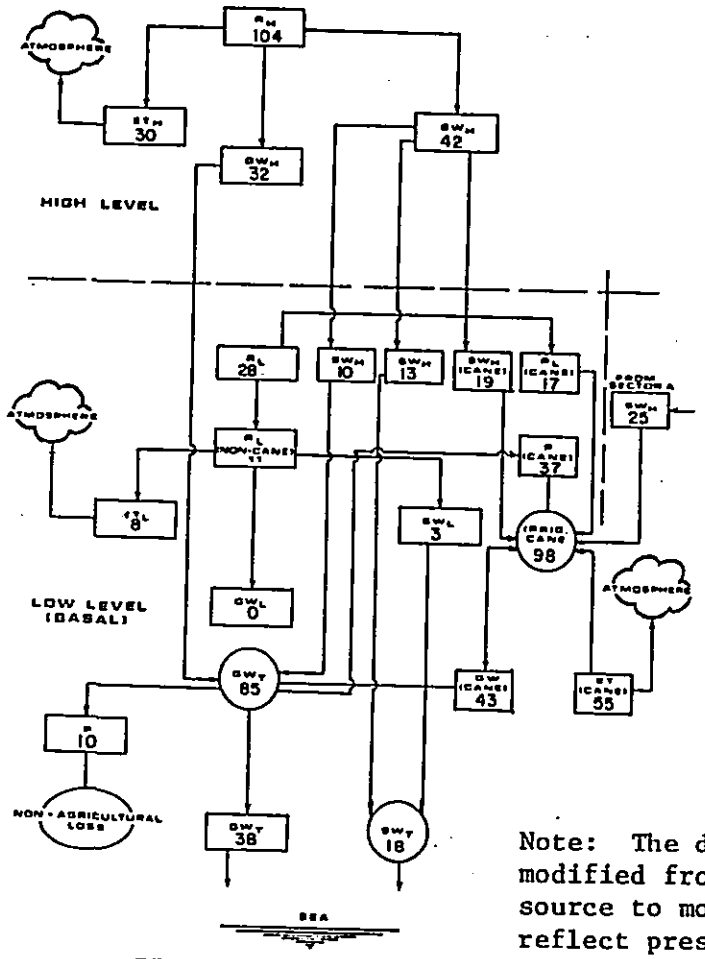
Note: The diagrams have been modified from the original source to more accurately reflect present-day conditions.

FIGURE II-7

LAHAINA DISTRICT HYDROLOGIC BUDGET FLOW DIAGRAMS (MGD) SECTOR A (HONOKOHAU TO KAHANA)



NATURAL CONDITIONS



PRESENT DAY CONDITIONS

Note: The diagrams have been modified from the original source to more accurately reflect present-day conditions.

KEY TO BUDGET SYMBOLS IN FLOW DIAGRAMS

R : RAINFALL
ET : EVAPOTRANSPIRATION
SW : SURFACE WATER
GW : DEEP GROUNDWATER PERCOLATION
P : PUMPAGE OF GROUNDWATER, BASAL
H : HIGH LEVEL
L : LOW LEVEL
T : TOTAL

Source: Wilson Okamoto & Assoc., 1977

FIGURE II-8

LAHAINA DISTRICT HYDROLOGIC BUDGET FLOW DIAGRAMS (MGD) - SECTOR B (KAHANA TO SOUTH RIDGE LAUNIUPOKO)

the original source to more accurately reflect present conditions. The hydrologic balances were originally derived from rainfall, evaporation, and outflow data gathered until 1976, then compared with water budgets given in Report R-33 (Belt, Collins, 1969), Circular C-51 (Yamanaga and Huxel, 1969), and work of E.W. Broadbent for Pioneer Mill Co. The correspondence of the calculated values of rainfall, runoff to the sea, and surplus groundwater among these reports where direct comparisons could be made are quite good, as indicated in the following summary:

	Rainfall (mgd)			Runoff to Sea (mgd)		Surplus Groundwater (mgd)	
Source[1]	C51	R33	R54	R33	R54	R33	R54
Sector A	133	122	133	16	13	29	31
Sector B	132	112	132	17	16	35	43
Total	265	234	265	33	29	65	74

[1] C51: Circular C-51 (Yamanaga and Huxel, 1969)
R33: Report R-33 (Belt, Collins & Associates, 1969)
R54: Report R-54 (Wilson Okamoto & Associates, 1977)

Figures II-7 and II-8 illustrate details of the hydrologic balances in Sectors A and B respectively. For each sector, two budgets were computed, one for predevelopment natural conditions and the other for present conditions of water development. Balances are computed for the high level groundwater zone and separately for the basal lens region, which is tributary to the high level aquifers. The "present day conditions" component of residual groundwater outflow in both sectors, as shown on Figures II-7 and II-8, is smaller than in Report R-54 (2 mgd less in Sector A, 5 mgd less in Sector B) because new wells have been added since 1976.

The diagrams are self-explanatory. The most meaningful component with respect to expanding production of water is the present day residual groundwater outflow (GW_T). It is from this surplus that added production would have to be drawn. Present day residual surface water (SW_T) is chiefly floodwater, the development of which would require expensive impoundment structures.

In Sector A, the present day groundwater discharge to the sea averages 29 mgd. Not all of this surplus flow is exploitable because a substantial discharge must occur in order for the basal lens to remain thick enough to permit pumpage of fresh water. An important fraction, however, can be added to groundwater draft. From Sector B a surplus of 38 mgd discharges to the sea, a portion of which is exploitable without imposing danger of salinization at the currently active pumping stations. The unused flux in Sector A (approximately 4.2 mgd per mile of coast) is greater than in Sector B (approximately 3.7 mgd per mile of coast), even though the total surplus is less because the ratio of discharge length to recharge volume is smaller.

Evidently in Sectors A and B some additional groundwater can be safely developed. In the zone of high level dike aquifers, practically no groundwater is being extracted by means of pumps, except in upper Honokowai where Amfac Properties and Pioneer Mill Co. have several wells. In hydrologic balance computations any groundwater taken from the high level zone lessens the amount of water available to the basal aquifer. Unless high level water is easy and cheap to obtain, the dike aquifers are not likely to be an attractive source of water for the county system.

Water Development.

Sector A. The largest and most productive water development project in Sector A is the Honokohau Stream diversion and transmission system, which takes water from elevation 850 feet in Honokohau Valley and diverts it through tunnels and ditches to Pioneer Mill Co. sugar fields. Added to the Honokohau contribution are small increments from Kaluanui Valley (average 0.9 mgd), a tributary of Honokohau, and Honolua Valley (average 3.2 mgd). Figure II-9, taken from the "Kahakuloa Water Study," charts the collection and disposal of flows in the system. It may be possible to add several mgd of additional high level surface and ground waters to the system, but at substantial cost.

The Honokohau diversion is a very efficient collection and transmission system. According to Appendix B of the Kahakuloa report (R-54), the intake collects about 84 percent of the total surface flow of the stream at elevation 850 feet. This high an efficiency could not be

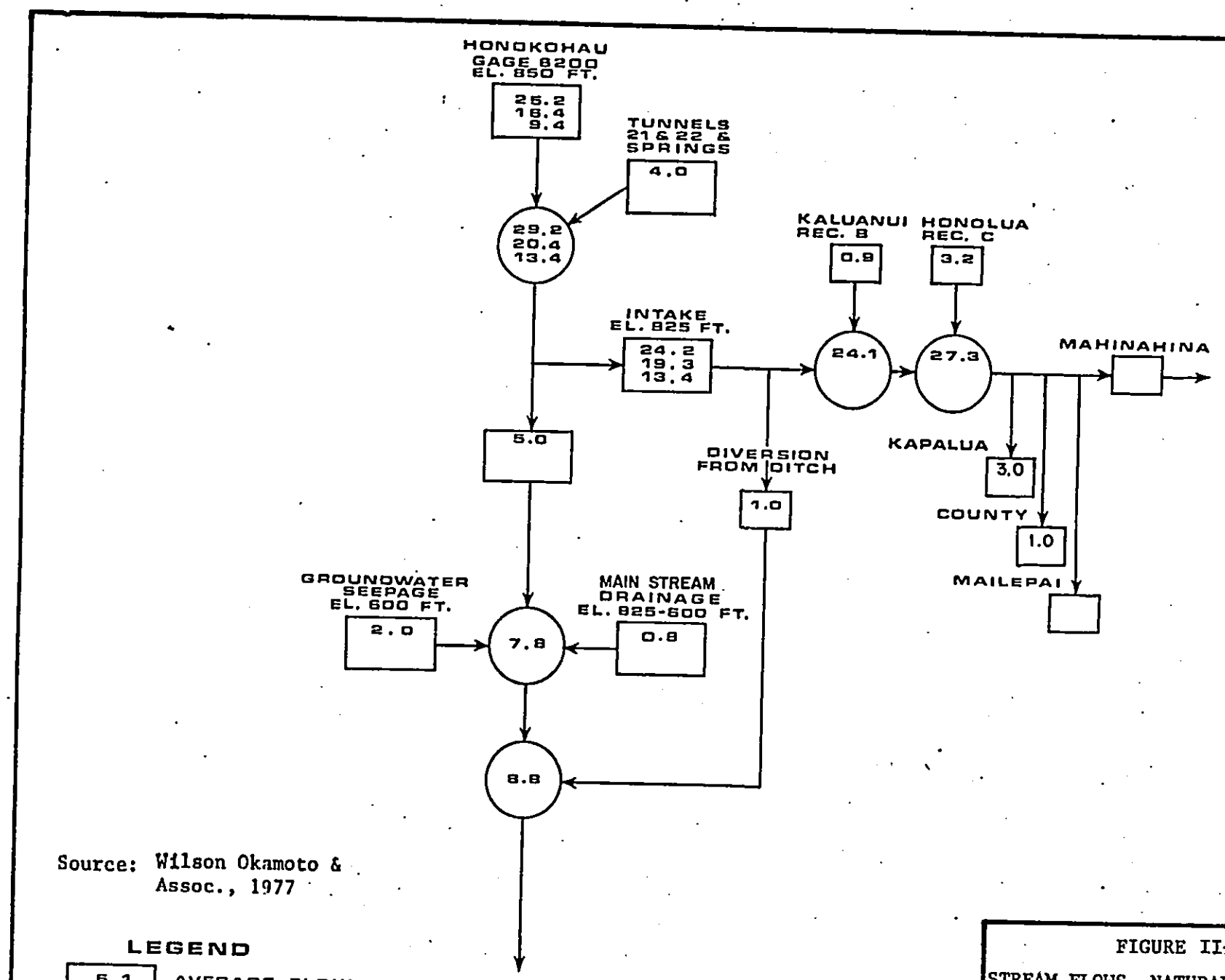


FIGURE II-9

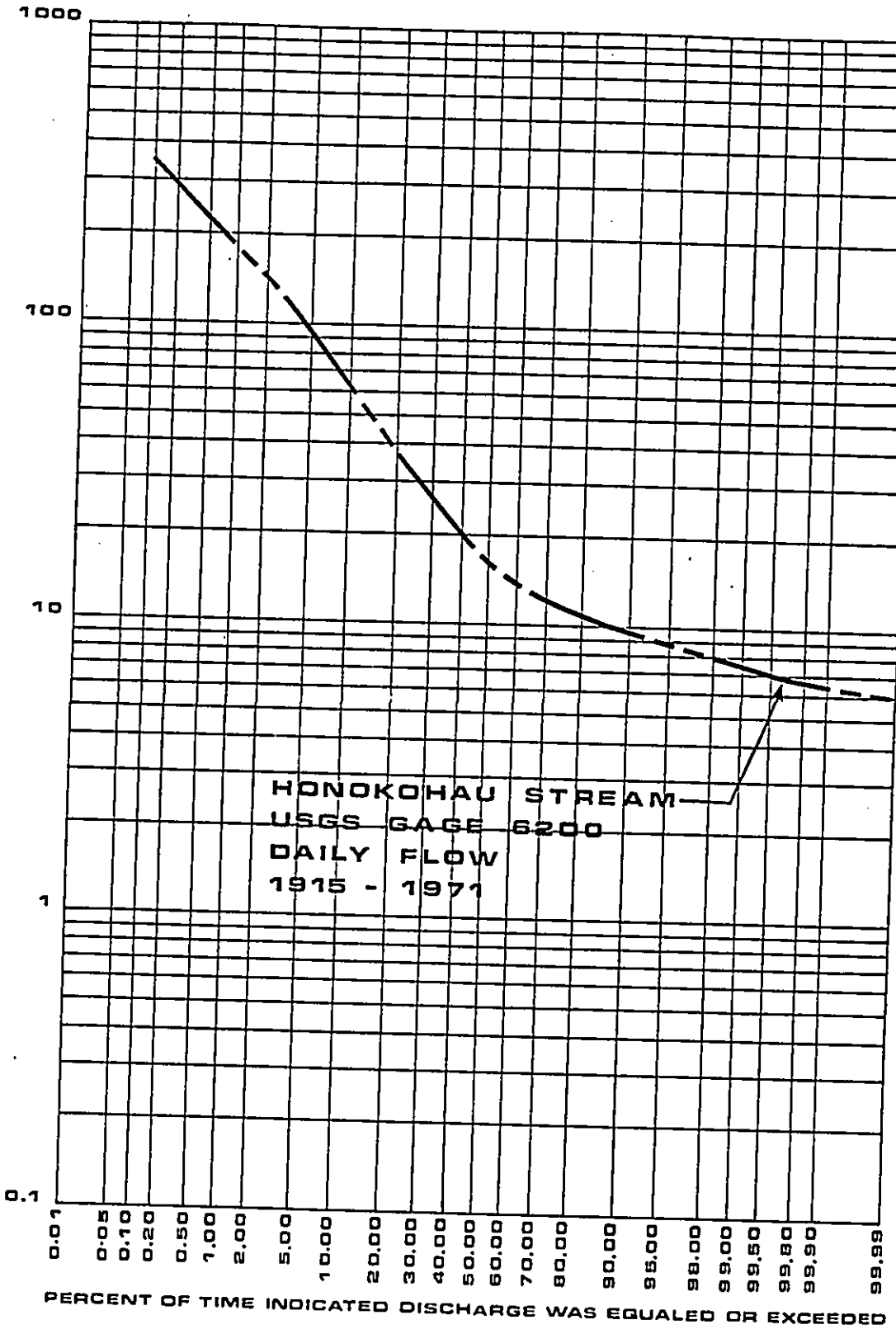
STREAM FLOWS, NATURAL CONDITIONS & CURRENT DIVERSIONS OF THE HONOKOHAU WATERSHED

significantly improved upon. Figure II-10 shows daily flow duration curve data for the Honokohau Stream. The average flow in the tunnel just below the intake is 24.2 mgd.

Formerly, Pioneer Mill Co. received all of the Honokohau tunnel flow for sugar cane irrigation. Now, water is withdrawn for use by the Kapalua community, and the County Department of Water Supply and still more is withdrawn at Honokohau and Alaeloa. The Kapalua resort area presently withdraws approximately 3 mgd from the Honokohau ditch. Withdrawal may be expected to increase to 4.5 mgd when full development occurs. The county's Lahaina-Alaeloa system presently withdraws approximately 1.2 mgd at the Alaeloa Intake. No increase in withdrawal by the County is anticipated in the future.

Until the county's Napili A (State No. 5838-01) and Napili B (State No. 5838-02) wells were drilled in the last decade, practically no groundwater was pumped from Sector A. Two unsuccessful wells at Alaeloa (5840-01 and 5839-02) were drilled earlier by the state, but the quality of the pumped groundwater was not acceptable for domestic use. The Napili A and B wells presently yield 1 mgd each. Typical chloride levels of these wells are shown on Figure II-11. It is believed that the high chloride levels for the Napili A well are the result of locating the well at a site where the vertical permeability is high, thus allowing brackish water from deep in the lens to enter the well. The somewhat elevated salinity is not necessarily due to overpumping and does not indicate excessive salt water intrusion. The chloride levels of the Napili A well have been very stable since the beginning of its operation in 1971, indicating that an equilibrium condition exists. It should be noted that the chloride levels are well below the 250 mg/l secondary standard maximum contaminant level.

Pumps on the two most recently drilled wells, Napili C (5838-03) and Honokahua A (5838-04) are sized to yield 1.5 mgd and 0.7 mgd respectively. The relatively low yield of Honokahua A appears to be attributable to location of this well in tight rock formation. Low permeability aquifer material of this nature is not believed to be typical of the area. Unfortunately, the yield of this well cannot be increased by deepening it due to the limited thickness of the aquifer.



Source: Wilson Okamoto & Associates, 1977

FIGURE II-10

STREAM FLOW DURATION CURVE
FOR HONOKOHAU STREAM

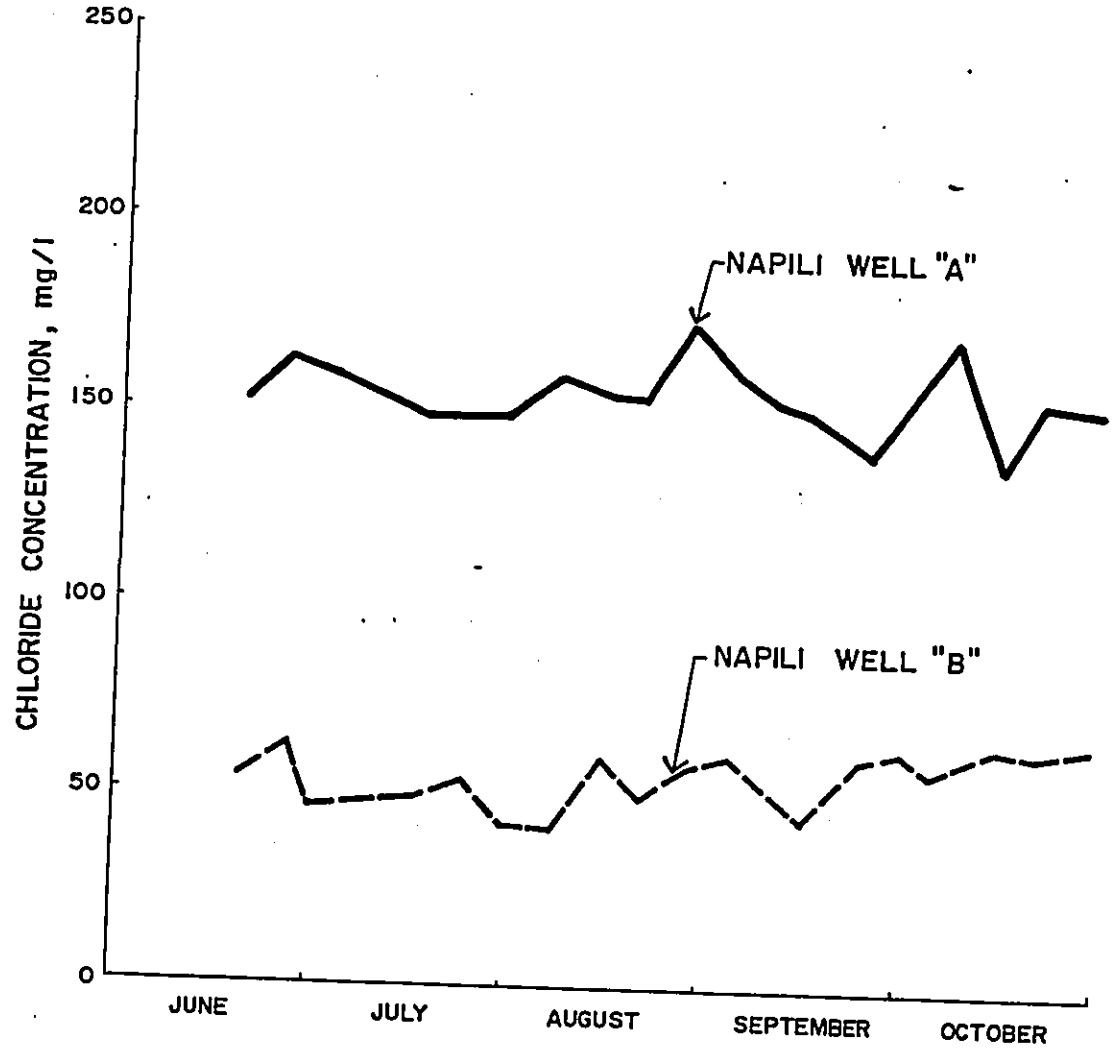


FIGURE II-11

BASAL WELL
CHLORIDE LEVELS

The operation of all four wells in Sector A would yield approximately 4 mgd of basal water, reducing the present day surplus by another 2 mgd, from 29 mgd to 27 mgd. An appreciable portion of the unused groundwater flow of 27 mgd will be safely developable. If 3 mgd from new wells were added to the 4 mgd from the Napili and Honokahua wells, the 5-foot head contour on which the existing wells are located would be depressed by about 0.5 feet. Still another increment of 2 mgd would depress the head about 0.2 feet more. In the Lahaina district draft per well of 1 mgd, where the head lies between 4.0 and 4.5 feet, is a safe practice.

At least 3 and up to 5 additional mgd of potable water could be withdrawn from Sector A. The total draft of potable water from the sector would then be 7 to 9 mgd, of which 4 mgd is assigned to the existing Napili and Honokahua wells. An additional well may be located in the Honokahua district, while other new wells would have to be sited north of Honokahua near the 5-foot head contour, which is located about 2 miles inland. The wells would not interfere with any existing domestic or agricultural pumping stations.

Sector B. In Sector B, an average of 19 mgd of surface water is diverted from four streams: 5.7 mgd from Honokowai, 5.2 mgd from Kahoma, 5.7 mgd from Kauaula, and 2.5 mgd from Kanaha. Less than 1.0 mgd is taken from a fifth stream, Launiupoko. Perhaps a small increment of surface water remains to be developed, but not an amount that would palpably ameliorate supply problems.

Most of the basal groundwater pumped in the Lahaina district is taken from Sector B by Pioneer Mill Co. Prior to the series of dry years from 1971 through 1977, plantation average draft was 42 mgd. During the dry period, it climbed to a peak of 49 mgd in 1977. In 1979, following the return of normal weather in 1978, total draft fell to 37 mgd. Over the long term plantation draft is expected to average 40 to 45 mgd.

