EXECUTIVE CHAMBERS

HONOLULU

GEORGE R. ARIYOSHI
GOVERNOR

September 21, 1984

Ms. Letitia N. Uyehara, Director
Office of Environmental Quality Control
550 Halekauwila Street, Room 301
Honolulu, Hawaii 96813

Dear Ms. Uyehara:

Based on the recommendation of the Office of Environmental Quality Control, I am pleased to accept the environmental impact statement for the Kaupo Water System Improvements on Maui as a satisfactory fulfillment of the requirements of Chapter 343, Hawaii Revised Statutes.

This environmental impact statement will be a useful tool in deciding whether this project should be allowed to proceed. My acceptance of the statement is an affirmation of its adequacy under applicable laws and does not constitute an endorsement of the proposal.

When the decision is made regarding this action, I expect the proposing agency to carefully weigh the societal benefits against the environmental impact which will likely occur. This impact is adequately described in the statement and, together with the comments made by reviewers, provides a useful analysis of alternatives to the proposed action.

With warm personal regards, I remain,

Yours very truly,

George R. Ariyoshi

cc: Mr. William S. Haines, Director
Department of Water Supply, County of Maui

ENVIRONMENTAL IMPACT STATEMENT

FOR THE

KAUPO WATER SYSTEM IMPROVEMENTS

Kaupo, Island of Maui, Hawaii

Submitted by
Department of Water Supply
County of Maui
Wailuku, Maui, Hawaii

Prepared by
Sam O. Hirota, Inc.
345 Queen Street, Suite 500
Honolulu, Hawaii 96813

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COUNTY OF MAUI
DEPARTMENT OF WATER SUPPLY

ENVIRONMENTAL IMPACT STATEMENT FOR THE KAUPO WATER SYSTEM IMPROVEMENTS KAUPO, MAUI, HAWAII

PROPOSING AGENCY AND OFFICIAL CONTACT

William S. Haines
Mr. William S. Haines, Director
Department of Water Supply
County of Maui
P.O. Box 1109
Wailuku, Maui, Hawaii 96793

PREPARED BY

Sam O. Hirota, Inc.
345 Queen Street, Suite 500
Honolulu, Hawaii 96813

JUNE 1984

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I. SUMMARY

AGENCY ACTION

Department of Water Supply, County of Maui

PROJECT OBJECTIVES

The objective of this action is to bring the domestic water supply in compliance with the State (Chapter 20, Title 11) and Federal Interim Drinking Water Regulations. The present drinking water quality does not comply with the permissible maximum contaminant levels for turbidity and microbial levels.

PROPOSED ACTION

An engineering study prepared for the Department of Water Supply has made a recommendation to filter water from the existing surface water sources and to supplement the surface water sources during drought conditions or when turbidity levels are too high for the filters. The project includes the following actions:

1. Install a pressure filter (separator/cartridge filter) at the existing 40,000 gallon tank site at elevation 1080 feet and chlorination appurtenances.
2. Install a new mid level 40,000 gallon storage tank at elevation 540 feet.
3. Drill a new well at the site of the former Kaupo School and install deep well pumps and chlorination appurtenances.

4. Install additional waterlines to separate the domestic water system from the agricultural water system.

STUDY AREA

Kaupo (population 43) is a very small community located in a remote area on the southern coast of Maui. The principal economic activity is cattle ranching. Kaupo is west of Hana, and it is accessible only by a single unpaved road from either Kipahulu or Ulupalakua. Terrain in the area ranges from gentle sloping lowlands to steeply sloping forest reserve uplands, while the intermediate and lower areas are mostly pasture land. There are no commercial electrical services to the area.

EXISTING WATER SYSTEM

The existing water supply and distribution system for Kaupo consists of two interconnected systems: one belongs to the Kaupo Ranch and the other belongs to the County of Maui. Water from both systems is used for livestock as well as for domestic purposes. The quantity of water consumed by users served by both the County and Kaupo Ranch water systems in 1981 is estimated to be 9,300 gallons per day (maximum average daily use). Water is now obtained from the Naholoku (elevation 5200 feet) and Kalepa Streams' (elevation 1664 feet) intakes (surface water source), except in times of drought, when the deficiency of demand must be met by

pumping water from Punahoa Spring (groundwater source approximate elevation 5 feet).

PROBABLE IMPACTS OF THE PROPOSED ACTIONS

The amount of land area in square feet (S.F.) that will be affected will be approximately 12,300 S.F. The breakdown of the land area will be as follows: the new well site - 5,000 S.F., the new mid level tank - 6,400 S.F. and the filtration facility - 900 S.F. The rural nature of the surrounding area and the lack of nearby homes will result in minimal construction and site clearing impacts on both the human and natural environment. Access to the three sites will be off the access road which leads from Piilani Highway to the Kaupo Ranch Headquarters. The access road intersects Pillani Highway adjacent to the old Kaupo School property. The well site was selected at the old Kaupo School, since the location is within the center of the Kaupo Water System and the property is owned by the State and could be used by the County. Once completed, the well pumps and chlorination system will be sheltered in a small shed type structure. The old Kaupo School site is also accessible from Piilani Highway. The midlevel tank site was selected mainly because of its elevation in relation to the water system and its location adjacent to the access road to Kaupo Ranch. The site of the filtration facility was selected because of its distance and relationship to the existing 40,000 gallon

tank.

The filter units and the chlorination system would be housed in a small shed type structure.

The small size of land affected, its present open space use, and the common flora and fauna make impact on these aspects negligible. Further, the impact of having additional waters available to the community is not believed to be a primary catalyst for growth. The community is isolated and not easily accessible; these obstacles along with the State and County land use and zoning restrictions should restrain the future growth of Kaupo.

No wells have been drilled in the Kaupo area and it is difficult to estimate if good quality groundwater can be found in this area. However, if the exploratory well is successful and can be converted to a production well, then, the Punahoa Spring source can be used as a backup well to provide water for agricultural use.

ALTERNATIVE ACTIONS/SITES

The use of slow sand filters was investigated to treat for turbidity in the water because of the small demand and the lack of commercial power in the area. The SSF was found to be ineffective for high turbidity conditions (25 + NTU). The costs of installing electric power lines or operating generators continuously were cost prohibitive and eliminated

package water treatment plants, reverse osmosis, and other methods of water treatment requiring a continuous power supply.

Other alternative sites for the new well were located at the Manawainui Stream and higher elevation area above Punahoa Springs. These locations appear very good for groundwater development, however the cost to develop and transport the water to the Kaupo Water System would be very expensive for this small water system.

Rainfall is too low and infrequent in this area to be considered as a reliable water source for rain catchment systems.

II. PROJECT DESCRIPTION

A. STATEMENT OF OBJECTIVES

The objective of the proposed action is to upgrade the quality of Kaupo's drinking water to comply with the State and Federal Drinking Water Quality Regulations as set forth by Chapter 20, Potable Water, Hawaii State Department of Health Regulations, the U.S. Environmental Protection Agency's (EPA) National Interim Primary Drinking Water Regulations, and the National Secondary Drinking Water Regulations.

The Safe Drinking Water Act (P.L. 93-523) was signed into law on December 16, 1974. The Act set up a cooperative program among local, state and federal agencies. The Act directed the Environmental Protection Agency to produce the National Interim Primary Drinking Water Regulations and the Secondary Drinking Water Regulations for the protection of public health and welfare. The primary drinking water regulations are designed to protect public health and the State's primary drinking water regulations must be at least as stringent, but may be more stringent than the federal regulations. The primary drinking water regulations are mandatory requirements for public water systems. The secondary drinking water regulations are designed to improve aesthetic water quality which deals with taste, odor and appearance of drinking water. The secondary maximum

contaminant levels are of an advisory nature and are not mandatory requirements for public water systems. The State and County governments are tasked with the enforcement, monitoring and record keeping of the primary drinking water regulations.

In August 1977, the State Department of Health issued Chapter 49 of the Public Health Regulations, which was the State's Primary Drinking Water Regulation. Chapter 49 adopted the National Interim contaminants and their maximum contaminant levels including those for radionuclides. Chapter 49 also included procedures for testing, reporting and record keeping. In issuing these regulations, the State took primacy for administration and enforcement of the Safe Drinking Water Act.

On December 26, 1981, Chapter 49 was repealed and Chapter 20, Potable Water Systems was adopted to replace Chapter 49. The new regulations were based substantially on Chapter 49 and included the trihalomethane requirements along with specific requirements for monitoring sodium and corrosivity.

The State of Hawaii has not adopted Secondary Contaminant Levels.

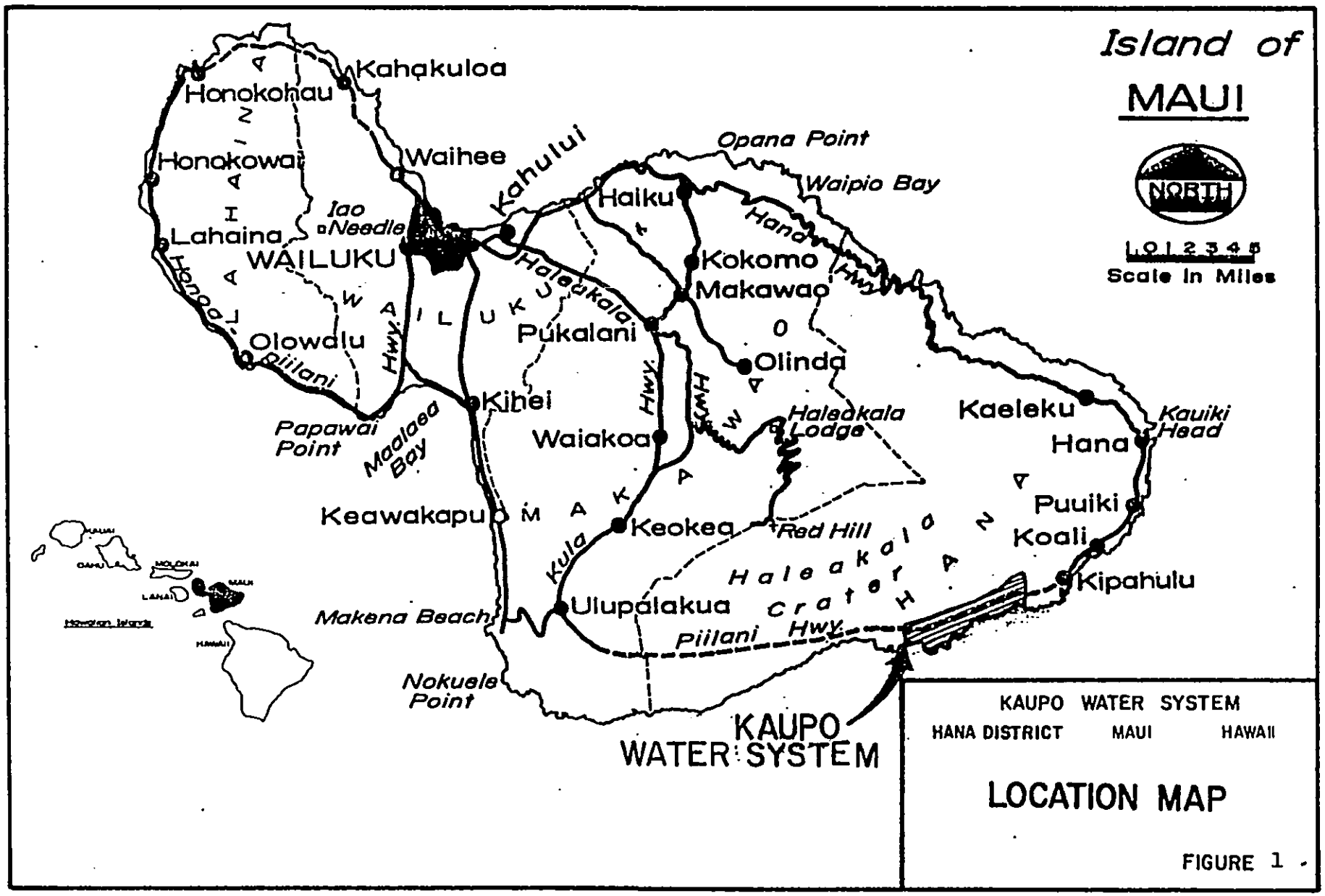
B. THE STUDY AREA

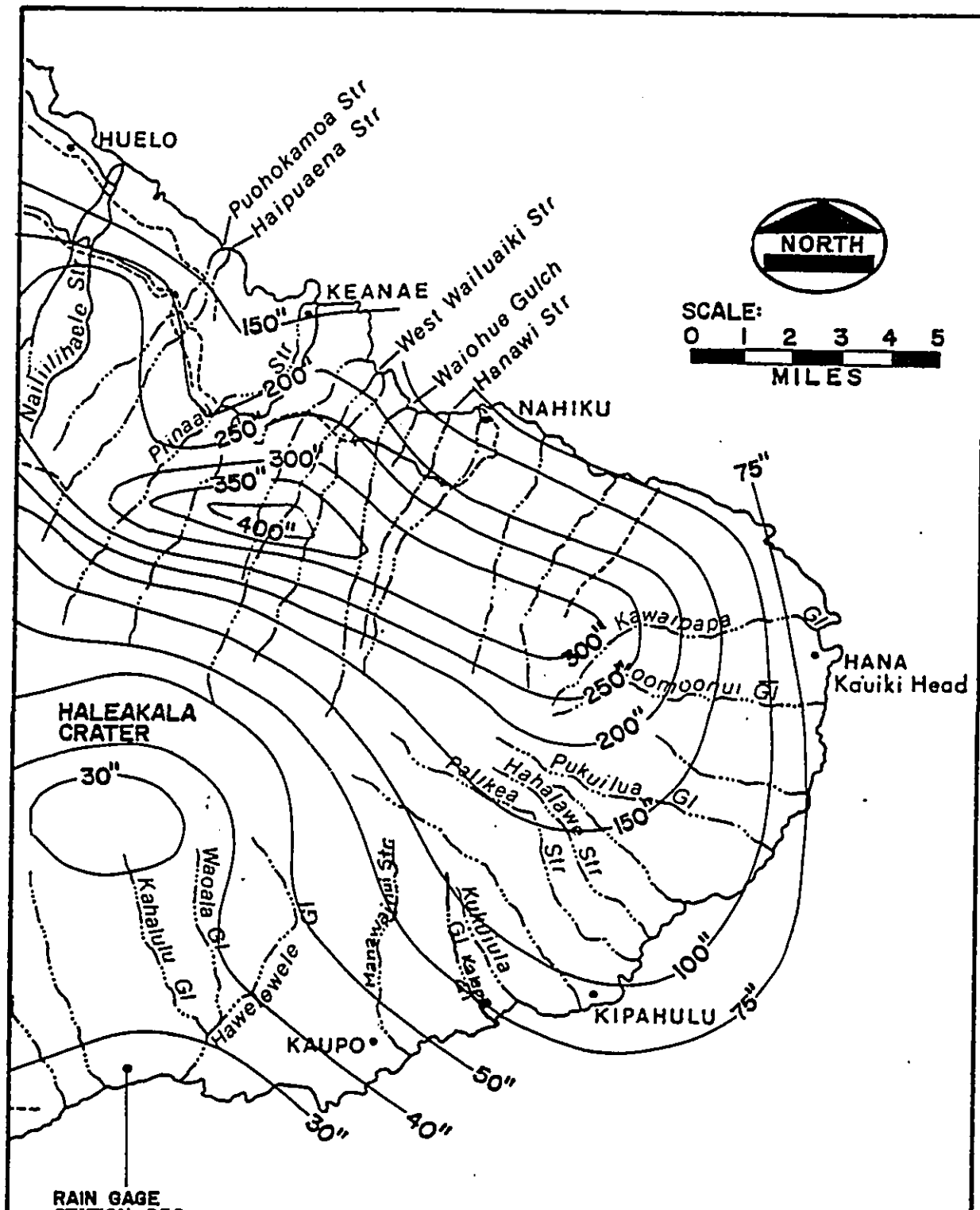
Kaupo is a very small community (1980 population, 43) located in a remote area on the southeast coast of Maui. Kaupo is accessible only by a single unpaved narrow road from either Kipahulu or Ulupalakua (see Figure 1). Travel to the area is frequently delayed by slides, high water or debris in the stream beds. It is always a long, arduous journey. Terrain in the area ranges from gentle sloping lowlands to steeply sloping Forest Reserve uplands, while the intermediate and lower areas are mostly pasture land.

The area is made up of lava flows which consist mainly of olivine and picritic basalt, basaltic andesite and andesite. The permeability of the ground is quite high.

Groundwater is known to occur in the area as perched water, basal water and impounded water in the rift zone. Perched water occurs at all elevations and is separated from other groundwater by impervious rock. Basal water occurs near and below sea level and is in contact with seawater. Impounded water is usually not separated from other groundwater by impervious rock.

The climate in the Kaupo area is mild with annual average low and high temperature ranging from the mid sixties to the mid eighties. Figure 2 shows the mean annual rainfall map prepared by the U.S. Weather Bureau in 1955. Kaupo has a


Island of
MAUI
NORTH
0 1 2 3 4 5
Scale in Miles
Kahakuloa
Honokohau
Honokowai
Waihee
Kahului
Opana Point
Waipio Bay
Halku
Iao Needle
Lahaina
WAILUKU
Hana Hwy
Kokomo
Makawao
Haleakala Hwy
Olowalu
Piilani Hwy
Pukalani
Olinda
Kihei
Papawai Point
Maalaea Bay
Waiakoa
Haleakala Lodge
Kaeleku
Kauiki Head
Hana
Puuiki
Keawakapu
Keokea
Red Hill
Kula
Haleakala crater
Koali
Kipahulu
Makena Beach
Ulupalakua
Piilani Hwy
Nokuele Point
KAUPO WATER SYSTEM
KAUPO WATER SYSTEM
HANA DISTRICT MAUI HAWAII
LOCATION MAP
FIGURE 1



REF: U.S. WEATHER BUREAU. 1955 IN TAKASAKI. K.J.. PRELIMINARY REPORT ON THE WATER RESOURCES OF SOUTHEAST MAUI. HAWAII.

KAUPO WATER SYSTEM

HANA DISTRICT MAUI HAWAII

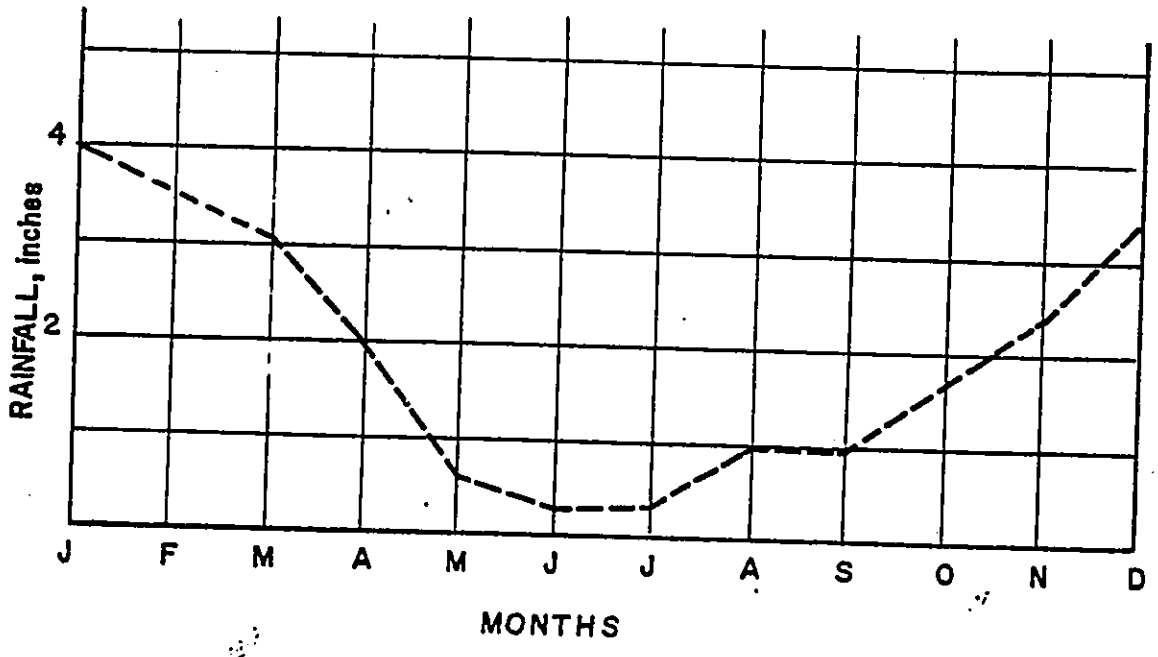
MEAN ANNUAL RAINFALL

FIGURE 2

mean annual rainfall of 50 inches. Since Mount Haleakala is too high and wide, the incoming ocean air flows around it and therefore rainfall is highest on the windward or northern side of Haleakala between elevations 2,000 feet and 4,000 feet. Kaupo lies on the leeward side of the tradewinds and thus receives little of the orographic rainfall.

According to the U.S. Geological rainfall gage 256 in Waiopai (see Figure 3), June is the driest month followed by July. During the period between 1931 to 1960, there were 20 rainless June months and 16 rainless July months. Successive rainless durations of two months or more occurred 18 times, nine of which were for three successive months. The longest duration with no rainfall was for six months in 1948.

The U.S.G.S. estimated the average rainfall at 40 inches per year in southeast Maui. This amount of rainfall is equivalent to 95 billion gallons per year or 260 million gallons per day. Of this 260 million gallons per day, the area east of and including Kaupo Gap receives about 100 million gallons per day or approximately 40 percent of the total rainfall in about 25 percent of the area.



REF: TAKASAKI, K.J., PRELIMINARY REPORT ON THE WATER RESOURCES OF SOUTHEAST MAUI, HAWAII, U.S. GEOLOGICAL SURVEY, MARCH 1971

KAUPO WATER SYSTEM
HANA DISTRICT MAUI HAWAII

MEAN MONTHLY RAINFALL AT RAIN-GAGE STATION 256

FIGURE 3

There are no areas zoned for urban or residential use in Kaupo. The State Land Use zoning in the area is mainly agricultural; areas along the shoreline, high in the mountains in the forest reserve or along river valleys are designated conservation (see Figure 4). In addition, the County has designated some areas along the shoreline as special management areas (SMA) and as flood (tsunami) zones (see Figure 5).

C. THE EXISTING KAUPO WATER SYSTEM

The existing water supply and distribution system for Kaupo (see Figure 6) consists of two interconnected systems: one system belongs to the Kaupo Ranch and the other system belongs to the County of Maui. In recent years, Kaupo Ranch has been providing maintenance services for both systems, in return they receive free water from the County system. Generally speaking, the County system serves users along Piilani Highway while the Kaupo Ranch system serves users at higher elevations near the ranch headquarters. Water from both systems is used for livestock as well as for domestic purposes.

