January 2, 1979

The Honorable Kazu Hayashida
Director, Board of Water Supply
City and County of Honolulu
630 South Beretania Street
Honolulu, Hawaii 96813

Dear Mr. Hayashida:

Based upon the recommendation of the Office of Environmental Quality Control, I am pleased to accept the Environmental Impact Statement for Kahuku Water Development, Kahuku, Oahu, Hawaii, as satisfactory fulfillment of the requirements of Chapter 343, Hawaii Revised Statutes, and the Executive Order of August 23, 1971. This environmental impact statement will be a useful tool in the process of deciding whether or not the action described therein should or should not be allowed to proceed. My acceptance of the statement is an affirmation of the adequacy of that statement under the applicable laws, and does not constitute an endorsement of the proposed action.

When you make your decision regarding the proposed action itself, I hope you will weigh carefully whether the societal benefits justify the environmental impacts which will likely occur. These impacts are adequately described in the statement, and, together with the comments made by reviewers, will provide you with a useful analysis of alternatives to the proposed action.

With warm personal regards, I remain,

Yours very truly,

George R. Ariyoshi

bcc: Mr. Richard O'Connell
Mr. Walter W.F. Choy

ORIGINAL

FILE COPY

CITY AND COUNTY OF HONOLULU
BOARD OF WATER SUPPLY

REVISED
ENVIRONMENTAL IMPACT STATEMENT
FOR
KAHUKU WATER DEVELOPMENT
KAHUKU, KOOLAULOA, OAHU, HAWAII

TAX MAP KEY: 5-6-06:Portion of Parcel 6
5-6-08:Portion of Parcel 2

THIS ENVIRONMENTAL DOCUMENT IS SUBMITTED
PURSUANT TO CHAPTER 343, HRS

PROPOSING AGENCY: Board of Water Supply
City and County of Honolulu
630 South Beretania Street
Honolulu, Hawaii 96843

RESPONSIBLE OFFICIAL: Kazu Hayashida DATE 11/29/78
KAZU HAYASHIDA
MANAGER & CHIEF ENGINEER

PREPARED BY: Park Engineering, Inc.
190 South King Street, Suite 2085
Honolulu, Hawaii 96813

ACCEPTING AUTHORITY: Governor, State of Hawaii

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BOARD OF WATER SUPPLY

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SUMMARY

The Kahuku Water Development project is located next to Kahuku Town in the Koolauloa District. The project involves 1) drilling two deepwells, 2) installing two deepwell pumps, 3) constructing a 0.5-million gallon reservoir and control building, 4) constructing an access road, and 5) installing a 12-inch transmission main.

The objectives of the proposed action are to 1) insure adequate water for the City's Koolauloa Housing project and 2) upgrade the present domestic water system. The water project is a major component of the City's housing project, which is intended to provide adequate low-income housing and help relocate families in the existing plantation homes of which the land leases expire in 1983.

The project will alter 3.2 acres of land for the construction of the facilities and related improvements. Approximately 7,400 cubic yards of earth will be excavated and removed. Two deepwells will tap the underground basal water supply and a maximum pumpage of 1.0 million gallons per day can be expected.

The estimated project cost is $1,200,000 and will be financed by a $600,000 grant and a $600,000 loan from Farmer's Home Administration. The land acquisition and construction phase is tentatively planned for Fiscal Year 1978 and project construction will require approximately one year to complete.

The adverse impacts resulting from the proposed project involve the temporary construction related impacts and the alteration of 3.2 acres of land for the facility. However, the benefits derived from the project by the community is felt to outweigh these impacts and in addition appropriate mitigative measures will be employed to minimize these impacts.

Among the alternatives that were considered was a no action alternative; however, this was considered to be unacceptable from a public welfare standpoint. The other alternative dealt with utilizing the existing wells; however because of their age and questionable construction it was also rejected.