The basal lens is also being exploited for domestic and incidental uses by means of drilled wells. County wells in Kauaula Valley and near Lahainaluna are capable of producing a total of about 1 mgd. Amfac Properties steadily pumps 1.5 mgd for domestic use from a basal well in Honokowai and about 2 mgd for golf course irrigation from wells at Puukolii and Hahakea. Thus, to plantation withdrawals must be added about

5 mgd, giving an average total draft of about 47 mgd on the lens and leaving surplus groundwater drainage to the sea as 38 mgd. Despite the 38 mgd surplus flow to the sea, it should once again be noted that only a portion of the flow is exploitable.

Even though Sector B is relatively heavily exploited, additional potable groundwater could be developed without seriously impairing the quality of the basal water at the large plantation pumping stations. Adding yet another 5 mgd to the present draft (averaged as 47 mgd) would depress the 5-foot head contour by about 0.5 feet. In the region of the plantation stations, the reduction would be about 0.2 feet. As in Sector A, potable water developments will have to be restricted to areas where the head is 5 feet or greater, approximately 2 miles and further inland. It is anticipated that additional groundwater will be developed in Sector B for agricultural and resort use by private entities.

Natural Hazards

Natural hazards include storm flooding, tsunami inundation, and earthquakes. The Honokahua well site is not susceptible to flooding and tsunami hazards. Earthquake hazards must be considered in structural design standards.

Flooding. Flood insurance maps prepared by the U.S. Army Corps of Engineers for the U.S. Housing and Urban Development indicate that the proposed sites are well outside designated flood-prone areas (U.S. Army Corps of Engineers, 1980).

Tsunami Inundation. The maximum inland reach of tsunamis is about 40 feet above mean sea level (U.S. Army Corps of Engineers, 1980). The Honokahua Well "B" will be located at approximately 900 feet above mean sea level.

Earthquakes. The 1976 Uniform Building Code designates Maui as belonging in seismic zone 2 (potential moderate damage). The Honolulu Board of Water Supply, however, requires water-handling structures to be designed according to a more stringent zone 3 standards. This precaution is corroborated by the findings of a university study that reexamined the building code requirements (Furumoto et al, 1973). That study analyzed the effects of three significant earthquakes and recommended that Maui be designated zone 3 (potential major damage).

The rating has an effect on the structural design criteria for lateral loads. The lateral loads used for zone 3 are twice that for zone 2.

Cultural Resources

Archaeological and historical surveys have been done for Lahaina town, Honolua Valley, Honokowai Valley, and along the proposed realignment route of Honoapiilani Highway. No previous documented survey, however, exists for the inland area of the Honokahua district. A reconnaissance survey through Honokahua was conducted in the 1960s and indicated the possibility of significant archaeological resources; however, there are no written records available (Maui Historic Society, 1981). The only other available inventory of known historic or archaeological resources is at the State Office of Historic Sites. According to its information, no historic or archaeological resources exist near the proposed well site as the inventoried sites are clustered near the coastline.

Flora and Fauna

There are no endangered species on the proposed well site. The existing flora consists of introduced species such as haole koa, guava, christmas berry, eucalyptus, and various grass species.

The proposed well site is not a critical wildlife habitat (HWRRS, Fish and Wildlife, 1975). Birds and rodents such as rats, mice, and mongoose are the primary visitors or inhabitants. The only endemic species that may visit the site is the Hawaiian owl, or pueo (Asio flammeus sandwichensis), which will feed on the rats and mice.

There are no wetlands in the vicinity of the proposed well site (Elliot and Hall, 1977).

SOCIO-ECONOMIC FACTORS

History

The principal urban settlement in the study area is the town of Lahaina. It has an eminent history, being once the capital of the ancient Hawaiian kingdom. Villages were developed in the valleys by the early Hawaiians. Stréams were diverted for taro growth and springs were tapped

for domestic use. Ancient water rights of 1 mgd for growing taro are still being observed in Honokohau Valley. After the relocation of the capital to Honolulu, Lahaina was reinvigorated with the rise of the whaling industry. The character of Lahaina as a whaling town is being preserved to this day through historic preservation and urban design controls.

With the rise of agriculture in the early 1900s, the numerous small plantation communities of Honokahua, Kahana, Mahinahina, Honokowai, Kapunakea, Wainee, and others sprung up. Extensive water development projects were undertaken for irrigation. Wells were dug, streams were diverted, and a major ditch system was developed to convey the water. The ditch system is the Honokohau ditch.

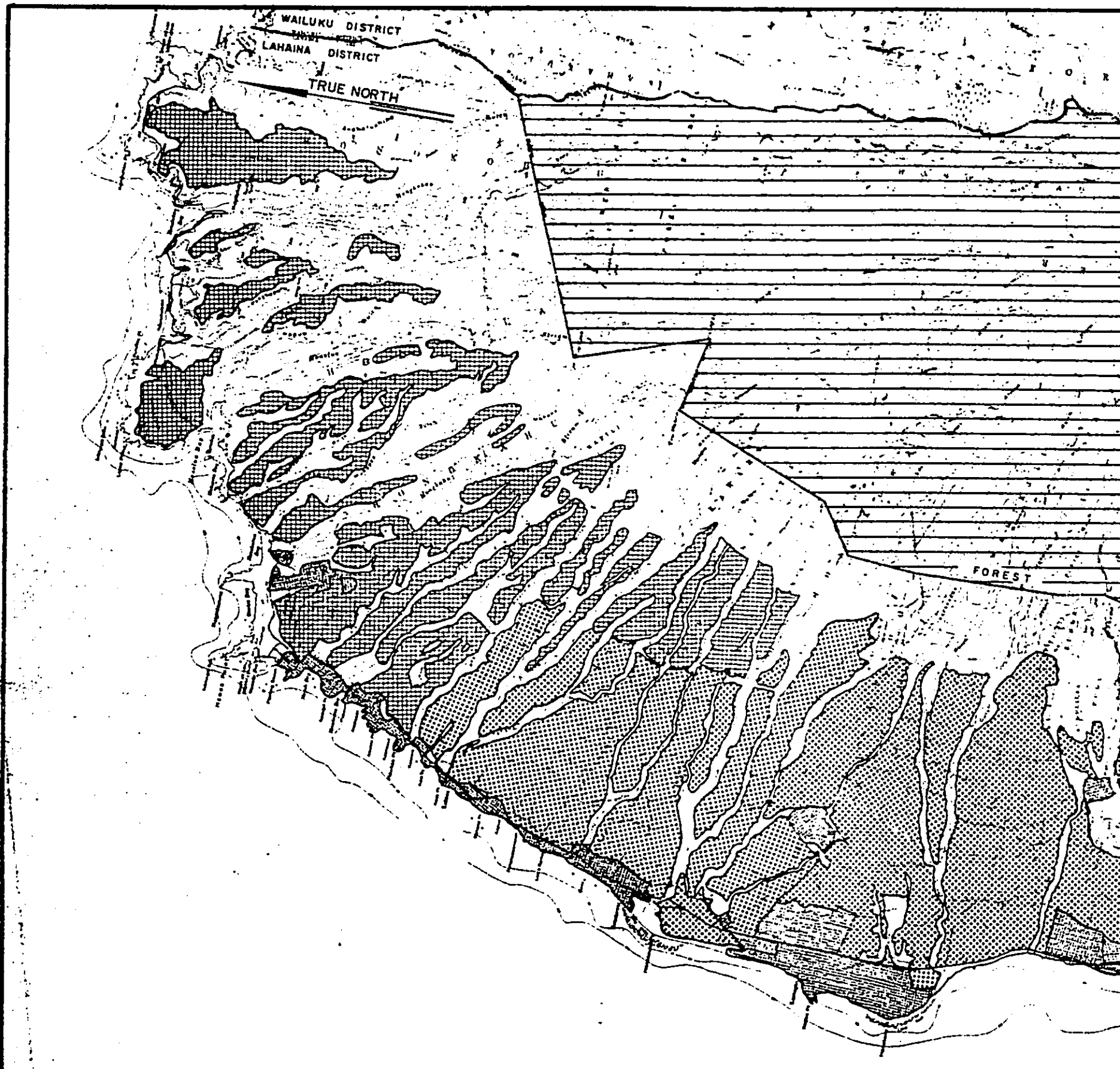
Since statehood, the tourism industry in the Lahaina district has been rapidly expanding. The beautiful beaches of West Maui are a natural attraction for resort development. Hotels, resort condominiums, and apartments have been transforming the former plantation communities into a medium-rise, visitor-oriented environment. Vacant areas between communities are being filled in with resort development such that a continuous belt of development will soon exist from Lahaina to Napili.

Existing Land Use

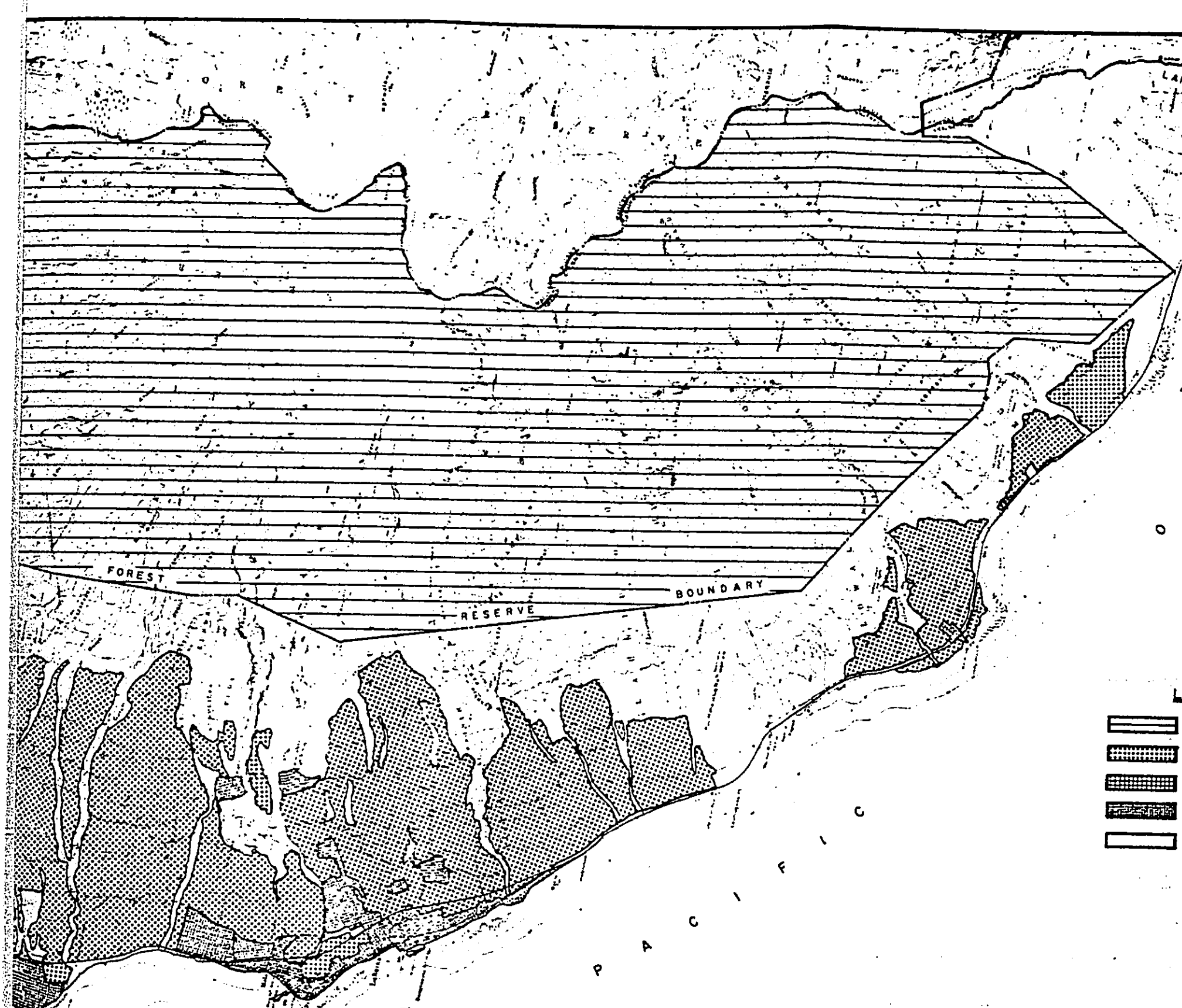
Land Use. The dominant land use in the Lahaina-Alaeloa area along the coast is resort. The three major resort areas are Lahaina, Kaanapali, and Kapalua. Agriculture (sugar cane and pineapple) dominates the upland areas, with grazing and forest reserve in the higher elevations. Residential use is scattered in Lahaina and along the coast between Kaanapali and Kapalua (see Figure II-12). Demand for potable water is therefore primarily concentrated along the coastline. Water for irrigation is needed in the upland areas.

Ownership. Major landowners in the study area are the State of Hawaii, Maui Land and Pineapple Co., Amfac, and Bishop Estate.

The land holdings of Maui Land and Pineapple Co. are in the northern portion of the Lahaina area, while Amfac owns a large portion of the central area encompassing Kaanapali and the lands mauka of Kaanapali.



SOURCE: BELT, COLLINS AND ASSOC., 1969


FOREST
RESERVE
BOUNDARY
PACIFIC
2000' 0 2000' 4000'
SCALE IN FEET

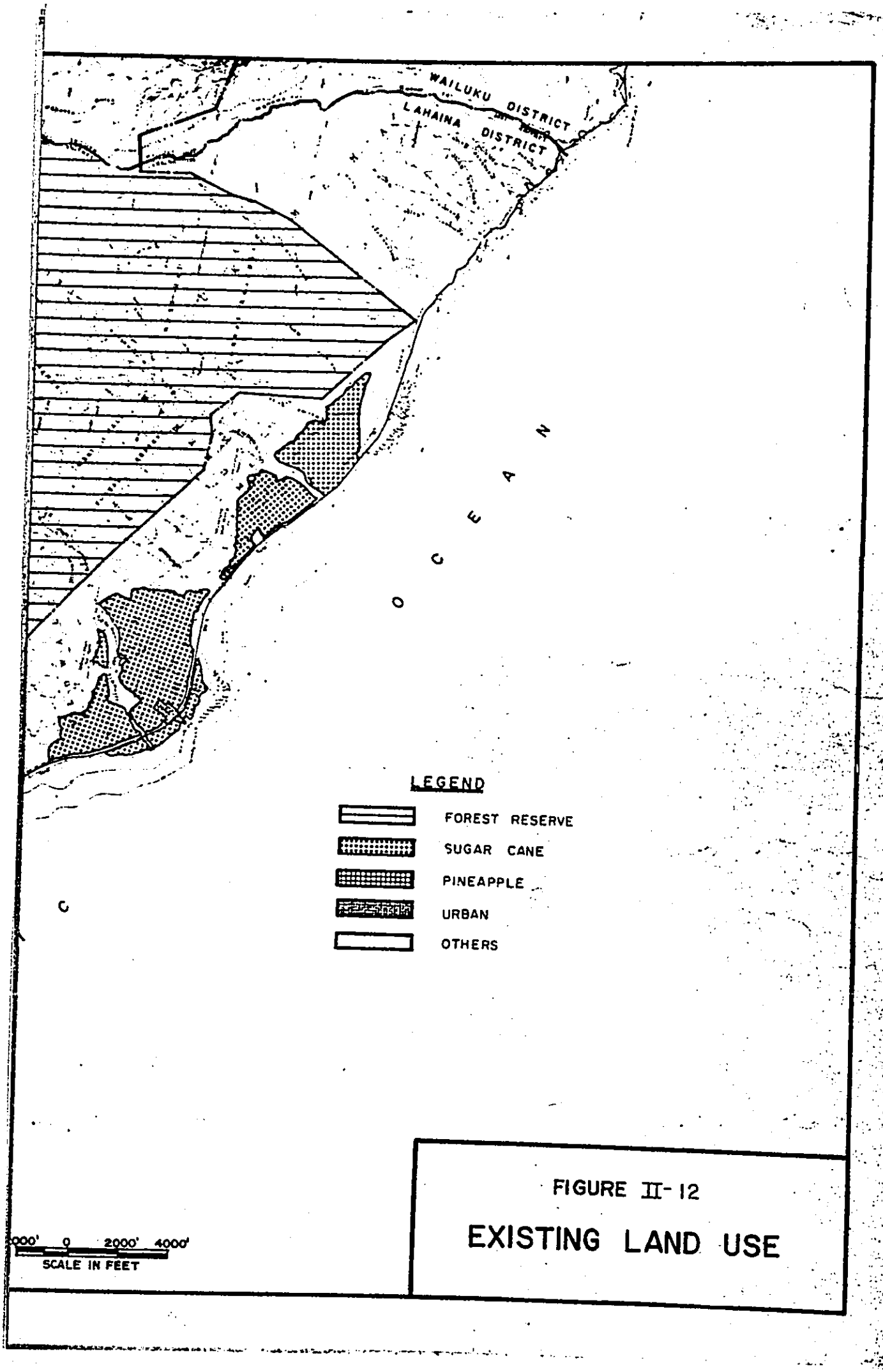


FIGURE II-12

EXISTING LAND USE

Bishop Estate's land holdings are primarily mauka of Lahaina town. Except for park areas along the shoreline, the state's land holdings are primarily in the mauka area straddling Amfac's land holdings. Small, individual land holdings are concentrated in Lahaina town, along the shoreline from Honokowai to Napili, and in Honokohau Valley (see Figure II-13).

Economy

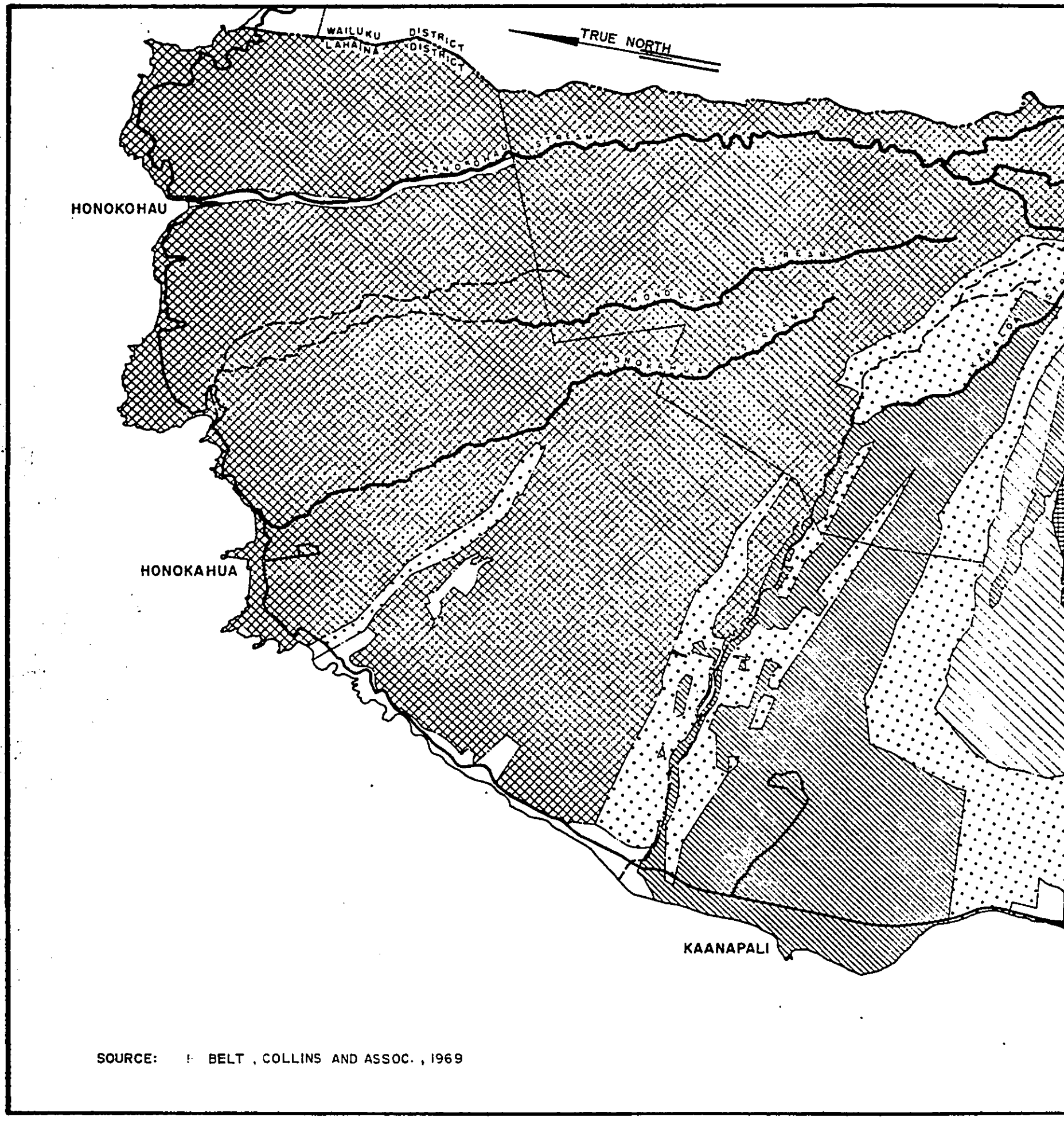
Industries. Historically, the sugar and pineapple industries have provided the bulk of employment opportunities within the Lahaina-Kaanapali-Napili study area. Today, however, the unusual charm of Lahaina town and the development of resort complexes along the splendid coastline have advanced the visitor industry to a position of growth that makes it the area's primary employer. This increase in the tourist industry and resort-hotel personnel has emphasized the need for additional housing. Construction activities are in evidence throughout the study area to provide this housing. The Lahaina Shopping Center and other commercial areas are being developed to support the resort and residential development. The continued economic growth outlook for the area is optimistic.