The privately owned Kaupo Ranch System and the County System are considered as separate water systems. Since the Ranch system serves only seven houses and 21 people and the County system serves only 22 people on nine "effective domestic meters". Neither water system falls under the definition of

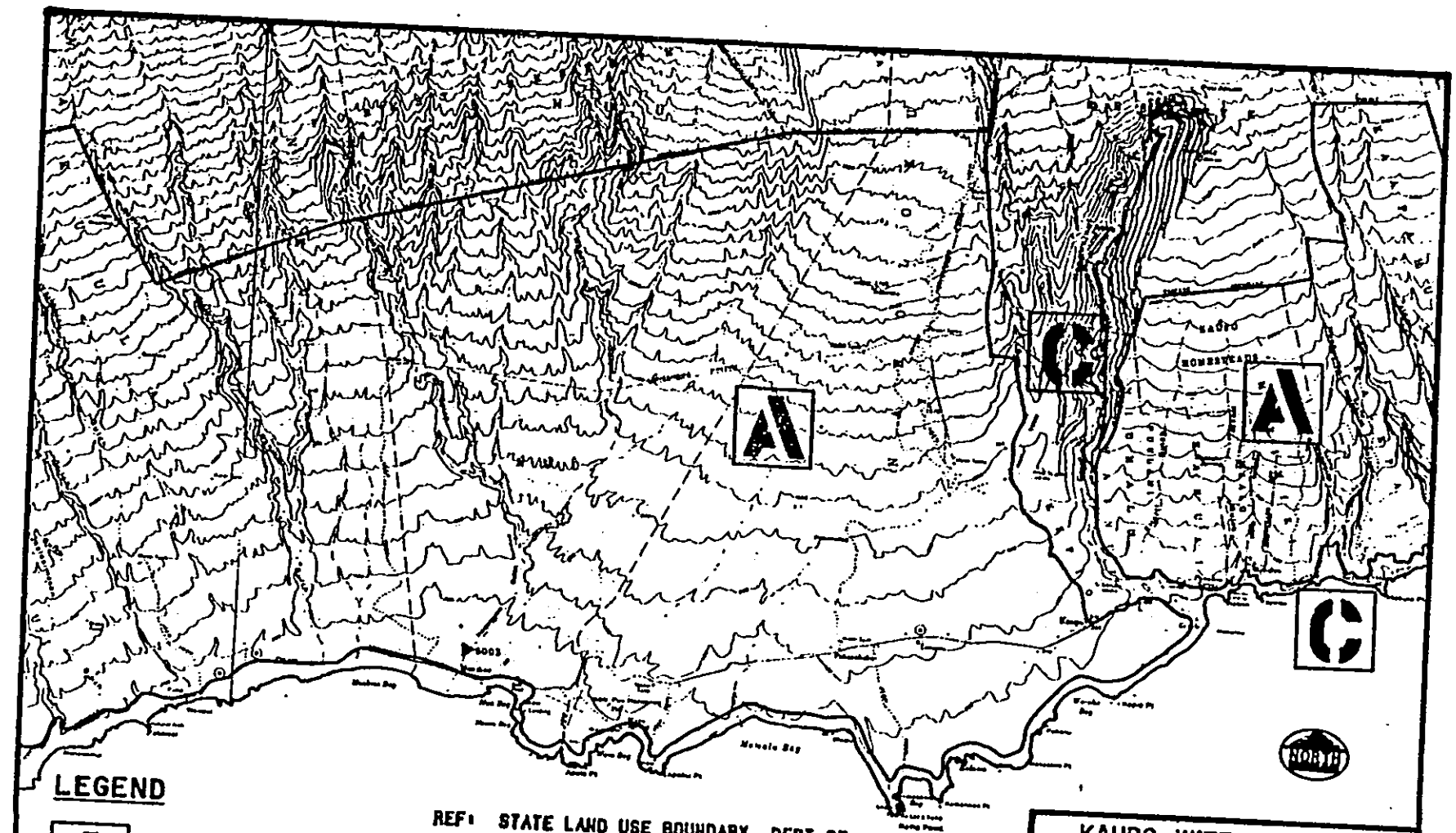
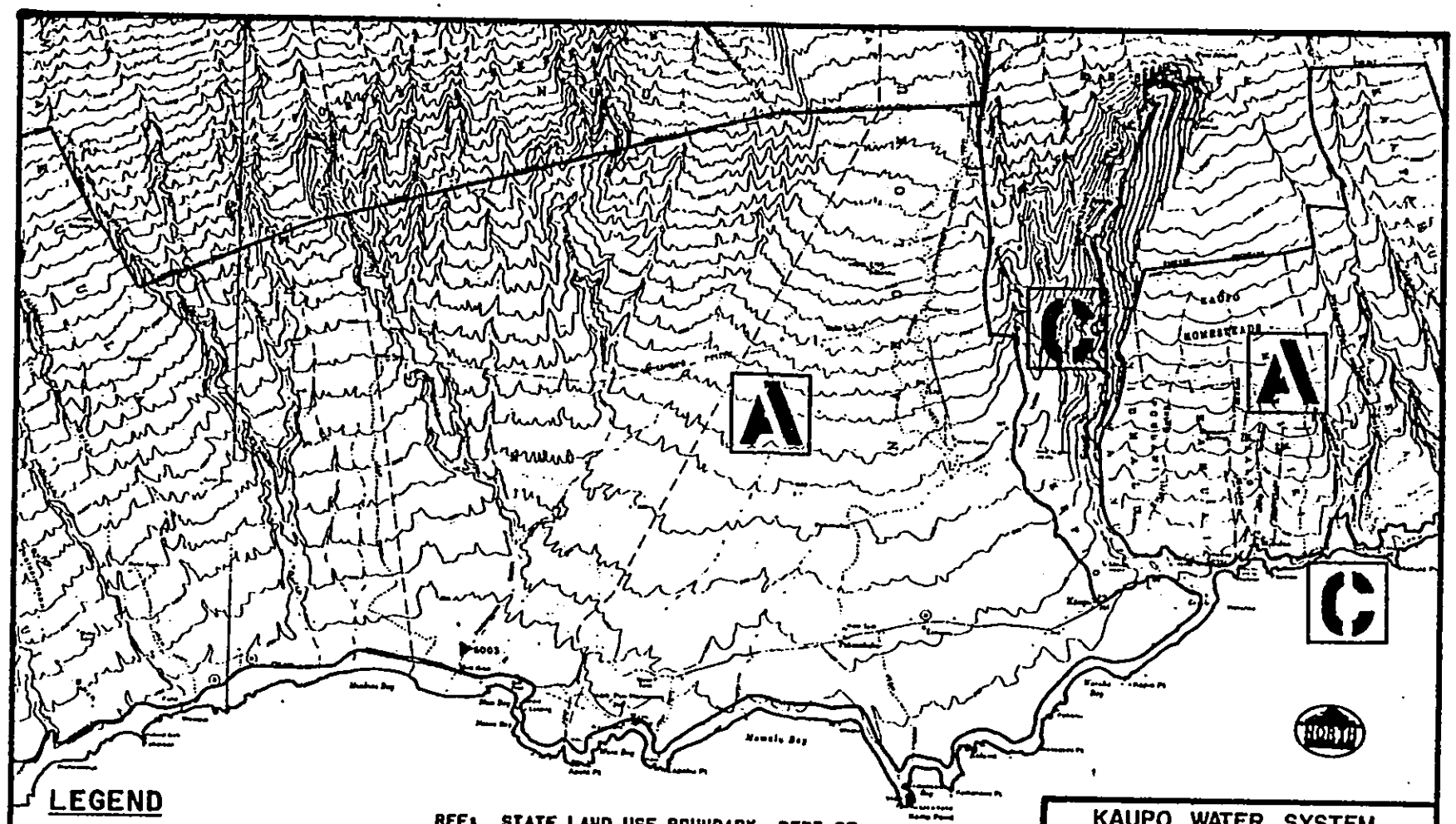

A
C
A
C
NORTH
LEGEND
A AGRICULTURAL
C CONSERVATION
REF: STATE LAND USE BOUNDARY, DEPT OF PLANNING AND ECONOMIC DEVELOPEMENT DISTRICT MAP H-15, DEC. 20, 1974.
3000 0 3000 6000 9000 1200 1500
GRAPHIC SCALE
IN FEET
KAUPO WATER SYSTEM
HANA DISTRICT MAUI HAWAII
STATE LAND USE BOUNDARY

FIGURE 4


A
C
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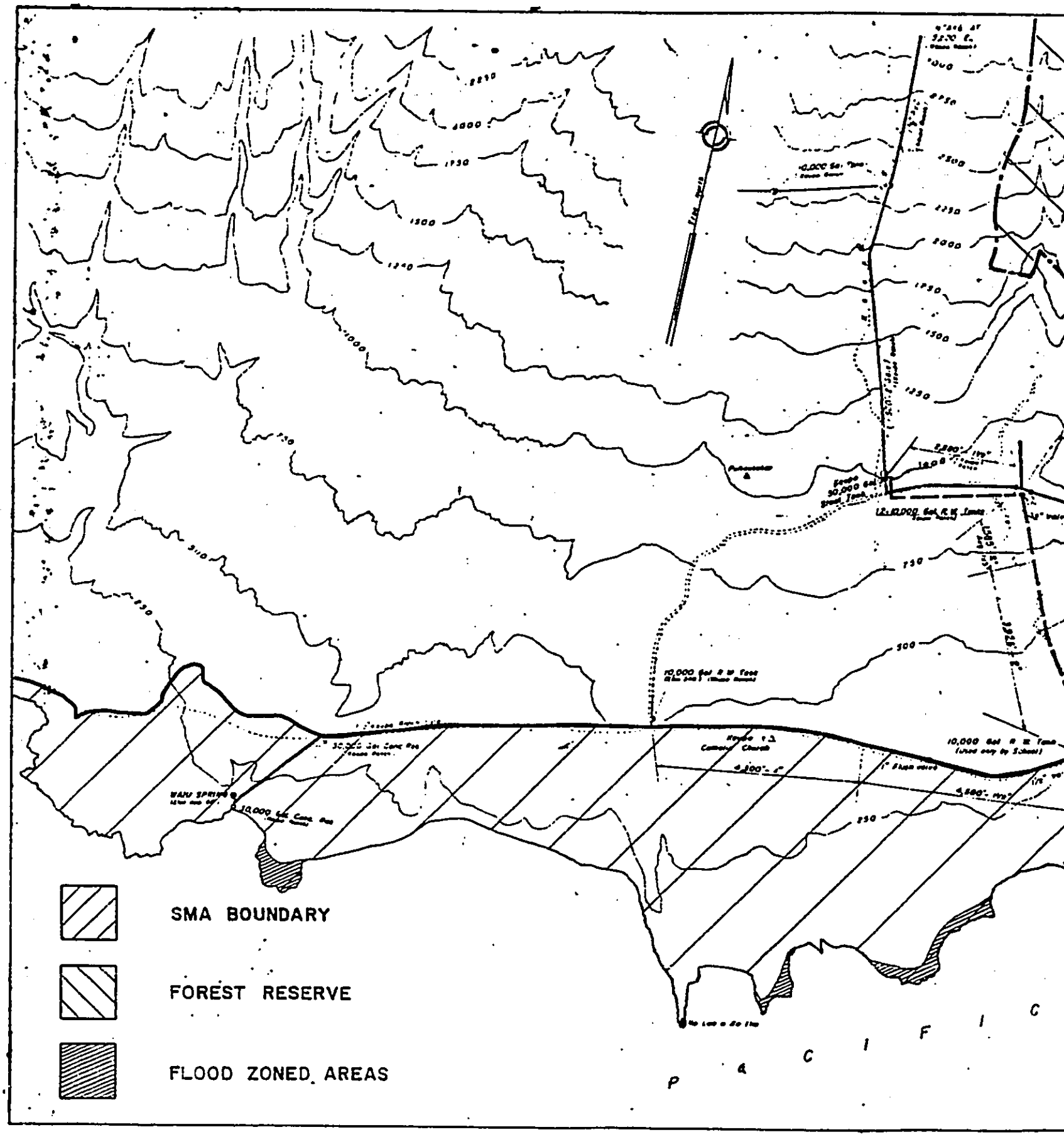
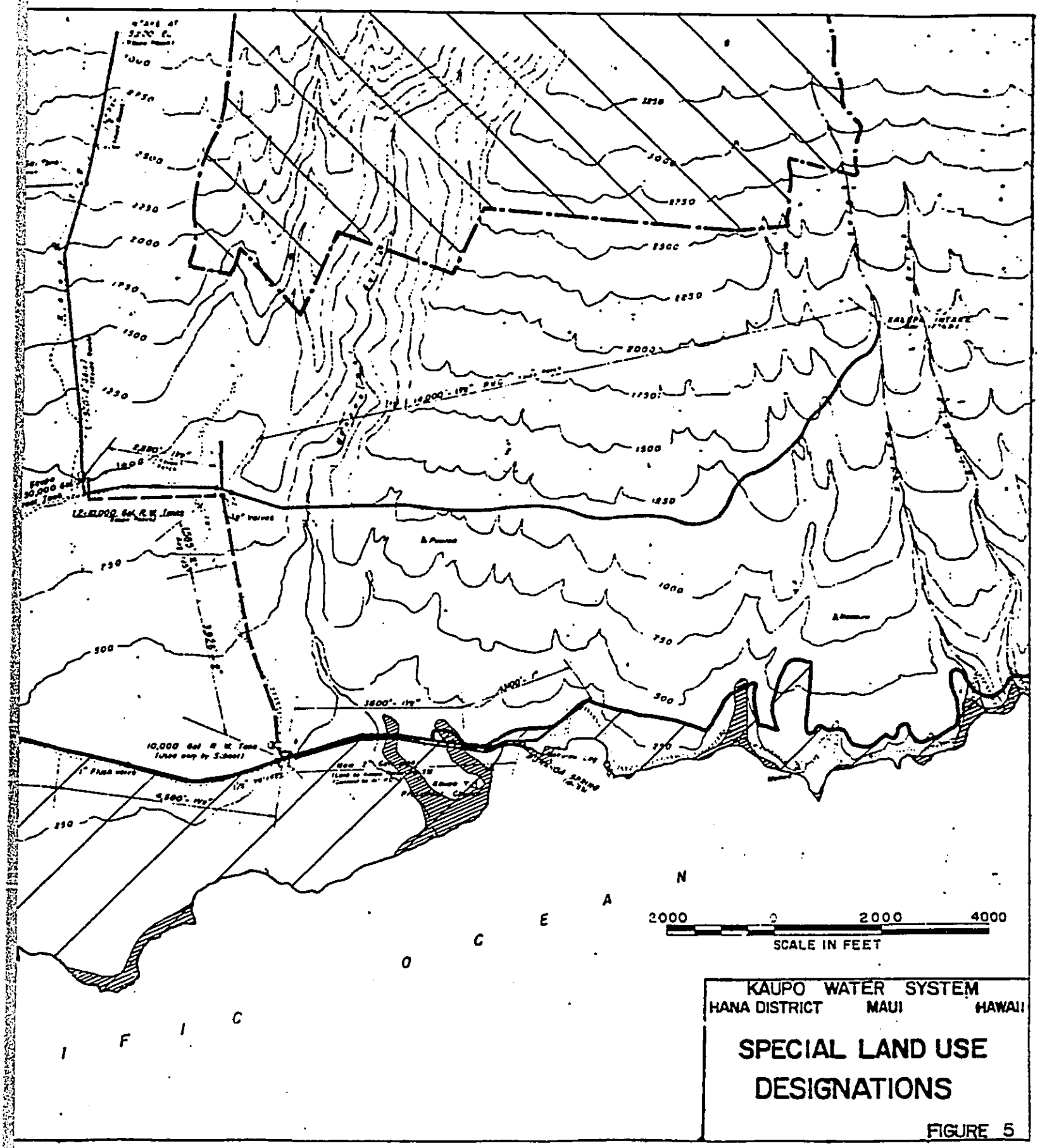
LEGEND
A AGRICULTURAL
C CONSERVATION
REF: STATE LAND USE BOUNDARY, DEPT OF PLANNING AND ECONOMIC DEVELOPEMENT DISTRICT MAP H-15, DEC. 20, 1974.
3000 0 3000 6000 9000 1200 1500
GRAPHIC SCALE
IN FEET
KAUPO WATER SYSTEM
HANA DISTRICT MAUI HAWAII
STATE LAND USE BOUNDARY

FIGURE 4

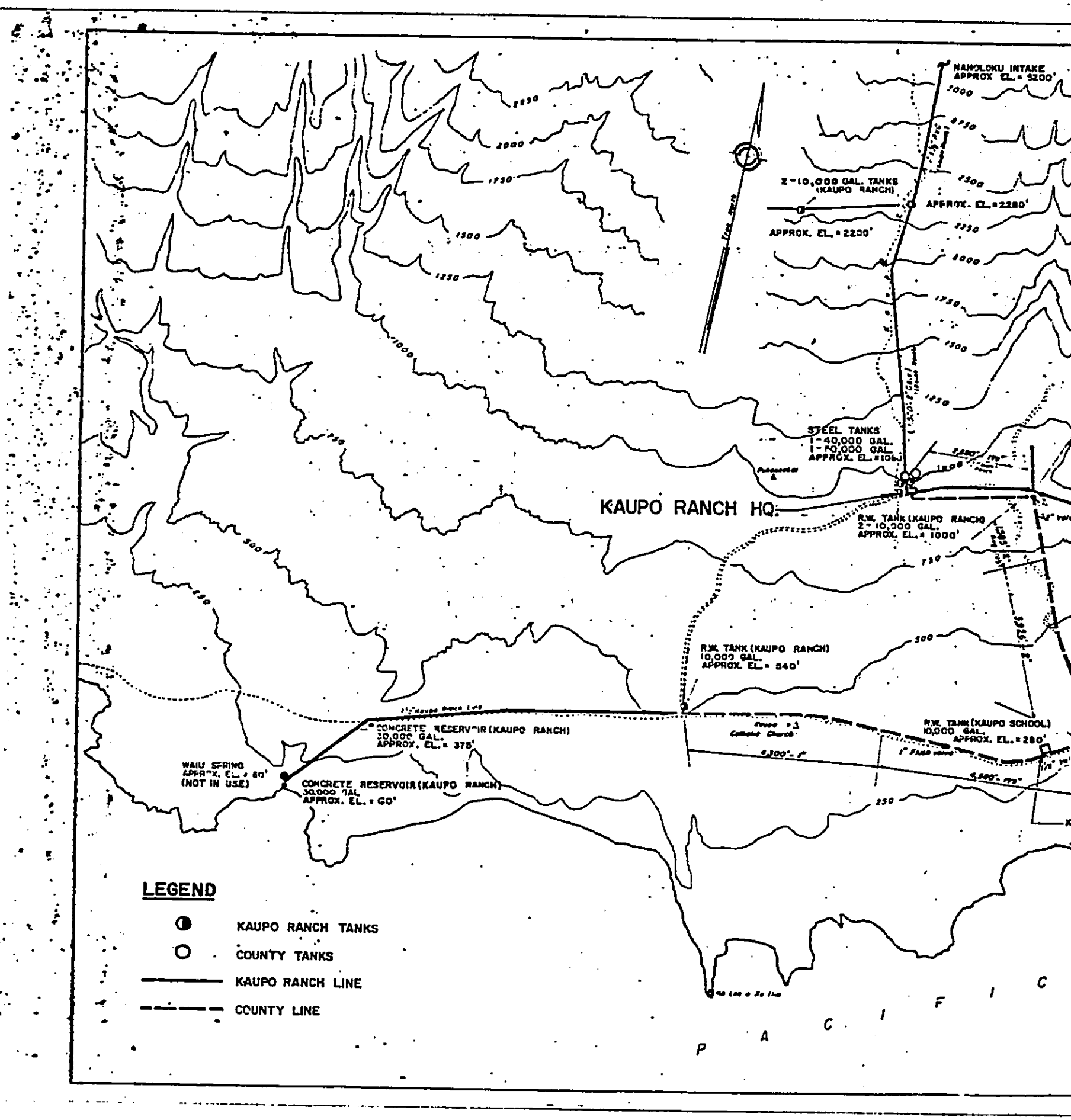

SMA BOUNDARY
FOREST RESERVE
FLOOD ZONED AREAS

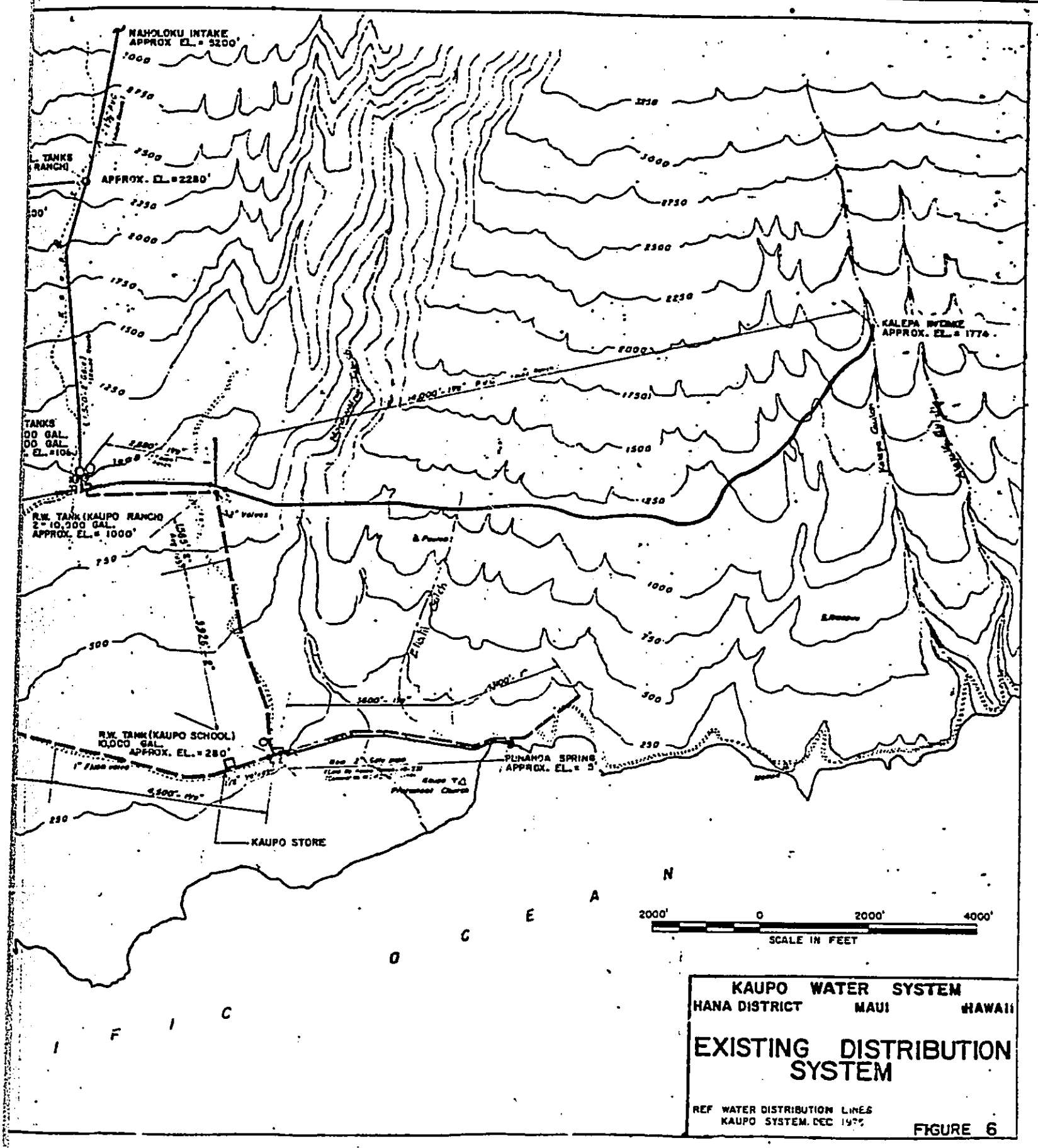


KAUPO WATER SYSTEM
HANA DISTRICT MAUI HAWAII

SPECIAL LAND USE DESIGNATIONS

FIGURE 5


NAHOLOKU INTAKE
APPROX. EL. = 5200'
2-10,000 GAL. TANKS
(KAUPO RANCH)
APPROX. EL. = 2280'
APPROX. EL. = 2230'
STEEL TANKS
1-40,000 GAL.
1-50,000 GAL.
APPROX. EL. = 1060'
KAUPO RANCH HQ.
R.W. TANK (KAUPO RANCH)
2-10,000 GAL.
APPROX. EL. = 1000'
R.W. TANK (KAUPO RANCH)
10,000 GAL.
APPROX. EL. = 540'
R.W. TANK (KAUPO SCHOOL)
10,000 GAL.
APPROX. EL. = 280'
CONCRETE RESERVOIR (KAUPO RANCH)
30,000 GAL.
APPROX. EL. = 375'
WAIU SPRING
APPROX. EL. = 60'
(NOT IN USE)
CONCRETE RESERVOIR (KAUPO RANCH)
30,000 GAL.
APPROX. EL. = 60'
LEGEND
KAUPO RANCH TANKS
COUNTY TANKS
KAUPO RANCH LINE
COUNTY LINE
P A C I F I C



KAUPO WATER SYSTEM
HANA DISTRICT MAUI HAWAII

EXISTING DISTRIBUTION SYSTEM

REF WATER DISTRIBUTION LINES
KAUPO SYSTEM. DEC 19??

FIGURE 6

a "public water system" as defined in Chapter 20, Title 11 of the Public Health Regulations.

The average or nominal quantity of water consumed by users served by both the County and Kaupo Ranch water systems in 1980 was estimated to be 5,400 gallons per day. The estimated maximum daily demand was estimated to be 8,900 gallons per day. Drinking water is presently obtained from the Naholoku and Kalepa Streams' intakes (surface water sources), except in times of drought when the deficiency of the demand must be met by pumping water from Punahoa Spring (groundwater source).

The surface water intakes are located on Naholoku Stream and on Kalepa Stream at elevations of 5,200 and 1,774 feet respectively (Figure 6). Punahoa Spring is located very close to the shoreline at an elevation of about 5 feet. For approximately three months per year, water must be pumped from Kaupo Ranch's Punahoa Spring to make up for the lack of surface waterflows.

In the existing distribution system, the transmission lines are used to convey water from the source to the existing 50,000 gallon storage tank (A) near the ranch headquarters. Water flows through the system continuously to prevent the plastic pipes from bursting due to hydrostatic pressure. From the 40,000 gallon storage tank (B) the water is then distributed to the Kaupo Ranch System and the County System.

The Kaupo water distribution system lies mainly in agriculturally zoned areas, but some pipelines cross conservation lands (Manawainui Gulch). The Kaupo water distribution system is not located in any special use areas except for Punahoa Spring, which is in flood (tsunami) hazard zone (see Figure 4).

Manawainui Stream intake was previously used as a water supply source for Kaupo, but the intake pipeline was damaged by an earthquake; it was subsequently abandoned because of its inaccessibility and cost to install new water line. At one time groundwater was also supplied by Waiu Spring, but it often went dry or produced water of high nitrate and chlorine content and its use was discontinued.