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I. DESCRIPTION OF THE PROJECT

A. PROJECT LOCATION

The proposed Kahuku Water Development project is located next to Kahuku Town in the Koolauloa District of Oahu Island, approximately 26 miles north of downtown Honolulu, as shown in Figure 1. The proposed well and reservoir site, and transmission main are shown in Figure 2, Vicinity Map, and except for a portion of transmission main within the State highway right-of-way, the rest of the project is situated on portions of Tax Map Key: 5-6-06:6 and 5-6-08:2.

B. STATEMENT OF OBJECTIVES

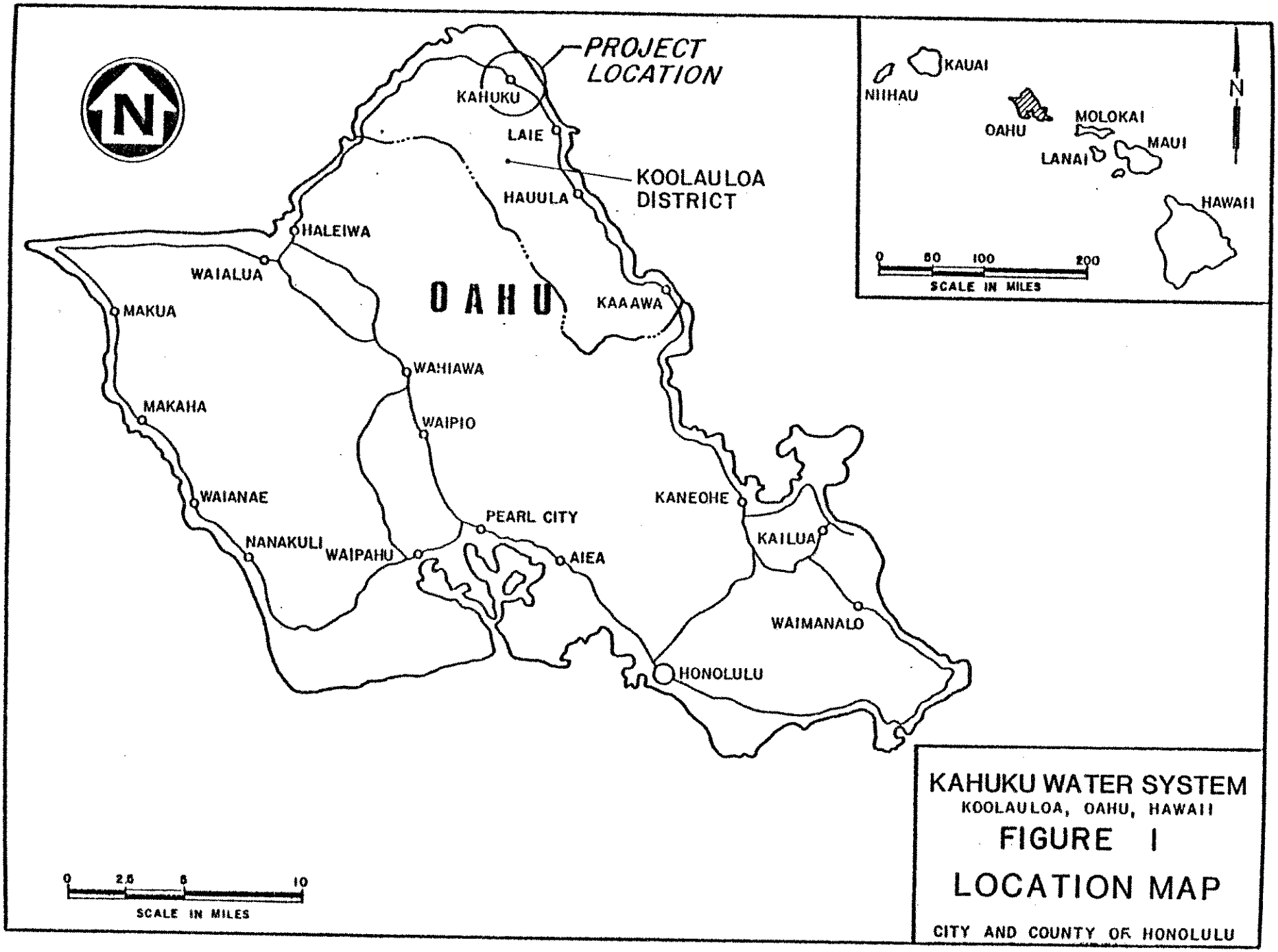
The objectives of the proposed action is intended to 1) insure adequate water resources for a proposed Department of Housing and Community Development, City and County of Honolulu, residential development that will replace existing plantation dwellings and provide low-cost housing in the Kahuku area and 2) upgrade the present domestic water system from the standpoint of a more reliable water source and storage facility.