Population

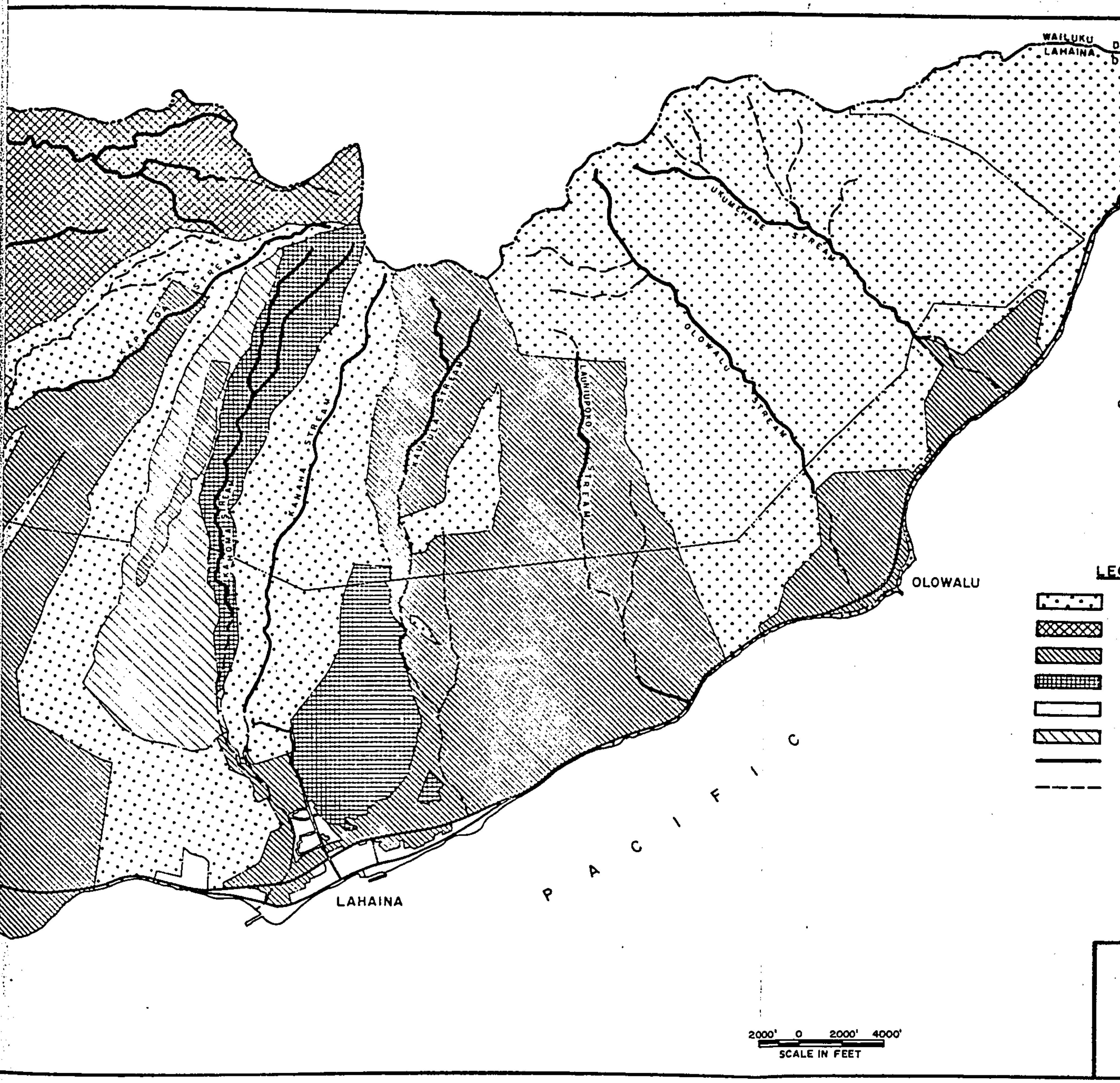
The de facto population of the Lahaina district is composed of two major classes: (1) permanent residents and (2) transient visitors. The data from the U.S. Bureau of Census only report residents, while visitor counts are estimated by the Hawaii Visitors Bureau.

Residents. Preliminary results from the 1980 census (DPED, 1980) indicated that Lahaina district was the third fastest growing district in Maui County, exceeded only by Kihei and Kula. Growth during the decade of the 1970s was tremendously greater than growth during the previous decade. Within the Lahaina district, the largest proportion of the residents reside in Lahaina town (60 percent), followed by Napili-Honokowai (24 percent) (see Table II-3).

The average household size of 3.1 is relatively small compared to other Maui districts (U.S. OEO, 1975). Only Kihei-Makawao has a smaller average household size. This characteristic may be due to the large proportion of condominium-type housing in Kihei and Lahaina.



SOURCE: BELT, COLLINS AND ASSOC., 1969



WAILUKU D
LAHAINA D
UKUMEHAME STREAM
OLOWALU STREAM
LAUNIUPOKO STREAM
KAUAULA STREAM
KANAHA STREAM
KAHOMA STREAM
KAPALOA STREAM
OLOWALU
LAHAINA
P A C I F I C
LEG
2000' 0 2000' 4000'
SCALE IN FEET

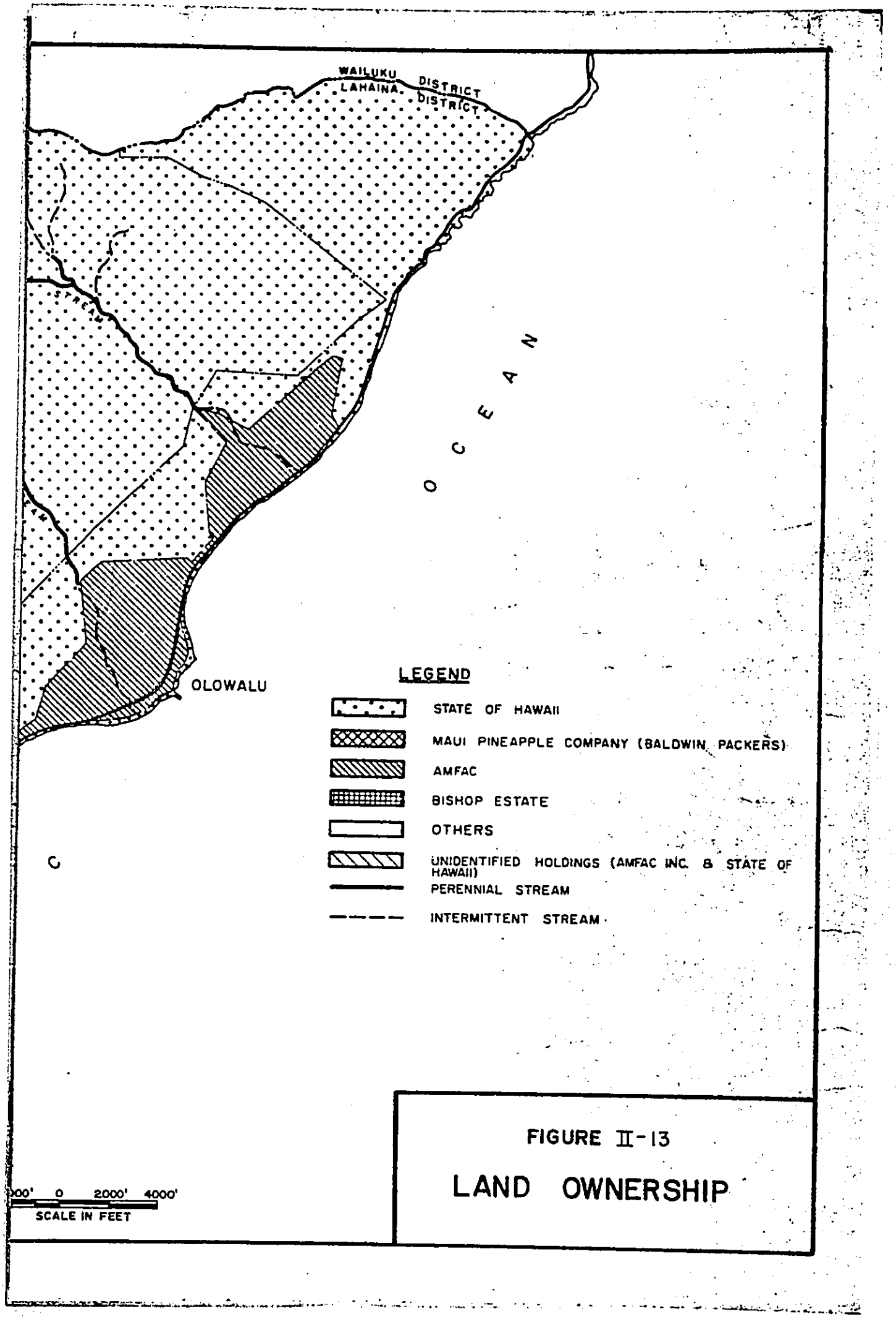


FIGURE II-13

LAND OWNERSHIP

TABLE II-3

RESIDENT POPULATION OF LAHAINA DISTRICT: 1960 TO 1980

Area	1960	1970	1980	Percent Change 1960-1970	Percent Change 1970-1980
Lahaina District	4,844	5,524	10,287	14.0	86.2
Lahaina	3,423	3,718	6,105	8.6	64.2
Kaanapali[1]*	N/A	N/A	525	-	-
Napili-Honokowai*	N/A	N/A	2,454	-	-
Honokahua[1]	354	431	308	21.8	-28.5

* These places were newly defined for 1980.

[1] Not part of the public water system service area.

Source: Department of Planning and Economic Development, The Population of Hawaii, 1980: Preliminary Census Results, Statistical Report 141, 1980.

Visitors. Visitor census is available only on a countywide basis. For Maui County in 1979, the average daily visitor census was 15,831 (HVB, 1980). An estimated average visitor census for the study area can be obtained indirectly by multiplying the average number of occupied units by the average visitor census per occupied hotel room. The average visitor census per occupied hotel room was estimated on a statewide basis to be 2.3 (DPED, 1978). The number of occupied units averaged about 1,600, while the total number of visitor units was approximately 2,300 (70 percent occupancy rate). These figures yield an average visitor census of 3,680 for the study area in 1979. That is about 23 percent of the total for Maui County.

Housing

The number of housing units in the Lahaina district increased by 350 percent according to the preliminary results of the 1980 census (see Table II-4). Hotel units were not included in the housing unit count. All condominium units, however, were included, regardless of the residence status of their occupants. The inclusion of condominium units used by visitors in the housing count but not the population total is the primary reason for the disproportionate growth of the housing inventory during the decade relative to the resident population growth (DPED, 1980).

Housing characteristics are summarized in Table II-5, based on data from the 1975 OEO Census Update Survey.

In 1975, about 70 percent of the housing units were detached single family dwellings. About 25 percent were apartments or condominiums. This figure is exceeded only by Kihei, which had about 28 percent. Most of the housing structures, however, are low to medium rise (one to three stories). Of the multi-unit structures, the majority had a range of 11 to 50 units. The units contained mostly one to three bedrooms.

Future Growth

General Plan. According to the Lahaina General Plan (Kasamoto et al. 1968), the scenario for the communities in the Lahaina district is as follows:

TABLE II-4

HOUSING UNITS IN LAHAINA DISTRICT, 1970 TO 1980

	1970	1980	% Change
Maui County	13,922	33,243	138.8
Lahaina District	1,762	7,931	350.1
Honokahua[1]	125	686	448.8
Kaanapali[1]	-	1,355	-
Lahaina	1,132	2,505	121.3
Napili-Honokowai	-	3,196	-

[1] Not part of public water system service area.

TABLE II-5

HOUSING CHARACTERISTICS IN THE LAHAINA DISTRICT, 1975

	Lahaina	Maui County
Type		
Single Family Detached	69.5%	84.0%
Duplex	2.4	1.2
Townhouse	3.7	0.7
Apartment or Condominium	24.5	14.1
Number of Floors per Housing Structure		
1 Story	74.0	83.0
23 Stories	22.3	11.5
46 Stories	2.3	3.0
712 Stories	1.3	2.5
Units per Structure		
One	69.5	84.0
Duplex	2.4	1.5
310	8.7	3.4
1150	15.8	6.3
51100	2.9	3.9
101 or More	0.8	0.9
Bedrooms per Unit		
None	3.7	1.3
One	17.9	11.4
Two	20.6	21.4
Three	48.4	54.3
Four or More	9.4	11.6

1. Alaeloa-Kahana: Alaeloa is set aside for residential use, while Kahana is planned for apartment and hotel development.

2. Honokowai: Honokowai has large areas planned for apartment and hotel uses. Many of the apartment lands are already put to hotel-apartment use, especially those lands makai of the highway.

3. Kaanapali: Kaanapali is a well-known resort area with several elegant hotels along the coast, a resort commercial area, tennis facilities, and two 18-hole golf courses.

4. Lahaina Town: Lahaina town is more like a typical urban area than the more recently developed resort and apartment areas further north. The town has a historic district whose purpose is to "preserve historic structures and sites within said district and to enable the State and the County to make plans for the restoration of historic structures and sites" (Maui County Historic Districts Ordinance, Article 3, Chapter 8, Zoning).

Table II-6 summarizes the acreages zoned for the various uses and Figure II-14 is the zoning map.

Population Projections. Several population growth projections exist for the Lahaina district.

- 208 Plan (State DOH, 1980): This is the most recent officially adopted projection (June 1980) and is based on the state's Series II-F population projection. In the Series II-F projection, future population was allocated to the counties. Maui County Public Works Department was then responsible for disaggregating the county's allocation to the various districts. The Series II-F projection is based on a "controlled-growth" policy.

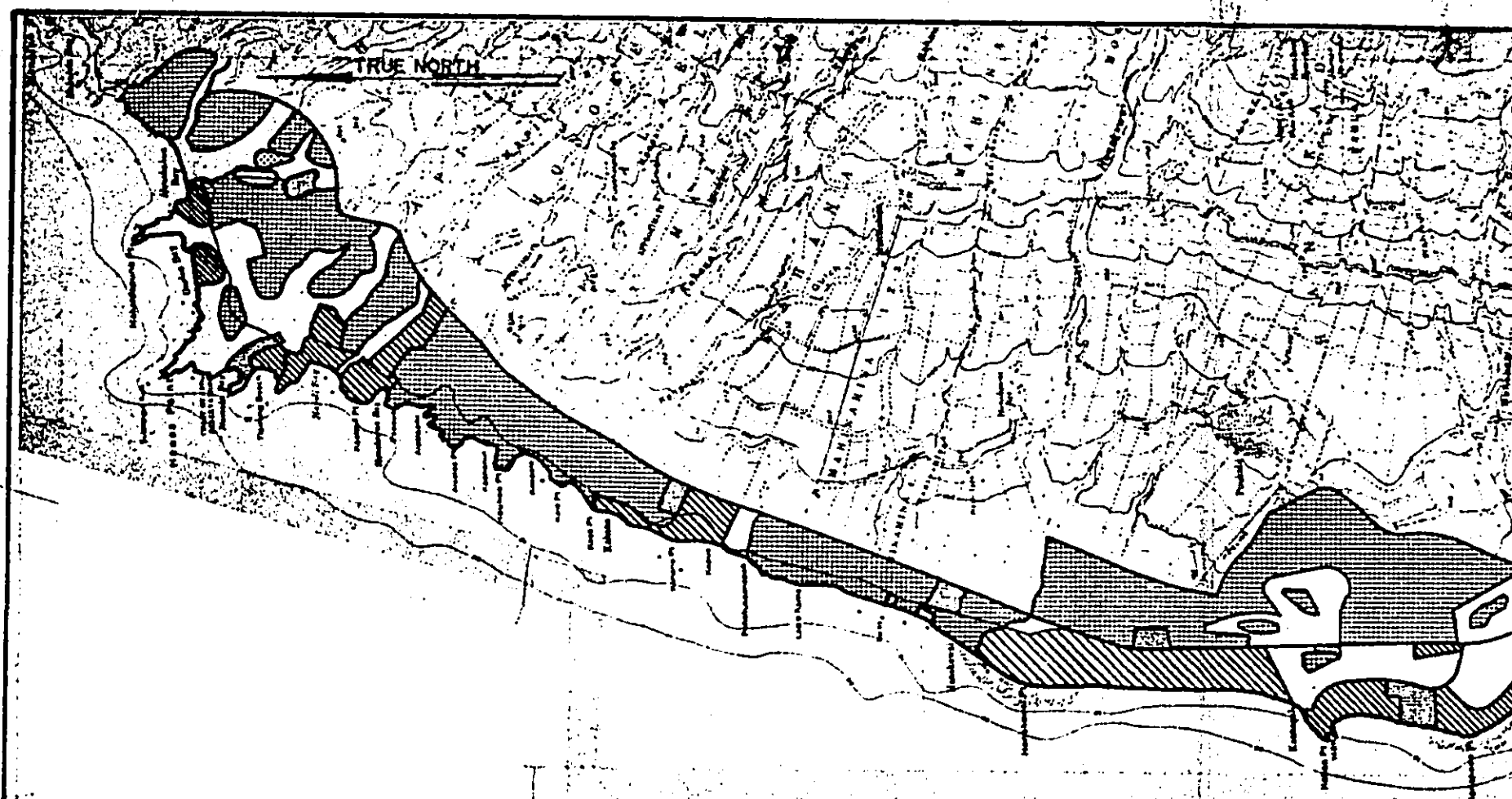
- Lahaina General Plan (Kasamoto, 1978): This plan is still the official county development plan for the Lahaina district. The County of Maui Planning Department recently formulated the Lahaina Community Plan, which will supersede the general plan when adopted. Until the revised plan is adopted, the existing plan is used as a guide to growth. The population projection of

TABLE II-6

ZONING ACREAGES WITHIN SERVICE AREA

Land Use Zoning	Acres	
Lahaina		
Residential	909.5	
Apartment	152.6	
Hotel	14.4	
Public	348.2	
Commercial	29.3	
Industrial	81.2	1,535.2
Honokowai		
Residential	50.4	
Apartment	137.8	
Commercial	12.0	200.2
Alaeloa-Kahana		
Residential	344.5	
Apartment	6.5	
Hotel	136.2	
Commercial	21.6	508.8
	Total	2,244.2

Note: Kaanapali and Kapalua are not part of the Maui County Department of Water Supply water service area; therefore, acreages for these areas are not included in the above table.



LEGEND

- COMMERCIAL
- INDUSTRIAL
- PUBLIC (GOLF COURSE, PARKS, ETC.)
- SCHOOLS
- RESIDENTIAL & APARTMENT
- HOTEL

SOURCE: BELT, COLLINS AND ASSOC., 1969

2000' 0

SCALE IN FE

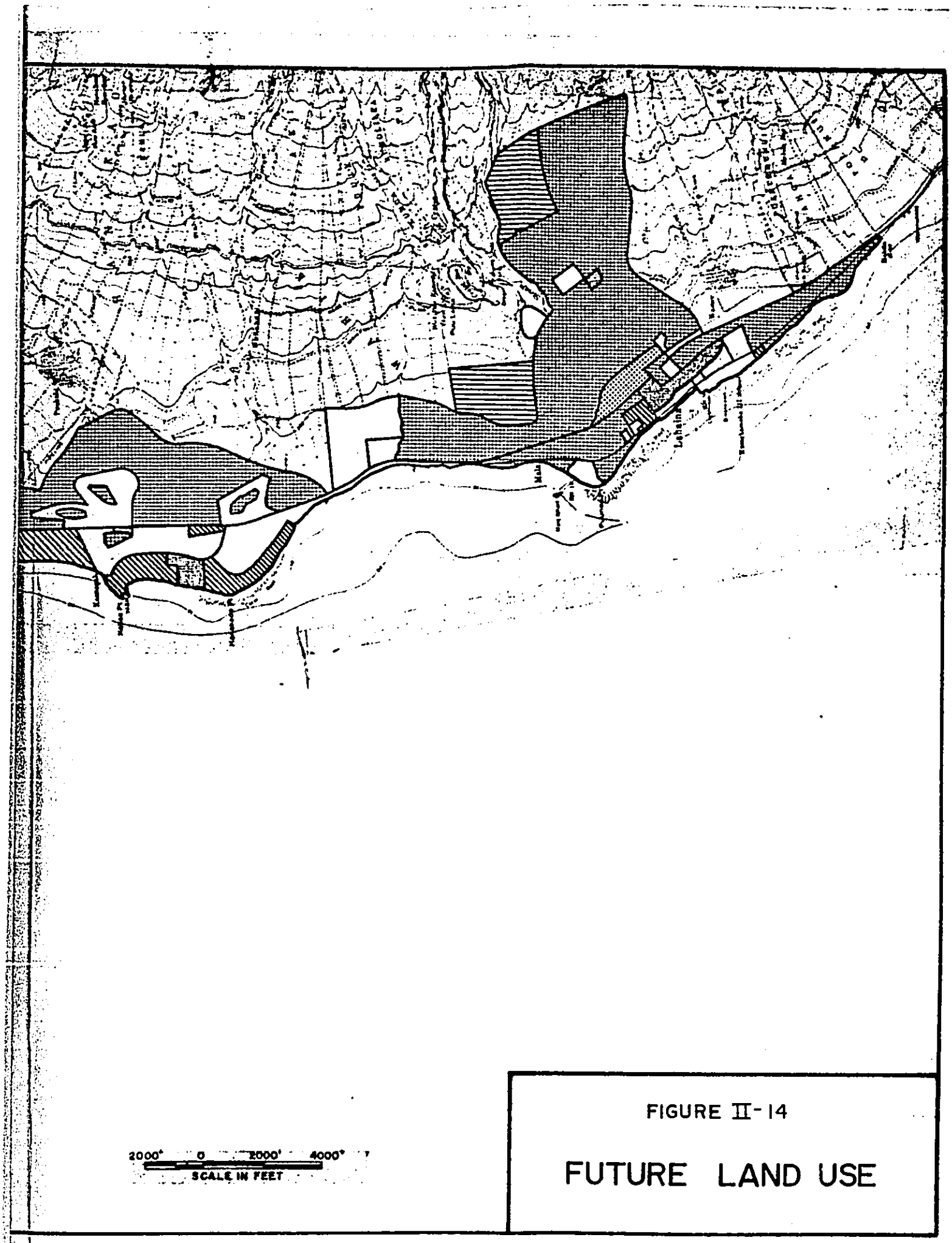


FIGURE II-14

FUTURE LAND USE

the Lahaina General Plan is based on a very optimistic economic outlook. The projections of the Lahaina Community Plan are between those of the Lahaina General Plan and the 208 Plan.

- Water Master Plan (R.M. Towill, 1971): To estimate water requirements, this plan estimated the ultimate population that was allowed by the Lahaina General Plan zoning. It then assumed 35 percent of this ultimate growth to occur by 1980 and 70 percent to occur by 1990. Full development (100 percent) was projected to occur by 2000. The estimates resulted in a slightly higher growth rate than anticipated by the Lahaina General Plan population projections.

- Department of Water Supply Estimates (DWS, 1978): The DWS modifications of the Water Master Plan projections in effect revised the population growth rate for the district. This estimate increases even further the divergence from the 208 Plan estimate than either the Lahaina General Plan or Water Master Plan estimates.

The alternative population projection figures are presented in Table II-7 and on Figure II-15.