There are two County-owned storage tanks in the County system: one new 40,000 gallon steel tank, and an old 50,000 gallon iron tank. The 40,000 gallon tank was installed in 1981 to replace the old, leaking, rusted, 50,000 gallon tank. However, the old tank is still connected to the system and is being used. The Kaupo Ranch system includes five tanks: three 10,000 gallon redwood tanks and two 40,000 gallon concrete reservoirs.

The existing system is not capable of transmitting sufficient water for fire fighting purposes. According to the Department of Water Supply Standards, 250 gallons per minute (GPM) over a two-hour period are needed for

agricultural areas. Meeting the County system standards would required major modifications to the pipelines and is not a consideration in the proposed action mainly because of economic reasons.

D. CONTAMINANTS AND CONTAMINANT LEVELS

Sampling of the water sources indicated that turbidity, bacteriology, cadmium, sodium, and corrosivity, had readings which were not in compliance with the Primary Drinking Water Standards. Table 1 summarizes these contaminants which exceeded the maximum contaminent levels.

Turbidity sampling and testing were conducted by the Department of Water Supply at the old 50,000 gallon tank. The range of daily turbidity readings was 0.0 to 15+ nephelometric turbidity units. The monthly average turbidity and the two-day average turbidity exceeded their maximum contaminant levels in four of the ten month record period.

Bacteriology sampling at Kaupo Store and Kaupo Ranch Barn had numerous samples exceeding the maximum contaminant levels during the record period.

The only location where a cadmium reading exceeded the maximum contaminant level was at Kaupo Store. However, with the small concentration detected in the water system, the reading could have been a laboratory error or could have

TABLE 1
CONTAMINANTS EXCEEDING MAXIMUM CONTAMINANT LEVELS

		Sampling Location	Maximum Contaminant Level	Highest Recorded Value	Sample Date
PRIMARY CONTAMINANTS					
Turbidity		Old Tank	1 NTU or 2 day Ave < 5.0 NTU	(a)	(a)
Microbiology		Kaupo Barn	1 colony/100mm (MF)	(c)	(c)
		Kaupo Store	1 colony/100mm (MF)	(d)	(d)
Cadmium		Kaupo Store	0.01 mg/l	0.015 mg/l	5/12/80
Sodium		Punahoa Spring	20 mg/l(e)	39.4 mg/l	2/12/81
Corrosivity		New Tank	LI > 0.0	-3.29	2/12/81
		Old Tank	LI > 0.0	-2.91	2/12/81
		Kaupo Store	LI > 0.0	-3.32	11/12/81
		Punahoa Spring	LI > 0.0	-1.45	2/12/81

(a) See Appendix for Turbidity Results
(b) See Appendix for Maximum Contaminant Level
(c) See Appendix for Microbiology Results at Kaupo Barn
(d) See Appendix for Microbiology Results at Kaupo Store
(e) Proposed MCL, not adopted as of this date

SECONDARY CONTAMINANTS					
Color	1	Old Tank		60 CU	2/12/81
	2	New Tank	15 CU	43 Cu	2/12/81
Iron	1	Old Tank		2.49 mg/l	2/12/81
	2	New Tank	0.30 mg/l	1.12 mg/l	2/12/81
	7	Tap @ Pumphouse		0.60 mg/l	5/08/81
	1	Old Tank - Kalepa Line		0.35 mg/l	11/12/81
Odor	2	New Tank	3 TON	22.6 TON	2/12/81
	4	Punahoa Spring		16.0 TON	2/12/81

been an isolated case of being a corrosion by-product from the old galvanized iron pipes in the distribution system. It is recommended that monitoring for cadmium be continued to obtain more data for evaluation.

Monitoring for sodium is required by an amendment to the National Interim Primary Drinking Water Regulations and the adoption of Chapter 20 by the State Department of Health. The only location where sodium exceeded the proposed maximum contaminant level was at the Punahoa Spring which is located on the beach. The spring water is pumped to the Kaupo Water System during times of drought. Should a groundwater source be included in the recommended alternative, it is recommended that the well be drilled sufficiently inland of the shoreline which should alleviate the sodium problem.

The State's Chapter 20 and Federal Regulations requires that corrosivity also be monitored in the water system. The samplings of waters in the distribution system indicated that the water is "mildly corrosive" as measured by the Langelier Index (LI, Table 1). However, with the low alkalinity and calcium carbonate concentration in the source waters, the Langelier Index may not be an appropriate measure of the corrosiveness of the water sources. The State Department of Health is currently conducting a State-wide program of testing corrosivity in Hawaii's waters. After this study is completed, recommendations can

be made to deal with corrosivity. In the meantime, continued monitoring for signs of corrosion in the distribution system should be made.

Secondary Drinking Water Regulation contaminants which exceeded their maximum contaminant levels included color, iron and odor.

These secondary contaminants exceeded the maximum contaminant levels in water samples taken from the County's old 50,000 and new 40,000 gallon tanks. The 50,000 and 40,000 gallon tanks are interconnected and the source of these secondary contaminants is believed to be primarily from the old rusted 50,000 gallon tank. It is recommended that the 50,000 gallon tank be disconnected from the water system immediately. Another high odor reading was detected at Punahoa Spring, the groundwater source near the beach. The probable causes of this odor are the algae growing on the rocks in the well and its location near the ocean.

E. DESCRIPTION OF THE RECOMMENDED ACTION

The recommended action is to install a pressure filter (separator/cartridge filter) to remove turbidity from the surface waters and to construct a well at Kaupo School. In this action the existing surface water sources would continue to be the main water sources of the water system, while the new well is proposed to provide water during drought conditions or when the raw water turbidity is too high for the filtration facility to handle effectively.

This action includes the construction of the filtration facility near the existing 40,000 gallon storage tank at elevation 1,080 feet. The separator/cartridge filter facility will be located above the existing 40,000 gallon storage tank. The filtered water will be disinfected by chlorination. The treated water then enters the existing 40,000 gallon tank which will feed the new 40,000 gallon mid level tank proposed at elevation 540 feet to reduce pressure and provide fire flow storage for the lower service area along Piilani Hwy. The new 40,000 gallon tank is connected to the existing distribution system through a new four inch waterline. A new four inch waterline will connect the two 40,000 gallon tanks.

The existing raw water lines from Kalepa and Naholoku Streams will have to be relocated to the filtration facility and to the separated agricultural water system which will not require any treatment.

The proposed well located at the old Kaupo School grounds will pump groundwater from the basal lens to the new 40,000 gallon mid level tank. The pump is proposed to be powered by a diesel, direct drive motor since there is no commerical electrical service in the area. A booster pump at the new 40,000 gallon mid level tank will boost water to the existing 40,000 gallon tank during drought conditions. These booster pumps will also be powered by diesel, direct drive motors.

The old, rusted 50,000 gallon storage tank near the existing 40,000 gallon storage tank collects water from the two surface water sources. Consequently, the water stored in the 40,000 gallon tank has turbidity, algae, color, and odor problems from the 50,000 gallon tank. The disconnection of the 50,000 gallon tank from the system will alleviate some of the problems associated with color, iron and odor.

F. ALTERNATIVE ACTIONS CONSIDERED

Five alternative system improvements were evaluated. Each alternative was categorized according to the water supply source or sources. The first category was to retain the

surface water sources of Kalepa and Naholoku Streams. The second category was to eliminate the existing surface water sources and to develop a new groundwater source. The third category was to combine the existing surface water sources with the development of a new groundwater source on the Kaupo School grounds. All of the alternatives were based on combining the Kaupo Water System and the Kaupo Ranch domestic water system into one system. Kaupo Ranch's agricultural water system was separated from the domestic water system. The agricultural water system will direct untreated surface water to the cattle trough system of Kaupo Ranch. To separate the present system into two systems, new transmission lines and distribution lines need to be installed at a high capital cost.

Preliminary cost estimates and a present worth cost analysis were made for each alternative. Table 2 shows alternatives considered according to the least annualized total cost. The alternatives using surface water sources only and the alternative of the slow sand filter and well had the highest annualized cost. The well only and the separator/cartridge filter with well alternative had the lower annual cost.

The high cost of the alternative using surface water only was due mainly to the proposal of using 1.0 million gallons storage tanks or reservoirs to store water for times of drought.

TABLE 2
RANKING OF ALTERNATIVES BY ANNUALIZED COST
(t=20 years, i=8%)

SOURCE	ALTERNATIVE	ANNUALIZED COST	COST/1000 GAL.
*Surface/ Groundwater	3A - Separator/ Cartridge Filter/ Well	$ 98,404	$16.85
Groundwater	2 - Wells	$111,915	$19.16
Surface/ Groundwater	3B - Slow Sand Filter/Well	$124,703	$21.35
Surface	1A - Separator/ Cartridge Filter	$157,946	$27.05
Surface	1B - Slow Sand Filter	$180,054	$30.83

*Recommended Alternative

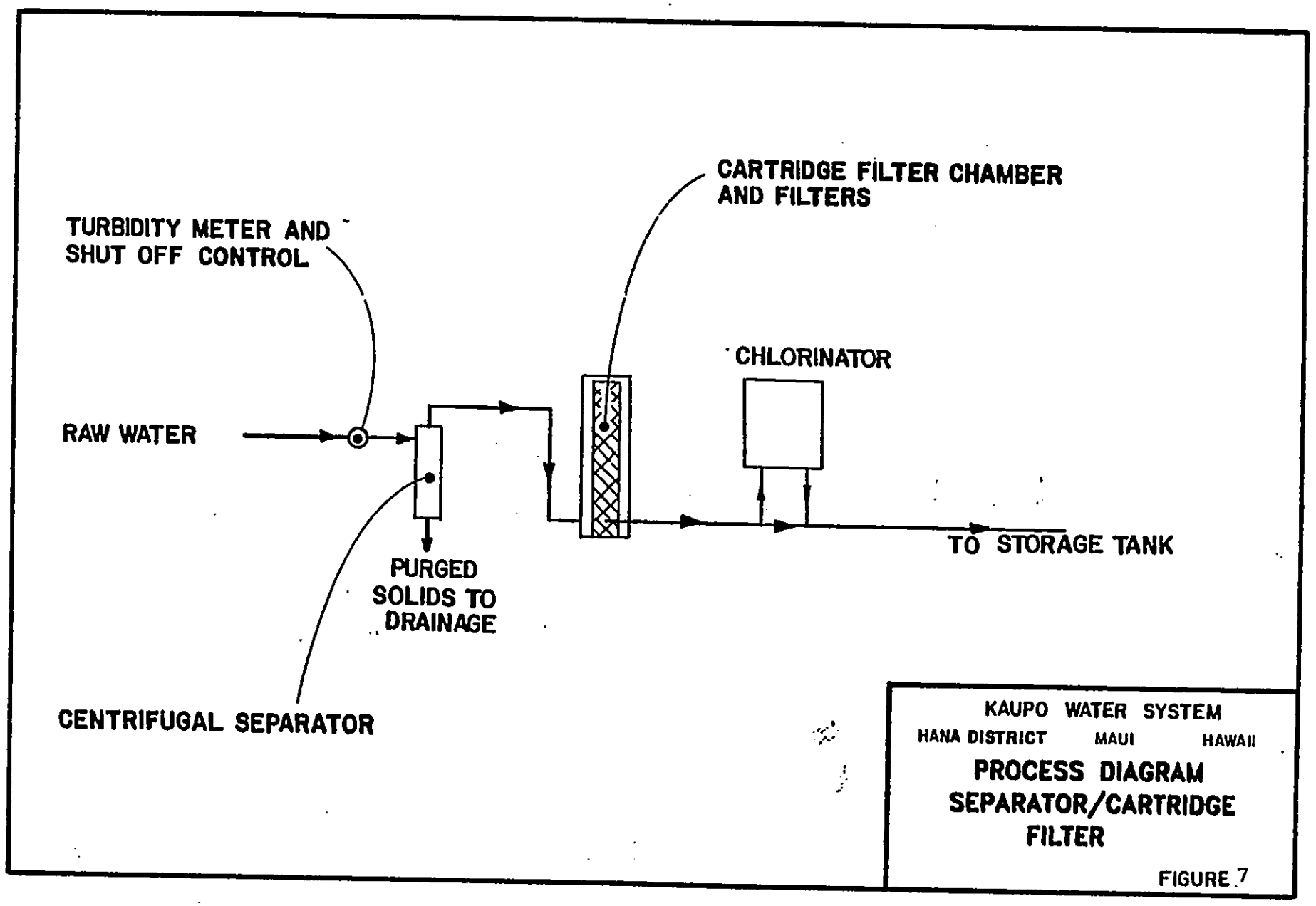
Alternative treatment methods considered for turbidity reduction were centrifugal separators/cartridge filters and slow sand filters.

Centrifugal Separators/Cartridge Filters

The centrifugal separator uses the principal of centrifugal force to separate heavier particles from the water. There are no moving parts and except for periodic purging, there are no other maintenance requirements. The cartridge filter units consist of a filter chamber and the cartridge filters. The filters are changed when they collect enough particles either on or within the filter to create a large headloss through the filters. Figure 7 shows a diagram of the filtration process with both types of filters in line.

Slow Sand Filters

A slow sand filter (SSF) system typically consists of two concrete boxes about nine feet in depth. Inside, a sand layer, about two feet deep, would be supported by a gravel layer containing underdrains. A basin would be placed between the slow sand filters to collect the sand which is scraped off during the maintenance process. This discarded sand may be washed in this basin for reuse. The underdrains collect the filtered water and transmit it to the storage tank. The filtered water would then be disinfected before being distributed to the consumers through the existing



KAUPO WATER SYSTEM
HANA DISTRICT MAUI HAWAII

PROCESS DIAGRAM
SEPARATOR/CARTRIDGE
FILTER

FIGURE 7

transmission lines. See Figure 8 for the slow sand filter process.

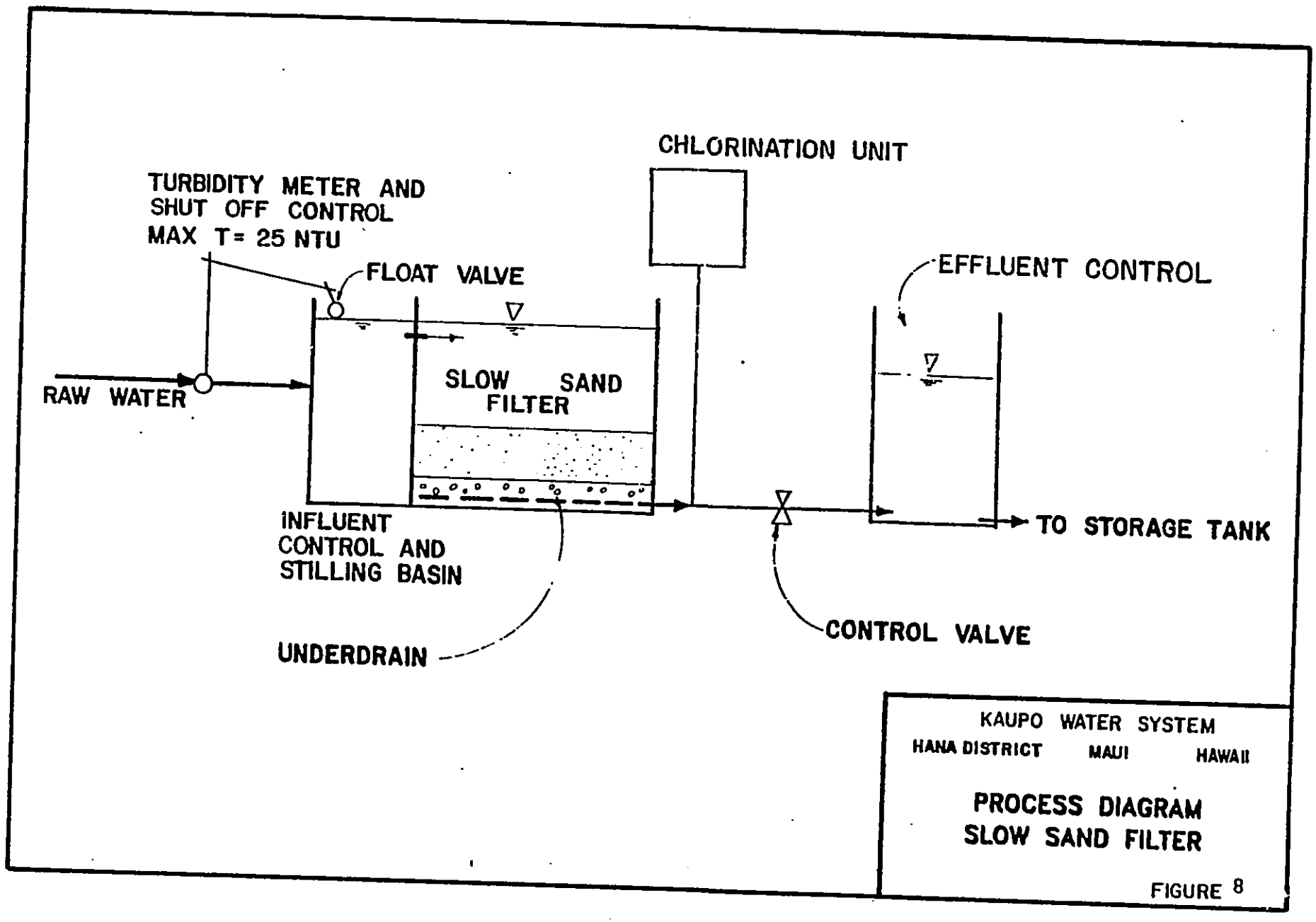
The slow sand filter although lower in cost cannot handle turbidity higher than 30 NTU and would need to be shut down during high turbidity conditions.

G. ALTERNATIVE SITES

Two other sites were considered as possible locations for the well. One site was in the Manawainui Valley in the vicinity where the transmission line from the Kalepa Stream intake crosses the valley and the other site above the Punahoa Spring. Both sites appear to be locations where the chance of finding good quality groundwater would be high. The recommended well site at the old Kaupo School grounds sits in the center of the water distribution system and would not require a long transmission line, thus keeping the costs of the project down. The environmental impacts of the sites for the recommended action were identified and the information is provided in Section V of the EIS.

H. USE OF PUBLIC FUNDS OR LANDS

The recommended action had a first cost of $911,400 and an annual operating and maintenance cost of $14,512.


CHLORINATION UNIT
TURBIDITY METER AND
SHUT OFF CONTROL
MAX T= 25 NTU
FLOAT VALVE
EFFLUENT CONTROL
SLOW SAND
FILTER
RAW WATER
INFLUENT
CONTROL AND
STILLING BASIN
TO STORAGE TANK
CONTROL VALVE
UNDERDRAIN
KAUPO WATER SYSTEM
HANA DISTRICT MAUI HAWAII
PROCESS DIAGRAM
SLOW SAND FILTER
FIGURE 8

The costs of the other alternative actions are shown in Table 3. The recommended alternative is the least expensive and was one of the reasons for selecting this alternative. The present worth calculations were based on an interest rate of 8 percent and a period of 20 years. The money to fund the project will come from the State and the County.

The Maui County Water System users may pay for a portion of the proposed action in the form of an increase in water charges.

The old Kaupo School site (TMK 1-7-02:15) is owned by the State with the County having use of the property.

Kaupo Ranch owns the property where the mid level tank is to be sited (TMK 1-7-02:17) and the property where the filtration facility will be situated is near the existing 40,000 gallon tank site (TMK 1-7-04:4). Easements for the access road and the new pipeline will be required between Piilani Highway and the Kaupo Ranch headquarters.

I. PHASING AND TIMING

Presently, the two separate water systems do not meet the definition of a "Public Water System" because of the small populations being served by each system. Therefore, these water systems presently need not comply with the State's Chapter 20 Regulations or the National Interim Primary Drinking Water Standards. According to the estimated

TABLE 3
PRESENT WORTH COST SUMMARY OF ALTERNATIVES

Alternative	1A Separator/ Cartridge Filter	1B Slow Sand Filter	2 Well	3A Well + Separator/ Cartridge Filter	3B Well + Slow Sand Filter
Capital Cost	$1,633,200	$1,672,800	$869,400	$911,400	$1,026,000
P.W. Replacement Cost	3,389	-	-	3,389	-
P.W. Salvage Value	(169,884)	(176,862)	(81,617)	(90,626)	(95,324)
P.W. O&M Cost	84,829	271,964	311,581	142,482	294,301
Total Present Worth Capital Cost	1,551,534	1,768,702	1,099,364	966,645	1,224,997
Annualized Total P.W. Capital Cost	157,946	180,054	111,915	98,404	124,729
Cost per 1000 gallons*	$27.05	$30.83	$19.16	$16.85	$21.35

(*Daily Output = 16,000 GPD)

population projections, the County Water System will serve 25 people or more by 1990 and Kaupo Ranch System will serve 25 people or more by 1995.

The proposed action could be done in phases where the first phase would be to install the filtration facility, and the chlorination equipment at the existing 40,000 gallon tank. The 50,000 gallon tank should be eliminated from the system. The exploratory well could be drilled during this phase to ascertain the groundwater situation at the school site.

Should the testing of the exploratory well prove successful, then the second phase can begin. The second phase will include the well pumps, pipelines and the new 40,000 gallon mid level tank. Should the tests show the well to be unproductive, the alternate well site above Punahoa Spring should be drilled and tested. The well in this location will add to the cost of the project by requiring more pipeline to be installed and the pumped water will travel a greater distance thus also increasing the operating costs.

III. DESCRIPTION OF THE ENVIRONMENTAL SETTING

As described earlier, Kaupo is a small community (population 43 - 21 people served on Kaupo Ranch System, 22 people served on County System) located in the southeast portion of the island of Maui, west of Hana. The principal economic activity of this relatively isolated community is cattle ranching (estimated 2,500 head). Because of its location and major land uses (agriculture and open space), it is anticipated that the community will remain small (estimated population for the year 2000 is 62). Appendix A shows the method of estimating the population from the year 1980 to the year 2000. The present average daily consumption of water is about 5,375 gallons per day; the maximum average daily consumption is estimated to be about 8,810 gallons per day. The water demands for the year 2000 were calculated from the projected population and the per capita water usage of 75 gallons per day. The projected average daily demand and average maximum daily demand in the year 2000 are 7,750 and 12,788 gallons per day, respectively. Additional information on the site's environment is provided in Section V.

IV. THE RELATIONSHIP OF THE PROPOSED ACTION TO LAND USE PLANS, POLICIES, AND CONTROLS FOR THE AFFECTED AREA

The County's General Plan for the Kaupo area shows that the existing uses are likely to continue. That is, Kaupo will remain primarily a small rural agricultural community with no significant increases in population.

The proposed water improvement project will:

1. improve the quality of potable water;
2. provide flexibility in the water system to service the Kaupo community during times of drought;
3. result in improvement to the water distribution system so that contamination is minimized and the potable water supply and water for livestock can be provided by separate systems.

Because of Kaupo's isolated location and the restriction established by State and County land use designation and zoning, it is not anticipated that these proposed benefits will act as a catalyst for urban development and/or significant population growth in Kaupo.

V. THE PROBABLE IMPACTS OF THE PROPOSED ACTION ON THE ENVIRONMENT

A. INTRODUCTION

The environmental impacts of the three sites of the proposed actions were reviewed and are discussed below. Table 4 summarizes in a matrix form, the impacts anticipated at these sites. In many cases where the impacts were similar, a statement was made to indicate this to avoid repetition.

B. SITES CONSIDERED

Site I is the location of the filtration facility and a chlorination facility. The site is located near the existing 40,000 gallon tank at Kaupo Ranch's headquarters. Site II is the site of the new 40,000 gallon mid level tank at elevation 540 feet and is located adjacent to the Ranch headquarters access road. Site III is the former Kaupo School site where the well and pump is being considered to be located.

It should be noted that the sites indicated in Figure 9 show the approximated location only. The exact locations will fall within the approximate area identified by the rectangular blocks. General information on each site is provided below along with a summary discussion on potential impacts.