C. TECHNICAL CHARACTERISTICS

The proposed Kahuku Water Development project consists mainly of 1) clearing, grubbing and grading (reservoir site and access road), 2) drilling two deepwells, each approximately 340 feet deep, 3) installation of two 700 gallons per minute (gpm) deepwell pumps with related piping and appurtenances, 4) construction of a 0.5 Million Gallon (MG) reservoir and a single-story control building, 5) construction of an access road to the reservoir site approximately 2,000 linear feet, 6) installation of approximately 4,000 linear feet of 12-inch transmission main, and 7) construction of miscellaneous drainage improvements. A general well and reservoir site plan is shown in Figure 3.

Sitework

The well and reservoir site will be graded to obtain the necessary elevations so that the reservoir may be functionally incorporated into the existing system. Cuts from 0 to approximately 25 feet in height will be accomplished in accordance with applicable ordinances of the



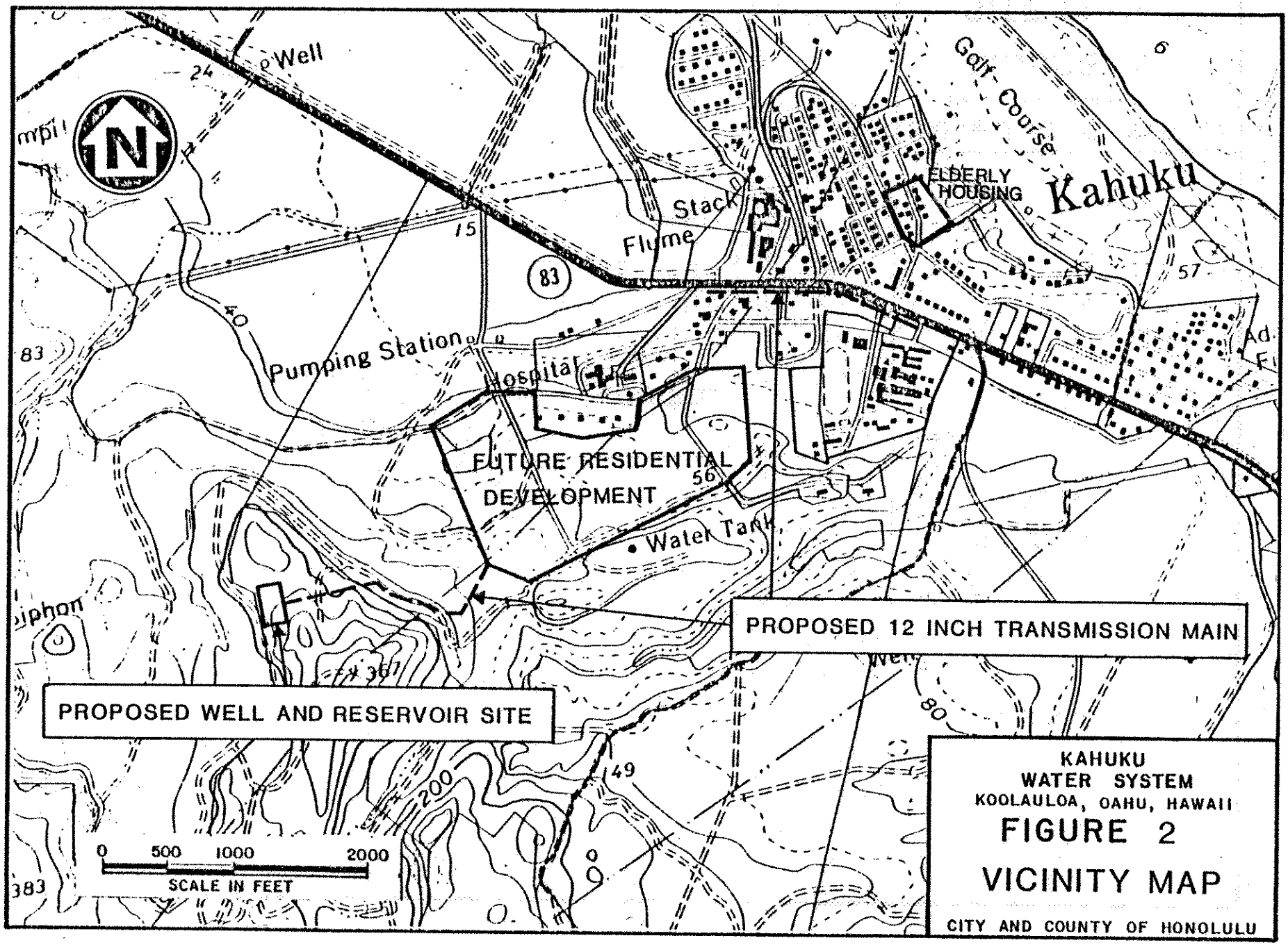
KAHUKU WATER SYSTEM

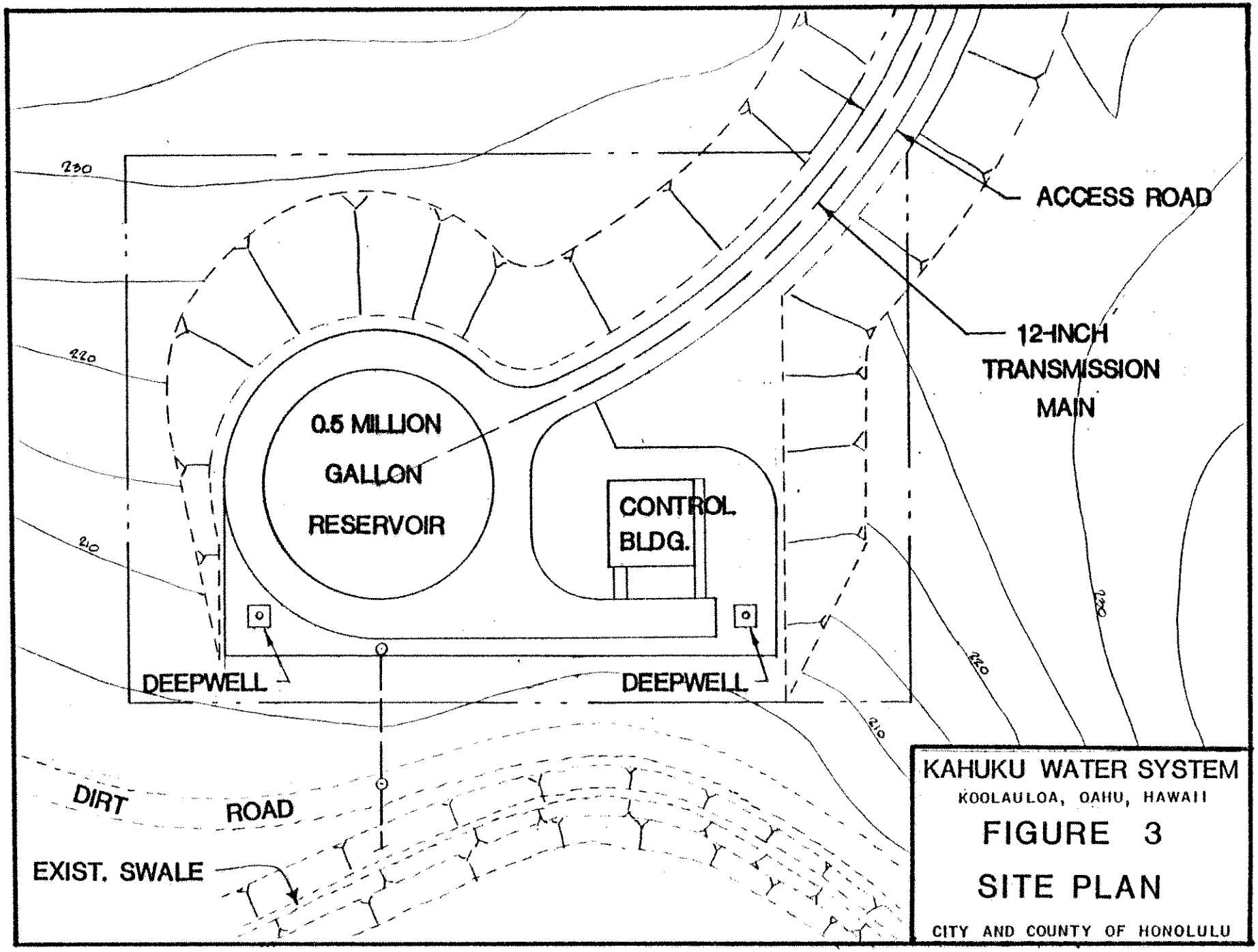
KOOLAULOA, OAHU, HAWAII

FIGURE 1

LOCATION MAP

CITY AND COUNTY OF HONOLULU


Well
Golf Course