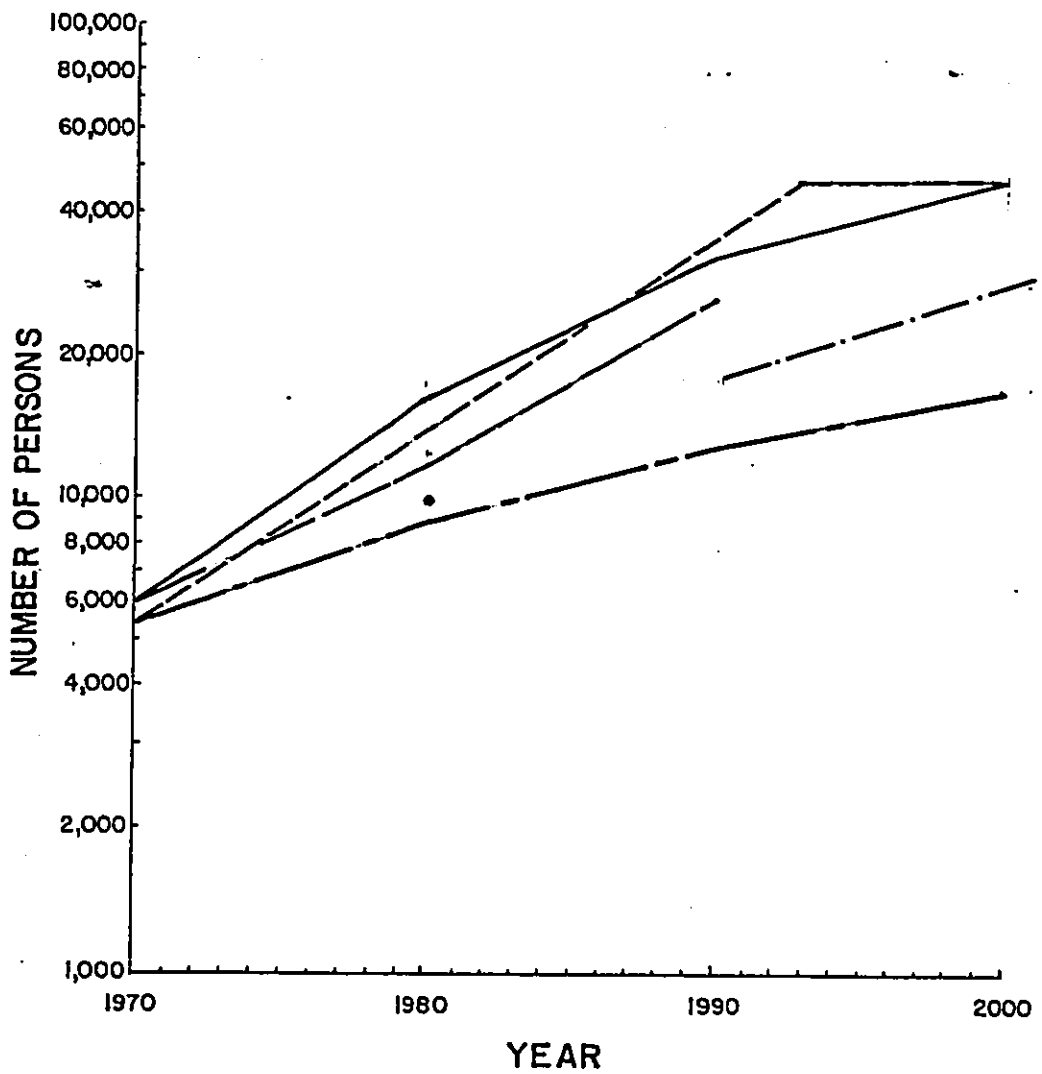
The trend indicated by the 1970 and 1980 census data shows that the 208 projection slightly underestimates the growth rate, while the Lahaina General Plan and all other projections overestimate the growth rate.

The 208 projections are the latest officially adopted county projections, which are believed to be reasonable considering that the cost for installing the infrastructure for sewers, solid waste disposal, and other county services would serve to restrict the growth rate. Therefore, the 208 projections is used in projecting future water requirements. Although the revised projections of the unadopted Lahaina Community Plan should also be considered, it may be noted that both the population projections of the 208 Plan and the Lahaina Community Plan are only estimates based upon available information. Regardless of which projection is used, the Department of Water Supply will be required to periodically reevaluate available population and water demand data for facility planning purposes.

TABLE II-7

ALTERNATIVE POPULATION PROJECTIONS FOR LAHAINA DISTRICT

Source	1970	1975	1980	1985	1990	1995	2000
208 Plan	5,524	7,400	9,000	10,900	12,800	15,100	17,200
Lahaina GP	6,000	8,500	12,100	18,100	27,000	--	--
Water Master Plan	6,000	--	16,600	--	33,300	--	47,500
DWS, 1978	--	--	--	--	--	47,500	--
Lahaina Community Plan	--	--	--	--	17,400	--	26,400



LEGEND

- 1980 CENSUS
- WATER MASTER PLAN (1971)
- DWS MODIFICATION (1978)
- LAHAINA GP (1968)
- 208 PLAN (1980)
- LAHAINA COMMUNITY PLAN (1983)

FIGURE II-15

ALTERNATIVE RESIDENT POPULATION PROJECTIONS - LAHAINA DISTRICT

The 208 projections encompass the entire Lahaina district. The allocation of the 208 projection to the county water service areas was accomplished by assuming that the relative distribution of the 1980 population will be about the same in the future. In 1980, 84 percent of the population in the Lahaina district resided in the county water service areas of Lahaina and Napili-Honokowai. The distribution between these two areas was 60 percent for Lahaina and 24 percent for Napili-Honokowai. When applying these percentages to the 208 projections, the resulting 1990 projection is 10,700 and the 2000 projection is 14,400. These figures are summarized in Table II-8.

Visitor Unit Projections. Primary visitor destination areas in the Lahaina district are Kaanapali and Kapalua. Both of these are serviced by private water systems. Within the municipal service area, visitor facilities will be constructed primarily in Lahaina, Honokowai, and Napili. Visitor unit projections are provided in Table II-9 and are based on the Hawaii Visitors Bureau (HVB) data and the State Tourism Plan. The occupancy rate has averaged about 70 percent in the past years, so this figure was applied to project the number of occupied units.

TABLE II-8

POPULATION PROJECTION FOR COUNTY WATER SERVICE AREAS

Area	1980	1990	2000
Lahaina District (208 Plan)	10,287	12,800	17,200
Lahaina-Alaeloa Service Area	8,559	10,700	14,400
Lahaina	6,105	7,600	10,300
Napili-Honokowai	2,454	3,100	4,100
Other Areas	1,728	2,100	2,800

TABLE II-9

VISITOR UNIT PROJECTIONS, LAHAINA DISTRICT, 1980 TO 2000

	1980	1990	2000
Lahaina-Alaeloa Service Area			
Total Units	2,300[1]	2,900[1]	3,600[3]
Occupied Units	1,600[4]	2,000[4]	2,500[4]
Estimated No. of Persons	3,700[5]	4,600[5]	5,800[5]
Kaanapali-Kapalua			
Total Units	3,900[6]	7,300[6]	13,900[6]
Occupied Units	2,700[4]	5,100[4]	9,700[4]
Estimated No. of Persons	6,300[5]	11,800[5]	22,400[5]
Total Units	6,200[7]	10,200[8]	17,500[3]
Total Occupied Units	4,300	7,100	12,200
Total Estimated No. of Persons	10,000	16,400	28,200

1 HVB, Visitor Plant Inventory and Maui Sun Condo'80 Inventory.

2 Based on HVB Visitor Plant Inventory (6/80); sum of 2,300 existing units and 600 proposed/planned units in service area.

3 Extrapolated from 1980 and 1990 figures on logarithmic graph.

4 Assumes 70 percent occupancy rate.

5 Based on 2.3 persons per occupied unit; DPED, 1978.

6 Difference of total units in Lahaina district and number of units in Lahaina-Alaeloa service area. According to State Tourism Plan, "most new hotel development is projected for Kaanapali. Large number of condominiums is projected for Kaanapali, Kapalua, and HonokowaiNapili" (DPED, 1980, p. 129). The maximum capacity for hotels (30 units/acre) and condos (20 units/acre) for Kapalua and Kaanapali is about 15,000.

7 HVB Visitor Plant Inventory (6/80) and Maui Sun Condo '80 Inventory.

8 State Tourism Plan (February 1980).

CHAPTER III

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

LAND USE PLANS AND POLICIES

Land use guidance is provided by a hierarchy of policy plans that have been enacted into law. At the broadest level is the state plan (Chapter 226, HRS), whose policies apply at a statewide level. Policies at the county level are provided by the recently-adopted County General Plan (Ordinance No. 1052). The most geographic-specific guidance is provided by the Lahaina General Plan, which was adopted in 1968 and is in the process of being updated. One important plan that is functionally specific is the 208 Water Quality Management Plan. This plan directly affects projects dealing with drinking water and wastewater. The Coastal Zone Management Program also has policies related to drinking water. The relationship of the proposed project to each of these plans is described below.

State Plan

The state plan consists of overall policies and a collection of functional plans. The proposed project deals with those policies relating to drinking water and the functional plan entitled State Water Resources Development Plan (DLNR, 1980).

The state plan objectives and policies for water are as follows (Section 226-16, HRS):

> (a) Planning for the State's facility systems with regard to water shall be directed towards achievement of the objective of the provision of water to adequately accommodate domestic, agricultural, commercial, industrial, recreational, and other needs within resource capacities.
>
> (b) To achieve the facility systems water objective, it shall be the policy of this State to:
>
> > (1) Relate growth activities to existing and potential water supply.
> >
> > (2) Support research and development of alternative water sources.

(3) Reclaim and encourage the productive use of runoff water and waste water discharges.

(4) Assist in improving the quality, efficiency, service, and storage capabilities of water systems for domestic and agricultural use.

(5) Support water supply services to areas experiencing critical water problems.

(6) Promote water conservation practices.

The proposed project, by planning future water needs in consonance with the resource capacities, is consistent with the state plan objective for water facilities. Growth activities have been related to the existing and potential water supply. The proposed well development will improve the quality, efficiency, and source capabilities of the domestic water system for Lahaina-Alaeloa. Furthermore, the project will help alleviate the water problems that necessitated restricting the issuance of new water meters between 1978 and 1980 for the Lahaina-Alaeloa service area.

The state water plan calls for the implementation of municipal water projects and programs proposed by state and county water agencies to meet planned urban growth and upgrade drinking water quality. At the time the draft plan was written, $8 million had been proposed for improvements to the West Maui water system between 1981 and 1985. This request was ranked as medium priority for state funding (DLNR, 1979).

Maui County General Plan

The proposed project is consistent with the following policies:

1. To meet or exceed federal quality standards for potable water.
2. To encourage cost sharing program with private developers in the expansion of the water supply (developers will be charged a source assessment fee of $3,400 per unit).
3. To seek new sources of water by exploration in conjunction with other government agencies (DLNR will probably assist in the development of new wells).

One policy may be contradicted: "limit growth activities to existing water supply and expand the supply of water wisely." The proposed proj-

projects will expand the supply but stay within limits of the available water resource. The projected growth is far below the level anticipated by previous projections in the Lahaina General Plan and Water Master Plan.

Lahaina General Plan and 208 Water Quality Management Plan

The water demand projections used for the proposed project were based on the 208 Water Quality Management Plan rather than the Lahaina General Plan (or the proposed Lahaina Community Plan). The projections of the 208 Plan are consistent with the land use patterns and zoning of the Lahaina General Plan.

Coastal Zone Management Program

The Hawaii Coastal Zone Management Act (Act 188/77) established two zones for management purposes:

1. An intensive permit control area called the Special Management Area (SMA). This area generally encompasses a narrow band along the coast.

2. An administrative area encompassing all land areas, except forest reserves.

The proposed site for the Honokahua Well "B" is outside the SMA but within the administrative area. Objectives and policies that are applicable to the proposed actions relate to coastal ecosystems and economic uses. They are as follows:

HAWAII CZM OBJECTIVES AND POLICIES
COASTAL ECOSYSTEMS

OBJECTIVE
Protect valuable coastal ecosystems from disruption and minimize adverse impacts on all coastal systems.

POLICY 1: Improve the technical basis for natural resources management.

POLICY 2: Preserve valuable coastal ecosystems with significant biological or economic importance.

POLICY 3: Minimize disruption or degradation of coastal water ecosystems by effective regulation stream diversions, channelization, and similar land and water uses, recognizing competing needs.

POLICY 4: Promote water quantity or quality planning and management practices which reflect the tolerance of fresh water and marine ecosystems and prohibit land and water uses which violate State water quality standards.

ECONOMIC USES

OBJECTIVE
Provide public or private facilities and improvements important to the State's economy in suitable locations.

POLICY 1: Concentrate in appropriate areas the location of coastal dependent development necessary to the State's economy.

POLICY 2: Insure that coastal dependent development such as harbors and ports, visitor industry facilities, and energy generating facilities are located, designed, and constructed so as to minimize adverse social, visual, and environmental impacts in the coastal zone.

POLICY 3: Direct the location and expansion of coastal dependent developments to areas presently designated and used for such developments and permit reasonable long-term growth at such areas, and permit coastal dependent development outside of existing areas when:

(i) Utilizing currently designated locations for such uses is not feasible;

(ii) Adverse environmental effects are minimized; and

(iii) It is important to the State's economy.

The proposed action conforms to these policies. The proposed groundwater withdrawal is based on a detailed evaluation of groundwater resources. The development of the well eliminates the need for diverting additional stream water from Honokohau Stream. The proposed water improvements are planned to serve areas already designated for urban development. A concerted effort will be made to eliminate any disturbances to any historic or archaeological resources that may exist on or near the well site.

LAND USE CONTROLS

Any proposed actions, especially those requiring construction of a facility, necessitate conformance to a multitude of regulations and laws. The applicability of these regulations to the Lahaina-Alaeloa water system is primarily attributed to land use and potential impacts associated with the proposed action. Because the proposed Honokahua Well "B" will be constructed on land currently zoned agricultural, a special use permit, as required by the State Land Use Commission's Rules and Regulations (promulgated pursuant to Chapter 205, HRS, State Land Use Law), will be required. The proposed project will also require a subdivision approval and variance in accordance to the Maui County Subdivision Ordinance of Chapter 11, Article I, Permanent Ordinance of the County of Maui, 1971.

The proposed project will require an approved environmental impact statement, as prescribed by the Environmental Quality Commission's regulations (promulgated pursuant to Chapter 343, HRS, Environmental Quality Commission and Environmental Impact Statements). The proposed action will also require securing permits, including the well drilling and the closely related drinking water source development permits. The well drilling permit, as required by DLNR Regulation 9 (promulgated pursuant to Chapter 177, HRS, Groundwater Use Act), is concerned primarily with the quantity of water withdrawn in order to assess the impact on sustainable yield of the basal lens. On the other hand, Chapter 20, Title 11 of the Administrative Rules (promulgated pursuant to Chapter 342, Environmental Quality and formerly Chapter 49 of the Public Health Regulations) is concerned primarily with the quality of water as it relates to public health and welfare. The applicable regulations are summarized in Table III-1.

TABLE III-1

APPLICABLE REGULATIONS

Applicability	Concern	Regulation (Law)	Permit/Approval
Location:			
Agricultural Land	Compatibility with agricultural activities	LUC R&R (Chapter 205, HRS)	Special Use Permit (SUP)
Actions:			
All Proposed Actions	Potential environmental impact	EQC R&R (Chapter 343, HRS)	Environmental Impact Statement (EIS)
Well Drilling	Safe yield quantity HRS)	DLNR Reg. 9 (Chapter 177,	Well-Drilling Permit
Source Development	Quality of developed water source	DOH Chapter 20, Administrative Rules	Source Development Permit
Subdivision of Land	Land Use	Maui County Subdivision Ordinance	Subdivision Approval/ Subdivision Variance

CHAPTER IV

PROBABLE IMPACT AND MITIGATION MEASURES OF THE PROPOSED ACTIONS

Impacts from any activity have space and time dimensions. Spatially, impacts may either occur locally (i.e., limited to the immediate site) or have regional ramifications. Temporally, impacts persist over a short duration, such as those occurring during the construction period, or they persist over a long-term period. The evaluation of whether these impacts are adverse or beneficial can be very subjective and dependent on one's values and point of view. In this environmental impact statement, a "beneficial" impact will be any enhancement of the physical or socio-economic environment, or an avoidance of sensitive resources such as endangered species. An "adverse" impact will be any disruption that creates inconvenience, affects public health and safety, impinges upon the capacity of a system, or imposes upon sensitive resources. 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.

Both direct and secondary impacts stemming from the proposed Honokahua Well "B" are discussed in this chapter. Direct impacts are primarily physical and financial, while secondary impacts are primarily of a socio-economic nature.

DIRECT PHYSICAL IMPACTS

Development and operation of the Honokahua Well "B" will involve sitework, groundwater withdrawal, energy consumption, and preemption of agricultural use. Sitework activities will have localize impacts. Groundwater withdrawal will potentially have long-term, regional impacts. Energy impacts are primarily a fiscal issue at this point since the supply is presently not limited but the cost continues to rise. The degree of impact on agriculture is minimal due to the small amount of acreage involved.

Localized Impacts. Short-term impacts will result from the sitework necessary for the well (clearing, grading, and stockpiling). The

potentially adverse impacts include runoff and erosion, noise, dust, traffic, and visual/ aesthetic deterioration. These impacts will cease upon completion of construction. The following mitigation measures will be employed:

Potential Impact	Mitigation Measure
Soil Erosion	Cutoff ditches above graded areas will be provided to minimize runoff onto slopes. Planting of exposed areas (immediately after completion of grading) will retard velocity of runoff and soil particle transport. County grading ordinances and soil erosion standards and guidelines will be enforced.
Noise and Dust	Because there are no residences in the vicinity, noise and dust will not be a problem.
Visual, Aesthetics	Visual impacts will be minimal since the proposed site is far removed from urban developments.
Traffic	Interference with pineapple truck traffic will be minimized by providing bypass routing if the existing route is impeded by construction work.

A beneficial impact will be the jobs created for workers in the construction industry.

The site is at the fringe of existing pineapple fields and no endangered flora or fauna are known to exist in the immediate vicinity. As for archaeological and historic sites, a reconnaissance walk-through survey in Honokahua Valley revealed potentially significant sites (information from Maui Historical Society). To avoid destroying any significant archaeological or historic sites, the site of the well will be surveyed and the final site will be selected at some location where no archaeological resources are present. This is possible because the site of the well is quite flexible and can be readily relocated anywhere within about a 500-foot radius. The site may be located entirely within the existing pineapple fields if necessary. Access to the site during and after construction will be through the use of existing pineapple field access roads.

If any previously unidentified sites or remains (such as artifacts, shell, bone, or charcoal deposits; human burials; rock or coral alignments, pavings, or walls) are encountered, work will be halted and the State Historic Preservation Office and Maui Historical Society will be contacted immediately. Specific instructions and applicable phone numbers related to archaeological discoveries will be included in the construction contracts and project work plans.

Regional Impacts.

Groundwater Withdrawal. The new well will increase groundwater withdrawal from 4 mgd (based on the Honokahua Well "A" being on line) to 5 mgd. In Sector A (see Chapter II), with the four existing wells operating, the groundwater discharge to the sea averages 27 mgd. An appreciable portion of the unused groundwater flow of 27 mgd can be safely developed such that the basal lens will remain of substantial depth to permit pumpage of fresh water. At least 3 and up to 5 additional mgd of potable water could be withdrawn from Sector A for a total draft in the sector at 7 to 9 mgd. New wells following Honokahua Well "B", however, will need to be located well north of the existing well sites. These wells would be located in the Honolua and northern Honokahua districts near the 5-foot head contour, which is located about 2 miles inland. A total draft of 9 mgd would be expected to depress the existing 5-foot head contour about 0.7 feet, which is within the limits of safe practice. Beyond 9 mgd, there may be a risk of inducing salt water intrusion--an impact that is virtually irreversible. The location and draft of the proposed Honokahua Well "B" is believed to be within the safe limits to avoid the risk of salt water intrusion.

There are no private wells within Sector A. Thus, the proposed new well will not interfere with any existing private domestic or agricultural pumping. The sugar cane industry in the Lahaina district is presently dependent on irrigation water drawn from the Honokohau ditch. By developing groundwater sources and not increasing the withdrawal of surface water, the public sector is minimizing the competition with those private users who depend heavily on surface water.

Energy Consumption. The cost of electrical power is currently about 11¢/kwh (Maui Electric Co., December 12, 1980). At this rate, the

annual cost of pumping 1 mgd is estimated to be $158,000. Energy cost is expected to increase each year and, until alternative energy sources become economical, this rising cost will result in an unavoidable impact on the county's budget and water rates.

Agricultural Production. The small land area (not more than 0.7 acres) converted from pineapple cultivation to government utility use is minimal and will have virtually no impact on agricultural production. The cultivated land on which the proposed site is located is assigned a "Class C" overall productivity rating by the Land Study Bureau (1967). The location and configuration of the site will be selected to minimize the taking of cultivated pineapple land.

DIRECT FINANCIAL IMPACT TO CONSUMERS

An impact that has received a significant amount of attention is the increase in user charges required to finance proposed water system improvements throughout Maui. A study by R.W. Beck and Associates of Seattle, Washington, indicated that the water rates will need to be tripled in the next three years to pay for capital improvement and operation and maintenance costs. A large portion of this increase is attributable to the cost of constructing and operating facilities needed to meet the requirements of the Safe Drinking Water Act. Rising electrical power cost is also expected to account for a significant portion of the increases. The bimonthly nonagricultural water consumption charge was 59¢/1,000 gallons (for consumption totaling over 25,000 gallons) at the time cost estimates for the proposed improvements were developed (1981). The following section will attempt to evaluate the cost of the proposed action with respect to water rates.

The projected present worth cost for Honokahua Well "B" is shown in Table IV-1 along with the estimated "incremental cost" when this cost is distributed among the Lahaina-Alaeloa consumers. From this analysis, which disregards inflation, and administrative and distribution system costs, it may be observed that the present worth cost for 1,000 gallons for the well is fairly close to the 59¢ per 1,000 gallons water rate. It may be observed that if the total cost is distributed among all the consumers of the system, the added cost per consumer would be only 3¢/1,000 gallons.