TABLE 4

SUMMARY OF IMPACTS

	Site I	Site II	Site III
IMPACTS			
Land Modification	-1	-1	-1
Soil Erosion	-1	-1	-1
Potable Water Quality	+2	+2	+2
Groundwater Aquifer Recharging	0	0	0
Air Quality	0	0	0
Noise Levels	0	0	-1
Flood Hazard	0	0	0
Flora	0	0	0
Fauna	0	0	0
Land Use	0	0	0
Agricultural Impact	0	0	0
Recreational Lands	0	0	0
View and Aesthetics	0	0	0
Utilities (1)	-1	-1	-1
Historic/Archaeological Sites	0	0	0
TOTAL POINTS	-1	-1	-2

LEGEND

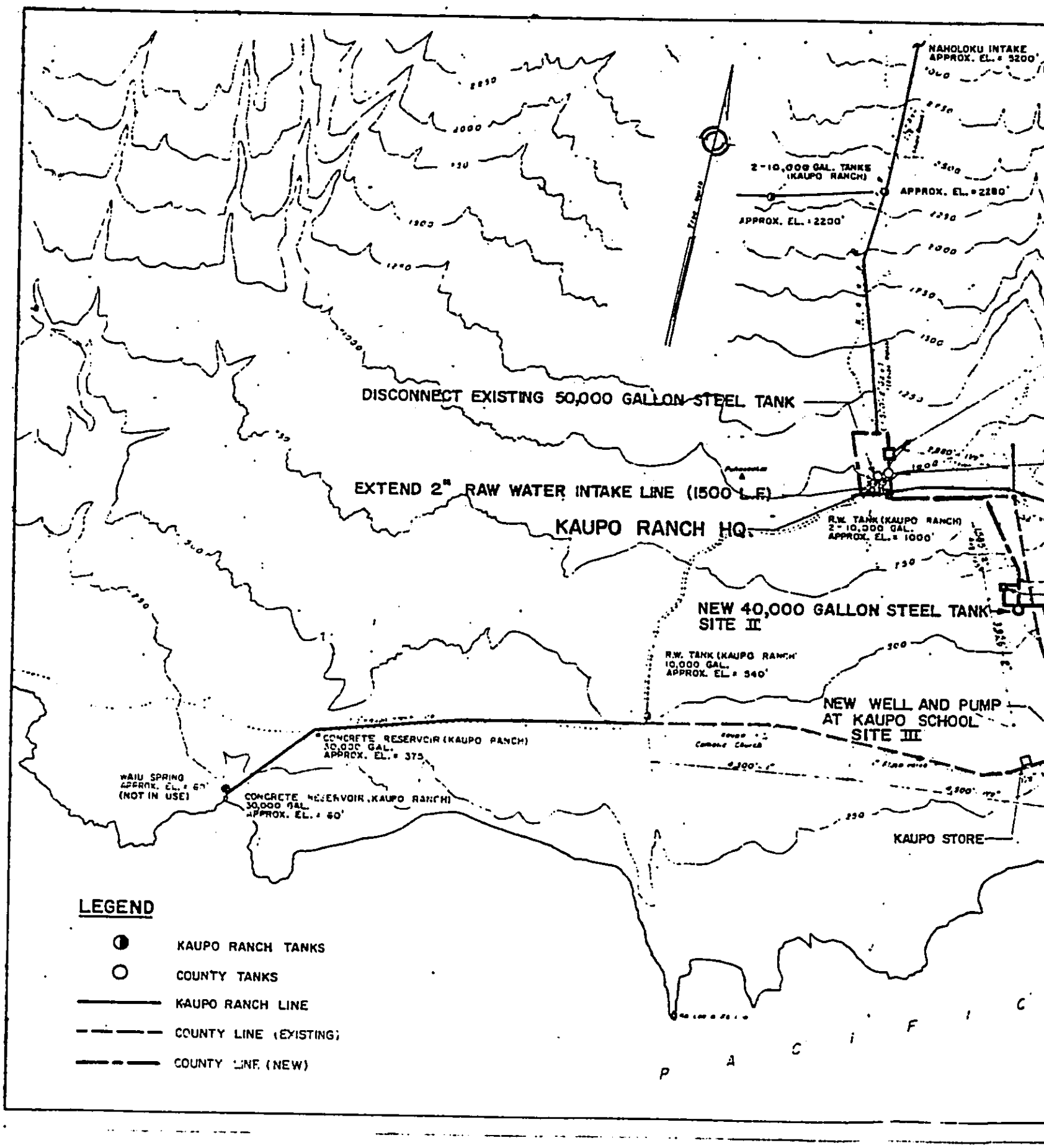
-3 = Short- and Long-term adverse, unmitigated impact expected.
-2 = Long-term adverse impacts foreseen, some mitigation measures possible.
-1 = Short-term (construction) adverse impacts.
0 = No change anticipated from present system.
+1 = Short-term benefits anticipated.
+2 = Long-term benefits anticipated.
+3 = Significant short- and long-term benefits foreseen.

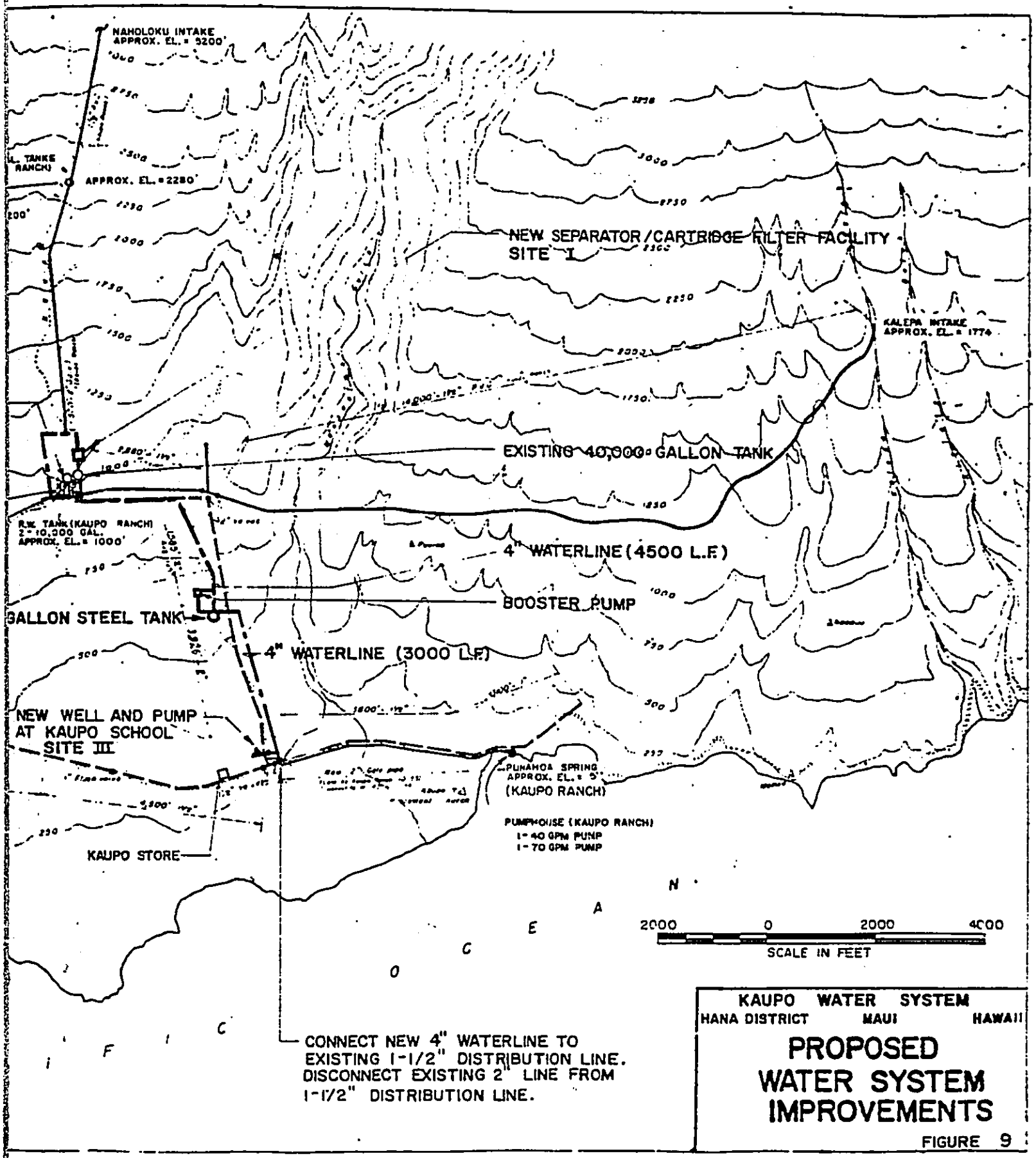
(1) Utilities were rated:

+1 = Power (within .5 mile) available
-1 = Power (within .5 mile) unavailable

(2) Cost were rated:

+1 = Lowest cost
0 = Median costs
-1 = Highest cost


NAHOLOKU INTAKE
APPROX. EL. = 3200'
2 - 10,000 GAL. TANKS
(KAUPO RANCH)
APPROX. EL. = 2280'
APPROX. EL. = 2200'
DISCONNECT EXISTING 50,000 GALLON STEEL TANK
EXTEND 2" RAW WATER INTAKE LINE (1500 L.F.)
KAUPO RANCH HQ
R.W. TANK (KAUPO RANCH)
2 - 10,000 GAL.
APPROX. EL. = 1000'
NEW 40,000 GALLON STEEL TANK
SITE II
R.W. TANK (KAUPO RANCH)
10,000 GAL.
APPROX. EL. = 340'
NEW WELL AND PUMP
AT KAUPO SCHOOL
SITE III
CONCRETE RESERVOIR (KAUPO RANCH)
30,000 GAL.
APPROX. EL. = 375'
WAIU SPRING
APPROX. EL. = 60'
(NOT IN USE)
CONCRETE RESERVOIR (KAUPO RANCH)
30,000 GAL.
APPROX. EL. = 60'
KAUPO STORE
LEGEND
KAUPO RANCH TANKS
COUNTY TANKS
KAUPO RANCH LINE
COUNTY LINE (EXISTING)
COUNTY LINE (NEW)



KAUPO WATER SYSTEM
HANA DISTRICT MAUI HAWAII

PROPOSED WATER SYSTEM IMPROVEMENTS

FIGURE 9

SITE I

Location: Site I is located above the 40,000 gallon steel storage tank.

Tax Map Key: 1-7-4: 4 (Portion of)

Owner: Kaupo Ranch

General Description:

(1) The site is located about 9,000 feet from Piilani Highway; access is via a dirt road leading to Kaupo Ranch Headquarters

(2) The site is located in an open area with some trees (guava) and grass.

(3) The land is on a steep incline (about 40 degrees).

(4) The site is approximately 1,100 feet above mean sea level.

(5) Commercial electrical power is not available in Kaupo.

(6) The existing dirt roads are narrow and in poor condition; use by large trucks or heavy equipment is difficult.

Proposed Action: Location of a pressure filter facility and chlorination unit; total land required will be approximately 900 square feet.

Potential Impacts:

Land Modification: The land will be modified by site clearing and grading for the water treatment facility. Because the area affected is small, the impact on the area's geology, topography, and climate is expected to be negligible.

Soil Erosion. The general soil association on the site is identified as Hana-Makaalae-Kailua association. This soil association is described by the Soil Conservation Service (SCS), U.S. Department of Agriculture as:

> "Moderately deep and deep, gently sloping to steep, well-drained soils that have a moderately fine textured or fine textured subsoil or underlying material; on intermediate uplands."

The construction activity (e.g. hauling of materials and equipment) would result in short-term soil erosion. Such an impact would likely have a short-term impact on the specific project site (until the vegetation has grown or is replanted).

Impact on Water. The present sources of water (Naholoku and Kalepa Streams) would be used. The Punahoa Spring's water is partly saline and may be used as a backup source to the well. The future water demand for domestic use on Naholoku and Kalepa Streams would increase, requiring additional water withdrawal from the streams. The decrease in water volume in the streams may have an adverse impact on the stream biota and the terrestrial flora and fauna dependent on the stream for their water.

No impact on other surface (i.e. streams) waters or ocean water is foreseen.

No impact on recharging of groundwater is anticipated. The proposed site would be relatively small and would not create a significant impact on groundwater recharging.

Drinking water quality would be improved, because the water would be less turbid and treated to meet the drinking water regulations.

Impact on Air Quality. During construction, some impacts relating to land clearing will occur. This includes site clearing, hauling, grading, etc. The activities would create dust. However, because there are no nearby residents, dust would not have a adverse effect on the human environment.

Long-term impact on air quality would be minimal. The filtration facility will require only periodic inspections and maintenance. The dust created by the maintenance vehicles would not be significant because no residents are nearby.

Impact on Ambient Noise Levels. Noise in this type of agricultural area is normally below 45 dB (decibels), compared to a normal suburban residential area which has a typical dB range of 53 to 57, and an urban residential area which has a typical dB range of 58 to 62.

The construction of filtration facility will not create high noise levels. The noise impact would be minimal especially in light of the isolated location of the site.

Impact on Flood Hazard. This site alternative is not located in an area of flood hazard.

Impact on Flora. Site I is located in an area identified as a open guava forest with shrubs. The pasture uses of the surrounding area are reflected by the present open, grassy environment. Other vegetation includes koa haole, lantana, Spanish clover, and Bermuda grass. This vegetation is commonly found throughout the area and the removal of a small area (less than 1,000 square feet) would not be significant or detrimental. No known rare or endangered plants are located within the site or the surrounding area.

Impact on Fauna. Fauna in the area is likely to include mice, rats, mongoose and a variety of birds (see Table 5). These are commonly found in the area and their displacement or possible destruction will not significantly affect the environment. There are no known endangered species of fauna in the project site or surrounding areas.

Impact on Historial/Archaeological Sites. There are no known Historical or Archaeological sites in the vicinity of the water tanks.

TABLE 5

AVIFAUNA IDENTIFIED IN THE KAUPO AREA

Common Name	Scientific Name
Cardinal	Cardinalis cardinalis
Barred Dove	Geopelia striata
Spotted Dove	Streptopelia chinensis
Mockingbird	Mimus polyglottos
Pacific Golden Plover	Pluvialis dominica fulva
Pueo, Hawaiian Owl	Asio flammeus sandwichensis
Ricebird	Lochura punctulata
White Eye	Zosterops j. japonicus

Source: Atlas of Hawaii, University of Hawaii at Manoa, Department of Geography, 1973.

Other Source: Hawaiian Birdlife, Andrew J. Berger, 1972. Literature Review and Synthesis of Information on Pacific Island Ecosystems, U.S. Department of the Interior, Fish and Wildlife Service, 1979

Impact on Land Use. The land is designated Agricultural. A water treatment facility would be considered a public facility and would probably not be a catalyst for population growth or expansion in the surrounding area or community. The agricultural nature of the community, the unimproved roadway into the area, and the existing land use designation and zoning would appear to indicate that little future development in the community will occur.

Impact on Agricultural Lands. The project will have an impact on lands that are used for pasture. However, the exclusion of this small area from extensive agricultural use is not felt to be a significant social or economic loss.

Impact on Recreation. The site is currently not planned or zoned for recreational purposes.

Impact on Views and Aesthetics. The treatment facility would not be highly visible. Additionally, the location is not considered scenic, nor is it part of a panoramic view from higher areas.

Impact on County Expenditures. The cost of this action is shown in Table 3.

Cost to the Maui County Water Users. The recommended actions may result in an increase in water charge to the overall water users of the County. The County must pay for a portion of these improvements; to recover this cost, the

County may charge the users of the total County water system. The need for improving water quality is mandated; thus the increased water charge seems unavoidable. The cost of the alternative was a factor in the final recommended alternative.

Availability of Utilities. Commercial power is not available in the Kaupo Area. The cost of installing power lines to Kaupo is prohibitive. Power generators, an alternative power source, have a lower initial cost and annual operating cost than the capital cost incurred for constructing power lines to the site. The pressure filter system requires little or no power. The power required would be supplied by batteries.

Impact on Other Socioeconomic Aspects. Due to the nature of this project, other socioeconomic aspects were not reviewed because they are not relevant. These aspects include: accessibility to commercial areas and medical facilities, transportation networks, cultural areas and medical facilities, transportation networks, cultural patterns, fire and police services.

Sites discussed below are based on similar situations (i.e. small size of development) and provide more succinct statements on impact based on the rationale developed for Site I.

Site II

Location: North of the former Kaupo School site

Tax Map Key: 1-7-02:17 (Portion of)

Owner: Kaupo Ranch and others

General Description:

(1) Site II is located approximately 2,700 feet from Piilani Highway and the former Kaupo School site.

(2) The area is densely vegetated and includes tall grasses, koa haole, morning glory, guava and mango trees.

(3) The estimation of the site is 540 feet above mean sea level.

(4) Electrical power lines are not available in Kaupo.

(5) Access to the tank site is off the access road to the Kaupo Ranch headquarters.

Proposed Action: Location of the 40,000 gallon mid level, tank. The amount of land required for the tank is less than 15,000 square feet.

Potential Impacts:

Land Modification. Minimal impact to the site would occur. Although the appearance would be altered because of land clearing and grading, once the vegetation grows back, tank area would obscure only a small portion of the disturbed area.

Soil Erosion. Some soil erosion during site clearing would occur. This would be minimal because of the small area involved.

Impact on Water. The proposed use of Site II for a new storage tank will reduce the head the well pumps need to generate to fill the existing 40,000 gallon tank. The storage tank will also act as a pressure breaker for the lower service area and to meet the peak and fire demands of the lower service areas.

No impact on other surface (i.e. streams) waters or ocean water is foreseen.

No impact on recharging of groundwater is anticipated. The proposed site would be relatively small and would not create a significant impact on groundwater recharging.

Other impacts would be similar to those described under Site I. Power required by the pumps will be provided by diesel generators.

Site III

Location:	Former Kaupo School Property
Tax Map Key:	1-7-2:15 (Portion of)
Owner:	State of Hawaii
General Description:	(1) The site is located along the side of Piilani Highway

(2) Vegetation within the site consists of grasses and bushes.

(3) The site is located on near level land at an estimated elevation of 240 feet above mean sea level.

(4) No commercial electrical power lines are available in the Kaupo ara.

Proposed Action:

Location of a well with pumps on the site. The area required is less than 10,000 square feet.

Potential Impact:

The impact would be similar to that of Site II. Figure 9 shows the proposed improvements to Kaupo water system.

VI. ANY PROBABLE ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED

The recommended alternative, a filtration facility at the existing County tank and a groundwater well at the old Kaupo School, will not have significant long-term environmental impacts. Some temporary impacts such as fugitive dust, potential soil erosion, and noise will occur during the construction period. After construction, no further adverse impacts are anticipated.

VII. ALTERNATIVES TO THE PROPOSED ACTION

A no-action alternative was not considered because compliance with the drinking water standards is mandatory by State and Federal laws. Should non-compliance occur, the State and Federal authorities could bring a civil suit against the water supplier to force compliance and impose a fine on the water supplier.

Alternatives were classified by the type of water supply source - surface water only, groundwater only and a combination of surface and groundwater. Alternative treatment methods considered for the removal of turbidity were pressure filters (centrifugal separators/cartridge filters) and slow sand filters. Other methods such as a package water treatment plants, reverse osmosis and other methods were quickly eliminated because of their dependency on power, high maintenance requirements and high costs. Table 6 gives a summary of the alternatives considered in the engineering report.

Because of the frequent rainless conditions and the lack of commercial power in the area it was felt that using a combination of surface sources and a groundwater source would provide the water system some flexibility in meeting the year round water demand. The high elevation of the surface water source makes it possible for the water system to operate as a gravity system and there is no power

TABLE 6

SUMMARY OF ALTERNATIVES AND SITES OF

TREATMENT/WELL FACILITIES

Alternative	Source	Treatment for Turbidity	Location
1A	Surface water	Separator/Cartridge Filter	Vicinity of Existing 40,000 gallon tank
1B	Surface water	Slow Sand Filter	Vicinity of Existing 40,000 gallon tank
2	Groundwater	-	Kaupo School property
3A	Surface & Groundwater	Separator/Cartridge Filter	Vicinity of Existing 40,000 gallon tank Kaupo School
3B	Surface & Groundwater	Slow Sand Filter	Vicinity of Existing 40,000 gallon tank Kaupo School

requirement. The groundwater source would supply water during dry periods or should the turbidity in the stream water be too high for the pressure filters to handle.

Alternatives 1A and 1B included 1.0 million gallon storage tanks to store enough water to last approximately three months. However, the high cost of the reservoirs eliminated these alternatives.

VIII. THE RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

The proposed project is believed to be beneficial to the human population in the Kaupo area. The treated surface water and groundwater well will provide good quality potable water, and a flexible system in providing consistent sources of water. The project will also create a better supply - distribution system. While the increase in potable water may cause some resettlement of former residents and greater cattle production, the area is isolated by land access and rural and therefore significant growth (in population or economic activity) is not anticipated. Based on the review of the objectives, the environmental and socioeconomic impacts, of the proposed actions it was found that the proposed action should enhance the short- and long-term uses of man's environment with little physical, socioeconomic, and land use impacts.

IX. MITIGATION MEASURES PROPOSED TO MINIMIZE ADVERSE IMPACTS

Only short-term construction related impacts are anticipated. Subsequently, if construction adheres to County's grading regulations and good construction practices (e.g. no excessive gunning of equipment, wetting down the area to keep dust down), no other mitigation measures are required.

X. ANY IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES THAT WOULD BE INVOLVED IN THE PROPOSED ACTIONS

The proposed action will result in the commitment of land, groundwater, and labor. The land committed would be approximately 13,000 square feet total land of which a portion is the old Kaupo School (no longer being used). The groundwater is a renewable resource; approximately 12,000 gallons per day (present maximum use) would be utilized; by the year 2000, about 16,000 gallons per day (maximum use) would be used. Based on the hydrogeologist report, the quality and quantity of groundwater in this area should satisfy the present and future demands for Kaupo. Finally, labor in the form of construction workers and periodic inspection by the County water personnel will occur. There is currently available personnel nearby at the Hana Department of Water Supply that can perform the inspections; labor utilized will be compensated.

These resources will be committed and/or used for the proposed action. As consumption of resources are normal; no other significant or unique impacts are foreseen.

XI. AN INDICATION OF WHAT OTHER INTERESTS AND CONSIDERATIONS OF GOVERNMENTAL POLICIES ARE THOUGHT TO OFFSET THE ADVERSE ENVIRONMENTAL EFFECTS OF THE PROPOSED ACTION

Table 7 on the following pages identifies the governmental laws and regulations which must be complied with prior to or during the implementation of the proposed action.

It is felt that should the proposed action take place, the impacts will be minimized by following these regulations.

TABLE 7

GOVERNMENTAL LAWS AND REGULATIONS AFFECTING THE PROPOSED ACTION

FEDERAL

-- The Safe Drinking Water Act (PL 93-523) is an amendment to the Public Health Service Act.

-- The National Interim Primary Drinking Water Regulations were promulgated in accordance with the provisions of the Safe Drinking Water Act. They contain the standards by which all public drinking water supplies are regulated and monitored.

-- The National Secondary Drinking Water Regulations were also promulgated in accordance with the Safe Drinking Water Act. This regulation covers contaminants which may adversely affect the aesthetic quality of drinking water, such as taste, odor, color and appearance. The Secondary Levels represent reasonable goals for drinking water quality, but are not Federally enforceable.

-- The Clean Water Act regulates wastewater discharges and covers Water Quality Management.

-- The Clean Air Act represents a comprehensive effort to protect and enhance the nation's air resources. Among other things the Act requires that emissions from all operating and maintenance equipment comply with the Federal Air Quality Standards.

-- The Noise Control Act establishes control on the emission of noise detrimental to the human environment. All equipment must comply with Federal Emission Control Standards as prescribed for that particular type of equipment.

-- The Resource Conservation and Recovery Act regulates the management of hazardous materials. Of concern here are the requirements relating to the safe and effective disposal of water treatment plant solid waste material.

-- The Hazardous Materials Transportation Act regulates the transportation of hazardous materials such as chlorine gas which is used for water disinfection.

Table 7 (Continued)

-- The National Energy Conversation Policy Act represents the first step in regulating the use of energy by the public. It is therefore prudent to review all energy conservation policies with respect to their future application to water treatment plants.

-- The Water Quality Management Act was an outgrowth of the Clean Water Act. The Act directs state and local agencies in developing area-wide waste treatment management plans and established agencies to implement these plans. They are referred to as "208 Plans."

-- The Water Pollution Control Act of 1972 contains two general goals which influence the establishment, design and operation of water systems. These goals are:

1. To have by July 1, 1983 (to the extent possible) water that is clean enough for recreational use and in the use and propagation of fish, shellfish and wildlife;

2. And by 1985, to eliminate the discharge of any pollutants into the nation's waters. These guidelines may influence design decisions.

Table 7 (Continued)

STATE

-- Chapter 340E Hawaii Revised Statutes (HRS): the Safe Drinking Water Act establishes guidelines and grants authority to the Department of Health and gives primary regulations, and at the Director's option, promulgates and enforces secondary regulations relating to aesthetic quality of the drinking water.

-- Chapter 342 HRS, Environmental Quality: covers the regulation of air, water, noise, and solid waste regulations. It establishes permit requirements for the discharge of waste, for authorization to construct, modify, or operate any air pollution source, to emit excessive noise or to operate sanitary landfills or open dumps.

-- Chapter 343 HRS, Environmental Quality Commission and EIS authorizes the issuance of rules and regulations on the requirements of Environmental Impact Statements (EIS) and what items should be covered in the EIS.

-- Chapter 344 HRS, State Environmental Policy contains general guidelines for State planning of Natural Resources Development. Section 208 of this statute covers Water Quality Management.