Kahuku
ELDERLY HOUSING
Stack
Flume
Pumping Station
Hospital
FUTURE RESIDENTIAL DEVELOPMENT
Water Tank
PROPOSED 12 INCH TRANSMISSION MAIN
PROPOSED WELL AND RESERVOIR SITE
0 500 1000 2000
SCALE IN FEET
KAHUKU
WATER SYSTEM
KOOLAULOA, OAHU, HAWAII
FIGURE 2
VICINITY MAP
CITY AND COUNTY OF HONOLULU


230
220
210
ACCESS ROAD
12-INCH
TRANSMISSION
MAIN
0.5 MILLION
GALLON
RESERVOIR
CONTROL
BLDG.
DEEPWELL
DEEPWELL
DIRT ROAD
EXIST. SWALE
KAHUKU WATER SYSTEM
KOOLAULOA, OAHU, HAWAII
FIGURE 3
SITE PLAN
CITY AND COUNTY OF HONOLULU

City and County of Honolulu and recommended design criteria furnished by a soils consultant. Cuts for the access road also vary from 0 to about 25 feet and will also conform to the appropriate regulations.

The area will be grassed and landscaped to minimize the potential for erosion from the exposed slopes and to mitigate any visual impairment as a result of the sitework.

Deepwells and Pumps

Two deepwells will be drilled to a depth of (-)130 feet below mean sea level (msl) and a 12-inch diameter steel casing will be installed to a depth of (-)30 feet below msl. Two 700 gpm deepwell pumps with 75 horsepower motors will be installed, along with related piping, as well as appurtenances to the reservoir and transmission main.

0.5 Million Gallon Reservoir

The reservoir will be cylindrical in shape, of reinforced concrete construction, and approximately 70 feet in diameter with a height of about 21 feet. The concrete walls of the reservoir will remain unpainted, reflecting the Board's recently enacted policy of "minimized maintenance". The floor elevation will be 210 feet (msl) and the overflow elevation will be 228 feet (msl). A 12-foot-wide asphalt concrete road will encircle the reservoir to provide access to the grounds by maintenance vehicles and personnel.

Control Building

The control building is a one-story concrete and masonry building, approximately 28 feet square with a maximum height of 16 feet. The control building will house the chlorinators, telemetry system, motor control center and a water closet. The building's exterior surface will remain unpainted as in the case of the reservoir, but exposed metal surfaces will be painted.

Access Road

The access road will be 12 feet wide, paved, and have a maximum grade of 20 percent. The access road will connect to a City and County road in the proposed residential development.