TABLE IV-1

WATER COST DATA FOR THE HONOKAHUA WELL "B"

Incremental Increase in Average Daily Flow*	Present Worth Costs (cost/1,000 gallons)			Present Worth Incremental Cost to Lahaina-Alaeloa Consumers++ (cost/1,000 gallons)
	Capital Cost**	O&M Cost+	Total Cost	
1.0 mgd	30¢	46¢	76¢	3¢

* Average daily flows estimated for present worth computations.

** Offsite electrical and land acquisition costs are not included. These costs are not expected to be significant.

\+ Costs are based on average daily flows and 11¢/kwh.

++ Does not include administrative costs and costs associated with the distribution system.

It would appear that any substantial increases in unit water supply costs resulting from the proposed action will probably be attributable to inflationary factors and other costs. It should be noted that the above analysis is based on numerous assumptions, including an 8 percent discount rate and no inflation.

SECONDARY IMPACTS

The Honokahua Well "B" is intended to be the first step of a long term plan designed to support a projected additional population of 5,800 residents and 2,100 visitors by the year 2000. The projected population represents 3 and 2 percent annual increases for residents and visitors respectively. This growth rate represents the existing policy as expressed in the 208 Water Quality Management Plan and the State Tourism Plan.

The 208 Water Quality Management Plan is based on the following considerations:

1. Maintenance of environmental standards
2. The ability to provide and finance support services (sewers, water, solid waste, etc.)
3. Consistency with the state's II-F population projection for the county.

The State Tourism Plan projections are based on economic forecasts and minimization of adverse social impacts.

The Lahaina General Plan is in the process of being updated by the Lahaina Community Plan. The revised plan will reexamine the broader issues of growth--such as rate, type, location, and intensity of growth--while considering the multiple physical, social, and economic factors that influence this growth. When the Lahaina Community Plan is adopted, the projections of this plan will supersede the 208 and tourism plan projections. The water development plan is flexible enough to accommodate adjustments to the population projections. The plan's flexibility and phasing are discussed in greater detail in Chapter I.

Since the Kaanapali and Kapalua areas have private water systems, these areas will not pose an immediate burden on the county's water development plans. Their options for future water development, however, may be affected. Kapalua will compete with the county system if it decides to develop basal groundwater. Expansion of the Kaanapali groundwater sources, however, which are located in Sector B, should not affect basal groundwater development in Sector A.

SUMMARY

A summary of the potential impacts and mitigation measures for the proposed action is shown in Table IV-2.

TABLE IV-2

SUMMARY OF POTENTIAL IMPACTS AND MITIGATION MEASURES FOR THE HONOKAHUA WELL "B"

Direct Impacts - Physical and Economic

Action	Potential Impacts: Adverse	Potential Impacts: Beneficial	Mitigation Measures
Sitework (clearing, grading, stockpiling)	Soil erosion		Erosion control as mandated by grading ordinance.
	Noise and Dust		None - no residences nearby.
	Visual, aesthetics		Landscaping.
	Traffic		Bypass routing.
	Possible archaeological resources		Move site.
		Jobs	
		No endangered species	
Groundwater withdrawal	Saltwater intrusion		Proposed additional pumping is well within sustainable yield as determined by hydrogeological analysis.
	Energy consumption and costs		None - unavoidable (see Chapter V).
	Preemption of agricultural use		None - unavoidable (see Chapter V).
		No competition with private users	
		Lessened competition w/ surface water users	

Direct Impacts - Financial

Action	Potential Impacts: Adverse	Potential Impacts: Beneficial	Mitigation Measures
Construction and operation of the well		Minor impact on water rates	

Secondary Impacts

Increase in the quantity of available potable water		Helps support projected growth which are based on existing policies (208 Water Quality Management Plan, State Tourism Plan) that consider environmental standards, support services, state II-F growth policy, economic forecasts, social impact	

CHAPTER V

UNAVOIDABLE ADVERSE IMPACTS

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

SITEWORK

Sitework effects are unavoidable but are reduced by the proposed mitigation measures. The short duration of the impact and the fact that the proposed well site is located away from residential areas make this impact negligible.

PREEMPTION OF AGRICULTURAL USE

The well will be developed on land presently zoned agriculture. The total acreage of the project is not more than 0.7 acres. This is a negligible impact on Maui Land and Pineapple Co.'s total acreage of over 3,000 acres used for pineapple cultivation.

ENERGY COST OF WELL PUMPS

Less expensive alternative sources of energy to run the pumps are unavailable at this time.

FINANCING

The construction and operation of the well is only part of a countywide effort to improve the drinking water quality and quantity. The implementation of all the necessary projects will inevitably require an increase in the water rates. The price must be paid to comply with the requirements of the Safe Drinking Water Act for public health protection and to support future growth.

GROWTH

A certain degree of adverse impacts associated with growth (traffic increase, crowdedness, etc.) will inevitably occur. The proposed project

alone does not stimulate growth; other infrastructures and favorable economic and political conditions are also required. Sewers and roads are already being provided. Without the proposed projects, growth may still proceed and result in severe water shortages and unsafe drinking water quality. Although water could be used as a tool to control growth, many undesirable consequences may result from this practice. Ideally, growth should be controlled by comprehensive, thoroughly evaluated, and universally accepted county planning policies and development plans.

CHAPTER VI

ALTERNATIVES TO THE PROPOSED ACTION

Several alternative source development schemes, most of which could meet the water quality and quantity objectives, were evaluated for the Lahaina-Alaeloa water system. Both monetary and nonmonetary constraints, however, resulted in these alternatives being less viable than the recommended alternatives.

The "no action" alternative for both systems was not considered viable since it fails to promote compliance with the Safe Drinking Water Act and provide the quantity of water necessary to satisfy the projected water needs.

BASAL GROUNDWATER IN OTHER AREAS

Development of a basal well in other areas of the Honokahua district (north of the proposed site) and in the Honolua district would require the construction of extensive transmission systems and additional storage facilities at a substantially higher capital cost. Development of basal wells in other areas of the Lahaina district was not feasible due to such factors as inadequate groundwater head, interference with existing and proposed wells (publicly and privately owned), and inadequate existing transmission pipeline capacity.

TREATMENT OF SURFACE WATER

Treatment of surface water withdrawn from the existing Alaeloa Intake is considered to be cost-effective. For this reason, construction of a treatment plant of Alaeloa is anticipated to be the next step (following the installation of Honokahua Well "B") in the long-term plan to meet future potable water supply needs. Reasons for developing the Honokahua Well "B" prior to installing the treatment plant at Alaeloa is addressed in the discussion on phasing in Chapter I.

Although future potable water needs of the Lahaina-Alaeloa system could be met by increasing the withdrawal at the Alaeloa intake and treating this surface source, such an alternative was considered highly undesirable. Increasing withdrawal from the Honokohau tunnel at the

Alaeloa intake, which presently averages 1.0 mgd, would have the adverse regional impact of reducing the irrigation water available to Pioneer Mill Company.

DEVELOPMENT AND TRANSMISSION OF HIGH LEVEL GROUNDWATER

Two development tunnels near the Honokohau ditch intake presently discharge an average of 2.2 mgd of high-quality water into the Honokohau ditch system. Collecting this water before it mixes with the Honokohau Stream water and piping it to the various service areas is one alternative in developing an additional potable water source. This scheme, however, was not considered viable at this time due to the high cost of transmission facilities required. This scheme would also reduce the amount of irrigation water available to Pioneer Mill Co. The risk and cost of constructing additional development tunnels would appear to be substantially higher than for the recommended alternative.

CHAPTER VII

RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

Groundwater withdrawal must be carefully planned to ensure maintenance of long-term productivity. If pumped at high rates that would support intensive short-term growth, the long-term groundwater productivity would be jeopardized by salt water intrusion. It is for this reason that the hydrogeology was carefully examined to determine the amount of groundwater that is safely developable. The 208 and tourism plan growth projections for 2000 do not place a water demand beyond available resources.

CHAPTER VIII

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Natural resources that will be committed by the proposed actions include land, water, and petroleum sources of energy. Committed manmade resources include construction materials, financial capital, and manpower.

LAND

The land committed to the proposed well can be theoretically reversed and returned to cultivation or natural vegetation. This possibility is highly unlikely, however, as long as the well is functional. The land area involved is very small.

WATER

Water pumped from the proposed well would not be available for other uses. As far as groundwater is concerned, withdrawals would not preclude any activities that would otherwise occur. Instead, they would reduce the amount of groundwater flowing unused to the ocean. The amount of water used within the limits of the total sustainable yield is a renewable resource that is naturally replenished by rainfall.

ENERGY

Energy will be required for construction and operation of the proposed projects. As the energy source becomes scarce, such as the relatively fixed supply of petroleum-based fuels, the cost increases. Alternative renewable sources of energy become viable as the cost of petroleum fuels keeps rising. Substitution of petroleum fuels is possible when cost justifies a change.

CONSTRUCTION MATERIALS, CAPITAL, AND LABOR

Capital investment in water supply facilities is generally staged over short-term periods to match as closely as practicable the needs arising during those periods. Because of the large investment required, a commitment to certain facilities is almost irreversible.

Commitment of manpower and energy to sustain operations, procurement of supplies, and replacement of defective equipment are required over the long term. From the public's viewpoint, the commitment to the proposed action means a commitment to support these costs through increased water rates.

CHAPTER IX

OFFSETTING CONSIDERATIONS OF GOVERNMENT POLICY

As noted in previous chapters, the proposed actions will result in some adverse impacts, the most significant being the growth and financial impacts. While being aware of these impacts, policies that justify proceeding with the proposed actions are contained in the state and county general plans and the federal Safe Drinking Water Act.

STATE PLAN

Growth policies in the state plan are contained in Chapter 226, Part III, "Priority Directions," which establishes overall implementation priorities. Two policies are pertinent.

1. Manage population growth rates throughout the state consistent with available and planned resource capacities (Section 226-104[a][1]).

2. Plan the development and availability of land and water resources in a coordinated manner so as to provide for the desired levels of growth in each geographic area (Section 226-104[b][2]).

These policies state that water should be developed to support the desired level of growth; however, the amount of developed water should be within resource capacities. For the proposed actions, the desired level of growth is that which was determined by the 208 Water Quality Management Plan, which, in turn, is consistent with the state's II-F population projection. The amount of water required to support this projected population is within the water resource capacities of the region.

COUNTY GENERAL PLAN

One of the county's policies on growth states--

> "Ensure the stability of population growth so that the county's economic growth will be stable and the expansion of public and private support systems will not be overly burdensome on our natural resources."

This policy is similar to the state plan's policy relating growth to resource capacity.

A county policy relating to drinking water quality states--

"Meet or exceed Federal quality standards in potable water."

The proposed actions directly implement this policy. The increased water rate is an attendant effect of implementing this policy.

FEDERAL SAFE DRINKING WATER ACT

By enacting the Safe Drinking Water Act (PL 93-523), Congress proclaimed that all persons are entitled to equal protection of their public health in terms of their drinking water.

Although the act did not provide funding to comply with the standards, the Environmental Protection Agency Office of Water Supply identified several financial assistance programs for public water systems, including the Farmers Home Administration, Economic Development Agency, and Department of Housing and Urban Development. These grants could mitigate some of the financial impacts.

CHAPTER X

UNRESOLVED ISSUES

There are some issues that cannot be resolved with certainty with the information presently available. They include the presence of archaeological resources at the proposed well site and timing of the construction of the proposed projects.

ARCHAEOLOGICAL RESOURCES

The presence of significant archaeological resources on the proposed Honokahua Well "B" site could not be determined from existing survey information. If significant archaeological resources are located upon surveying the site, the well site will be moved.

CONSTRUCTION TIMETABLE

The timing of the construction of the proposed projects has not yet been determined with great certainty due to unresolved issues related to financing and growth. Based on the available information, it is projected that construction of the proposed well will begin in 1985.

CHAPTER XI

LIST OF NECESSARY APPROVALS

The proposed actions will be subject to approval by the following agencies:

1. Department of Public Works, County of Maui (grading permit)
2. Department of Health, State of Hawaii (new potable water source, Chapter 20, Title 11 of the Administrative Rules, formerly Chapter 49 of the Public Health Regulations)
3. Planning Commission, County of Maui (special use permit)
4. Department of Land and Natural Resources, State of Hawaii (well drilling permit)
5. Land Use and Code Administration, Department of Public Works, County of Maui (subdivision approval and subdivision variance)

CHAPTER XII

ORGANIZATIONS AND PERSONS CONSULTED

PREPARATION NOTICE CONSULTATION PERIOD

The following organizations and people were consulted during the notice of preparation review period. 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 Interior, Fish and Wildlife Service
   - c)* Department of the Army, Corps of Engineers
   - d) U.S. Environmental Protection Agency

2. State
   - a)* Department of Health
   - b)* Department of Land and Natural Resources
   - c)* Department of Agriculture
   - d)* Department of Planning and Economic Development
   - e) University of Hawaii Environmental Center
   - f)* Department of Transportation
   - g)* Department of Accounting and General Services
   - h) Senator Machida
   - i) Senator Yamasaki
   - j) Representative Monahan (East Maui)
   - k) Representative Andrews (East Maui)
   - l) Representative Honda
   - m) Representative Takitani

3. County of Maui
   - a)* Office of the Mayor
   - b)* County Council
   - c)* Department of Public Works
   - d)* Department of Planning
   - e)* Economic Development Agency
   - f) Fire Department
   - g)* Police Department

4. Private and Community Organizations

a)* Maui Land and Pineapple Co.

b) Various community associations in the Lahaina district

c) Kapalua Land Co.

d) Kaanapali Resort (Amfac Corporation)

e) Pioneer Mill Co., Ltd.

f) Hotel associations

g)* University of Hawaii Water Resources Research Center

h)* Maui Historical Society

i)* Hawaiian Telephone Company

j)* Sierra Slub

In addition to the Honokahua Well "B" project, the preparation notice circulated for this EIS addressed two other water system improvement projects. These two projects were: 1) the Alaeloa Water Treatment Plant, and 2) a surface water treatment facility in Honokohau Valley. Since the construction of the Alaeloa and Honokohau treatment facilities have been deferred, this EIS only addresses the Honokahua Well "B" project. It should be noted that some of the following written comments to the preparation notice are responses directed towards the two water treatment projects that are no longer part of the EIS.

RECEIVED MAR 1 8 1981

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

March 16, 1981

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

Re: EIS Preparation Notice
Lahaina-Alaeloa and Honokohau
Water System Improvements
Lahaina District
Maui, Hawaii

Dear Mr. Abe:

We have reviewed the referenced Environmental Impact Statement (EIS) Preparation Notice dated March 5, 1981. The action proposed will have no significant adverse impact on the fish and wildlife resources in the area; therefore, we have no further comments.

We appreciate this opportunity to comment.

Sincerely yours,

William B. Lennan II

William B. Lennan II
Acting Deputy Project Leader
for Environmental Services

XII-3

CONSERVE AMERICA'S ENERGY

Save Energy and You Serve America!

M&E Pacific, Inc.

Environmental Engineers

Pacific Trade Center, Suite
190 South King St
Honolulu, Hawaii 9
(808) 521-3051 Telex 743

April 13, 1981

Mr. William B. Lennan, II
Acting Deputy Project Leader
for Environmental Services
U.S. Department of the Interior
Fish and Wildlife Service
P. O. Box 50167
Honolulu, Hawaii 96850

SUBJECT: Environmental Impact Statement
Preparation Notice for the Lahaina-Alaeloa and
Honokohau Water System Improvements
Lahaina District, Maui, Hawaii

Thank you for reviewing the EIS preparation notice for the subject projects.

An EIS containing an expanded and more detailed discussion on the vari topics touched upon in the preparation notice is being compiled.

JAMES S. KUMAGAI, Ph.D.
Vice President

RA/bs

RECEIVED MAR 1 9 1981

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

PODED-PV

18 March 1981

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

Dear Mr. Kumagai:

We have reviewed your Preparation Notice for the Lahaina-Alaeloa and Honokohau Water System Improvements Environmental Impact Statement, Lahaina District, Maui, Hawaii, dated 5 March 1981, and we provide the following comments:

a. Deposit of fill materials in the streams may require a Department of the Army permit pursuant to Section 404 of the Clean Water Act of 1964, as amended.

b. The proposed well site, pipeline alignment, and treatment plant site for the Lahaina-Alaeloa Water System improvements and the proposed treatment facility site for the Honokohau Valley Water System improvement are not situated within any designated flood plain but rather in an area of minimal flooding (Zone C). This evaluation is based on the preliminary Flood Insurance Study for the island of Maui prepared by the Federal Insurance Administration.

Thank you for the opportunity to provide comments on your proposed Environmental Impact Statement for this project at this early stage.

Sincerely,

for KISUK CHEUNG
Chief, Engineering Division

XII-4

M&E Pacific, Inc.

Environmental Engineers

Pacific Trade Center, Suite 6
190 South King Str
Honolulu, Hawaii 96
(808) 521-3051 Telex: 7430

April 13, 1981

Mr. Kisuk Cheung, Chief
Engineering Division
U.S. Army Engineer District
Fort Shafter, Hawaii 96858

SUBJECT: Environmental Impact Statement
Preparation Notice for the Lahaina-Alaeloa and
Honokohau Water System Improvements
Lahaina District, Maui, Hawaii

Thank you for your comments on the subject document. The following are response to your comments dated March 18, 1981:

1. The only site near a stream is the Honokohau treatment plant. Fill material from this site will not be disposed in Honokoha Stream. If there is any excess material after grading, this will be deposited at a safe distance from the stream.

2. Flood insurance maps have been obtained from your office and discussed in the EIS. Thank you for your point of clarificat that the proposed site is in Zone C, which indicates minimal flood hazard.

JAMES S. KUMAGAI, Ph.D.
Vice President

RTT/bs

RECEIVED APR 9 1981

IGE R. ARIYOSHI
GOVERNOR OF HAWAII

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

March 25, 1981

GEORGE A. L. YUEN
DIRECTOR OF HEALTH

VERNE C. WAITE, M.D.
DEPUTY DIRECTOR OF HEALTH

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

~~JAMES S. KUMAGAI, PH.D., P.E.~~
DEPUTY DIRECTOR OF HEALTH

~~TADAO BEPPU~~
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 the Lahaina-Alaeloa and Honokohau Water System Improvements, Lahaina District, Maui, Hawaii

XII-5

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.F. 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

April 13, 1981

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

SUBJECT: Environmental Impact Statement
Preparation Notice for the Lahaina-Alaeloa and
Honokohau Water System Improvements
Lahaina District, Maui, Hawaii

Thank you for reviewing the EIS preparation notice for the subject projects.

An EIS containing an expanded and more detailed discussion on the various topics touched upon in the preparation notice is being compiled.

JAMES S. KUMAGAI, Ph.D.
Vice President

RA/bs

RECEIVED MAR 2 7 1981

I. 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

March 25, 1981

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

Dear Dr. Kumagai:

Thank you for sending the EIS Preparation Notice for the Lahaina-Alaeloa and Honokohau water system improvements for our comments. We offer the following comments for your consideration in preparing the Environmental Impact Statement.

1. The proposed improvements--a 1.0 mgd capacity well and a 1,200-foot, 12-inch transmission line connecting the well to the existing Alaeloa system, together with a 1 mgd water treatment plant for the Honokohau ditch waters--certainly would not be difficult to meet the requirements for future growth up to the year 2000 as indicated. Further analysis of projected water demands should be made.

2. If additional surface waters are planned to be developed to meet future demands, the impact of such development on irrigation supplies should be analyzed.

3. We suggest further descriptions regarding who is to install the improvements and the time table of phasing these improvements over the next 20 years.

We certainly would be interested in receiving the final EIS.

Very truly yours,

ROBERT T. CHUCK
Manager-Chief Engineer

XII-6

M&E Pacific, Inc.
Environmental Engineers

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

April 13, 1981

Mr. Robert T. Chuck
Manager-Chief Engineer
Department of Land & Natural Resources
Division of Water & Land Development
1151 Punchbowl Street
Honolulu, Hawaii 96813

SUBJECT: Environmental Impact Statement
Preparation Notice for the Lahaina-Alaeloa and
Honokohau Water System Improvements
Lahaina District, Maui, Hawaii

Thank you for your review and comments on the subject document. The following are in response to your comments dated March 25, 1981:

1. Population and water demand projections are based on an analysis of the most current data available. The water source development plan is anticipated to be flexible enough to accommodate changing conditions in the future.

2. Increases in withdrawal of surface waters to meet future demands are not proposed due to the adverse impact of such actions on irrigation supplies.

3. Financing, phasing, and the role of DOWALD in the development of the proposed well are issues that have not yet been resolved. The EIS will address these areas, where possible, based on information currently available.

JAMES S. KUMAGAI, Ph.D.
Vice President

RA/bs

JORGE R. ARIYOSHI
GOVERNOR

JOHN FARIAS,JR.
CHAIRMAN,BOARD OF AGRICULTURE

RECEIVED MAR 12 1981

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

March 10, 1981

MEMORANDUM

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

Subject: EIS - Lahaina-Alaeloa and
Honokohau Water System Improvements

The environmental impact statement has been reviewed by the Department of Agriculture, and we have no comments to offer.

We appreciate the opportunity to comment.

XII-7

JOHN FARIAS, JR.
Chairman, Board of Agriculture

M&E Pacific, Inc.

Environmental Engineers

Pacific Trade Center, Suite 6
190 South King Stre
Honolulu, Hawaii 9681
(808) 521-3051 Telex 74300

April 13, 1981

Mr. John Farias, Jr.
Chairman, Board of Agriculture
Department of Agriculture
1428 South King Street
Honolulu, Hawaii 96814

SUBJECT: Environmental Impact Statement
Preparation Notice for the Lahaina-Alaeloa and
Honokohau Water System Improvements
Lahaina District, Maui, Hawaii

Thank you for reviewing the EIS preparation notice for the subject projects.

An EIS containing an expanded and more detailed discussion on the vario topics touched upon in the preparation notice is being compiled.

JAMES S. KUMAGAI, Ph.D.
Vice President

RA/bs

RECEIVED MAR 2 3 1981

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

March 18, 1981

Ref. No. 2874

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

Dear Dr. Kumagai:

Subject: Environmental Impact Statement Preparation Notice for the Lahaina-Alaeloa and Honokohau Water System Improvements, Lahaina District, Maui

Thank you for giving us an opportunity to review the subject EIS Preparation Notice.

Since the Hawaii Coastal Zone Management (CZM) Program's statutory concerns address water quantity and quality management practices, we recommend that the EIS include a discussion of relevant CZM objectives and policies. This will assist decision-making agencies, since the CZM policies are binding on their actions within the State's coastal zone.