-- State Land Use Commission requires a Special Use Permit for facilities on agriculturally zoned land. The County Planning Commission must approve a Special Use Permit first. If construction requires more than 15 acres, the State Land Use Commission must review and give final approval.

-- Chapter 77 HRS, requires that permits for drilling wells be obtained from the State Board of Land and Natural Resources.

-- Chapter 49 HRS, requires that a permit for use of a new water source be obtained from the Department of Health and that they be notified of the abandonment of any water source.

-- Uniform Building Code establishes building requirements in earthquakes and fire zoned areas.

Table 7 (Continued)

COUNTY

-- The Rules and Regulations of the Department of Water Supply provide direction, guidance and the procedures for the resolution of problems regarding public water services in the County of Maui.

-- The Department of Water Supply System Standards prescribe standards in the design and construction of water system facilities.

-- The County Chapter authorizes the County Planning Commission to issue Special Use Permits for construction of facilities not consistent with the zoning established for the area.

-- Flood Hazard District Ordinances zones the lands within a flood hazard district into floodway district, flood fringe district and coastal high hazard district zones. Development within flood hazard district zone is also regulated.

XII. ORGANIZATIONS AND PERSONS CONSULTED DURING THE EIS CONSULTATION PERIOD

Table 8 identifies the agencies and individuals receiving a copy of the Draft EIS Preparation Notice. A total of 41 government agencies, community groups, and individuals were provided a copy of the EIS Preparation Notice. Additionally, five (5) agencies/individuals requested status as "consulting parties". Fifteen (15) responses were received on the EIS Preparation Notice, of these eight (8) had substantial comments to provide. Those letters (having substantial comments) were responded to and copies are included in Section XIII.

TABLE 8

ORGANIZATIONS AND PERSONS CONSULTED DURING EIS CONSULTATION PERIOD

Agency	Date Notice Mailed	Date of Comment	Date of Response
City and County of Honolulu			
Department of Land Utilization	3/06/81	—	—
State of Hawaii			
Office of Environmental Quality Control, Department of Health	3/06/81	--	—
Department of Agriculture	3/06/81	3/24/81	4/10/81
Department of Accounting and General Services	3/06/81	3/19/81 **	—
Department of Land and Natural Resources	3/06/81	--	—
State Historic Preservation Officer, DLNR	3/06/81	--	—
Department of Health	3/06/81	—	—
Department of Planning and Economic Development	3/06/81	4/02/81 **	—
Department of Transportation	3/06/81	4/02/81	4/10/81
Environmental Center, UH at Manoa	3/06/81	—	—
Water Resources Research Center, UH at Manoa	3/06/81	--	—
Senator Gerald K. Machida	3/06/81	—	--
Senator Mamoru Yamasaki	3/06/81	--	—
State Representative William W. Monahan	3/06/81	--	--
State Representative Herbert J. Honda	3/06/81	---	—
State Representative Anthony T. Takitani	3/06/81	--	--
State Representative Mark J. Andrews	3/06/81	--	--
Federal			
U.S. Environmental Protection Agency	3/06/81	3/17/81	4/10/81
U.S. Army Corps of Engineers, DOA	3/06/81	3/31/81	4/10/81
Geological Survey, Water Resources Division	3/06/81	--	--

TABLE 8 (Continued)

Federal (continued)	Date Notice Mailed	Date of Comment	Date of Response
U.S. Department of Agriculture, Soil Conservation Service	3/06/81	--	--
Fish and Wildlife Service, Division of Ecological Services	3/06/81	--	--
County of Maui			
Hana Soil Conservation Service	3/06/81	--	--
U.S. Dept. of Interior, Haleakala National Park	3/06/81	3/17/81	4/10/81
Office of the Mayor	3/06/81	--	--
County Council	3/06/81	3/11/81 **	--
County Clerk	3/06/81	3/20/81 **	--
Department of Parks and Recreation	3/06/81	--	--
Department of Public Works	3/06/81	3/18/81 **	--
Office of Economic Development Agency	3/06/81	3/16/81 **	--
Planning Department	3/06/81	3/12/81 **	--
County Fire Department	3/06/81	--	--
Police Department	3/06/81	3/23/81	4/10/81
Utilities			
Maui Electric Company, Ltd.	3/06/81	--	--
Hawaiian Telephone Company-Maui	3/06/81	--	--
Other Organizations			
Kaupo Community Association	3/06/81	--	--
The Sierra Club *	3/18/81	--	--
Brock and Associates *	3/24/81	4/01/81	4/10/81
Mr. Michael Howden *	3/30/81	4/15/81	4/27/81
Ms. Marion Beers *	3/30/81	--	--
EDAW *	3/30/81	--	--

* Requested Consulting Party status.

** No Comment Response

XIII. REPRODUCTION OF COMMENTS AND RESPONSES MADE DURING THE CONSULTATION PROCESS

The letters commenting on the EIS Preparation Notice and the written responses provided back to the reviewers (on substantial comments) are included in this Section. These copies were reduced to half-size from the actual copies and are provided in chronological order as shown on Table 9.

TABLE 9
REPRODUCTION OF COMMENTS AND RESPONSES MADE
DURING THE CONSULTATION PROCESS

Pages 68 to 83 contain reduced size copies of the comments and responses to the comments during the EIS Consultation Period. Where a substantial comment was received, the written response immediately follows the letter. The comments/responses are provided in the following order:

TABLE 9 (Continued)

Agencies Having Comments and Receiving Written Responses:

Council Chairman
Bob H. Nakasone

Council Vice-Chairman
Goro Hokama

Councilmen
Abraham Aiona
Toshio Ansai
Allen W. Barr
Howard S. Kihune
Linda Lingle
Rick Medina
Wayne K. Nishiki

Director of Council Services

COUNTY COUNCIL
COUNTY OF MAUI
WAILUKU, MAUI, HAWAII

RECEIVED

Sam O. Hirota, Inc./Tea.
By

March 11, 1981

Mr. Dennis I. Hirota, Ph.D.,P.E.
Vice President
Sam O. Hirota, Inc.
345 Queen Street - Suite 500
Honolulu, Hawaii 96813

Dear Mr. Hirota:

Your notice regarding Environmental Assessment/EIS Preparation Notice for (1) Hana Water System Improvements; (2) Keanae Water System Improvements; (3) Kaupo Water System Improvements; has been received.

Your notice 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
BOB NAKASONE
COUNCIL CHAIRMAN

BN/lc

APR - 9 1981

MAUI PLANNING COMMISSION
Rozeno Taosal Chairman
Mary Cabudlay, Vice Chairman
Wesley Wong
Stanley Okamoto
Ralph Hayashi, Ex Officio
William Hames, Ex-Officio

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

RECEIVED
MAR 1 .. '81
Sam O. Hirota, Inc./Tea.
By

March 12, 1981

Mr. Dennis I. Hirota, Ph.D., P.E.
Vice President
Sam O. Hirota, Inc.
345 Queen Street, Suite 500
Honolulu, Hawaii 96813

Dear Mr. Hirota:

RE: ENVIRONMENTAL ASSESSMENT/EIS PREPARATION NOTICE FOR
(1) HANA WATER SYSTEM IMPROVEMENTS
(2) KEANAE WATER SYSTEM IMPROVEMENTS
(3) KAUPO WATER SYSTEM IMPROVEMENTS

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

MAR 20 1981

HANNIBAL TAVARES
Mayor

FRED MATSUMOTO
Coordinator

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

RECEIVED
1981
Sam O. Hirota, Inc./Tes.
By

March 16, 1981

Mr. Dennis I. Hirota, Ph.D., P.E.
Vice President
Sam O Horita, Incorporated
345 Queen Street, Suite 500
Honolulu, Hawaii 96813

Dear Mr. Hirota:

Subject: Environmental Assessment/EIS
Preparation Notice for the Hana, Keanae,
and Kaupo Water System Improvemtns.

The Department of Economic Development have reviewed the subject Environmental Assessment and 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 at this time, however, we thank you for the opportunity to review the Environmental Assessment/EIS Preparation Notice.

Sincerely,

FRED MATSUMOTO
Economic Development
Coordinator

cc: Mr. Bill Haines

APR - 9 1981

HANNIBAL TAVARES
Mayor
RALPH HAYASHI
Director of Public Works
SAMUEL MATSUO, Ph.D.
Deputy Director of Public Works

RECEIVED
Sam O. Hirota, Inc./Tes.

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

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

WM-470

March 18, 1981

Dr. Dennis I. Hirota
Vice President
Sam O. Hirota, Inc.
345 Queen St., Suite 500
Honolulu, HI 96813

Dear Dr. Hirota:

SUBJECT: ENVIRONMENTAL ASSESSMENT/EIS PREPARATION NOTICE FOR
1) Hana Water System Improvements
2) Keanae Water System Improvements
3) Kaupo Water System Improvements

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

We have reviewed your submittal and have no comments to offer.

Very truly yours,

Ralph Hayashi
Director of Public Works

BH:ym

MAR 24 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

IN REPLY REFER TO LETTER NO. (P)1262.1

MAR 19 1981

RECEIVED
MAR 23 1981
Sam O. Hirota, Inc./Tax.
By

Dr. Dennis I. Hirota
Sam O. Hirota, Inc.
Suite 500
345 Queen Street
Honolulu, Hawaii 96813

Dear Dr. Hirota:

Subject: Environmental Assessment/EIS
Preparation Notice for
(1) Hana Water System Improvements;
(2) Keanae Water System Improvements; and
(3) Kaupo Water System Improvements

We have reviewed the subject documents and do not have any comments on the subject improvements.

Very truly yours,

RIKIO NISHIOKA
State Public Works Engineer

MI:jm

69

MAR 24 1981

JAMES S. USHIJIMA
County Clerk

MANUEL H. OSHI
Deputy County Clerk

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

RECEIVED
MAR 24 1981
Sam O. Hirota, Inc./Tax.
By

March 20, 1981

Dr. Dennis I. Hirota
Vice President
Sam O. Hirota, Inc.
345 Queen Street - Suite 500
Honolulu, Hawaii 96813

Dear Dr. Hirota:

Your memorandum dated March 6, 1981, concerning the EIS preparation notice for the Hana, Keanae, and Kaupo water systems improvements, 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

MAR 24 1981

DEPARTMENT OF PLANNING
AND ECONOMIC DEVELOPMENT

Kamamalu Building 250 South King St Honolulu Hawaii Mailing Address P O Box 2359 Honolulu Hawaii 96804

HIDETO KONO
Director

FRANK SERVANEK
Deputy Director

April 2, 1981

Ref. No. 2944

RECEIVED
APR - 7 1981
Sam O. Hirota, Inc./Tes.
By_____

Dr. Dennis I. Hirota
Vice-President
Sam O. Hirota, Inc.
345 Queen Street, Suite 500
Honolulu, Hawaii 96813

Dear Dr. Hirota:

SUBJECT: Environmental Assessment/EIS Preparation Notice for:
(1) Hana Water System Improvements
(2) Keanae Water System Improvements
(3) Kaupo Water System Improvements

We have reviewed the above documents and find that they have adequately assessed the major environmental impacts which can be anticipated from the implementation of these projects.

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

Sincerely,

Hideto Kono

cc: Office of Environmental Quality Control
Department of Water Supply, County of Maui

APR - 9 1981

The Sierra Club
Maui Group, Hawaii Chapter
P. O. Box 416
Haiku, Maui, Hawaii 96708

RECEIVED
MAR 18 1981
Sam O. Hirota, Inc./Tes.
By

March 12, 1981

Mr. Ralph Morita
Sam O. Hirota, Inc.
345 Queen Street, Suite 500
Honolulu, HI 96813

Dear Mr. Morita:

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

Kaupo Water System Improvements
Keanae Water System Improvements
Wailua-Hana Water System Improvements, all County of Maui Department of Water Supply. Please send copies of Preparation Notices, subsequent Draft EIS's, and other relevant documents.

Sincerely yours,

John Bose, II
Maui Group Chairman

71

MAR 18 1981

ENVIRONMENTAL COMMUNICATIONS INC.

March 18, 1981

Mr. John Bose, II
Chairman
The Sierra Club
Maui Group, Hawaii Chapter
P. O. Box 416
Haiku, Maui, Hawaii 96708

Dear Mr. Bose,

Subject: Environmental Assessment/EIS Preparation Notice for Hana, Kaupo, and Keanae Water System Improvements

We have received your letter of March 12, 1981, requesting copies of the Preparation Notices, Draft EIS's, and other relevant documents regarding the aforementioned subject.

Enclosed please find copies of the Environmental Assessment/EIS Preparation Notice for the Proposed Kaupo Water System Improvements, Keanae Water System Improvements, and Hana Water System Improvements. Your comments on the EIS Preparation Notices are requested on or before April 18, 1981. Comments should be sent to:

Mr. Ralph Morita
Sam O. Hirota, Inc.
345 Queen Street, Suite 500
Honolulu, Hawaii 96813

We appreciate your interest in these EIS Preparation Notices.

Very truly yours,

F. J. Rodriguez

cc: Sam O. Hirota, Inc. - Ralph Morita

Enclosures

FJR:CKT:pi

1132 BISHOP BUILDING, SUITE 500 • P O BOX 836 • HONOLULU, HAWAII 96808 • TELEPHONE (808) 531-6391

BROCK AND ASSOCIATES
SURVEYORS · ENGINEERS · PLANNERS

48 MARKET STREET
WAILUKU, MAUI, HAWAII 96793
(808) 244-7484 • 538 0552
TELEX (808) 38931
2395 HAANAPALI PARKWAY
LAHAINA, MAUI, HAWAII 96761
(808) 667-2402
680 IWILEI STREET
NR BUILDING, SUITE 615
HONOLULU, HAWAII 96813

File: 7000
March 16, 1981

Mr. Ralph Morita
Sam O. Hirota, Inc.
345 Queen Street, Suite #500
Honolulu, Oahu, Hawaii
96813

Dear Mr. Morita:

According to the Environmental Quality Commission Bulletin of March 8, 1981, your firm will be preparing Environmental Impact Statements for the following projects:

Kaupo Water System Improvements, Kaupo, Maui

Keanae Water System Improvements, Keanae, Maui

Wailua-Hana Water System Improvements, Hana, Maui

We wish to be granted "consulted party" status during your preparation of the Environmental Impact Statements. Mr. Jim Brock, Senior Principal of our firm, is familiar with all three water systems and will comment on all drafts sent to us.

Thank you in advance for your cooperation.

Very truly yours,
BROCK AND ASSOCIATES

Julie R. Abramson

Julie R. Abramson
Planner

:gka

ENVIRONMENTAL COMMUNICATIONS INC.

F. J. RODRIGUEZ
PRESIDENT

March 24, 1981

Ms. Julie R. Abramson, Planner
Brock and Associates
48 Market Street
Wailuku, Maui, Hawaii 96793

Dear Ms. Abramson,

Subject: Environmental Assessment/EIS Preparation Notice for Hana, Kaupo, and Keanae Water System Improvements

We have received your letter of March 16, 1981 on the abovementioned EIS Preparation Notices. In compliance with your request we are providing you with copies of the Notices for your review and comments. The Environmental Impact Statement Regulations provide a 30-day review period for consulting parties to submit written comments on the EIS Preparation Notice. Therefore, your written comments are due on or before April 24, 1981. Your comments should be sent to:

Mr. Ralph Morita
Sam O. Hirota, Inc.
345 Queen Street, Suite 500
Honolulu, Hawaii 96813

Your prompt review and response will be most appreciated. Your company will be placed on the EIS mailing lists for these proposed projects.

Very truly yours,

F. J. Rodriguez

Enclosures

cc: Sam O. Hirota, Inc.

HOWDEN REALTY

P.O. Box 729
Makawao, Maui, Hawaii 96768
Telephone 808 572-9433

RECEIVED
MAR 30 1981
Sam O. Hirota, Inc./Ins.
By

March 24, 1981

Dear Mr. Morita,

My mother Marion Beers and I each wish to be considered as "Consulted Parties" in the preparation of EIS for the Kaupo, Maui water system. We are both landowners there.

Please send all pertinent documents to:

MARION BEERS
1201 CALIFORNIA ST. #505
SAN FRANCISCO, CALIF 94109

MICHAEL HOWDEN, AT ABOVE ADDRESS:

Mahalo,
Michael Howden

73

MAR 30 1981

ENVIRONMENTAL COMMUNICATIONS INC.

March 30, 1981

Mr. Michael S. Howden
P.O. Box 729
Makawao, Maui, Hawaii 96768

Dear Mr. Howden,

SUBJECT: EIS Preparation Notice for the Proposed Kaupo Water System Improvements

As requested in your letter of March 24, 1981, we are providing a copy of the abovementioned EIS Preparation Notice. We are also providing a copy to your mother at the address indicated in your letter.

The Environmental Impact Statement Regulations promulgated by the State's Environmental Quality Commission provides a 30-day review period on the EIS Preparation Notice for organizations and individuals requesting to be a consulting party. That is, written comments must be provided within 30 days of date the EIS Preparation Notice is sent to the consulting party. Therefore, your expedious response is requested. Written responses should be provided to:

Mr. Ralph Morita
Sam O. Hirota, Inc.
345 Queen Street, Suite 500
Honolulu, Hawaii 96813

We appreciate your interest in this project.

Very truly yours,

F. J. Rodrigues

Enclosure

cc: Mrs. Marion Beers
Department of Water Supply, County of Maul
Environmental Quality Commission
Sam O. Hirota, Inc.

1153 BISHOP BUILDING, SUITE 500 • P.O. BOX 536 • HONOLULU, HAWAII 96809 • TELEPHONE (808) 521-2161

F. J. RODRIGUEZ
PRESIDENT

ENVIRONMENTAL
COMMUNICATIONS
INC.

March 30, 1981

Mrs. Marion Beers
1201 California Street, Suite 505
San Francisco, California 94109

Dear Mrs. Beers,

SUBJECT: EIS Preparation Notice for the Proposed Kaupo Water System Improvements

As requested in your son's letter of March 24, 1981, we are providing a copy of the abovementioned EIS Preparation Notice. We are also providing a copy to your son at his Maui address.

The Environmental Impact Statement Regulations promulgated by the State's Environmental Quality Commission provides a 30-day review period for organizations and individuals requesting to be a consulting party. That is, any written comments provided should be received on or prior to the end of that 30-day period. Therefore, your expedious response is requested. Written responses should be provided to:

Mr. Ralph Morita
Sam O. Hirota, Inc.
345 Queen Street, Suite 500
Honolulu, Hawaii 96813

We appreciate your interest in this project.

Very truly yours,

F. J. Rodrigues

Enclosure

cc: Mr. Michael Howden
Department of Water Supply, County of Maui
Environmental Quality Commission
Sam O. Hirota, Inc.

1152 BISHOP BUILDING, SUITE 505 • P O BOX 536 • HONOLULU HAWAII 96809 • TELEPHONE (808) 521-4361

F. J. RODRIGUEZ
PRESIDENT

ENVIRONMENTAL
COMMUNICATIONS
INC.

March 30, 1981

Ms. Wendy Hee
EDAW
1136 Union Mall, Suite 201
Honolulu, Hawaii 96813

Dear Ms. Hee,

SUBJECT: EIS Preparation Notice for the Proposed Hana Water System Improvements, Keanae Water System Improvements, and Kaupo Water System Improvements

As requested, via your telephone conversation with Ralph Morita of Sam O. Hirota, Inc., we are providing you with copies of the abovementioned EIS Preparation Notices. It is our understanding that should your organization comment on the EIS Preparation Notices, the response will be provided on or before April 7, 1981. Your response should be sent to:

Mr. Ralph Morita
Sam O. Hirota, Inc.
345 Queen Street, Suite 500
Honolulu, Hawaii 96813

Thank you for your concern in this matter. Your expeditious response would be most appreciated.

Very truly yours,

F. J. Rodrigues

Enclosures

cc: Department of Water Supply, County of Maui
Environmental Quality Commission
Sam O. Hirota, Inc.

1152 BISHOP BUILDING, SUITE 505 • P O BOX 536 • HONOLULU, HAWAII 96809 • TELEPHONE (808) 521-4361

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
215 Fremont Street
San Francisco, Ca. 94105

RECEIVED
APR 3 1981
Sam O. Hirota, Inc./Inc.
By_____

17 MAR 1981

Mr. Ralph Morita
Sam O. Hirota, Inc.
345 Queen Street, Suite 500
Honolulu, HI 96813

Dear Mr. Morita:

The Environmental Protection Agency (EPA) Region IX office has received your letter requesting comments on proposed water treatment plants for Hana, Keanae and Kaupo. The Hawaii State Department of Health has primary enforcement responsibilities (primacy) of the Safe Drinking Water Act (SDWA) and the National Pollutant Discharge Elimination System (NPDES) Program. Thus, any questions or comments regarding water or wastewater treatment plants and their associated permits should be directed to the State Department of Health. By copy of this letter I have taken the liberty of forwarding your request to:

Thomas Arizumi, Chief
Drinking Water Program
Hawaii State Department of HEalth
P.O. Box 3378
Honolulu, HI 96801
Phone: (808) 548-4682

Sincerely yours,

William M. Thurston
Chief, Water Supply Section
Water Division

cc: Thomas Arizumi, Chief, Drinking Water Program, Hawaii State Department of Health

APR - 9 1981

SAM O. HIROTA, INC.

April 10, 1981

Mr. William M. Thurston
Chief, Water Supply Section
Water Division
U.S. Environmental Protection Agency
Region IX Office
215 Fremont Street
San Francisco, California 94105

Dear Mr. Thurston:

Subject: Environmental Assessments/EIS Preparation Notices for Hana, Kaupo, and Keanae Water System Improvements

Thank you for your letter of March 17, 1981, informing us of the transfer of the EIS Preparation Notices to the Hawaii State Department of Health. Please note that we have sent copies of the EIS Preparation Notices to that same Department.

We appreciate your interest in this matter.

Very truly yours,

SAM O. HIROTA, INC.

Dennis I. Hirota, Ph. D.
Vice President

cc: Department of Water Supply,
County of Maui

Norman Saito Engineering Consultants
Attention: Tate Imada

Environmental Communications, Inc.
Attention: F. J. Rodriguez

Surveying • Engineering • Computer Graphics • Ocean Sciences
345 QUEEN STREET • SUITE 500 • HONOLULU, HAWAII 96813 • TELEPHONE (808) 537-9971

United States Department of the Interior

NATIONAL PARK SERVICE
HALEAKALA NATIONAL PARK
P.O. BOX 537
MAKAWAO, MAUI, HAWAII 96768

IN REPLY REFER TO:

March 17, 1981

RECEIVED
MAR 1 9 1981
Sam O. Hirota, Inc./Log.
by

Ralph Morita of
Sam O Hirota Inc.
345 Queen Street
Suite 500
Honolulu, Hawaii 96813

Dear Mr. Morita:

We are interested in obtaining a copy of the environmental impact statement (when completed) on the Kaupo water system improvement project.

Please send to:

Superintendent
Haleakala National Park
P. O. Box 369
Makawao, Maui, Hawaii 96768

Thank you.

Sincerely yours,

Susan S. Nikaido

Susan S. Nikaido
Clerk Typist

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APR 10 1981

SAM O. HIROTA, INC.

April 10, 1981

Ms. Susan S. Nikaido
U.S. Department of the Interior
National Park Service
Haleakala National Park
P.O. Box 537
Makawao, Maui, Hawaii 96768

Dear Ms. Nikaido,

SUBJECT: KAUPO WATER SYSTEM IMPROVEMENT PROJECT, DRAFT ENVIRONMENTAL IMPACT STATEMENT

We have received your request of March 17, 1981, on the abovementioned project. We will be including the Haleakala National Park on the Draft EIS Distribution List for the Proposed Kaupo Water System Improvement Project.

Thank you for your interest and concern.

Very truly yours,
SAM O. HIROTA, INC.

Dennis I. Hirota, Ph.D.
Vice President

cc: Department of Water Supply,
County of Maui

Norman Saito Engineering Consultants
Attention: Tats Imada

Environmental Communications, Inc.
Attention: F. J. Rodriguez

Surveying • Engineering • Computer Graphics • Ocean Sciences
345 QUEEN STREET • SUITE 500 • HONOLULU, HAWAII 96813 • TELEPHONE (808) 537-9971

YUR REFERENCE AC/yyc

OUR REFERENCE

POLICE DEPARTMENT
COUNTY OF MAUI
WAILUKU, MAUI, HAWAII 96793

March 23, 1981

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

Sam O. Hirota, Inc.
345 Queen Street, Suite 500
Honolulu, Hawaii 96813

Attention: Dennis I. Hirota
Vice President

Dear Mr. Hirota:

Please be informed there is no apparent adverse impact on police services relative to the proposed improvements to the Hana, Kaupo and Keanae water systems.

Very truly yours,

JOHN S. SAN DIEGO, SR.
Chief of Police

cc: Board of Water Supply
County of Maui

RECEIVED
MAR 26 1981
Sam O. Hirota, Inc./Hon.
By_____

77

SAM O. HIROTA, INC.