We have no other comments to offer at this time, but would appreciate the opportunity to review the Draft EIS on this project when it is completed.

Sincerely,

Hideto Kono

cc: Office of Environmental Quality Control

XII-8

M&E Pacific, Inc.

Environmental Engineers

Pacific Trade Center, Suite
190 South King S
Honolulu, Hawaii
(808) 521-3051 Telex: 743

April 13, 1981

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

SUBJECT: Environmental Impact Statement
Preparation Notice for the Lahaina-Alaeloa and
Honokohau Water System Improvements
Lahaina District, Maui, Hawaii

Thank you for your review and comments on the subject document. In response to your comment dated March 18, 1981, a discussion will be included in the EIS on those coastal zone management policies that ar relevant to drinking water quantity and quality.

JAMES S. KUMAGAI, Ph.D.
Vice President

RTT/bs

RECEIVED MAR 23 [illegible]

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

RYOKICHI HIGASHIONNA, Ph.D.
DIRECTOR

DEPUTY DIRECTORS
JACK K. SUWA
JAMES R. CARRAS
JAMES B. McCORMICK
JONATHAN K. SHIMADA, Ph.D.

IN REPLY REFER TO

STP 8.7145

March 18, 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:

Environmental Impact Statement
Preparation Notice for the Lahaina-
Alaeloa and Honokohau Water System
Improvements, Lahaina District, Maui

6-IIX

Thank you for the opportunity to comment on the subject matter.

We have no substantive comments to offer which would affect the proposed assessment work.

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

April 13, 1981

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

SUBJECT: Environmental Impact Statement
Preparation Notice for the Lahaina-Alaeloa and
Honokohau Water System Improvements
Lahaina District, Maui, Hawaii

Thank you for reviewing the EIS preparation notice for the subject projects.

An EIS containing an expanded and more detailed discussion on the various topics touched upon in the preparation notice is being compiled.

JAMES S. KUMAGAI, Ph.D.
Vice President

RA/bs

RECEIVED MAR 23 1981

GEORGE R. ARIYOSHI
GOVERNOR

STATE OF HAWAII
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
DIVISION OF PUBLIC WORKS
P. O. BOX 119, HONOLULU, HAWAII 96810

HIDEO MURAKAMI
COMPTROLLER

MIKE N. TOKUNAGA
DEPUTY COMPTROLLER

LETTER NO. (P)1261.1

MAR 19 1981

Dr. James S. Kumagai
M & E Pacific, Inc.
Pacific Trade Center, Suite 1600
190 South King Street
Honolulu, Hawaii 96813

Dear Dr. Kumagai:

Subject: Environmental Impact Statement
Preparation Notice for the Lahaina-Alaeloa
and Honokohau Water System Improvements
Lahaina District, Maui, Hawaii

We have reviewed the subject document and are of the opinion that the major environmental impacts have been identified for further analysis in the subsequent subject EIS.

We have no other comment to offer at this juncture of the project.

Very truly yours,

RIKIO NISHIOKA
State Public Works Engineer

MI:jm

XII-10

M&E Pacific, Inc.

Environmental Engineers

Pacific Trade Center, Suite 1
190 South King Str
Honolulu, Hawaii 96
(808) 521-3051 Telex: 7430

April 13, 1981

Mr. Rikio Nishioka
State Public Works Engineer
Department of Accounting and
General Services
P. O. Box 119
Honolulu, Hawaii 96810

SUBJECT: Environmental Impact Statement
Preparation Notice for the Lahaina-Alaeloa and
Honokohau Water System Improvements
Lahaina District, Maui, Hawaii

Thank you for reviewing the EIS preparation notice for the subject projects.

An EIS containing an expanded and more detailed discussion on the various topics touched upon in the preparation notice is being compiled.

JAMES S. KUMAGAI, Ph.D.
Vice President

RA/bs

RECEIVED MAR 24 1981

S S. USHIJIMA
unty Clerk

MANUEL K. OISHI
Deputy County Clerk

OFFICE OF
COUNTY CLERK
200 SOUTH HIGH STREET
WAILUKU, HAWAII 96793

March 20, 1981

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

Dear Mr. Kumagai:

Thank you for your letter of March 5, 1981, concerning your preparing an EIS for the Lahaina-Alaeloa and Honokohau Water system improvements.

Your communication was presented to the Council of the County of Maui on March 20, 1981, and referred to its Planning Committee for attention.

Very truly yours,

JAMES S. USHIJIMA
County Clerk

/lye

XII-11

M&E Pacific, Inc.

Environmental Engineers

Pacific Trade Center, Suite 60
190 South King Stree
Honolulu, Hawaii 9681
(808) 521-3051 Telex: 743006

April 13, 1981

Mr. James S. Ushijima
County Clerk
County of Maui
Wailuku, Hawaii 96793

SUBJECT: Environmental Impact Statement
Preparation Notice for the Lahaina-Alaeloa and
Honokohau Water System Improvements
Lahaina District, Maui, Hawaii

Thank you for reviewing the EIS preparation notice for the subject projects.

An EIS containing an expanded and more detailed discussion on the variou topics touched upon in the preparation notice is being compiled.

JAMES S. KUMAGAI, Ph.D.
Vice President

RA/bs

COUNTY COUNCIL
COUNTY OF MAUI
WAILUKU, MAUI, HAWAII 96793

Gwen Y. Ohashi
Director of Council Services

March 11, 1981

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

Dear Mr. Kumagai:

Your letter enclosing the Environmental Impact Statement Preparation Notice for the Lahaina-Alaeloa and Honokohau Water System Improvements, has been received.

Your letter will be placed on the Council's March 20th Agenda, and referred to the appropriate committee for review and discussion.

Should you have any comments or questions, please let me know.

Yours sincerely,

BOB NAKASONE
COUNCIL CHAIRMAN

BN/lc

XII-12

M&E Pacific, Inc.
Environmental Engineers

Pacific Trade Center, Suite 6
190 South King Str
Honolulu, Hawaii 96
(808) 521-3051 Telex: 7430

April 13, 1981

Mr. Bob Nakasone, Council Chairman
County Council
County of Maui
Wailuku, Hawaii 96793

SUBJECT: Environmental Impact Statement
Preparation Notice for the Lahaina-Alaeloa and
Honokohau Water System Improvements
Lahaina District, Maui, Hawaii

Thank you for reviewing the EIS preparation notice for the subject projects.

An EIS containing an expanded and more detailed discussion on the vari topics touched upon in the preparation notice is being compiled.

JAMES S. KUMAGAI, Ph.D.
Vice President

RA/bs

RECEIVED MAR 2 3 1981

HANNIBAL TAVARES
Mayor

RALPH HAYASHI
Director of Public Works

SAMUEL MATSUO, Ph.D.
Deputy Director of Public Works

COUNTY OF MAUI
DEPARTMENT OF PUBLIC WORKS
200 South High Street
Wailuku, Maui, Hawaii 96793

DIVISIONS
Engineering
Highway Construction and Maintenance
Land Use and Codes Enforcement
Waste Management

WM-473

March 18, 1981

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

Dear Dr. Kumagai:

SUBJECT: ENVIRONMENTAL IMPACT STATEMENT
PREPARATION NOTICE FOR THE LAHAINA-ALAELOA
AND HONOKOHAU WATER SYSTEM IMPROVEMENTS
LAHAINA DISTRICT, MAUI, HAWAII

Thank you for the opportunity to comment on the above subject matter.

We have reviewed your submittal and have no comments to offer at this time.

Very truly yours,

Ralph Hayashi
Director of Public Works

BH:ym

XII-13

M&E Pacific, Inc.
Environmental Engineers

Pacific Trade Center, Suite [illegible]
190 South King Str[illegible]
Honolulu, Hawaii 96[illegible]
(808) 521-3051 Telex: 7430[illegible]

April 13, 1981

Mr. Ralph Hayashi
Director of Public Works
Department of Public Works
County of Maui
Wailuku, Hawaii 96793

SUBJECT: Environmental Impact Statement
Preparation Notice for the Lahaina-Alaeloa and
Honokohau Water System Improvements
Lahaina District, Maui, Hawaii

Thank you for reviewing the EIS preparation notice for the subject projects.

An EIS containing an expanded and more detailed discussion on the variou[illegible] topics touched upon in the preparation notice is being compiled.

JAMES S. KUMAGAI, Ph.D.
Vice President

RA/bs

RECEIVED MAR 1 7 1981

COUNTY OF MAUI
PLANNING DEPARTMENT
200 S. HIGH STREET
WAILUKU, MAUI, HAWAII 96793

HANNIBAL TAVARES
Mayor

TOSH ISHIKAWA
Planning Director

CHRISTOPHER L. HART
Deputy Planning Director

March 12, 1981

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

Dear Mr. Kumagai:

RE: Environmental Impact Statement
Preparation Notice for the Lahaina-Alaeloa and
Honokohau Water System Improvements
Lahaina District, Maui, Hawaii

This acknowledges receipt of your communication dated March 6, 1981, with attachments pertaining to the environmental assessment preparation notices for the various proposed projects as referenced.

Please be advised that we will reserve the right to comment on the final Environmental Impact Statement.

Please call my office should you have any questions.

Yours very truly,

TOSH ISHIKAWA
Planning Director

XII-14

M&E Pacific, Inc.
Environmental Engineers

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

April 13, 1981

Mr. Tosh Ishikawa, Planning Director
Planning Department
County of Maui
Wailuku, Hawaii 96793

SUBJECT: Environmental Impact Statement
Preparation Notice for the Lahaina-Alaeloa and
Honokohau Water System Improvements
Lahaina District, Maui, Hawaii

Thank you for reviewing the EIS preparation notice for the subject projects.

An EIS containing an expanded and more detailed discussion on the various topics touched upon in the preparation notice is being compiled.

JAMES S. KUMAGAI, Ph.D.
Vice President

RA/bs

RECEIVED MAR 1 8 1981

ANNIBAL TAVARES
Mayor

FRED MATSUMOTO
Coordinator

COUNTY OF MAUI
DEPARTMENT OF ECONOMIC DEVELOPMENT
WAILUKU, MAUI, HAWAII 96793
TELEPHONE 244-7710

March 16, 1981

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

Dear Mr. Kumagai:

Subject: Environmental Impact Statement
For the Lahaina-Alaelua and
Honokohau Water System Improvements.

The Department of Economic Development have reviewed the subject Environmental Impact Statement and find that, in general, it has adequately identified and assessed the major environmental impacts which can be anticipated to result from the proposed project.

We have no other comments to offer, however, we thank you for the opportunity to review the EIS.

Sincerely,

FRED MATSUMOTO
Economic Development
Coordinator

cc: Mr. Bill Haines
Department of Water Supply
County of Maui

XII-15

M&E Pacific, Inc.
Environmental Engineers

Pacific Trade Center, Su··
190 South King ···
Honolulu, Hawai···
(808) 521-3051 Tele··

April 13, 1981

Mr. Fred Matsumoto
Economic Development Coordinator
Department of Economic Development
County of Maui
Wailuku, Hawaii 96793

SUBJECT: Environmental Impact Statement
Preparation Notice for the Lahaina-Alaeloa and
Honokohau Water System Improvements
Lahaina District, Maui, Hawaii

Thank you for reviewing the EIS preparation notice for the subject projects.

An EIS containing an expanded and more detailed discussion on the va··
topics touched upon in the preparation notice is being compiled.

JAMES S. KUMAGAI, Ph.D.
Vice President

RA/bs

RECEIVED MAR 2 5 1981

POLICE DEPARTMENT
COUNTY OF MAUI
WAILUKU, MAUI, HAWAII 96793

OUR REFERENCE AC/yyc

YOUR REFERENCE

March 23, 1981

Address All Communications to
John S. San Diego, Sr.
Chief of Police
Joseph C. Cravalho
Deputy Chief of Police

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

Dear Mr. Kumagai:

Please be informed there is no apparent adverse impact on police services relative to the proposed improvements to the Lahaina-Alaeloa and Honokohau water systems.

XII-16

Very truly yours,

JOHN S. SAN DIEGO, SR.
Chief of Police

cc: Board of Water Supply
County of Maui

M&E Pacific, Inc.

Environmental Engineers

Pacific Trade Center, Suite [illegible]
190 South King Street
Honolulu, Hawaii 96813
(808) 521-3051 Telex: 743[illegible]

April 13, 1981

Mr. John S. San Diego, Sr.
Chief of Police
County of Maui
Wailuku, Hawaii 96793

SUBJECT: Environmental Impact Statement
Preparation Notice for the Lahaina-Alaeloa and
Honokohau Water System Improvements
Lahaina District, Maui, Hawaii

Thank you for reviewing the EIS preparation notice for the subject projects.

An EIS containing an expanded and more detailed discussion on the various topics touched upon in the preparation notice is being compiled.

JAMES S. KUMAGAI, Ph.D.
Vice President

RA/bs

RECEIVED MAR 2 3 '81

Maui Land & Pineapple Company, Inc.

March 20, 1981

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

Dear Mr. Kumagai:

SUBJECT: Environmental Impact Statement
Preparation Notice for the Lahaina-Alaeloa and
Honokohau Water System Improvements
Lahaina District, Maui, Hawaii

XII-17

Thank you for the opportunity to comment on the preparation notice for the EIS.

First of all, as you point out, some of the sites, in particular for the Lahaina-Alaeloa system, will be located on our property. At the scale of the map enclosed, it is difficult to tell just what the impact might be on us. I am sure, however, that locations can be worked out which will be satisfactory to all of us concerned including those involved in our pineapple operations.

Second, in your discussion of the mitigation measures you comment on growth, and I quote - "This proposed plan limits the increase in water supply to support the projected population consistent with the 208 Water Quality Management Plan. This projection is based on a slow-growth premise and is much lower than previous projections for the area, such as the Lahaina General Plan."

As you may be aware, the County of Maui is now preparing a new general plan for the entire island. I feel strongly that any water development plan should be consistent with the Maui County General Plan as this represents a full range of input from the community as to desired type, location, and timing of growth. Water development plans should respond to these requirements and not in themselves be a limiting factor or a direct controller of what may otherwise be highly desirable growth and development.

P. O. Box 187
Kahului, Maui, Hawaii 96732
Telephone (808) 877-3351

M&E Pacific, Inc.

Environmental Engineers

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

April 13, 1981

Mr. Colin C. Cameron
Maui Land & Pineapple Co., Inc.
P. O. Box 187
Kahului, Hawaii 96732

SUBJECT: Environmental Impact Statement
Preparation Notice for the Lahaina-Alaeloa and
Honokohau Water System Improvements
Lahaina District, Maui, Hawaii

Thank you for your review and comments on the subject document. The following are in response to your comments dated March 20, 1981:

1. It is our understanding that the Maui Department of Water Supply is presently negotiating with your firm for the acquisition of the proposed sites. Every effort is being made to minimize the impact on the operations at Honolua Plantation.

2. The 208 Water Quality Management Plan was selected as the basis of the population projections because it is the most current county projection available, and the infrastructures for sewers, solid waste disposal, and other county services are presently based on these projections. The water source development plan is flexible and need not be a direct controller of future growth and development. The proposed source development plan may be altered as necessary to accommodate the new general plan.

JAMES S. KUMAGAI, Ph.D
Vice President

RA/bs

I will appreciate also the opportunity to review the draft EIS after it has been prepared.

Sincerely,

Colin C. Cameron
President

CCC
sm

University of Hawaii at Manoa

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

17 March 1981

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

Dear Dr. Kumagai:

Subject: Lahaina-Alaeloa & Honokohau Water System Improvements, EIS preparation notice.

The following comments are in response to your subject announcement:

1. In order to exploreall reasonable alternative treatment processes, the EIS should include rapid sand filtration as an alternative to the proposed slow sand filtration process. The comparison should include construction and operating costs, quality of water produced, and qualifications of maintenance personnel.

2. Would a pipeline to eliminate the need of using Honokohau Ditch surface water also eliminate the need to treat the water? If it is, a cost comparison may be helpful in this consideration. Or does Honokohau Ditch tap a surface water source at its origin?

This notice was reviewed by WRRC and affiliate personnel.

Sincerely,

Edwin T. Murabayashi
EIS Coordinator

ETM:jm

cc: H. Gee
Y.S. Fok
C. Liu

XII-19

M&E Pacific, Inc.

Environmental Engineers

Pacific Trade Center, Suite 600
190 South King Street
Honolulu, Hawaii 96813
(808) 521-3051 Telex: 7430(RCA)

April 13, 1981

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

SUBJECT: Environmental Impact Statement
Preparation Notice for the Lahaina-Alaeloa and
Honokohau Water System Improvements
Lahaina District, Maui, Hawaii

Thank you for your review and comments on the subject document. The following are in response to your comments dated March 17, 1981:

1. The EIS will include a detailed discussion on alternative treatment processes, including conventional and direct rapid sand filtration.

2. Piping of high level groundwater to the Honokohau community will eliminate the need for a treatment facility. The EIS will contain a more detailed discussion on this and other alternatives.

JAMES S. KUMAGAI, Ph.D.
Vice President

RA/bs

AN EQUAL OPPORTUNITY EMPLOYER

RECEIVED MAR 1 2 1981

Maui Historical Society

P. O. Box 1018 • Wailuku, Hawaii 96793

Hale Hoikeike - 1841

March 11, 1981

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

SUBJECT : Environmental Impact Statement
Preparation Notice for the Lahaina- Alaeloa and
Honokohau Water System Improvements
Lahaina District, Maui, Hawaii

According to your statement, no archaeological known sites are in the area of the proposed well site in Honokahua Valley. Our records show there are such sites and recommends further study of the area.

Our survey was done in 1967 and there has been no further study of the area since then. We would strongly recommend that a further survey be made before clearing for thewell site is done. We can recommend an archaeological surveyor here on Maui if you so desire. We feel that this may be a very important procedure to take. If there is manifest evidence of archaeological findings in the area, it should be studied carefully before any developing is done. It may prove to be an unimportant site, in which case we would certainly have no objections to the development proceeding, provided time is allowed for the study to ~~#~~ be made first.

XII-20

The proposed treatment site is not listed in our survey as having anything of value to be studied.

Sincerely,

Virginia Wirtz

(Mrs) Virginia Wirtz
Museum Director

M&E Pacific, Inc.

Environmental Engineers

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

April 14, 1981

Mrs. Virginia Wirtz, Museum Director
Maui Historical Society
P. O. Box 1018
Wailuku, Hawaii 96793

SUBJECT: Environmental Impact Statement
Preparation Notice for the Lahaina-Alaeloa and
Honokohau Water System Improvements
Lahaina District, Maui, Hawaii

Thank you for your comments on the subject document. In a follow up phone call to your office, it is our understanding that no written records exist on archaeological resources in the vicinity of the proposed Honokahua Well "B" site; however, a walk-through reconnaissance was done several years ago. Because this walk-through survey did reveal the possibility of significant archaeological resources, an expert recommended by you will be contacted to accompany the surveyors to select a site and identify any archaeological resources, if any.

Any further design planning will consider such resources.

JAMES S. KUMAGAI, Ph.D.
Vice President

RTT/bs

EO MAR 23 821

HAWAIIAN TELEPHONE
GTE

March 17, 1981

M&E PACIFIC, INC.
Environmental Engineers
190 So. King Street
Honolulu, HI 96813

SUBJECT: Environmental Impact Statement
Preparation Notice for the Lahaina-Alaeloa and
Honokohau Water System Improvements.

Thank you for your letter concerning the subject project.

To date, we have not received any request for telephone or telemetering service. However, we normally provide a telemetering circuit for the Department of Water Supply which is usually generated by a request to our Business Office.

Please call Joseph Santos at 242-5104 if you need more information.

J. Pontanilla

J. PONTANILLA
Senior Engineer

/dm

XII-21

M&E Pacific, Inc.
Environmental Engineers

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

April 13, 1981

Mr. J. Pontanilla
Senior Engineer
Hawaiian Telephone
P. O. Box 370
Wailuku, Hawaii 96793

SUBJECT: Environmental Impact Statement
Preparation Notice for the Lahaina-Alaeloa and
Honokohau Water System Improvements
Lahaina District, Maui, Hawaii

Thank you for reviewing the EIS preparation notice for the subject projects.

An EIS containing an expanded and more detailed discussion on the various topics touched upon in the preparation notice is being compiled.

JAMES S. KUMAGAI, Ph.D.
Vice President

RA/bs

The Sierra Club
MAUI GROUP, HAWAII CHAPTER
P. O. Box 416
HAIKU, MAUI, HAWAII 96708

March 12, 1981

Mr. Roy Abe
M & E Pacific, Inc.
190 S. King Street
H nolulu, HI 96813

Dear Mr. Abe:

Please list this organization as a consulted party in the preparation of the environmental impact statement for:

Lahaina-Alaeloa and Honokohau Water Systems Improvement,
County of Maui Department of Water Supply

Please send a copy of the preparation notice and all subsequent relevant documents.

Sincerely yours,

John Bose, II
Maui Group Chairman

XII-22

M&E Pacific, Inc.
Environmental Engineers

Pacific Trade Center, Suite 600
190 South King Street
Honolulu, Hawaii 96813
(808) 521-3051 Telex: 7430(illegible)

March 19, 1981

Mr. John Bose, II, Chairman
Sierra Club
P. O. Box 416
Haiku, Maui, HI 96708

SUBJECT: EIS Preparation Notice for the Lahaina-Alaeloa and Honokohau Water System Improvements

Enclosed as requested is a copy of the EIS Preparation Notice for the Lahaina-Alaeloa and Honokohau Water System Improvements.

We welcome any comments that will enable us to prepare as accurate an assessment as possible. Thank you for expressing an interest in the project.

We will forward the Draft EIS to you upon completion.

JAMES S. KUMAGAI
Vice President

RTT/bs

Encl.

ENVIRONMENTAL IMPACT STATEMENT REVIEW PERIOD

The following organizations were consulted during the EIS review period. 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 Army, Corps of Engineers
   - d) U.S. Environmental Protection Agency
   - e)* U.S. Geological Survey

2. State
   - a)* Department of Health
   - b)* Department of Land and Natural Resources
   - c)* Department of Agriculture
   - d)* Department of Planning and Economic Development
   - e)* University of Hawaii Environmental Center
   - f)* Department of Transportation
   - g)* Department of Accounting and General Services
   - h)* Office of Environmental Quality Control
   - i)* Department of Defense
   - j)* State Historic Preservation Officer (DLNR)
   - k)* Department of Hawaiian Home Lands
   - l)* State Energy Office
   - m) Department of Social Services and Housing
   - n)* University of Hawaii, Water Resources Research Center
   - o) Office of Hawaiian Affairs
   - p) Senator Machida
   - q) Representative Hee

3. County of Maui
   - a) Office of the Mayor
   - b) County Council
   - c) Department of Public Works
   - d)* Department of Planning
   - e) Economic Development Agency

f) Fire Department

g)* Police Department

h)* Department of Parks and Recreation

4. Private and Community Organizations

a) Maui Land and Pineapple Co.

b) Maui News

c) Kapalua Land Co.

d) Kaanapali Resort (Amfac Corporation)

e) Pioneer Mill Co., Ltd.

f) American Lung Association

g) Lahaina Outdoor Circle

h)* Maui Historical Society

i)* Hawaiian Telephone Company

j) Sierra Club

k) James Brock, Brock & Assoc.

l) Honolulu Star Bulletin

m) Honolulu Advertiser

M+E Pacific

United States Department of Agriculture

Soil Conservation Service

P.O. Box 50004
Honolulu, Hawaii
96850

February 3, 1983

Ms. Jacqueline Parnell, Director
Office of Environmental Quality Control
550 Halekauwila St., Room 301
Honolulu, HI 96813

Dear Ms. Parnell:

Subject: EIS for the Honokahua Well "B", Lahaina District, Maui, HI

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

Thank you for the opportunity to review this document.

Sincerely,

Francis C.H. Lum
FRANCIS C. H. LUM
State Conservationist

cc:
Mayor Hannibal Tavares, County of Maui
William S. Haines, Director, Department of Water Supply, County of Maui
M & E Pacific, Inc., Honolulu, HI

XII-25

The Soil Conservation Service is an agency of the Department of Agriculture

SCS-AS-1
10-79

DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
P. O. BOX 1109
WAILUKU, MAUI, HAWAII 96793

February 11, 1983

U. S. Department of Agriculture
Soil Conservation Service
P. O. Box 50004
Honolulu, HI 96850

Attn: Mr. Francis C.H. Lum
State Conservationist

Subject: ENVIRONMENTAL IMPACT STATEMENT
HONOKAHUA WELL "B"
LAHAINA DISTRICT, MAUI

Gentlemen:

We acknowledge receipt and hereby thank you for your response on the subject matter.

Sincerely,

William S Haines
William S. Haines
Director

RC/tm

cc: Programs Manager

"By Water All Things Find Life"

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
FEB 4 1983

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

Re: EIS, Honokahua Well "B"
Lahaina District, Maui,
Hawaii

Dear Ms. Parnell:

We have reviewed the Environmental Impact Statement for Honokahua Well "B", Lahaina, Maui, and have no additional comments to offer at this time.

Sincerely yours,

Ernest Kosaka
Project Leader
Office of Environmental Services

cc: Mayor Hannibal Tavares
H & E Pacific, Inc.
Department of Water Supply, Maui

CONSERVE AMERICA'S ENERGY

Save Energy and You Serve America!

XII-26

DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
P. O. BOX 1109
WAILUKU, MAUI, HAWAII 96793

February 11, 1983

U. S. Department of the Interior
Fish and Wildlife Service
300 Ala Moana Blvd.
P. O. Box 50167
Honolulu, HI 96850

Attn: Mr. Ernest Kosaka, Project Leader
Office of Environmental Services

Subject: ENVIRONMENTAL IMPACT STATEMENT
HONOKAHUA WELL "B"
LAHAINA DISTRICT, MAUI

Gentlemen:

We acknowledge receipt and hereby thank you for your response on the subject matter.

Sincerely,

William S. Haines
Director

RC/tm

cc: Programs Manager

"By Water All Things Find Life."

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

February 1, 1983

Mr. Roy R. Takemoto
Office of Environmental
Quality Control
550 Halekauwila Street
Room 301
Honolulu, Hawaii 96813

Dear Mr. Takemoto:

Thank you for the opportunity to review the Environmental Impact Statement (EIS) for the proposed Honokahua Well "B", Lahaina District, Maui, Hawaii, sent to us on January 6, 1983.

Based on our review, we offer no comments in addition to those already expressed in our March 18, 1981 letter regarding Department of the Army permit requirements and floodplain management.

Sincerely,

Kisuk Cheung
Chief, Engineering Division

Copies furnished:

Honorable Hannibal Tavares
Mayor, Maui County
200 South High Street
Wailuku, Hawaii 96793

M & E Pacific, Inc.
190 South King Street
Honolulu, Hawaii 96813

Department of Water Supply
County of Maui
200 South High Street
Wailuku, Hawaii 96897

XII-27

DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
P. O. BOX 1109
WAILUKU, MAUI, HAWAII 96793

February 11, 1983

Department of the Army
Pacific Ocean Division
Corps of Engineers
Ft. Shafter, HI 96858

Attn: Mr. Kisuk Cheung
Chief, Engineering Division

Subject: ENVIRONMENTAL IMPACT STATEMENT
HONOKAHUA WELL "B"
LAHAINA DISTRICT, MAUI

Gentlemen:

This acknowledges receipt and we thank you for your response on the above subject matter.

Sincerely,

William S. Haines
Director

RC/tm

cc: Programs Manager

"By Water All Things Find Life."

United States Department of the Interior

GEOLOGICAL SURVEY

Water Resources Division
P.O. Box 50166
FPO San Francisco 96850

February 7, 1983

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

Mayor Hannibal Tavares
County of Maui
200 South High Street
Wailuku, Hawaii 96793

From: U.S. Geological Survey, WRD, Honolulu, Hawaii

Subject: EIS for Honokahua Well "B", Lahaina District, Maui

Attached are comments by my staff on the EIS for Honokahua Well "B", Lahaina District, Maui. In general, the ground-water development along the Lahaina coast has shown good planning and is hydrologically sound.

Thank you for giving us the opportunity to comment on this document.

Sincerely,

Benjamin L. Jones
District Chief

Enclosure

cc: M & E Pacific, Inc.
Department of Water Supply, County of Maui

Comments on EIS for Honokahua Well "B"

Page	Item	Comments
I-7	Table I-2	To be consistent, the generally accepted term is sustainable yield rather than "safe yield"
II-16,17	Figure II-7,8	Theso two diagrams have been modified from the original source and should be so stated.
II-24,25		These two pages are reversed.
IV-3	Para. 1	The rationale of using the water budget for the entire sector A to justify additional pumpage is weak. Suppose sector A is divided into 3 parts with ground-water discharge equal along the coast. Less than 12 mgd of ground-water flux can be attributed to the southern third of the sector where the wells are concentrated.

DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
P. O. BOX 1109
WAILUKU, MAUI, HAWAII 96793

March 22, 1983

Mr. Benjamin L. Jones, District Chief
U. S. Department of the Interior
Geological Survey - Water Resources Division
P. O. Box 50166
Honolulu, HI 96850

Subject: EIS for Honokahua Well "B"
Lahaina District, Maui, Hawaii

Dear Mr. Jones:

Thank you for your review and comments on the subject document. The following are in response to your comments dated February 7, 1983:

1. The term "sustainable yield" will be used in place of "safe yield" throughout the report.

2. Since the diagrams on Figures II-7, 8 (p. II-16, 17) have been modified from the original source, this will be as stated in the text and on each of the figures.

3. The reversal of pages II-24 and 25 will be corrected.

4. On page IV-3, the first paragraph, starting from the fourth sentence, will be revised to read:

"At least 3 and up to 5 additional mgd of potable water could be withdrawn from Sector A for a total draft in the sector at 7 to 9 mgd. New wells following Honokahua Well "B", however, will need to be located more north of the existing well sites. These wells would be located in the Honolua and northern Honokahua districts near the 5-foot head contour, which is located about 2 miles inland. A total draft of 9 mgd would be expected to depress the existing 5-foot head contour about 0.7 feet, which is within the limits of safe practice. Beyond

9 mgd, there may be a risk of inducing salt water intrusion -- an impact that is virtually irreversable. The location and draft of the proposed Honokahua Well "B" is believed to be within the safe limits to avoid the risk of salt water intrusion."

Please call us if there are additional comments or questions.

Sincerely,

William S. Haines
Director

RC/tm

cc: Programs Manager

GEORGE R. ARIYOSHI
Governor of Hawaii

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

January 19, 1983

CHARLES G. CLARK
GEORGE [illegible]
Director of Health

JOHN F. CHALMERS, M.D.
Deputy Director of Health

HENRY K. 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

MEMORANDUM

To: Honorable Mayor Hannibal Tavares, County of Maui
Mrs. Jacqueline Parnell, OEQC

From: Director of Health

Subject: Environmental Impact Statement (EIS) for Honokahua Well "B", Lahaina, Maui

Thank you for allowing us to review and comment on the subject EIS. On the basis that the project will comply with all applicable Public Health Regulations, please be informed that we do not have any objections to this project.

For your information, the Department of Health is vested with the responsibility to assure that public water systems in the state are providing water which is in compliance with the State's drinking water regulations known as Chapter 20, Title 11, Administrative Rules, and are in compliance with all other applicable terms and conditions of Chapter 20.

Briefly, Section 11-20-29 of Chapter 20 requires all new sources of potable water serving public water systems to be approved by the Director of Health prior to their use to serve potable water. Such approval is based primarily upon the satisfactory submission of an engineering report which adequately addresses all concerns as set down in Section 11-20-29. The engineering report must be prepared by a registered professional engineer and bear his or her seal upon submittal.

If you should have any questions regarding Chapter 20, Title 11, Administrative Rules, please contact the Drinking Water Program at 548-2235.

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.

Melvin Koizumi
CHARLES G. CLARK

cc: M&E Pacific ✓
Dept. of Water Supply, Maui

XII-30

DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
P. O. BOX 1109
WAILUKU, MAUI, HAWAII 96793

January 28, 1983

Department of Health
State of Hawaii
P. O. Box 3378
Honolulu, Hawaii 96801

Attn: Mr. Melvin Koizumi

Subject: Environmental Impact Statement
Honokahua Well "B"
Lahaina District, Maui, Hawaii

Gentlemen:

We acknowledge receipt and wish to thank you for your response on the subject matter.

Sincerely,

William S. Haines
William S. Haines
Director

RC/tm

cc: Programs Manager

"By Water All Things Find Life"

GEORGE R. ARIYOSHI
GOVERNOR OF HAWAII

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

SUSUMU ONO, CHAIRMAN
BOARD OF LAND & NATURAL RESOURCES

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

January 25, 1983

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

Gentlemen:

Thank you for the opportunity to comment on the draft statement of the environmental impact of the Honokahua Well "B" project.

We have no objections to the statement. It is, however, suggested that development of the well be closely coordinated with our Division of Water and Land Development while the well is being planned and constructed.

Sincerely,

SUSUMU ONO
Chairman of the Board

cc: M & E Pacific, Inc.
Dept. of Water Supply, Maui County

XII-31

DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
P. O. BOX 1109
WAILUKU, MAUI, HAWAII 96793

February 10, 1983

State of Hawaii
Department of Land & Natural Resources
1151 Punchbowl Street
Honolulu, HI 96813

Attn: Mr. Susumu Ono
Chairman of the Board

Subject: ENVIRONMENTAL IMPACT STATEMENT
HONOKAHUA WELL "B"
LAHAINA DISTRICT, MAUI

Gentlemen:

We acknowledge receipt and hereby thank you for your response on the above subject matter.

Sincerely,

William S. Haines
Director

RC/tm

cc: Programs Manager

"By Water All Things Find Life."

GEORGE R. ARIYOSHI
GOVERNOR

JACK K. SUWA
CHAIRMAN, BOARD OF AGRICULTURE

SUZANNE D. PETERSON
DEPUTY TO THE CHAIRMAN

State of Hawaii
DEPARTMENT OF AGRICULTURE
1428 So. King Street
Honolulu, Hawaii 96814

Mailing Address:
P. O. Box 22159
Honolulu, Hawaii 96822

January 31, 1983

MEMORANDUM

TO: Office of Environmental Quality Control

SUBJECT: Environmental Impact Statement
Honokahua Well "B"
Lahaina District, Maui

The Department of Agriculture has reviewed the subject statement and finds that impacts on agriculture have been addressed.

Thank you for the opportunity to comment.

Jack K. Suwa
JACK K. SUWA, CHAIRMAN
BOARD OF AGRICULTURE

cc: M & E Pacific, Inc.
Department of Water Supply
County of Maui

"Support Hawaiian Agricultural Products"

XII-32

DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
P. O. BOX 1109
WAILUKU, MAUI, HAWAII 96793

February 10, 1983

State of Hawaii
Department of Agriculture
1428 South King Street
P. O. Box 22159
Honolulu, HI 96822

Attn: Mr. Jack K. Suwa, Chairman

Subject: ENVIRONMENTAL IMPACT STATEMENT
HONOKAHUA WELL "B"
LAHAINA DISTRICT, MAUI

Gentlmen:

We acknowledge receipt and hereby thank you for your response on the above subject matter.

Sincerely,

William S. Haines
Director

RC/tm

cc: Programs Manager

"By Water All Things Find Life."

DEPARTMENT OF PLANNING AND ECONOMIC DEVELOPMENT

GEORGE R. ARIYOSHI
Governor
HIDETO KONO
Director
FRANK SKRIVANEK
Deputy Director

P.O. BOX 2359 HONOLULU, HAWAII 96804

February 28, 1983

Ref. No. 707S

COPY

The Honorable Hannibal Tavares
Mayor
County of Maui
200 South High Street
Wailuku, Hawaii 96793

Dear Mayor Tavares:

Subject: Honokahau Well "B" EIS, Lahaina District, Maui, Hawaii

XII-33

We have reviewed the environmental impact statement (EIS) for the Honokahau Well "B" and have the following comments.

Since Chapter X of the EIS includes a provision for re-siting the project to avoid adverse impacts on significant archeological resources, it thus adequately addresses the only discernible potential impact on coastal resources identified in Chapter 205A (HRS).

We note for your consideration that the discussion of applicable CZM program objectives and policies on page III-3 of the document should include conformance to the avoidance of potential impacts on historic and archeological resources.

Thank you for the opportunity to review the subject document.

Sincerely,

Hideto Kono

cc: Office of Environmental Quality Control
M & E Pacific, Inc.
Department of Water Supply, County of Maui

DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
P. O. BOX 1109
WAILUKU, MAUI, HAWAII 96793

March 23, 1983

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

Subject: Environmental Impact Statement For
Honokahua Well "B"
Lahaina, Maui

Dear Mr. Kono:

Thank you for your comments dated February 28, 1983 on the subject document.

A statement indicating conformance to the avoidance of potential impacts on historic and archaeological resources will be included in the discussion of applicable CZM program objectives and policies.

Sincerely,

William S. Haines
Director

RC/tm

cc: Programs Manager

"By Water All Things Find Life."

XII-34

University of Hawaii at Manoa

Environmental Center
Crawford 317 • 2550 Campus Road
Honolulu, Hawaii 96822
Telephone (808) 948-7361

January 14, 1983

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

Dear Mrs. Parnell:

Re: Honokahua Well "B"
Lahaina District, Maui, Hawaii

We have conducted a brief in-house review of the above cited document. We note that pages II-24 and II-25 are apparently inserted in reverse order.

In light of the ground-water resource analysis (pages II-10 to II-25, by John Mink), it must be concluded that the draft from the proposed well will have no serious detrimental impact on the resource.

We are particularly pleased to note the commitment to further reconnaisance by an archeologist recommended by the Maui Historical Society to aide in the well site selection so as to avoid impacts to the archeological resources.

Yours truly,

Doak C. Cox
Director

AN EQUAL OPPORTUNITY EMPLOYER

DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
P. O. BOX 1109
WAILUKU, MAUI, HAWAII 96793

March 21, 1983

University of Hawaii at Manoa
Environmental Center
Crawford 317, 2550 Campus Road
Honolulu, HI 96822

Attn: Mr. Doak C. Cox, Director

Subject: Environmental Impact Statement
Honokahua Well "B"
Lahaina, Maui

Gentlemen:

Thank you for your response on the EIS. The reversal of Pages II - 24 and 25 will be corrected.

Sincerely,

William S. Haines
Director

RC/tm

cc: Programs Manager

"By Water All Things Find Life."

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. McCORMACK
JONATHAN K. SHIMADA, Ph.D.

IN REPLY REFER TO

STP 8.8840

January 11, 1983

Ms. Jacqueline Parnell, Director
Office of Environmental
Quality Control
550 Halekauwila Street, Room 301
Honolulu, Hawaii 96813

Dear Ms. Parnell:

Environmental Impact Statement
Honokahua Well "B"
Lahaina District, Maui, Hawaii

Thank you for the opportunity to review the subject document.

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

Very truly yours,

Ryokichi Higashionna

Ryokichi Higashionna
Director of Transportation

XII-35

DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
P. O. BOX 1109
WAILUKU, MAUI, HAWAII 96793

January 25, 1983

State of Hawaii
Department of Transportation
869 Punchbowl Street
Honolulu, HI 96813

Attn: Mr. Ryokichi Higashionna, Director

Subject: Environmental Impact Statement
Honokahua Well "B"
Lahaina District, Maui, Hawaii

Gentlemen:

We acknowledge receipt and hereby thank you for your response on the subject matter.

Sincerely,

William S. Haines

William S. Haines
Director

RC/tm

cc: Programs Manager

GEORGE R. ARIYOSHI
GOVERNOR

STATE OF HAWAII
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
P. O. BOX 119, HONOLULU, HAWAII 96810

HIDEO MURAKAMI
COMPTROLLER

MIKE M. TORUNAGA
DEPUTY COMPTROLLER

LETTER NO. (P)1064.3

JAN 21 1983

Honorable Hannibal Tavares
Mayor
County of Maui
200 South High Street
Wailuku, Hawaii 96793

Dear Mayor Tavares:

Subject: EIS for Honokahua Well "B"
Lahaina District, Maui, Hawaii

We have reviewed the subject matter and have no comments to offer.

Respectfully,

HIDEO MURAKAMI
State Comptroller

XII-36

DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
P. O. BOX 1109
WAILUKU, MAUI, HAWAII 96793

January 28, 1983

Department of Accounting and
General Services
State of Hawaii
P. O. Box 119
Honolulu, HI 96810

Attn: Mr. Hideo Murakami, State Comptroller

Subject: EIS for Honokahua Well "B"
Lahaina District, Maui, Hawaii

Gentlemen:

We acknowledge receipt and hereby thank you for your response on the subject matter.

Sincerely,

William S. Haines
Director

RC/tm

cc: Programs Manager

"By Water All Things Find Life"

GEORGE R. ARIYOSHI
GOVERNOR

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

Jacqueline Parnell
DIRECTOR
TELEPHONE NO.
548-6915

February 7, 1983

Mr. William Haines
Department of Water Supply
County of Maui
200 South High Street
Wailuku, Hawaii 96793

Dear Mr. Haines:

Subject: Draft Environmental Impact Statement for the Honokahua Well "B," Lahaina, Maui

We have no comments regarding this project. Thank you for the opportunity to review the draft EIS.

Sincerely,

Jacqueline Parnell
Director

cc: Office of the Mayor (Maui)
M&E Pacific

XII-37

DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
P. O. BOX 1109
WAILUKU, MAUI, HAWAII 96793

February 15, 1983

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

Attn: Ms. Jacqueline Parnell, Director

Subject: DRAFT ENVIRONMENTAL IMPACT STATEMENT
HONOKAHUA WELL "B"
LAHAINA, MAUI

Dear Ms. Parnell:

We acknowledge receipt and hereby thank you for your response on the subject matter.

Sincerely,

William S. Haines
Director

RC/tm

cc: Programs Manager

"By Water All Things Find Life."

GEORGE R. ARIYOSHI
GOVERNOR

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

A. U. ISHIMOTO
MAJOR GENERAL
ADJUTANT GENERAL

DANIEL K. C. AU
COLONEL
DEPUTY ADJUTANT GENERAL

1 FEB 1983

HIENG

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

Gentlemen:

Honokahua Well "B"

Thank you for providing us the opportunity to review the proposed project, "Honokahua Well "B," 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: M&E Pacific, Inc.
Dept of Water Supply
County of Maui
Env Quality Commission w/EIS

XII-38

DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
P. O. BOX 1109
WAILUKU, MAUI, HAWAII 96793

February 10, 1983

State of Hawaii
Department of Defense
Office of the Adjutant General
3949 Diamond Head Road
Honolulu, HI 96816

Attn: Jerry M. Matsuda
Captain, HANG
Contr & Engr Officer

Subject: ENVIRONMENTAL IMPACT STATEMENT
HONOKAHUA WELL "B"
LAHAINA DISTRICT, MAUI

Gentlemen:

We acknowledge receipt and hereby thank you for your response on the above subject matter.

Sincerely,

William S. Haines
Director

RC/tm

cc: Programs Manager

"By Water All Things Find Life"

GEORGE R. ARIYOSHI
GOVERNOR OF HAWAII

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

SUSUMU ONO, CHAIRMAN
BOARD OF LAND & NATURAL RESOURCES
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

FEB 14 1983

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

Gentlemen:

This is to add to our January 25, 1983 response to the draft statement of the environmental impact of Honokahua Well "B".

Our records indicate that this project does not occur on historic properties listed on the Hawaii Register or the National Register of Historic Places, or determined eligible for inclusion on the National Register of Historic Places.

Due to the lack of archaeological surveys in the vicinity, we are unaware that significant resources exist in the project area. This does not confirm, however, the absence of historical, cultural, architectural and/or archaeological resources on the property. If any previously unidentified sites or remains (such as artifacts, shell, bone, or charcoal deposits; human burials; rock or coral alignments, pavings, or walls) are encountered, please inform the applicant to stop work and contact our historic sites office at 548-7460 immediately.

The environmental impact statement, construction contracts, and project work plans should contain instructions to contact the State Historic Preservation Officer when archaeological remains are discovered in the project area.

Sincerely,

SUSUMU ONO
Chairman of the Board
and
State Historic Preservation Officer

cc: M&E Pacific, Inc.
Dept. of Water Supply, Maui County

XII-39

DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
P. O. BOX 1109
WAILUKU, MAUI, HAWAII 96793

March 7, 1983

Mr. Susumo Ono, Chairman of the Board
and State Historic Preservation Officer
Department of Land and Natural Resources
State of Hawaii
P. O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Ono:

Re: Environmental Impact Statement for Honokahua Well "B"

Thank you for your additional comments dated February 14, 1983. Please be assured that if any previously unidentified sites or remains are encountered during any phase of the project, your historic sites office will be contacted immediately.