April 10, 1981

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

Dear Chief San Diego:

Subject: Environmental Assessments/EIS Preparation Notices for Hana, Kaupo, and Keanae Water System Improvements

Thank you for your letter of March 23, 1981, on the abovementioned EIS Preparation Notices.

The information provided regarding police services will be included in the respective Environmental Impact Statements.

We appreciate your concern in this matter.

Very truly yours,
SAM O. HIROTA, INC.

Dennis I. Hirota, Ph. D.
Vice President

cc: Department of Water Supply,
County of Maui

Norman Saito Engineering Consultants
Attention: Tate Imada

Environmental Communications, Inc.
Attention: F. J. Rodrigues

APR - 9 1981

Surveying • Engineering • Computer Graphics • Ocean Sciences
345 QUEEN STREET • SUITE 500 • HONOLULU, HAWAII 96813 • TELEPHONE (808) 537-9871

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

March 24, 1981

MEMORANDUM

To: Mr. Dennis I. Hirota, Vice Pres.
Sam O. Hirota, Inc.

Subject: Environmental Assessment/EIS Preparation Notice
(1) Hana Water System Improvements
(2) Keanae Water System Improvements
(3) Kaupo Water System Improvements

The Department of Agriculture has reviewed the subject assessments and offers the following comments.

We agree with the assessment that there is a need for additional information on potential agricultural uses of the sites in order to fully determine the impacts of the proposed projects. We believe that the treatment plants or sedimentation basins should then be located on sites with the least agricultural potential.

With the number of alternatives available for the Keanae Water System, we believe Site I should not be chosen due to its impact on taro. The 1979 taro harvest decreased 14 percent from 1978 and acreage in taro decreased from 450 acres to 405 acres. (Statistics of Hawaiian Agriculture, 1979) The acreage involved in the Keanae Site I may be small, but due to the nature of taro plots and the effort and expenses involved in relocating for the farmer, the impact may be greater than it would first appear.

Thank you for the opportunity to comment.

JOHN FARIAS, JR.
Chairman, Board of Agriculture

cc: Dept. of Water Supply, County of Maui

RECEIVED
MAR 26 1981
Sam O. Hirota, Inc./Tes.
By

APR - 9 1981

78

SAM O. HIROTA, INC.

April 10, 1981

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

Dear Mr. Farias:

Subject: Environmental Assessments/EIS Preparation Notices for Hana, Kaupo, and Keanae Water System Improvements

Thank you for your comments of March 24, 1981, regarding the abovementioned EIS Preparation Notices.

We note that the site alternatives selected for each of the water system improvements have minimal impact on agricultural lands of importance. We will be sending your Department copies of the Draft EIS for each project, so that you may comment on their impact on agriculture lands.

We appreciate your concern in this matter.

Very truly yours,
SAM O. HIROTA, INC.

Dennis I. Hirota, Ph. D.
Vice President

cc: Department of Water Supply,
County of Maui

Norman Saito Engineering Consultants
Attention: Tats Imada

Environmental Communications, Inc.
Attention: F. J. Rodriguez

Surveying • Engineering • Computer Graphics • Ocean Sciences
849 QUEEN STREET • SUITE 800 • HONOLULU, HAWAII 96813 • TELEPHONE (808) 537-9971

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

PODED-PV

31 March 1981

Mr. Dennis I. Hirota, Vice President
Sam O. Hirota, Inc.
345 Queen Street, Suite 500
Honolulu, HI 96813

Dear Mr. Hirota:

We have reviewed your Environmental Assessment (EA)/EIS Preparation Notice for Hana, Keanae, and Kaupo Water System Improvements sent to us on 6 March 1981. We provide the following comments:

a. Any work which requires the deposit of fill materials in streams may require a Department of the Army permit under Section 404 of the Clean Water Act.

b. All three parcels indicated in the EA are not within a designated floodway area and are areas of minimal flooding as indicated by a Zone C designation, as shown on the federal flood insurance map (Incl 1). None of the proposed sites would be subject to any regulatory practices with regard to flood hazard mitigation under the Zone C designation.

Thank you for the opportunity to review the subject EIS.

Sincerely,

KISUK CHEUNG
Chief, Engineering Division

1 Incl
As stated

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APR - 1 1981
Sam O. Hirota, Inc./Tes.
By_____

APR - 9 1981

79

SAM O. HIROTA, INC.

April 10, 1981

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

Dear Mr. Cheung:

Subject: Environmental Assessments/EIS Preparation Notices for Hana, Kaupo, and Keanae Water System Improvements

We have received and reviewed your letter of March 31, 1981, commenting on the abovementioned EIS Preparation Notices.

We will include your comments in the Draft EISs now being prepared.

Thank you for providing the information to us. We appreciate your concern in this matter.

Very truly yours,

SAM O. HIROTA, INC.

Dennis I. Hirota, Ph. D.
Vice President

cc: Department of Water Supply,
County of Maui

Norman Saito Engineering Consultants
Attention: Tats Imada

Environmental Communications, Inc.
Attention: F. J. Rodriguez

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BROCK AND ASSOCIATES
SURVEYORS · ENGINEERS

48 MARKET STREET
WAILUKU, MAUI, HAWAII 96793
TELEPHONE (808) 244-7484

FILE: 7000
April 1st, 1981
reply to Wailuku office

RECEIVED
APR - 3 1981
Sam O. Hirota, Inc./Inc.
By

Mr. Ralph Morita
Sam O. Hirota, Inc
345 Queen Street, Suite 500
Honolulu, Oahu, Hawaii
96793

Dear Mr. Morita:

We have reviewed the Environmental Assessment/EIS Preparation Notice for the proposed Kaupo Water System Improvements.

The notice is well prepared and adequately covers all of our concerns.

We would appreciate receiving a draft of the EIS when it is prepared and will probably comment on the alternative selected when that information is known.

Very truly yours,
BROCK AND ASSOCIATES

James Helmuth Brock
Senior Principal

80

SAM O. HIROTA, INC.

April 10, 1981

Mr. James Helmuth Brock
Senior Principal
Brock and Associates
48 Market Street
Wailuku, Maui, Hawaii 96793

Dear Mr. Brock:

Subject: Environmental Assessments/EIS Preparation Notices for Hana, Kaupo, and Keanae Water System Improvements

We appreciate your letter of April 1, 1981 on the abovementioned EIS Preparation Notices.

Please be assured that your name will be retained on the Distribution List of the Draft EISs for all three projects.

We appreciate your concern on these matters.

Very truly yours,
SAM O. HIROTA, INC.

Dennis I. Hirota, Ph. D.
Vice President

cc: Department of Water Supply,
County of Maui

Norman Saito Engineering Consultants
Attention: Tats Imada

Environmental Communications, Inc.
Attention: F. J. Rodriguez

APR - 9 1981

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION

RECEIVED
APR - 7 1981
Sam O. Hirota, Inc.

STP 8.7177

April 2, 1981

Dr. Dennis Hirota, Ph.D., P.E.
Vice President
Sam O. Hirota, Inc.
345 Queen Street, Suite 500
Honolulu, Hawaii 96813

Dear Mr. Hirota:

Environmental Assessment/EIS Preparation Notice
(1) Hana Water System Improvements
(2) Keanae Water System Improvements
(3) Kaupo Water System Improvements

Thank you for the opportunity to express our concerns on the subject proposals.

We suggest the following points be added to the assessment:

1. Any work within the State highway right-of-way shall be subject to review and approval by the Highways Division, State Department of Transportation.

2. Any heavy equipment needed for construction shall be moved only during non-peak traffic hours to minimize interference with traffic on Hana Highway.

Very truly yours,

Ryokichi Higashionna

Ryokichi Higashionna
Director of Transportation

81

SAM O. HIROTA, INC.

April 10, 1981

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

Dear Mr. Higashionna:

Subject: Environmental Assessments/EIS Preparation Notices for Hana, Kaupo, and Keanae Water System Improvements

Thank you for your letter of April 2, 1981, commenting on the above-mentioned EIS Preparation Notices.

We will include your comments (items 1 and 2) in our Draft EIS documents.

We appreciate your concern on these matters.

Very truly yours,

SAM O. HIROTA, INC.

Dennis I. Hirota, Ph. D.
Vice President

cc: Department of Water Supply,
County of Maui

Norman Saito Engineering Consultants
Attention: Tate Inada

Environmental Communications, Inc.
Attention: F. J. Rodriguez

APR - 9 1981

Surveying • Engineering • Computer Graphics • Ocean Sciences
345 QUEEN STREET • SUITE 500 • HONOLULU, HAWAII 96813 • TELEPHONE (808) 537-8971

HOWDEN REALTY
Post Office Box 729
Makawao, Maui, Hawaii 96768
Telephone (808) 572-9433
Michael S. Howden
Principal Broker-Realtor

April 15, 1981

Comments concerning document entitled:
"Environmental Assessment/EIS Preparation Notice
For the Proposed
Improvements to the Kaupo Water System"

Concerning "Alternative 1": the pamphlet points out that "even though package plants are designed for automatic operation they still need periodic attention to monitor the process, maintain chemical solutions, and perform required maintenance."(page 2) One questions what is meant by "periodic maintenance" when it felt necessary to purchase two units "in case mechanical breakdown occurs"(3). Indeed, later on in the pamphlet, it is stated that "alternative A (packaged water treatment plant) will require a full-time operator and more vehicular trips will occur."(6) It must be noted that County of Maui presence in Kaupo, especially in terms of meaningful Department of Water Supply maintenance, is less than minimal, and that there is certainly no guarantee that any better service will be given to the Kaupo Community under "Alternative A."

"Alternative 2": surface water treatment, sedimentation basins seems much more in tune with natural process and seems to offer a viable, greatly less costly "solution" than "Alternative 1." However, as with "Alternative 1," "Alternative 2" does not speak to the immediate and future needs of the Kaupo Community--primarily more water from a better source transmitted through adequate lines, in conjunction with appropriate water storage facilities. Thus, from nearly all points of view, "Alternative 3" seems to me to be the best answer to the needs of the Kaupo Community. Concerning new potable water source from groundwater wells, the pamphlet quotes from Ground Water and Wells(1974):

"On the other hand, ground waters are normally clear. They do not require filtration to remove turbidity. They may require iron removal, softening or correction of corrosive or incrusting tendencies. Taste and odor removal, which is frequently a problem with surface waters, is rarely a problem with well water..."

More water has been and is an enduring concern of the Kaupo Community as a whole. The Kaupo Ranch, which at one point, had wanted to carry more cattle and enter piggery operations, etc., has consistently been unable to do so. Throughout the community at large, and especially among absentee landowners, the lack of plentiful water has kept numerous families from establishing, or in many cases [illegible]shing, residence in Kaupo.

In conclusion, I strongly urge your adoption of "Alternative 3," with considered study of the best location in which to drill, including Makawaiui

SAM O. HIROTA, INC.

April 27, 1981

Mr. Michael S. Howden
Principal Broker-Realtor
Howden Realty
P. O. Box 729
Makawao, Maui, Hawaii 96768

Dear Mr. Howden:

Subject: Environmental Assessment/EIS Preparation Notice for the Proposed Kaupo Water System Improvements

Thank you for your comments of April 15, 1981, regarding the aforementioned subject.

We note that you supported the alternative of groundwater wells for the Kaupo area. While it is not the intention of the project to provide substantially more potable water to the area, because it would act as a possible catalyst for development, we note that our final recommendation is to drill a groundwater well in the vicinity of the former Kaupo Elementary School.

We appreciate your comments on this matter, and will be sending you a copy of the Draft Environmental Impact Statement when it is completed.

Very truly yours,

Dennis I. Hirota, Ph. D.
Vice President

cc: Department of Water Supply,
County of Maui

Norman Saito Engineering Consultants
Attention: Tats Inada

Environmental Communications, Inc.
Attention: F. J. Rodriguez

Surveying • Engineering • Computer Graphics • Ocean Sciences
345 QUEEN STREET • SUITE 600 • HONOLULU, HAWAII 96813 • TELEPHONE (808) 537-9871

XIV. SUMMARY OF UNRESOLVED ISSUES

At this time, there are no unresolved issue from the standpoint of potential environmental impacts.

One issue that will have to be resolved later is the final location of the well. Before the well pumps are installed, an exploratory well and well testing need to be conducted to determine if the exploratory well can be converted into a production well.

XV. LIST OF NECESSARY APPROVALS

Table 10 identifies the necessary approvals and/or permits that may be required for the proposed action prior to its construction.

TABLE 10

LIST OF NECESSARY APPROVALS FOR THE PROPOSED ACTION

ENVIRONMENT IMPACT STATEMENT

An Environmental Impact Statement is required for all public projects.

STATE LAND USE

State Land Use Commission regulations (Part III, Section III) do not permit the location of water treatment facilities and accessory buildings in Agricultural Districts which are not ancillary to agricultural needs. A special use permit must be petitioned before the County Planning Commission to locate the new treatment facilities, storage tank, and the well in the Agriculture District.

WELL DRILLING

None of the alternatives under consideration provide for well drilling in a Designated Groundwater Control Area, however, a Well Drilling Permit must still be obtained from the DLNR. Information to be included in the application must include a description of the well, usage and amount of water proposed to be withdrawn and the name of the drilling contractor.

HISTORIC SITES

The Historic Sites Branch of the DLNR says permits are not required for construction near heiaus or other historic Hawaiian sites. It is recommended, however, that an archaeological survey be made prior to construction to ascertain the exact location of any historic site and the degree of historic significance. Although there are no laws regulating this, it is considered prudent to stay at least 200 feet away from any archaeological structure or site of significance.

FLOOD ZONE

Flood hazard ratings have been determined for all sites under consideration.

Flood Zone C describes an area of minimal flooding.

Flood Zone B describes an area between the limits of a 100 and 500-year flood, or certain areas subject to 100-year flooding with average depths less than 1 foot, or where the contributing drainage area is less than one square mile.

SPECIAL MANAGEMENT AREA (SMA)

A Special Management Area Use Permit is required for projects in the designated area which cost over $25,000, or which have significant adverse environment or ecological effects. Application for a permit to construct in a SMA is processed by the Maui County Planning Department. Should the well and treatment facility be located on the properties makai of Hana Highway in the vicinity of the ultraviolet light purifier facility, an SMA permit may be required.

OTHER PERMITS AND LICENSES

In addition to the above, there are other agencies to be notified and other permits to be obtained before construction or well drilling may commence.

Preliminary Engineering Report for New Potable Water Sources.

The Department of Health must be notified of the type, nature and scope of any proposed development of a new water source or of a treatment plant.

County Grubbing/Grading Permit.

Maui County Department of Public Works must issue a grubbing permit and grading permit before construction can start.

Land Acquisition

Title, leases and easements for the land to be used must be obtained for the project.

XVI. DRAFT EIS COMMENTS

Comments from reviewers of the Draft EIS and responses are included in Appendix D.

APPENDIX A

POPULATION PROJECTION FOR HANA DISTRICT

APPENDIX A - POPULATION PROJECTION FOR HANA DISTRICT

The purpose of this population study is to provide a basis for estimating future water demands for the County Water Systems in the Hana District which includes the communities of Hana, Keanae, Kaupo, Nahiku, and Kipahulu (see Figure A-1). In turn, the future water demands will be the basis of determining the capacity of the proposed treatment facility.

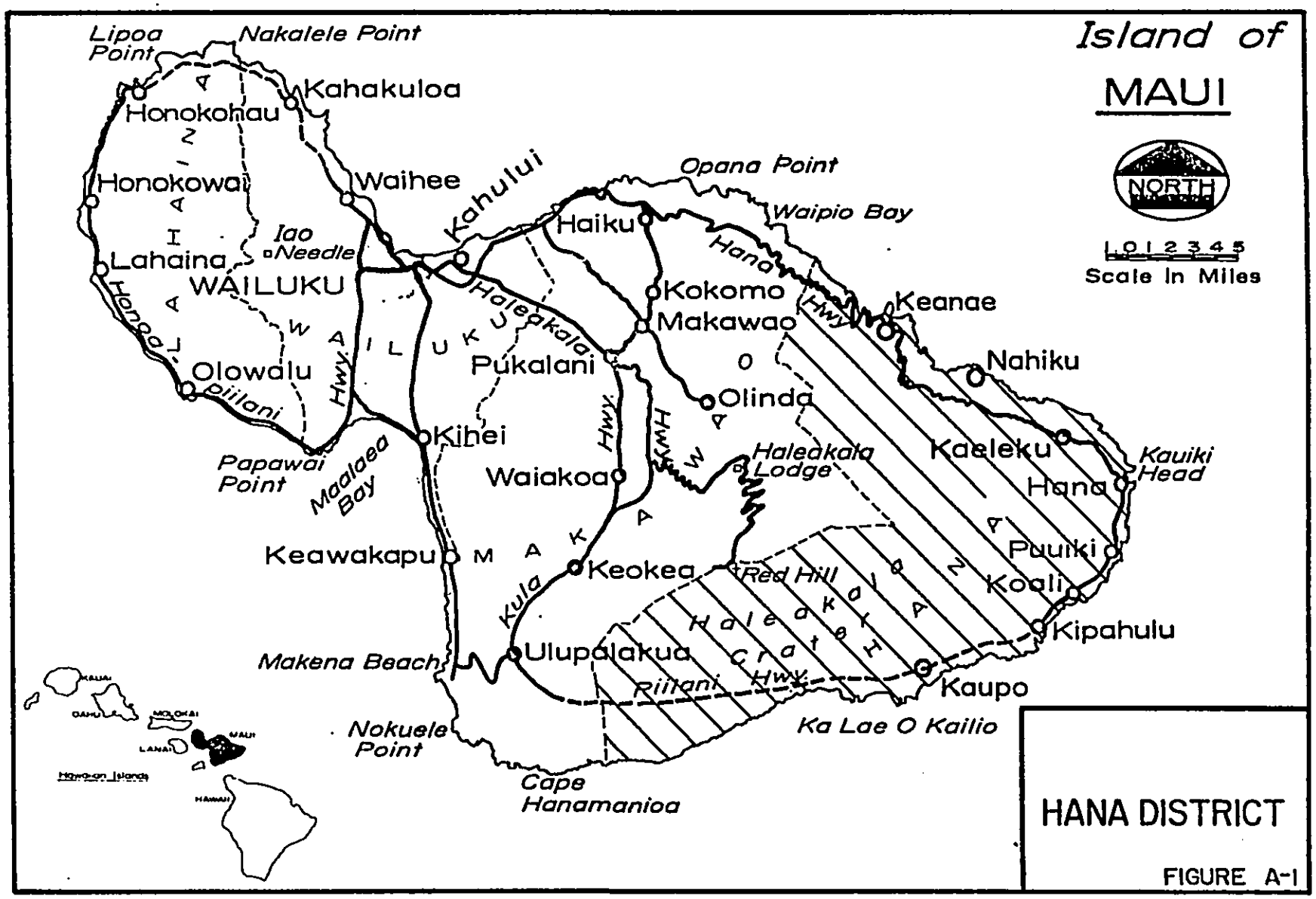
The State Department of Health makes periodic field surveys to estimate the resident population served by the County Water Systems. The Department of Health estimates the number of people being serviced by the County Water System in 1980 are shown below in Table A-1.

TABLE A-1

DEPARTMENT OF HEALTH RESIDENT POPULATION SURVEY FOR THE HANA DISTRICT (REFERENCES 1 and 2)

Community	County Water System	Private Water System	Total Population
Hana	891	260	1151
Keanae	241	-	241
Kaupo*	22	21	43
Nahiku	68	-	68
Kipahulu	-	55	55
TOTAL	1222	336	1558

(*State Department of Health shows that Kaupo has 65 people using the County's Water System based on 3.4 people/meter (19 meters). However, from an interview with Mr. Carl Bredhoff, Kaupo Ranch Manger, on 2 February, 1981, there appears to be approximately 22 people on the County's


Island of
MAUI
NORTH
0 1 2 3 4 5
Scale in Miles
Lipoa Point
Nakalele Point
Kahakuloa
Honokohau
Honokowai
Waihee
Kahului
Opana Point
Waipio Bay
Haiku
Iao Needle
Lahaina
WAILUKU
Hana Hwy
Kokomo
Makawao
Keanae
Olowalu
Piilani Hwy
Pukalani
Nahiku
Olinda
Kihei
Papawai Point
Maalaea Bay
Waiakoa
Haleakala Lodge
Kaeleku
Kauiki Head
Hana
Keawakapu
Keokea
Red Hill
Pauiki
Kula
Kooli
Kipahulu
Makena Beach
Ulupalakua
Haleakala Crater
Piilani Hwy
Kaupo
Ka Lae O Kailio
Nokuele Point
Cape Hanamanioa
HANA DISTRICT
FIGURE A-1

Water System and 21 people using the Kaupo Ranch System. The County Department of Water Supply indicated that in 1978 there were 19 people and 19 meters on record, of which eight meters were connected to cattle troughs and two were serving vacant houses (Reference 5). Based on the above information the estimated population for Kaupo was adopted as being 43 people.)

Kaupo Ranch's system serves about 21 people and 2,000 head of cattle. Therefore, the resident population estimate for the Hana Distric using the Department of Health figures is 1,558 people.

The Department of Health estimate of 1,558 people is higher than the 1980 census data for the Hana District of 1,423 people (Reference 2). The resident population distribution of the Hana District as estimated by the Department of Health will be used for this report.

The Department of Health estimate includes only those individuals residing in the Hana District. The estimated population would be more representative to consider the total population of the Hana District. The total population was determined by adding the estimated number of overnight visitors to the estimated resident population of the Hana District.

The commercial accommodations for visitors are mainly in Hana Town and it was assumed that an insignificant number of visitors stayed overnight at the communities of Keanae, Kaupo, Nahiku, and Kipahulu. According to the Hawaii Visitor's Bureau, the representative commercial accommodations in Hana Town are the Hotel Hana-Maui, the Hotel Hana-Kai Resort, the Heavenly Hana Inn, and the Kanakea Kottages (Purdy Ranch). Wainapanapa State Park with its cabins is a popular vacation place for local people and was included in this study. All accommodations except Hotel Hana-Maui receive water from the County's Water System. Hotel Hana-Maui is served by the privately owned Hana Ranch Water System. Table A-2 below shows the estimated number of visitors who stay overnight at Hana Town. The occupancy rates were based on average occupancy rates during peak visitor periods.

TABLE A-2

ESTIMATED NUMBER OF VISITORS STAYING OVERNIGHT IN HANA

A. Served by County Water System

Hotel/Apt/ Cabin	Source of Information	Number of Rooms	Ave Number of People Per Room	Occupancy Rate	Ave Number of People Per Day
Hotel Hana-Kai Resort	Manager (Ref. 7)	19 units	8-studios=2 11-singles=4	95%	57
Heavenly Hana Inn	Manager (Ref. 8)	4 units	4	95%	15
Kanakea Kottages (Purdy Ranch)	Manager (Ref. 9)	3 cabins	1-cabin=4 1-cabin=6 1-cabin=8	95%	17
Wainapanapa State Park	DLNR (Ref. 10)	12 cabins	6	100%	72
					161

B. Served by Private Water System

Hotel Hana-Maui	Manager (Ref. 11)	61 units	53-singles=2 8-cottages=4	95%	131
				TOTAL	292

The total population of the Hana District is estimated at 1,850 people (1,558 + 292 = 1,850 people).

According to the 208 Water Quality Management Plan for the County of Maui, three State documents were used to estimate population growth. The 208 Plan divides the island of Maui into five Hydrographic Areas. The Hana District is closely represented by Hydrographic Areas IV and V (see Figure A-2). The 208 Plan population projection and distribution for Hydrographic Area IV and V from the year 1980 to 2000 is shown in Table A-3.

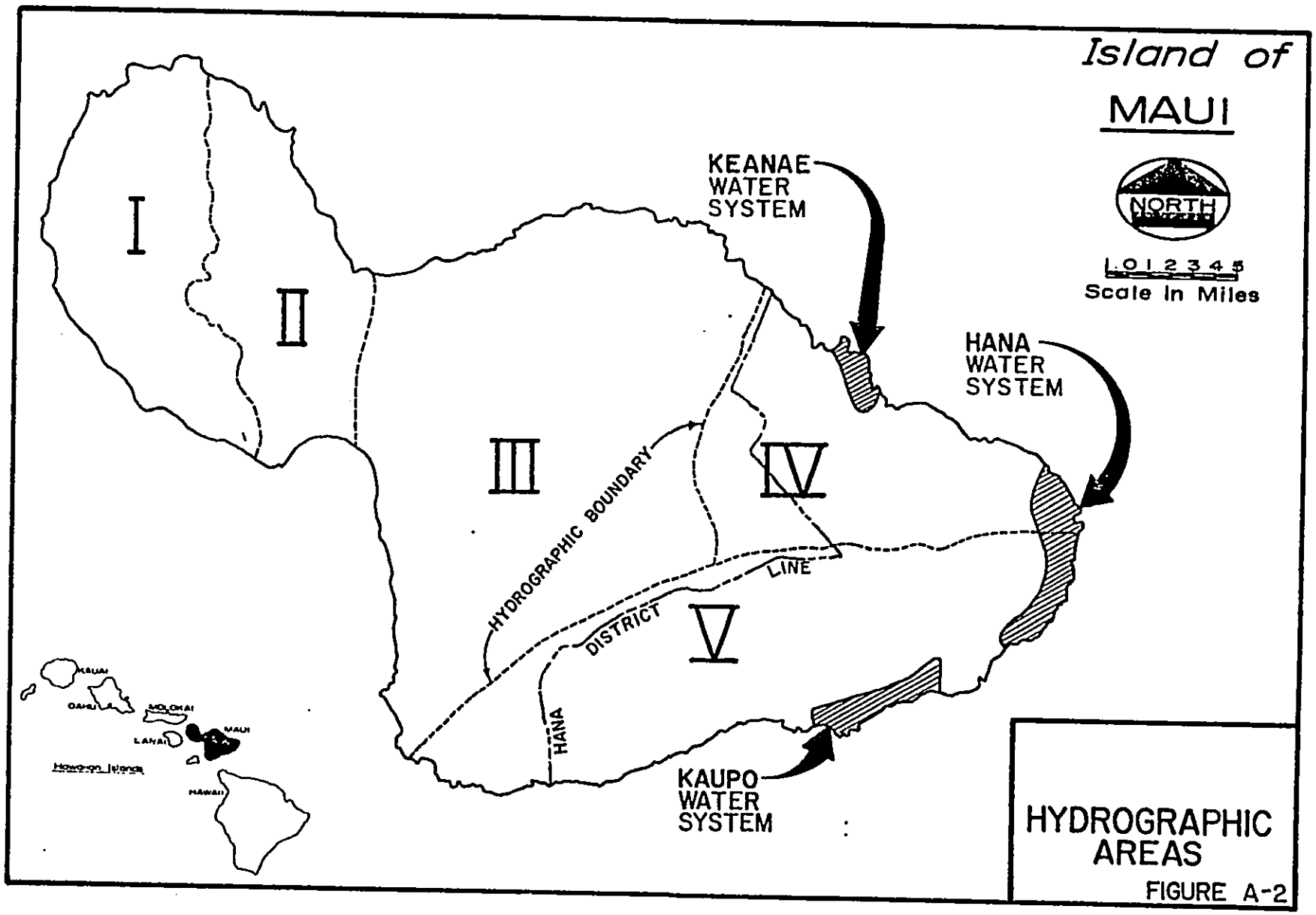

Island of
MAUI
NORTH
0 1 2 3 4 5
Scale in Miles
KEANAE
WATER
SYSTEM
HANA
WATER
SYSTEM
I
II
III
IV
V
HYDROGRAPHIC BOUNDARY
LINE
DISTRICT
HANA
KAUPO
WATER
SYSTEM
KAUAI
OAHU
MOLOKAI
MAUI
LANAI
Hawaiian Islands
HAWAII
HYDROGRAPHIC
AREAS

FIGURE A-2

TABLE A-3

208 PLAN POPULATION ESTIMATE OF THE HANA DISTRICT

	Year				
Hydrographic Area	1980	1985	1990	1995	2000
Hydrographic Area IV (Keanae to Nahiku to Hana Town)	1,150	1,323	1,484	1,676	1,938
Hydrographic Area V (Portion of Hana to Cape Hanamanioa)	550	610	665	734	861
Hana District (TOTAL)	1,700	1,933	2,149	2,410	2,799

The 208 Plan population projection for the 1980 resident population in the Hana District is 1,700 (Reference 4). This number is within ten percent of the total population estimated from the Department of Health data for the Hana District. It is assumed that the basic growth pattern of the Hana District would be the 208 Plan population projection and the population distribution throughout the Hana District is assumed to remain the same during the period. Therefore the estimated populations projected for each community within the Hana District was based on the growth rate of the Hydrographic Areas of the 208 Plan. Table A-4 shows the relative population distribution in the Hana area based on the 1980 population. These factors were applied to the 208 Plan population projections resulting in Table A-5 which shows the projected total population for Hana District Communities from the year 1980 to year 2000.

TABLE A-4

RELATIVE POPULATION DISTRIBUTION FOR HANA DISTRICT COMMUNITIES BASED ON HYDROGRAPHIC AREA IV AND V

Hydrographic Area	1980 Population	Realtive Dist. %	Comments
Total (IV)	1,251		$\frac{1150}{1700} \times 1850 = 1251$
Hana (Portion)	942	75.3	Calculated 942 = 1251-(241-68)
Keanae	241	19.3	
Nahiku	68	5.4	
Total (VI)	599		$\frac{550}{1700} \times 1850 = 599$
Hana (Portion)	501	83.6	Calculated 501=599-(55+43)
Kipahulu	55	9.2	
Kaupo	43	7.2	

TABLE A-5

TOTAL POPULATION PROJECTION FOR HANA DISTRICT

COMMUNITIES - YEAR 1980 TO YEAR 2000

Community (Hydrographic Area)	Year				
	1980*	1985	1990	1995	2000
Hana (IV+V)	1,443	1,506	1,673	1,876	2,176
Keanae (IV)	241	255	286	323	374
Kaupo (V)	43	44	48	52	62
Nahiku (IV)	68	72	81	91	105
Kipahulu (V)	55	56	61	68	79
Hana District	1,850*	1,933	2,149	2,410	2,799

*1980 total population derived from Department of Health figures and the estimated visitor count.

For the study areas of Hana, Keanae and Kaupo, there are two private water systems, one in Hana and the other in Kaupo. The distribution of the population being served by the County Water System and private water system was assumed to be the same as the 1980 distribution throughout the study period. Table A-6 shows the percent distribution of the total population being served between County and private water systems and Table A-7 shows the projected population being served by County and private water systems, respectively.

TABLE A-6

POPULATION DISTRIBUTION OF HANA DISTRICT COMMUNITIES SERVED BETWEEN COUNTY WATER SYSTEMS AND PRIVATE WATER SYSTEMS, IN YEAR 1980

Community	County Water System Population Distribution (%)	Private Water System Population Distribution (%)
Hana	1052/1443 = 72.90	391/1443 = 27.10
Keanae	241/241 =100.00	0 = 0.0
Kaupo*	22/43 = 51.16	21/43 = 48.84
Nahiku	68/68 =100.00	0 = 0.0
Kipahulu	0 = 0.0	55/55 =100.00

TABLE A-7

POPULATION PROJECTION FOR STUDY AREAS SERVED BY

COUNTY WATER SYSTEMS AND PRIVATE WATER SYSTEMS

YEAR 1980 TO YEAR 2000

Year	1980		1985		1990		1995		2000	
	C	P	C	P	C	P	C	P	C	P
Community										
Hana	1052	391	1098	408	1220	453	1368	508	1588	591
Keanae	241	0	255	0	286	0	323	0	374	0
Kaupo	22	21	23	21	25	23	27	25	32	30

C = County Water System
P = Private Water System

APPENDIX A - REFERENCES

1. S&S Engineers, Inc., Final Report, Interim Drinking Water Study, Municipal Water Systems, Department of Health, State of Hawaii, November 1977.

2. S&S Engineers, Inc., Final Report, Interim Drinking Water Study, Private Water Systems, Dept. of Health, State of Hawaii, April 1978.

3. Dept. of Planning and Economic Development, Research and Economic Analysis Division, State of Hawaii, The Population of Hawaii, 1980; Final Census Results, Statistical Report 143, March 18, 1981.

4. State Dept. of Health and County of Maui, Water Quality Management Plan of the County of Maui, December 1980.

5. County of Maui DWS letter dated 19 January 1978 to State Department of Health.

6. Telephone interview by Ralph Morita, SOH, Inc., with Mr. Carl Bredhoff, manager of Kaupo Ranch on 2 February 1981.

7. Telephone interview by Ralph Morita, SOH, Inc., with Mrs. Liberman, manager of Heavenly Hana-Inn on 19 August 1981.

8. Telephone interview by Ralph Morita, SOH, Inc., with Ms. Mary Purdy, manager of Kanakea Kottages on 10 August 1981.

9. Telephone interview by Ralph Morita, SOH, Inc., with Ms. Danielle Lam, DLNR State Parks, on 10 August 1981.

10. Telephone interview by Ralph Morita, SOH, Inc., with Mr. Gil Moss, manager of Hotel Hana-Maui on 10 August 1981.

APPENDIX B

Sampling Results for Primary and Secondary Contaminants

CONTAMINANTS			INORGANIC CHEMICALS										ORGANIC CHEMICAL	
			ARSENIC	BARIUM	CADMIUM	CHROMIUM	LEAD	MERCURY	SELENIUM	SILVER	FLUORIDE[c]	NITRATE	ENDRIN	LINDANE
UNITS			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
M.C.L.[a]			0.05	1.0	0.010	0.05	0.05	0.002	0.01	0.05	1.4	10.0	0.0002	0.004
LOCATION	LAB[b]	DATE												
1. OLD .05 MG TANK	BR (SOH)	02/12/81	<0.002	<0.1	<0.005	<0.05	<0.05	0.000086	<0.002	<0.01	0.25	0.08	<0.000001	<0.001001
"	BR (SOH)	11/12/81			<0.005		ND							
2. NEW .04 MG TANK	BR (SOH)	02/12/81	<0.002	<0.1	<0.005	<0.05	<0.05	0.000121	<0.002	<0.01	0.28	0.05	<0.000001	<0.000001
3. KAUPO STORE	DOH	03/20/80	ND[d]	ND[d]	ND[d]	ND[d]	ND[d]	ND[d]	ND[d]	ND[d]	ND[d]	0.1		
"	BR (DWS)	05/12/80	<0.002	<0.1	0.013[e]	<0.05	<0.05	0.00001	<0.002	<0.01	<0.01	0.6		
"	BR (DWS)	07/08/80	<0.002	<0.1	0.010	<0.05	<0.05	0.0001	<0.002	<0.01	<0.01	2.3	<0.000001	<0.000001
"	PEL (SOH)	05/08/81												
"	BR (SOH)	11/12/81			<0.005		<0.05							
4. PUNAHOA SPRING	BR (SOH)	02/12/81	<0.002	<0.1	<0.005	0.05	0.05	0.000164	<0.002	<0.01	0.33	0.08	<0.000001	<0.000001
6. DIVISION TANK	BR (SOH)	02/12/81			<0.005		ND[d]							

NOTES:

a. MAXIMUM CONTAMINANT LEVEL
b. LAB (SAMPLED BY)
   BR BREWER CHEMICAL (SOH) SAM O. HIROTA. INC.
   PEL PACIFIC ENVIORNMENTAL LABORATORY (DWS) DEPARTMENT OF WATER SUPPLY
   DOH STATE OF HAWAII DEPARTMENT OF HEALTH
   DLNR REPORTED BY DEPARTMENT OF LAND AND NATURAL RESOURCES
c. FLUORIDE M.C.L. BASED ON ANNUAL MEAN HIGH TEMPERATURE OF 80.1 DEGREES FAHRENHEIT
d. ND NOT DECTECTED IN SIGNIFICANT AMOUNTS
e. EXCEEDS MAXIMUM CONTAMINANT LEVEL
f. AMENDED TO THE NATIONAL INTERIM TEMPORARY DRINKING WATER REGULATIONS
g. NOT REQUIRED FOR POPULATIONS LESS THAN 10,000

	ORGANIC CHEMICALS						NIPDWR AMENDMENTS[1]			
NITRATE	ENDRIN	LINDANE	METHOXYCHLOR	TOXAPHENE	2,4-D	SILVEX	TOTAL TRIHALOMETHANES[2] INSTANTANEOUS	TOTAL TRIHALOMETHANES[2] POTENTIAL TOTAL	SODIUM	CORROSIVITY
mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	L.I.
10.0	0.0002	0.004	0.1	0.005	0.1	0.010	0.1		20	>0.0
0.06	<0.000001	<0.001001	<0.000005	<0.000005	<0.010	<0.010			3.07	-2.91[e]
0.05	<0.000001	<0.000001	<0.000005	<0.000005	<0.010	<0.010			4.17	-3.29[e]
0.:										
0.6										
2.3	<0.000001	<0.000001	<0.000005	<0.000001	<0.010	<0.010			3	
							0.00039	0.00035		
									2.35	-3.32[e]
0.08	<0.000001	<0.000001	<0.000005	<0.000005	<0.010	<0.010			39.4[e]	-1.45[e]

KALIPO WATER SYSTEM
HANA DISTRICT MAUI HAWAII

SAMPLING RESULTS
PRIMARY CONTAMINANTS

TABLE B-1

RADIONUCLIDES

CONTAMINANTS			NATURAL		MAN MADE[f]		
				COMBINED			
			GROSS	RA 226	GROSS		
			ALPHA	RA 228	BETA	TRITIUM	STRONTIUM-90
UNITS			pCi/l	pCi/l	pCi/l	pCi/l	pCi/l
MCL			15	5	50	20.000	8
WATER SYSTEM	LAB	DATE					
KIPAHULU WAI HUI[a]	CODH[b]	1978[c]	0.5±0.7	-[e]	0.4±1.0	-[g]	-[g]
"	CODH	1980[d]	0.0±0.5	-	-	-	-

NOTES:

a. RADIONUCLIDES SAMPLING WAS TAKEN BY THE STATE DEPARTMENT OF HEALTH AND SENT TO CALIFORNIA DEPARTMENT OF HEALTH FOR TESTING - KIPAHULU WAI HUI SYSTEM WAS THE CLOSEST TO KAUPO WATER SYSTEM AND ASSUMED TO HAVE SIMILAR RESULTS SINCE ALL WATER SYSTEMS ON MAUI WERE BELOW THE MAXIMUM CONTAMINANT LEVELS.

b. CDOH - CALIFORNIA DEPARTMENT OF HEALTH

c. CDOH LETTER DATED 8/12/78 TO DR. JAMES S. KUMAGAI, STATE DEPARTMENT OF HEALTH

d. CDOH LETTER DATED 2/21/80 TO DR. JAMES S. KUMAGAI, STATE DEPARTMENT OF HEALTH

e. CDOH LETTER DATED 8/21/78, "SINCE GROSS ALPHA LESS THAN 2.0 pCi/l, NO RADIUM ANALYSIS REQUIRED."

f. MAN MADE RADIONUCLIDES APPLICABLE TO COMMUNITY SYSTEM SERVING A POPULATION OF 10,000 OR MORE. THEREFORE THIS REQUIREMENT IS NOT APPLICABLE TO THE KAUPO WATER SYSTEM.

g. CDOH LETTER DATED 8/21/78, "GROSS BETA LESS THAN 3.0 pCi/l, THEREFORE IF ALL BETA ACTIVITY FROM Sr, A LARGE CONTRIBUTION FROM TRITIUM WOULD BE NECESSARY AND IN THIS CASE UNLIKELY."

KAUPO WATER SYSTEM
HANA DISTRICT MAUI HAWAII

SAMPLING RESULTS PRIMARY CONTAMINANTS

TABLE B-2

TURBIDITY AT KAUPO TANK

DATE	MONTHLY AVERAGES (NTU)	MONTHLY HIGH (NTU)	MONTHLY LOW (NTU)	NUMBER OF TIMES 2-DAY AVERAGE OVER 5.0 NTU
JUL 1977	2.7	9.6	0.6	3
AUG	1.6	8.0	0.4	0
SEP	1.1	2.9	0.3	0
OCT	0.9	9.1	0.4	0
NOV	0.4	0.9	0.3	0
DEC	1.3	5.9	0.4	1
JAN 1978	3.1	14+	0.6	5
FEB	2.7	15+	0.4	3
MAR	0.8	8.9	0.2	0
APR	1.0	7.4	0.2	0
MAY	SAMPLING STOPPED			

REF: SAMPLES AND TESTS BY COUNTY OF MAUI. DEPARTMENT OF WATER.

KAUPO WATER SYSTEM
HANA DISTRICT MAUI HAWAII

SAMPLING RESULTS
PRIMARY CONTAMINANTS

TABLE B-3

MICROBIOLOGY RESULTS - MEMBRA

	KAUPO BARN						KAUPO STORE	
		MONTHLY BASIS			3 MONTH BASIS			M
DATE	MONTHLY READING	REQ 1[a]	REQ 2[b]	3 MONTH AVERAGE	REQ 1[a]	REQ 2[b]	MONTHLY READING	
08-23-77							29	
09-20-77							>160	
10-18-77							1	
11-30-77							160	
12-27-77							14	
01-19-78							14	
02-02-78							40	
03-22-78							>140	
04-03-78							>290	
05-16-78							<1	
06-20-78							7	
07-10-78							24	
08-15-78	<1						22	
09-19-78	<1			TNTC	•	•	<1	
10-24-78	TNTC	•	•	TNTC	•	•	24	
11-21-78	<1			TNTC	•	•	<1	
12-29-78	<1			1			<1	
01-17-79	3	•		1			2	
02-17-79	<1			54.4	•	•	NO SAMPLE	
03-20-79	160	•	•	53.4	•	•	1	
04-24-79	<1			84.4	•	•	<1	
05-15-79	93	•	•	31	•	•	<1	
06-19-79	<1			31	•	•	24	
07-17-79	<1			TNTC	•	•	100	
08-28-79	TNTC	•	•	TNTC	•	•	150	
09-05-79	106	•	•	TNTC	•	•	194	

NOTES:

• EXCEEDED MCL

TNTC TO NUMEROUS TO COUNT

a. REQUIREMENT 1 - 1 COLONY/100ml OF ARITHMETIC MEAN OF ALL SAMPLES EXAMINED PER MONTH (OR 3 MONTH PERIOD).

b. REQUIREMENT 2 - 4 COLONIES/100ml IN MORE THAN 1 SAMPLE WHEN LESS THAN 20 SAMPLES ARE EXAMINED PER MONTH (OR 3 MONTH PERIOD).

c. SAMPLES AND TESTING BY COUNTY OF MAUI. DEPARTMENT OF WATER SUPPLY.

S - MEMBRANE FILTER METHOD

	KAUPO STORE					
		MONTHLY BASIS			3 MONTH BASIS	
REQ 2[b]	MONTHLY READING	REQ 1[a]	REQ 2[b]	3 MONTH AVERAGE	REQ 1[a]	REQ 2[b]
	29	•	•			
	>160	•	•	63	•	•
	1			107	•	•
	160	•	•	57.4	•	•
	14	•	•	78	•	•
	14	•	•	38	•	•
	40	•	•	80	•	•
	>140	•	•	166	•	•
	>290	•	•	143	•	•
	<1			99	•	•
	7	•	•	10.3	•	•
	24	•	•	17.7	•	•
	22	•	•	15.3	•	•
•	<1			15.3	•	•
•	24	•	•	8	•	•
•	<1			8	•	•
	<1			<1		
	2	•		1		
•	NO SAMPLE	–	–	–	–	–
•	1			1		
•	<1			<1		
•	<1			8	•	•
•	24	•	•	41.4	•	•
•	100	•	•	91.4	•	•
•	150	•	•	148	•	•
•	194	•	•			

LES

LESS

PPLY.

KAUPO WATER SYSTEM
HANA DISTRICT MAUI HAWAII

SAMPLING RESULTS
PRIMARY CONTAMINANTS

TABLE B-4

MICROBIOLOGY RESULTS—FERMENTATI

	KAUPO BARN						KAUPO STOR
		MONTHLY BASIS			3 MONTH BASIS		
DATE	NO. OF TUBES	REQ 1[a]	REQ 2[b]	3 MONTH	REQ 1[a]	REQ 2[b]	NO. OF TUE
	POSITIVE OF 5			AVERAGE			POSITIVE O
10-16-79	0/5						1/5
11-19-79	0/5			1.7/5	•		4/5
12-17-79	5/5	•	•	2.3/5	•		5/5
01-15-80	2/5	•		4/5	•	•	5/5
02-19-80	5/5	•	•	2.3/5	•		5/5
03-31-80	0/5			1.7/5	•		5/5
04-21-80	1/5			0/5			5/5
05-19-80	0/5			0/5			5/5
06-16-80	0/5						5/5

NOTES:

- • EXCEEDED MCL
- a. REQUIREMENT 1 - 1 COLONY/100ml OF ARITHMETIC MEAN OF ALL SAMPLES EXAMINED PER MONTH (OR 3 MONTH PERIOD).
- b. REQUIREMENT 2 - 4 COLONIES/100ml IN MORE THAN 1 SAMPLE WHEN LESS THAN 20 SAMPLES ARE EXAMINED PER MONTH (OR 3 MONTH PERIOD).
- c. SAMPLES AND TESTING BY COUNTY OF MAUI. DEPARTMENT OF WATER SUPPLY.

ERMENTATION TUBE METHOD

		KAUPO STORE					
S			MONTHLY			3 MONTH BASIS	
	REQ 2[b]	NO. OF TUBES	REQ 1[a]	REQ 2[b]	3 MONTH	REQ 1[a]	REQ 2[b]
		POSITIVE OF 5			AVERAGE		
		1/5	•				
		4/5	•	•	3.3/5	•	•
		5/5	•	•	4.7/5	•	•
	•	5/5	•	•	5/5	•	•
		5/5	•	•	5/5	•	•
		5/5	•	•	5/5	•	•
		5/5	•	•	5/5	•	•
		5/5	•	•	5/5	•	•
		5/5	•	•			

KAUPO WATER SYSTEM
HANA DISTRICT MAUI HAWAII

SAMPLING RESULTS
PRIMARY CONTAMINANTS

TABLE B-5

CONTAMINANTS			CHLORIDE	COLOR	COPPER	FOAMING AGENT	IR
UNITS			mg/l	COLOR U	mg/l	mg/l	mg
M.C.L.[a]			250	15	1.0	0.5	0.
LOCATION	LAB[b]	DATE					
1. OLD .05 MG TANK	BR (SOH)	02/12/81	7	60[c]	0.03		2.
"	BR (SOH)	05/08/81					<0.
"	BR (SOH)	11/12/81				<0.2	0.
2. NEW .04 MG TANK	BR (SOH)	02/12/81	4	43[c]	<0.02		1.
3. RANCH PUMPHOUSE	BR (SOH)	05/08/81					0.
4. KAUPO STORE	DOH	06/17/75	110	5	0.03		0.
"	DOH	03/20/80	2				
"	BR (DWS)	07/08/80	4				<0.
"	BR (DWS)	05/08/81					<0.
"	BR (SOH)	11/12/81	9	10	<0.02		0.
5. PUNAHOA SPRING	BR (SOH)	02/12/81	108	8	0.02		0.
"	BR (SOH)	05/08/81					<0.
6. DIVISION TANK	BR (SOH)	11/12/81				<0.2	0.

NOTES:

a. MAXIMUM CONTAMINANT LEVEL

b. LAB

		(SAMPLED BY)	
BR	BREWER CHEMICAL	(SOH)	SAM O. HIROTA. INC.
PEL	PACIFIC ENVIORNMENTAL LABORATORY	(DWS)	DEPARTMENT OF WATER SUPPLY
DOH	STATE OF HAWAII DEPARTMENT OF HEALTH		
DLNR	REPORTED BY DEPARTMENT OF LAND AND NATURAL RESOURCES		

c. EXCEEDS MAXIMUM CONTAMINANT LEVEL

d. TOTAL DISSOLVED SOLIDS

e. ND NOT DETECTED IN SIGNIFICANT AMOUNTS

FOAMING AGENT	IRON	MANGANESE	ODOR	SULFATE	T.D.S.[d]	ZINC	pH
mg/l	mg/l	mg/l	TON	mg/l	mg/l	mg/l	
0.5	0.30	0.05	3.0	250	500	5	6.5-8.5
	2.49[c]	0.02	ND[e]		41.8	0.016	6.55
	<0.03						
<0.2	0.35[c]						
	1.12[c]	<0.01	22.6[c]		28.2	0.028	6.27[c]
	0.60						
	0.30	<0.03	1.4	24	370	4	
					16		
	<0.03				45		
	<0.03						
	0.19	<0.01		<1.0	32.8	0.309	6.5
	0.08	<0.01	16[c]		230	0.114	6.98
	<0.03						
<0.2	0.14						

ER SUPPLY

KAUPO WATER SYSTEM
HANA DISTRICT MAUI HAWAII

SAMPLING RESULTS
SECONDARY CONTAMINANTS

TABLE B-6

APPENDIX C

GROUNDWATER DEVELOPMENT PROSPECTS

AT KAUPO, MAUI

By: Stephen Bowles

APPENDIX C

GROUNDWATER DEVELOPMENT PROSPECTS

AT KAUPO, MAUI

By: Stephen Bowles

The estimated water demand in Kaupo is presently 21,000 gallons per day and is expected to increase to about 30,000 gallons per day by the year 2000. Normal water supply is furnished to the community through a joint system between the County and Kaupo Ranch. The two gravity sources originated as stream diversions which do not meet the quality standards as set forth in the Federal Safe Drinking Water Act.

During drought periods, the Kaupo Ranch operates the Punahoa Spring diesel pump located at elevation 10 feet, about one mile east of the old Kaupo School. This pump, on occasion, pumps to the County's 50,000 gallon steel tank located near the Ranch headquarters at elevation 1,080 feet.