The environmental impact statement will be revised to include instructions to contact the State Historic Preservation Officer when archaeological remains are discovered in the project area. The environmental impact statement will further state that such instructions should be included in the construction contracts and on the project work plans.

Sincerely,

William S. Haines
Director

ab

"By Water All Things Find Life."

MAR 10 1983

GEORGE R. ARIYOSHI
GOVERNOR OF HAWAII

PROJECT OFFICES

WAIMEA OFFICE
P. O. BOX 135
KAMUELA, HAWAII 96743

PEAUKAHA OFFICE
P. O. BOX 833
HILO, HAWAII 96720

STATE OF HAWAII
DEPARTMENT OF HAWAIIAN HOME LANDS
P. O. BOX 1879
HONOLULU, HAWAII 96805

February 23, 1983

PROJECT OFFICES

MAUI OFFICE
P. O. BOX 72
KAHULUI, MAUI 96732

MOLOKAI OFFICE
P. O. BOX 158
HOOLEHUA, MOLOKAI 96729

KAUAI OFFICE
P. O. BOX 333
LIHUE, KAUAI 96766

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

Dear Sir:

SUBJECT: Honokahua Well "B"
Lahaina District, Maui, Hawaii

Thank you for allowing us to comment on the Environmental Impact Statement (EIS) for Honokahua Well "B".

We have no comments to offer on the EIS for the subject project.

Sincerely yours,

Mervwyn S. Jones
for Georgiana K. Padeken
Chairman

GKP:RF:SW:jm

cc: M & E Pacific, Inc.
Maui County Department of Water Supply

XII-40

DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
P. O. BOX 1109
WAILUKU, MAUI, HAWAII 96793

March 4, 1983

State of Hawaii
Department of Hawaiian Homes
335 Merchant Street
Honolulu, HI 96713

Atten: Georgiana K. Padeken, Chairman

Subject: ENVIRONMENTAL IMPACT STATEMENT
HONOKAHUA WELL "B"
LAHAINA, MAUI

Gentlemen:

We acknowledge receipt and hereby thank you for your response on the subject matter.

Sincerely,

William S. Haines
William S. Haines
Director

RC/tm

cc: Programs Manager

"Ka Wai Ola - All Things Find Life"

JAN 7 '83

GEORGE R. ARIYOSHI
GOVERNOR

ROY R. TAKEMOTO
CHAIRMAN

TELEPHONE NO.
(808) 548-6915

STATE OF HAWAII
ENVIRONMENTAL QUALITY COMMISSION
830 HALEKAUWILA ST.
ROOM 301
HONOLULU, HAWAII 96813

JAN -6 1983

Dear Reviewer:

Attached for your review is an Environmental Impact Statement (EIS) that was prepared pursuant to Chapter 343, Hawaii Revised Statutes and the Rules and Regulations of the Environmental Quality Commission:

Title: Honokahua Well "B"

Location: Lahaina District, Maui, Hawaii

Classification: Agency Action

Your comments or acknowledgement of no comments on the EIS are welcomed. Please submit your reply to the accepting authority or approving agency:

Office of Environmental Quality Control		Mayor Hannibal Tavares
550 Halekauwila Street, Room 301		County of Maui
Honolulu, Hawaii 96813	AND	200 South High Street
		Wailuku, HI 96793

Please send a copy of your reply to the proposing party:

✓ H & E Pacific, Inc.		Department of Water Supply
190 South King Street		County of Maui
Honolulu, Hawaii 96813	AND	200 South High Street
		Wailuku, HI 96793

Your comments must be received or postmarked by: February 7, 1983

If you have no further use for this EIS, please return it to the Commission.

Thank you for your participation in the EIS process.

Jan. 7, 1983
No Comments
T. Yoshikawa
Energy Program Administrator

DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
P. O. BOX 1109
WAILUKU, MAUI, HAWAII 96793

January 25, 1983

State Energy Office
Department of Planning & Economic Development
Kamamalu Building, 250 South King Street
Honolulu, HI 96813

Attn: Energy Program Administrator

Subject: Environmental Impact Statement
Honokahua Well "B"
Lahaina District, Maui, Hawaii

Gentlemen:

We acknowledge receipt and hereby thank you for your response on the subject matter.

Sincerely,

William S. Haines
Director

RC/tm

cc: Programs Manager

"By Water All Things Find Life"

University of Hawaii at Manoa

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

10 February 1983

Mayor Hannibal Tavares
County of Maui
200 South High Street
Wailuku, Hawaii 96793

Dear Mayor Tavares:

Subject: Environmental Impact Statement for Honokahua Well "B", Lahaina District, Maui, Hawaii, Department of Water Supply, County of Maui, January 1983

We reviewed the subject EIS and have no comment to offer at this time. Thank you for the opportunity to comment. This material was reviewed by UHRC personnel.

Sincerely,

Edwin T. Murabayashi
EIS Coordinator

ETH:jn

cc: OEQC
H & E Pacific
DWS, Main County

XII-42

DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
P. O. BOX 1109
WAILUKU, MAUI, HAWAII 96793

February 17, 1983

University of Hawaii at Manoa
Water Resources Research Center
Holmes Hall 283
2540 Dole Street
Honolulu, Hawaii 96822

ATTENTION: Mr. Edwin T. Murabayashi, EIS Coordinator

Gentlemen:

Re: Environmental Impact Statement
Honokahua Well "B", Lahaina, Hawaii

We acknowledge receipt and hereby thank you for your response on the subject matter.

Sincerely,

William S. Haines
Director

GO:RC:ab

cc: Programs Manager

COUNTY OF MAUI
PLANNING DEPARTMENT
200 S. HIGH STREET
WAILUKU, MAUI, HAWAII 96793

February 7, 1983

Ms. Joan Kodani
Environmental Quality Commission
State of Hawaii
550 Halekauwila Street, Room 301
Honolulu, Hi. 96813

Dear Ms. Kodani:

Re: Environmental Impact Statement For Honokahua Well "B", Lahaina District, Maui, Hawaii (January 1983)

As requested in your letter dated January 6, 1983, our office has reviewed the above EIS document and offers the following comments:

1. We suggest replacing "Figure II-14 Future Land Use." This figure was prepared by the State Department of Land and Natural Resources in 1963 and does not represent County land use policies, as specified in the Lahaina General Plan Map adopted by the Maui County Council in 1968. It should be noted that the County has undertaken a review and update of the existing Lahaina General Plan.

   The proposed Lahaina Community Plan, which was formulated in 1981, is currently pending before the County Council.

2. Relative to the proposed Lahaina Community Plan, we note that the population projections for this plan appear to be higher than the projections in the 208 Plan. The projected population in the 208 Plan for the Lahaina District is 12,800 and 17,200 residents for the respective years 1990 and 2000. The projected population in the proposed Lahaina Community Plan for the Lahaina District is 17,400 and 26,400 residents for the respective years 1990 and 2000.

   Given the higher population projections in the Lahaina Community Plan, the water demand projections for the Lahaina-Alaeloa service area may therefore be significantly higher than the projections contained in the EIS (Table I-1, p. I-6). Consequently, the County's program to develop other water sources may need to be accelerated. We believe that the EIS should note this possible situation.

3. The EIS should elaborate on the possibility of developing additional groundwater sources so as to eliminate the need to construct a costly water treatment facility. According to the EIS, the existing Lahaina-Alaeloa water system does not comply with Federal and State drinking water regulations. This is primarily due to the high turbidity in the Honokohau tunnel surface water withdrawn at the Alaeloa Intake. The EIS notes that the proposed Well "B" will provide a substitute to the existing surface water source, the Alaeloa Intake, and will probably not require any treatment, such as with existing wells. The existing wells currently meet all primary drinking water standards without treatment.

   Since there appears to be an adequate supply of additional groundwater (e.g. in Section A, it is estimated that an additional 3-5 MGD can be withdrawn), it would be desirable to clarify the feasibility of developing and using these groundwater sources versus constructing and operating a water treatment facility, in order to comply with Federal and State drinking water requirements.

4. The EIS should further clarify potential impacts on archaeological, historic and cultural resources. The document contains little information on this aspect, even though it is noted that significant archaeological sites may exist in the area. In our view, an archaeological reconnaisance survey should be conducted by a qualified archaeologist. This survey should include a map showing the location of archaeological, historic or cultural sites or remains, documentation relative to the potential significance of these sites and a list recommended mitigative measures to be undertaken before, during and after project construction.

5. We note that the proposed Well "B" will be located in close proximity (approximately 1,000 feet) to other existing wells. Given this situation, the EIS should elaborate on measures to be taken to minimize any impacts on the operation of the proposed and existing wells and groundwater supplies.

6. The EIS should specify the projected timetable for the construction and operation of the proposed Well "B".

7. Two pages in the EIS document are incorrectly numbered. Page II-24 should be labelled as page II-25 and vice versa.

Thank you for the opportunity to comment on this project.

Should further clarification be necessary, please contact John Min of our office.

Very truly yours,

TOSHIO ISHIKAWA
Planning Director

JM:wc

cc: Mayor Hannibal Tavares
William Haines, DWS
M & E Pacific Inc.

DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
P. O. BOX 1109
WAILUKU, MAUI, HAWAII 96793

March 4, 1983

Mr. Toshio Ishikawa, Director
Planning Department
County of Maui
Wailuku, HI 96793

SUBJECT: EIS for Honokahua Well "B"
Lahaina District, Maui, Hawaii

Thank you for your review and comments on the subject document. The following are in response to your comments dated February 7, 1983:

1. "Figure II-14, Future Land Use" will be revised to reflect the information of the 1968 Lahaina General Plan Map.

2. The population projections of the 208 Plan were believed to be the most realistic projections available during the preparation of the EIS. The projections of the Lahaina Community Plan, although not yet approved or adopted, will be noted in the EIS. The EIS will further note that the population projections of the 208 Plan and Lahaina Community Plan are estimates based upon available information. Regardless of which projection is used, the Department of Water Supply will be required to periodically evaluate the current and projected population and water demand for facility planning purposes.

3. The EIS briefly touches upon the feasibility of additional groundwater development in the Lahaina District in Chapter VI. The construction of a surface water treatment facility was determined to be more cost effective than development of additional wells in the northern Honokahua-Honolua area in the future. The costs associated with the development of additional groundwater sources primarily involve the combination of a transmission line from the wells to the Lahaina-Alaeloa system. The costs associated with this alternative are significantly higher than the proposed action. In the future, it is anticipated that the development of additional groundwater sources will be feasible, based on projected growth of the Lahaina district. This subject is discussed in detail in an April 1982 planning report entitled, "Lahaina-Alaeloa and Honokahua Water System Improvements," which was prepared for the Department of Water Supply by M & E Pacific, Inc.

4. Regarding the potential impacts on archaeological, historic, and cultural resources, it was deemed unnecessary to conduct a formal survey in this phase of the project for the following reasons:

   a. The exact location of the well has not been determined.

   b. The location of the well site and routing of the pipeline is very flexible. The well can be located entirely within the existing pineapple fields if necessary.

   c. Access to the site during and after construction will be through the use of existing pineapple field access roads. We will work closely with the Maui Historical Society to eliminate any disturbance of archaeological sites.

5. It is anticipated that no impacts will result from the proposed spacing between the new and existing wells unless unusual hydrogeologic conditions are encountered. Existing wells in the vicinity are spaced approximately the same distance apart, and no adverse impacts on groundwater supplies have been detected from the simultaneous operation of all the wells.

6. It is projected that the approximate start of construction of the proposed well will begin in 1985.

7. The reversal of pages II-24 and 25 will be corrected.

Please call us if there are additional comments or questions.

Sincerely,

William S. Haines
Director

RC/tm

POLICE DEPARTMENT
COUNTY OF MAUI
P. O. BOX 1029
WAILUKU, HAWAII 96793
AREA CODE (808) 244-7811

JOSEPH CRAVALHO
CHIEF OF POLICE

OUR REFERENCE
JS/yyc
YOUR REFERENCE

January 25, 1983

Honorable Hannibal Tavares
Mayor, County of Maui
Wailuku, Hawaii 96793

Dear Mayor Tavares:

We have reviewed the Environmental Impact Statement regarding Honokahua Well "B". No obvious adverse impact on police services were noticed, and we have no other comments to offer.

We thank you for the opportunity of allowing us to review this project.

Very truly yours,

JOSEPH CRAVALHO
Chief of Police

cc: Director William Haines
Department of Water Supply

XII-46

DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
P. O. BOX 1109
WAILUKU, MAUI, HAWAII 96793

January 28, 1983

Police Department
County of Maui
P. O. Box 1029
Wailuku, Hawaii 96793

Attn: Mr. Joseph Cravalho
Chief of Police

Subject: EIS for Honokahua Well "B"
Lahaina District, Maui, Hawaii

Gentlemen:

We acknowledge receipt and hereby thank you for your response on the subject matter.

Sincerely,

William S. Haines
Director

RC/tm

cc: Programs Manager
M&E Pacific, Inc.

HANNIBAL TAVARES
Mayor

NOLLE R. SMITH, JR.
Director

DEPARTMENT OF PARKS AND RECREATION
COUNTY OF MAUI
WAILUKU, MAUI, HAWAII 96793

February 7, 1983

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

Gentlemen:

Re: Honokahua Well "B"
Lahaina, Maui, Hawaii

We have reviewed the Environmental Impact Statement relative to the Honokahua Well "B" project and have no comments at this time.

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

Very truly yours,

Nolle R. Smith, Jr.
Director

cc: Mayor Hannibal Tavares
M+E Pacific
DWS - Maui

XII-47

DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
P. O. BOX 1109
WAILUKU, MAUI, HAWAII 96793

February 15, 1983

County of Maui
Department of Parks and Recreation
Wailuku, Maui, HI 96793

Attn: Mr. Nolle R. Smith, Jr., Director

Subject: ENVIRONMENTAL IMPACT STATEMENT
HONOKAHUA WELL "B"
LAHAINA, MAUI

Gentlemen:

We acknowledge receipt and hereby thank you for your response on the subject matter.

Sincerely,

William S. Haines
Director

RC/tm

cc: Programs Manager

"By Water All Things Find Life"

Maui Historical Society

P. O. Box 1018 • Wailuku, Hawaii 96793

January 18, 1983

Hale Hoikeike – 1841

Office of Environmental Quality Control
550 Halekauila St., Room 301
Honolulu, Hawaii 96813

To Whom It May Concern:

Thank you for the opportunity to review the Environmental Impact Statement for the proposed Honokahua Well "B" in Lahaina, Maui.

XII-48

Our only comment on this EIS is that we are delighted to see that on page 2, Section IV, "an archaeological survey will be conducted during the design phase of the well." And that on Page 3, Section X, Paragraph A, "the well site is relatively flexible". This was our chief concern when the project was first proposed, as it seemed from a rough survey that there might very well be some important archaeological remains in the general area. We will be happy to accept a true survey to determine the matter.

Sincerely,
Virginia Wirtz
(Mrs) Virginia Wirtz,
Museum Director

DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
P. O. BOX 1109
WAILUKU, MAUI, HAWAII 96793

January 26, 1983

Maui Historical Society
P. O. Box 1018
Wailuku, HI 96793

Attn: Mrs. Virginia Wirtz
Museum Director

Subject: Environmental Impact Statement
Honokahua Well "B"
Lahaina District, Maui, Hawaii

Dear Mrs. Wirtz:

Thank you for your comment on this EIS. Please be assured that your concern about an archaeological survey will be taken into consideration when a permanent site is selected to determine whether the proposed project is located within an area containing known historical sites.

Sincerely,
William S. Haines
William S. Haines
Director

RC/tm

cc: Programs Manager

"By Water All Things Find Life"

XII-49

HAWAIIAN TELEPHONE
GTE

John J Wilson
District Manager

January 11, 1983

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

Dear Sir:

Subject: Honokahua Well "B" Environmental Impact Statement

We acknowledge receipt of your E.I.S. for the subject matter. We thank you for the opportunity to review it and have no comments to offer at this time.

Sincerely,

John J. Wilson
Manager-Maui

cc: Mayor Hannibal Tavares
M & E Pacific, Inc.
Dept. of Water Supply

P O BOX 370 • WAILUKU, HAWAII 96793 • TELEPHONE (808) 242 5211 • CABLE TELHAWAII

DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
P. O. BOX 1109
WAILUKU, MAUI, HAWAII 96793

January 25, 1983

Hawaiian Telephone
P. O. Box 370
Wailuku, HI 96793

Attn: Mr. John J. Wilson
Manager - Maui

Subject: Environmental Impact Statement
Honokahua Well "B"
Lahaina District, Maui, Hawaii

Gentlemen:

We acknowledge receipt and hereby thank you for your response on the subject matter.

Sincerely,

William S. Haines
Director

RC/tm

cc: Programs Manager

"By Water All Things Find Life"

REFERENCES

1. Belt, Collins & Associates. A Water Source Development Plan for Lahaina District, Island of Maui, Report R33. Prepared for State of Hawaii, Department of Land and Natural Resources, Division of Water and Land Development. November 1969.

2. Bowers, Ralph. "Biological Reconnaissance of Honokohau Stream, Maui" in Kahakuloa Water Study. Department of Land and Natural Resources. 1977.

3. Elliott, M.E. and Hall, E.M. Wetlands and Wetland Vegetation of Hawaii. Prepared for U.S. Army Corps of Engineers. 1977.

4. Furumoto, A.S.; Nielson, N.N.; and Phillips, W.R. A Study of Past Earthquakes, Isoseismic Zones of Intensity, and Recommended Zones for Structural Design for Hawaii. Hawaii Institute of Geophysics, University of Hawaii. 1973.

5. Hawaii Revised Statutes (HRS), Chapter 205. "State Land Use Law." Chapter 226. "Hawaii State Planning Aid." Chapter 343. "Environmental Quality Commission and Environmental Impact Statements." Chapter 177. "Groundwater Use Act." Chapter 342. "Environmental Quality."

6. State of Hawaii, Department of Agriculture. Agricultural Lands of Importance to the State of Hawaii (Maps). Sheets M-1 and M-2. January 1977.

7. State of Hawaii, Department of Health. State of Hawai Public Health Regulations, Chapter 49, Potable Water Systems. 1977.

8. State of Hawaii, Department of Health. 208 Water Quality Management Plan, County of Maui. 1980.

9. State of Hawaii, Department of Land and Natural Resources. Conservation District Use Regulations. DLNR Reg. 4.

10. State of Hawaii, Department of Land and Natural Resources, Division of Water and Land Development. Revised Environmental Impact Statement, Pumps and Controls for Napili Well "C" and Honokahua Well "A", West Maui Water Project. August 1979.

11. State of Hawaii, Department of Land and Natural Resources. State Water Resources Development Plan (Draft). 1979.

12. State of Hawaii, Department of Planning and Economic Development. Long-Range Population and Economic Simulations and Projections for the State of Hawaii. 1978.

13. State of Hawaii, Department of Planning and Economic Development. State Tourism Plan (Draft). 1980.

14. State of Hawaii, Department of Planning and Economic Development. The Population of Hawaii, 1980: Preliminary Census Results. Statistical Report 141. November 19, 1980.

15. State of Hawaii, Environmental Quality Commission. Environmental Impact Statement Regulations.

16. State of Hawaii, Land Use Commission. Rules of Practice and Procedure and District Regulations. Effective December 21, 1975.

17. Hawaii Visitors Bureau. Annual Research Report, 1979. 1980.

18. Hawaii Visitors Bureau. Visitor Plant Inventory. June 1980.

19. Hawaii Water Resources Regional Study. Fish and Wildlife Study Element Report. 1975.

20. Kasamoto, Hiroshi, Muroda & Tanaka, Inc. A General Plan for the Lahaina District, County of Maui. Prepared for Maui County Planning Commission. 1968.

21. Land Study Bureau, Detailed Land Classification - Island of Maui, Bulletin No. 7, University of Hawaii, May 1967.

22. M&E Pacific, Inc. Lahaina-Alaeloa and Honokohau Water System Improvements. Prepared for Department of Water Supply, County of Maui. 1981.

23. McCall, W. Soil Classification in Hawaii. Circular 476, Cooperative Extension Service, University of Hawaii. 1975.

24. County of Maui, Department of Water Supply. An Assessment of the Future Source Water Requirements of the Lahaina Area System, West Maui, Island of Maui. February 1978.

25. County of Maui, Department of Water Supply. "Special Rule Establishing a Source Assessment Fee; Allocating Water Usage on an Annual Basis and Regulating the Approval of Subdivision Applications; the Approval of Building Permits and the Approval of Water Meters in the West Maui Areas Which Are Provided Public Water Service from the Kanaha, Waipuka, Alaeloa, Napili and Honokahua Water Sources and Systems." 1980.

26. Maui Historical Society. Personal Communication with Mrs. Virginia Wirtz, Museum Director. March 1981.

27. Maui Sun. Condo '80 Inventory. June 18, 1980, Year 10, Issue 34.

28. R.M. Towill Corporation. Water Master Plan for the County of Maui. December 1971.

29. Norman Saito Engineering Consultants, Inc. and Environmental Impact Study Corp. Revised Environmental Impact Statement for the Lahaina Water Treatment Plant. March 1980.

30. Stearns, H.T. and MacDonald, G.A. Geology and Groundwater Resources of the Island of Maui, Hawaii, Bulletin 7. October 1942.

31. United States Department of Agriculture, Soil Conservation Service. Soil Survey of Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii. 1972.

32. United States Army Corps of Engineers. "Flood Insurance Rate Map, Maui County." Prepared for U.S. Department of Housing and Urban Development.

33. United States Congress. "Interim Primary Drinking Water Regulations." Federal Register. Vol. 45, No. 168, Wednesday, August 27, 1980.

34. United States Congress. "National Secondary Drinking Water Regulations." Federal Register. Vol. 44, No. 140, Thursday, July 19, 1979.

35. United States, Office of Economic Opportunity (OEO). OEO 1975 Census Update Survey. Prepared by Survey and Marketing Services, Inc. for Maui Economic Opportunity, Inc. 1976.

36. Wilson, Okamoto & Associates, Inc. Kahakuloa Water Study, Report R54. Prepared for the Department of Land and Natural Resources, Division of Water and Land Development. December 1977.

37. Yamanaga, George and Huxel, C.J. Preliminary Report on the Water Resources of the Lahaina District, Maui. Prepared for the U.S. Geological Survey and State of Hawaii, Department of Land and Natural Resources, Division of Water and Land Development. USGS Circular C51, 1969.