In 1977, S&S Engineers suggested that the Kalepa and Naholoku Stream diversions might be replaced by a well in Manawainui Valley. This suggested site is inaccessible for all practical purposes. Because of numerous system constraints, complex ownership, and relatively steep terrain with few water users, there is no obvious site for a well which might provide an optimum fit in system hydraulics and hydrogeology. The best location for a well appears to be at the old school in Kaupo Village at elevation 280 feet. From this location the water could be boosted to the County steel tank at elevation 1080 feet. Such a well could be four inches to six inches in diameter. The chance of obtaining a supply to meet the present and forecasted demand is excellent. There is a good chance that perched groundwater might be struck, as the area is underlain by a complex of mud and lava flows that spilled down through Kaupo Gap (Stearns, 1942).

A well, drilled at elevation 100 feet, just inland of Punahoa Spring, would produce the needed supply, however, the long distance to the demand center would require a considerable amount of wasted energy as is the present situation of the Punahoa pump of Kaupo Ranch.

Numerous other well sites might be selected between Manawainui and Nuu Landing, each having advantages and disadvantages. It does not appear reasonable to consider large diameter wells for such a small demand.

A small diameter, relatively shallow (300 feet or less) well at the old Kaupo School site should be considered as the first choice. This well could be equipped with a 5 horsepower submersible pump or a small piston and rod pump operated from a walking beam. The latter type pump offers a site advantage in that it can be operated by an electric motor or fuel engine. Further, the piston and rod type pump can have a diameter as small as 1.5 to 2 inches, thus fitting into a 3 inch casing.

Although no wells have been drilled between Manawainui and Nuu, the small anticipated demand indicates that a well producing 30 gallons per minute will meet the needs. The Punahoa pump of Kaupo Ranch could be used to provide emergency supplies. Based on the available information, a well at Kaupo School should produce excellent water and not be susceptible to saltwater encroachment. As stated earlier, there is a good chance that perched groundwater might be struck, thus eliminating salinity as a concern.

REFERENCES

Stearns, H.T. and MacDonald, G.A., 1942, Geology and Groundwater Resources of Maui, Hawaii: Hawaii Division of Hydrography, Bulletin 7

Takasaki, K.J., and Yamanaga, G., 1970, Preliminary Report on the Water Resources of Northeast Maui: Hawaii Division of Water and Land Development, Circular C 60

Takasaki, K.J., 1971 Preliminary Report on the Water Resources of Southeast Maui: Hawaii Division of Water and Land Development, Circular C 58

APPENDIX D

COMMENTS AND RESPONSES TO

DRAFT EIS

MAUI PLANNING COMMISSION
Stanley Okamoto, Chairman
Victoria Chung, Vice Chairman
Zadoc Brown
Joseph Fonoa
Joseph J. Franco
David T. Fukuda
Lee Z. Hulsing
Marlene Kaaihue
Roy Suda
Ralph Hayashi, Ex-Officio
William Hunnel, Ex-Officio

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

November 9, 1983

RECEIVED
NOV 14 1983
SAM O. HIROTA, INC.

Mayor Hannibal Tavares
County of Maui
200 S. High Street
Wailuku, HI 96793

Dear Mayor Tavares:

Re: Environmental Impact Statements for:
1) Wailua-Hana Water System Improvements
2) Kaupo Water System Improvements
3) Keanae Water System Improvements

D-1

Thank you for the opportunity to review the referenced environmental impact statements.

We find the statements to be adequate in identifying and assessing the impacts which can be anticipated in the proposed projects. Please note, however, that Special Management Area Permits are processed and approved by the Planning Department and Commission respectively. The E.I.S.'s indicate that this is a function of the Department of Public Works.

Should there be any questions, please contact me at any time.

Very truly yours,

TOSH ISHIKAWA
Planning Director

:di

cc: William Haines
Sam O. Hirota

HANNIBAL TAVARES
Mayor
TELEPHONE 244-7855

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

April 24, 1984

Mr. Tosh Ishikawa
Director of Planning
County of Maui
200 South Street
Wailuku, Maui, Hawaii 96793

Dear Mr. Ishikawa:

Subject: Environmental Impact Statement (EIS) for Kaupo Water System Improvements, Kaupo, Maui.

Reference is made to your letter dated 9 November, 1983, commenting on the subject draft Environmental Impact Statement. Your concern that processing and approval of Special Management Area Permits by the Planning Department and Commission rather than by the Public Works Department has been corrected in the Final Environmental Impact Statement.

Thank you for reviewing our Environmental Impact Statement for the Kaupo Water System Improvements.

Yours very truly,

Hannibal Tavares

Hannibal Tavares
Mayor

HANNIBAL TAVARES
Mayor

RALPH HAYASHI, P.E.
Director of Public Works

LESTER NAKASATO, P.E.
Deputy Director of Public Works

LOUIS ABREU
Superintendent of Highways

FRED ARAKI
Engineering Head

EDWIN KAGEHIRO
Waste Management Chief

AARON SHINMOTO
Land Use Administrator

COUNTY OF MAUI
DEPARTMENT OF PUBLIC WORKS
200 SOUTH HIGH STREET
WAILUKU, MAUI, HAWAII 96793

RECEIVED
NOV 17 1983
SAM O. HIROTA, INC.
By

November 15, 1983

Ms. Letitia N. Uyehara, Interim Director
Office of Environmental Quality Control
550 Halekauwila Street, Room 301
Honolulu, HI 96813

Dear Ms. Uyehara:

Subject: EIS FOR KAUPO WATER SYSTEM IMPROVEMENTS,
KAUPO, MAUI, HAWAII

D-2

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

1. A subdivision of the tank site and access road is required.

2. A variance is required for a substandard lot.

3. A building permit is required for the tank.

Thank you for the opportunity to review and comment.

Very truly yours,

RALPH HAYASHI
Director of Public Works

cc: Mayor Hannibal Tavares
William S. Haines
Director of Water Supply
Sam O. Hirota, Inc.
LUCA

HANNIBAL TAVARES
Mayor
TELEPHONE 244-7855

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

April 24, 1984

Mr. Ralph Hayashi
Director of Public Works
County of Maui
200 South Street
Wailuku, Maui, Hawaii 96793

Dear Mr. Hayashi:

Subject: Environmental Impact Statement (EIS) for Kaupo
Water System Improvements, kaupo, Maui.

Reference is made to your letter dated 15 November, 1983, commenting on the subject draft Environmental Impact Statement. Your concerns regarding the tank site and access road have been addressed by sending the Department of Water Supply the required information and subdivision map. Submission of variance application and building permit will be made prior to the construction by the Department of Water Supply, Maui County.

Thank you for reviewing our Environmental Impact Statement for the Kaupo Water System Improvements.

Yours very truly,

Hannibal Tavares

Hannibal Tavares

Mayor

80/210
CB

NOV 2 1 1983

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

Dear Mayor Tavares:

D13

Thank you for the opportunity to comment on the environmental impact statement (EIS) for improvements to the Kaupo water system.

Because improvements are based on additional withdrawals from Naholoku and Kalepa Streams, we suggest that stream biota and terrestrial flora and fauna which depend on the stream be described, and the impact of withdrawal on these life forms be assessed. The impact of a reduction in the flow ought to be monitored and measures to mitigate that impact ought to be discussed.

Sincerely,

Susumu Ono
SUSUMU ONO
Chairperson

cc: Dept. of Water Supply,
County of Maui
S. O. Hirota, Inc.

HANNIBAL TAVARES
Mayor
TELEPHONE 244-7855

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

April 24, 1984

Mr. Susumu Ono
Chairperson
Department of Land and Natural Resources
1151 Punchbowl Street
Honolulu, Hawaii 96813

Dear Mr. Ono:

Subject: Environmental Impact Statement (EIS) for Kaupo
Water System Improvements, Kaupo, Maui.

Reference is made to your letter dated 21 November, 1983, commenting on the subject draft Environmental Impact Statement. Your concerns are addressed in the order in which they were presented.

No additional water will be taken nor will any improvements be made at the streams mentioned. Treatment will consist of filtering and chlorination prior to distribution. Therefore, impact on the stream biota and terrestrial flora and fauna which depend on the streams will not be increased.

Additional water required during periods of low stream flow will be supplied by new well source.

Thank you for reviewing our Environmental Impact Statement for the Kaupo Water System Improvements.

Yours very truly,

Hannibal Tavares

Hannibal Tavares
Mayor

80210
E/S

GEORGE R. ARIYOSHI
GOVERNOR OF HAWAII

CHARLES G. CLARK
DIRECTOR OF HEALTH

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

In reply, please refer to:
EPHSB-SS

November 29, 1983

MEMORANDUM

To: Honorable Hannibal M. Tavares, Mayor, County of Maui
Ms. Letitia N. Uyehara, Interim Director, OEQC

From: Director of Health

Subject: Environmental Impact Statement (EIS) for Kaupo Water System Improvements, Kaupo, Maui

D-4

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

We understand that the following improvements to the existing Kaupo water system are proposed:

1. Installation of a pressure filter to remove turbidity from surface waters and chlorination appurtenances;

2. Installation of a new mid-level 40,000 gallon storage tank at elevation of 540 feet;

3. Drilling of a new well at the old Kaupo School grounds and installation of deepwell pumps and chlorination appurtenances;

4. Installation of additional waterlines to separate the domestic water system from the agricultural water system; and

5. Elimination of a 50,000 gallon storage tank near Kaupo Ranch headquarters.

We also understand that the proposed improvements will combine the two interconnected but separate Kaupo systems, one operated by Kaupo Ranch and the other belonging to the County of Maui. Presently, the two water systems do not meet the definition of a "public water system" because of the small populations being served by each system. Therefore, their water systems presently are not required to comply with the State and Federal drinking water regulations. However, their combined populations will qualify Kaupo as a public water system and will be subject to all applicable terms and conditions of the State's drinking water regulations, Chapter 20, Title 11, Administrative Rules.

The proposed groundwater well located at the old Kaupo School grounds will require compliance with Section 11-20-29, Administrative Rules. This section requires Department of Health approval of all new potable water sources serving public water systems. Such approval is based upon the submission of an engineering report satisfactorily addressing all concerns set down in Section 11-20-29, Administrative Rules.

As you may know, concerns for well sources identified in Section 11-20-29, Title 11, include but are not limited to:

1. Nature of the soil and stratum overlaying the water source;

2. Nature, distance, direction of flow and time of travel of contaminants from present and projected domestic, industrial and agricultural sources of pollution, and waste injection wells and other waste disposal facilities;

3. Probability and effect of surface drainage or contaminated underground water entering the subject water source; and

4. Water quality and quantity data during normal and stress periods.

Reference is also made to the proposed dual-piping system to provide potable water and nonpotable (wash down and/or irrigation) water, to be delivered through separate distribution systems. The existence of separate domestic and irrigation systems indicates the potential for cross-connection of the two systems. We would recommend care be taken to prevent such occurrence especially in view of the different treatments proposed for the two systems. We also recommend that proper safety precautions are observed.

The Department supports the project objective to provide the Kaupo area with water in compliance with the State and Federal drinking water regulations.

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.

for CHARLES G. CLARK

cc: Mr. William S. Haines
Sam O. Hirota, Inc. ✓
DHO, Maui

HANNIBAL TAVARES
Mayor
TELEPHONE 244-7885

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

April 24, 1984

Mr. Charles G. Clark
Director of Health
State of Hawaii
Department of Health
P.O. Box 3378
Honolulu, Hawaii 96801

Dear Mr. Clark:

Subject: Environmental Impact Statement (EIS) for Kaupo Water System Improvements, Kaupo, Maui.

Reference is made to your letter dated 29 November, 1983, commenting on the subject draft Environmental Impact Statement. Your concerns on the proposed ground water well and the compliance with Section 11-20-29, Title 11, Administrative Rules, are addressed in the preliminary engineering report which will be completed with well pumping and water quality data for submission to the Dept of Health prior to well operation.

Thank you for reviewing our Environmental Impact Statement for the Kaupo Water System Improvements.

Yours very truly,

Hannibal Tavares

Hannibal Tavares

Mayor

SAM O. HIROTA, INC.

April 20, 1984

Mr. Gordon Okazaki
Department of Water Supply
County of Maui
P.O. Box 1109
Wailuku, Maui, Hawaii 96793

Dear Mr. Okazaki:

Subject: Environmental Impact Statement (EIS) for Kaupo Water System Improvements, Kaupo, Maui.

The following letters required no response:

a. Federal
   - U.S. Department of Interior (Geological Survey)
   - U.S. Department of Agriculture (Soil Conservation Service)
   - U.S. Coast Guard
   - U.S. Navy
   - U.S. Air Force

b. State of Hawaii
   - Office of Environmental Quality Control
   - Department of Agriculture
   - Department of Planning and Economic Development
   - Department of Accounting and General Services
   - Department of Defense (Adjutant General)
   - Department of Education
   - University of Hawaii (Water Resources Research Center)

c. Non-Governmental Agencies
   - Maui Electric Company

Yours very truly,

Dennis I. Hirota, PhD, P.E.
Vice President

United States Department of the Interior

GEOLOGICAL SURVEY
Water Resources Division
P.O. Box 50166
Honolulu, Hawaii 96850

November 21, 1983

Ms. Letitia N. Uyehara, Interim Director
Office of Environmental Quality Control
550 Halekauwila Street, Room 301
Honolulu, Hawaii 96813

Dear Ms. Uyehara:

RE: Kaupo Water System Improvements

The U.S. Geological Survey, Water Resources Division, Hawaii District, has no comments at this time regarding the above subject matter.

We appreciate the opportunity allowed to us to review the above environmental impact statement.

Sincerely,

Stanley F. Kapuzka
District Chief

Enclosure

cc: Mayor Hannibal H. Tavares, Wailuku, Maui
Mr. William S. Haines, Wailuku, Maui
Mr. Sam O. Hirota, Honolulu, Hawaii

D-7

COPY

801210
EIS

United States Department of Agriculture

Soil Conservation Service

P.O. Box 50004
Honolulu, Hawaii
96850

November 16, 1983

Ms. Letitia N. Uyehara, Interim Director
Office of Environmental Quality Control
550 Halekauwila Street, Room 301
Honolulu, HI 96813

Dear Ms. Uyehara:

Subject: Environmental Impact Statement for the Kaupo Water System Improvements, Kaupo, Maui, HI

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

Thank you for the opportunity to review the document.

Sincerely,

FRANCIS C.H. LUM
State Conservationist

Copy:
Honorable Hannibal H. Tavares
Mayor, County of Maui
200 South High Street
Wailuku, HI 96793

Mr. William S. Haines, Director
Department of Water Supply
County of Maui
P.O. Box 1109
Wailuku, HI 96793

Sam O. Hirota, Inc.
345 Queen Street, Suite 500
Honolulu, HI 96813

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

U.S. Department of Transportation
United States Coast Guard

Commander (dpl)
Fourteenth Coast Guard District

Prince Kalanianaole
Federal Building
300 Ala Moana Blvd.
Honolulu, Hawaii 96850
Phone: 546-2861

RECEIVED
NOV - 7 1983
SAM O. H[illegible]

11000
Serial 609
02 NOV 1983

Ms. Letitia N. Uyehara, Interim Director
Office of Environmental Quality Control
550 Halekauwila Street, Room 301
Honolulu, Hawaii 96813

Dear Ms. Uyehara:

The Fourteenth Coast Guard District has reviewed the EIS for the Kaupo Water System Improvements and has no objection or constructive comments to offer at the present time.

Sincerely,

J. E. SCHWARTZ
Commander, U. S. Coast Guard
District Planning Officer
By direction of
Commander, Fourteenth Coast Guard District

Copies to: (1) Mayor, County of Maui
(2) Department of Water Supply, Maui
(3) Sam O. Hirota, Inc., Honolulu

D-8

B0/210
ES Response

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

IN REPLY REFER TO:
5
002B:WKL:jam
Ser 2343
1 NOV 1983

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

Dear Mayor Tavares:

Environmental Impact Statement
Kaupo Water System Improvements

The EIS for the Kaupo Water System Improvements has been reviewed and the Navy has no comments to offer. As this command has no further use for the EIS, the EIS is being returned to the Environmental Quality Commission, by copy of this letter.

Thank you for the opportunity to review the EIS.

Sincerely,

M. M. DALLAM
CAPTAIN, CEC, U. S. NAVY
FACILITIES ENGINEER
BY DIRECTION OF THE COMMANDER

Enclosure

Copy to:
Department of Water Supply, Maui
Sam O. Hirota, Inc.
Environmental Quality Commission

801210
Kaupo EIS
Comments.

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 15TH AIR BASE WING (PACAF)
HICKAM AIR FORCE BASE, HAWAII 96853

RECEIVED
NOV - 1983
SAM O. HIROTA, INC.

31 OCT 1983

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

SUBJECT: Environmental Impact Statements for the Kaupo, Wailua-Hana and Keanae Water Systems Improvements

TO: Ms Letitia N. Uyehara, Interim Director
Office of Environmental Quality Control
550 Halekauwila Street, Room 301
Honolulu, HI 96813

1. This office has reviewed the following EISs and has no comment relative to the proposed projects:

a. Kaupo Water System Improvements

b. Wailua-Hana Water System Improvements

c. Keanae Water System Improvements

2. We greatly appreciate your cooperative efforts in keeping the Air Force apprised of your projects and thank you for the opportunity to review the documents. The EISs are returned for your file.

ROBERT M. OKAZAKI
Chief, Engrg & Envmtl Plng Div
Directorate of Civil Engineering

3 Atch
1. EIS-Keanae Water Sys Imp
2. EIS-Wailua-Hana Water Sys Imp
3. EIS-Kaupo Water Sys Imp

cc: Mayor Hannibal M. Tavares wo Atch
County of Maui
200 South High Street
Wailuku, Maui 96793

Mr William S. Haines, Director wo Atch
Dept of Water Supply
County of Maui
P. O. Box 1109
Wailuku, Maui 96793

Mr Sam O. Hirota wo Atch
345 Queen Street, Suite 500
Honolulu, HI 96813

D-9

801210
EIS

GEORGE R. ARIYOSHI
GOVERNOR

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

Letitia N. Uyehara
Interim Director
TELEPHONE NO.
548-6915

November 28, 1983

Mr. William S. Haines, Director
Department of Water Supply
County of Maui
P.O. Box 1109
Wailuku, Maui, Hawaii 96793

Dear Mr. Haines:

Subject: Draft Environmental Impact Statement for the Kaupo Water System Improvements

We have reviewed this EIS and have no objections to this project. Thank you for providing us the opportunity to comment.

Sincerely,

Letitia N. Uyehara
Interim Director

cc: Sam O. Hirota, Inc.

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

November 2, 1983

MEMORANDUM

TO: Honorable Hanaibal H. Tavares
Mayor, County of Maui

SUBJECT: Environmental Impact Statement (EIS) for
Kaupo Water System Improvements
Department of Water Supply, Maui County
TMK: 1-7-04: por. of 4 (Site I)
1-7-02: por. of 17 (Site II)
1-7-02: por. of 15 (Site III)
Kaupo, Maui

The Department of Agriculture has reviewed the subject EIS and does not foresee any significant adverse impacts upon agricultural activities as a result of the development of the proposed improvements.

Thank you for the opportunity to comment.

JACK K. SUWA, CHAIRMAN
Board of Agriculture

cc: Maui County Department of Water Supply
Sam O. Hirota, Inc.
Ms. Letitia N. Uyehara, Interim Director
Office of Environmental Quality Control

"Support Hawaiian Agricultural Products"

D-1

C
O
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Y

DEPARTMENT OF PLANNING AND ECONOMIC DEVELOPMENT

GEORGE R. ARIYOSHI
KENT M. KEITH
JOHN R. PINCREE

KAMAMALU BUILDING, 250 SOUTH KING ST., HONOLULU, HAWAII • MAILING ADDRESS: P.O. BOX 2359, HONOLULU, HAWAII 96804

Ref. No. 8359

November 10, 1983

Ms. Letitia N. Uyehara
Interim Director
Office of Environmental Quality Control
550 Halekauwila Street, Room 301
Honolulu, Hawaii 96813

Dear Ms. Uyehara:

Subject: Environmental Impact Statement for:
1) Hana Water System Improvements
2) Keanae Water System Improvements
3) Kaupo Water System Improvements

We have reviewed the above documents and find that they adequately assess the major environmental impacts which can be anticipated from the proposed water system improvements.

Thank you for the opportunity to comment on this matter.

Very truly yours,

Kent M. Keith

Kent M. Keith

cc: Mr. William S. Haines, Director
County of Maui, Department of Water Supply
Sam O. Hirota, Inc.

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NOV - 4 1983
SAM O. HIROTA, INC.
By

NOV 3 1983

(P)1885.3

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

Dear Mayor Tavares:

Subject: Environmental Impact Statements for
(1) Wailua-Hana Water System Improvements
✓(2) Kaupo Water System Improvements
(3) Keanae Water System Improvements

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

Thank you for the opportunity to review the environmental impact statements.

Very truly yours,

HIDEO MURAKAMI
State Comptroller

RY:jl
cc: Ms. L. Uyehara
Mr. W. Haines
✓Sam O. Hirota, Inc.

GEORGE R. ARIYOSHI
GOVERNOR

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

ALEXIS T. LUM
MAJOR GENERAL
ADJUTANT GENERAL

DANIEL K. C. AH
COLONEL
DEPUTY ADJUTANT GENERAL

HIENG

26 OCT 1983

Ms. Letitia N. Uyehara
Interim Director
Office of Environmental Quality Control
550 Halekauwila Street, Room 301
Honolulu, Hawaii 96813

Dear Ms. Uyehara:

✓Kaupo Water System Improvements
Keanae Water System Improvements
Wailua-Hana Water System Improvements

Thank you for providing us the opportunity to review the above subject Environmental Impact Statements.

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

Yours truly,

JERRY M. MATSUDA
Major, HANG
Contr & Engr Officer

Hon Hannibal M. Tavares/Mayor, County of Maui
Mr. Wm. S. Haines/Dept of Water Supply
County of Maui
✓Sam O. Hirota, Inc
Env Quality Commission w/EIS's

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OCT 28 1983
SAM O. HIROTA, INC.
By

GEORGE R. ARIYOSHI
GOVERNOR

DR. DONNIS H. THOMPSON
SUPERINTENDENT

STATE OF HAWAII
DEPARTMENT OF EDUCATION
P. O. BOX 2360
HONOLULU, HAWAII 96804

OFFICE OF THE SUPERINTENDENT

October 28, 1983

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NOV - 4 1983
SAM O. HIROTA, INC.
By

Ms. Letitia N. Uyehara
Interim Director
Office of Environmental Control
550 Halekauwila Street, Rm. 301
Honolulu, HI 96813

Dear Ms. Uyehara:

The Department of Education does not have any comments to offer on the Environmental Impact Statement for the Kaupo Water System.

Thank you for the opportunity to review the EIS.

Sincerely,

Donnis H. Thompson
Superintendent of Education

DHT:HL:jl

cc: Maui District
Mr. William S. Haines
✓Sam O. Hirota, Inc.

AN EQUAL OPPORTUNITY EMPLOYER

D-12

University of Hawaii at Manoa

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

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NOV 14 1983
SAM O. HIROTA, INC.

8 November 1983

Mr. William S. Haines, Director
Department of Water Supply
County of Maui
P. O. Box 1109
Wailuku, Maui 96793

Dear Mr. Haines:

SUBJECT: Environmental Impact Statement for the Kaupo Water System Improvements, Kaupo, Maui, Hawaii, September 1983

We have reviewed the subject EIS and have no comment to offer. Thank you for the opportunity to comment. This material was reviewed by WRRC and affiliate personnel.

Sincerely,

Edwin T. Murabayashi
Edwin T. Murabayashi
EIS Coordinator

ETM:jm

cc: Letitia Uyehara
Mayor Tavares
Sam O. Hirota, Inc.

AN EQUAL OPPORTUNITY EMPLOYER

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CUST
M-W

MAUI ELECTRIC COMPANY, LIMITED

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NOV 1 1983
SAM O. HIROTA, INC.
By _____

November 8, 1983

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

ATTENTION: Ms. Letitia H. Uyehara
Interim Director

SUBJECT: Kaupo Water System Improvements (EIS)
Kaupo, Maui

We are in receipt of subject project's Environmental Impact Statement (EIS) submitted with your October 21, 1983 transmittal letter.

We have reviewed the EIS and concur with the Department of Water Supply, County of Maui, regarding statements contained therein regarding power availability, if applicable, for this project.

Attached is the EIS, since we have no further use for it.

Donald Chai
DONALD CHAI
Customer Engineering Supervisor

DC:rt

Enc.

cc: County of Maui
Dept. of Water Supply, Maui
Sam O. Hirota, Inc. ✓

POST OFFICE BOX 398 • 210 KAMEHAMEHA AVENUE • KAHULUI, MAUI, HAWAII 96732 • (808) 871-6461