Transmission Main

The 12-inch transmission main will be installed under the access road and will connect to the proposed residential development's water system. From the residential water system at the Kamehameha Highway entrance, the 12-inch main will branch off and parallel the highway for about 2,000 feet to Kahuku School.

Miscellaneous Drainage Improvements

Storm runoff from the site will be directed overland into an existing swale located along a dirt road on the western side of the reservoir site. Reservoir perimeter subdrains, pump drains, venturi vault drains and overflow drains will be directed to a drain manhole and conveyed to the existing swale through a 12-inch culvert.

D. ECONOMIC CHARACTERISTICS

Use of Public Funds

The estimated project cost is $1,200,000 and will be financed by a grant and loan from Farmer's Home Administration (FmHA), U.S. Department of Agriculture. The grant will be for $600,000 and is contingent upon BWS issuing a $600,000 revenue bond at 5 percent interest per annum to FmHA to satisfy the loan requirement. The water service charge will finance the operation and maintenance of the proposed project.

The State has appropriated $300,000 for repayment of the $600,000 loan, while another appropriation for $400,000 is pending approval.

Phasing and Timing

A tentative schedule shows that the land acquisition and construction phase is planned for Fiscal Year 1978. The project construction will require approximately one year to complete.

E. SOCIAL CHARACTERISTICS

The proposed water project is an important component of the City's proposed Koolauloa Housing project, which is intended to provide adequate low-income housing and replace existing plantation homes, the leases of which will expire in 1983. The proposed housing project will also be the start of a new Kahuku community, which will reflect the character and life style of the people of Kahuku.

Also, the design concept of the project is directed toward upgrading the existing water system and improving service by replacing the existing source and storage facility. The project improvements will provide a more reliable water source and more uniform service pressure during peak demands.

F. ENVIRONMENTAL CHARACTERISTICS

The proposed project will alter 3.2 acres of land for the construction of the facilities and related improvements. Approximately 7,400 cubic yards of earth will be excavated and removed. The two deepwells will tap the underground basal water supply and a maximum pumpage of 1.0 Million Gallons per Day (MGD) can be expected.

II. DESCRIPTION OF ENVIRONMENTAL SETTING

A. REGIONAL DISTRICT

The environment affected by the proposed project includes a major portion of Kahuku Town, a small rural community located in the Koolauloa District on the Island of Oahu, approximately 26 miles north of downtown Honolulu, as shown in Figure 1. This Hawaiian Community evolved from a small sugar plantation settlement to a rural-oriented community encompassing residential, commercial and agricultural land use practices.

History

The Kahuku area, prior to its acquisition by James Campbell in the late 1880's, was used primarily for cattle ranching. However, upon acquiring these lands, Campbell constructed a water supply and distribution system and then leased the land to Kahuku Sugar Company for sugarcane cultivation and sugar processing. The sugar plantation remained in operation for 80 years, until 1971, at which time sugarcane production was halted.

With the closing of the sugar plantation and mill, emphasis was extended to diversified agriculture and tourism. Diversified agriculture consists of feed corn, watermelon, banana, guava and papaya cultivation. In addition, Kahuku Sugar Mill has become a major tourist destination since its conversion to a museum resort complex.

Demography

In 1970, the population of Kahuku Town was 917, which represented a decrease of 25.9 percent since the 1960 census. At the time of the 1970 census, the total housing units numbered 257 (of which 3 were owner-occupied units), the median rent ranged from $0 - $40, and employment was centered in the civilian labor force (DPED, 1972).

The City and County of Honolulu General Plan, Statement of Objectives and Policies, adopted in February, 1977, designates the Kahuku-Kahaluu area as rural. In an effort to maintain the Island's rural population, a distribution of approximately 1.9 percent of Oahu's residential population or 17,430 inhabitants is sought for the Kahuku-Kahaluu area in the year 2000.

Land Use

The current land use is shown in Figure 4, while Figure 5 shows the current City and County zoning map. The Detailed Land Use Map and the Development Plan of the Oahu General Plan (OGP, 1964) is shown in Figure 6, and Figure 7 shows the land use designations of the State Land Use Commission (SLUC, 1974).

Climatology

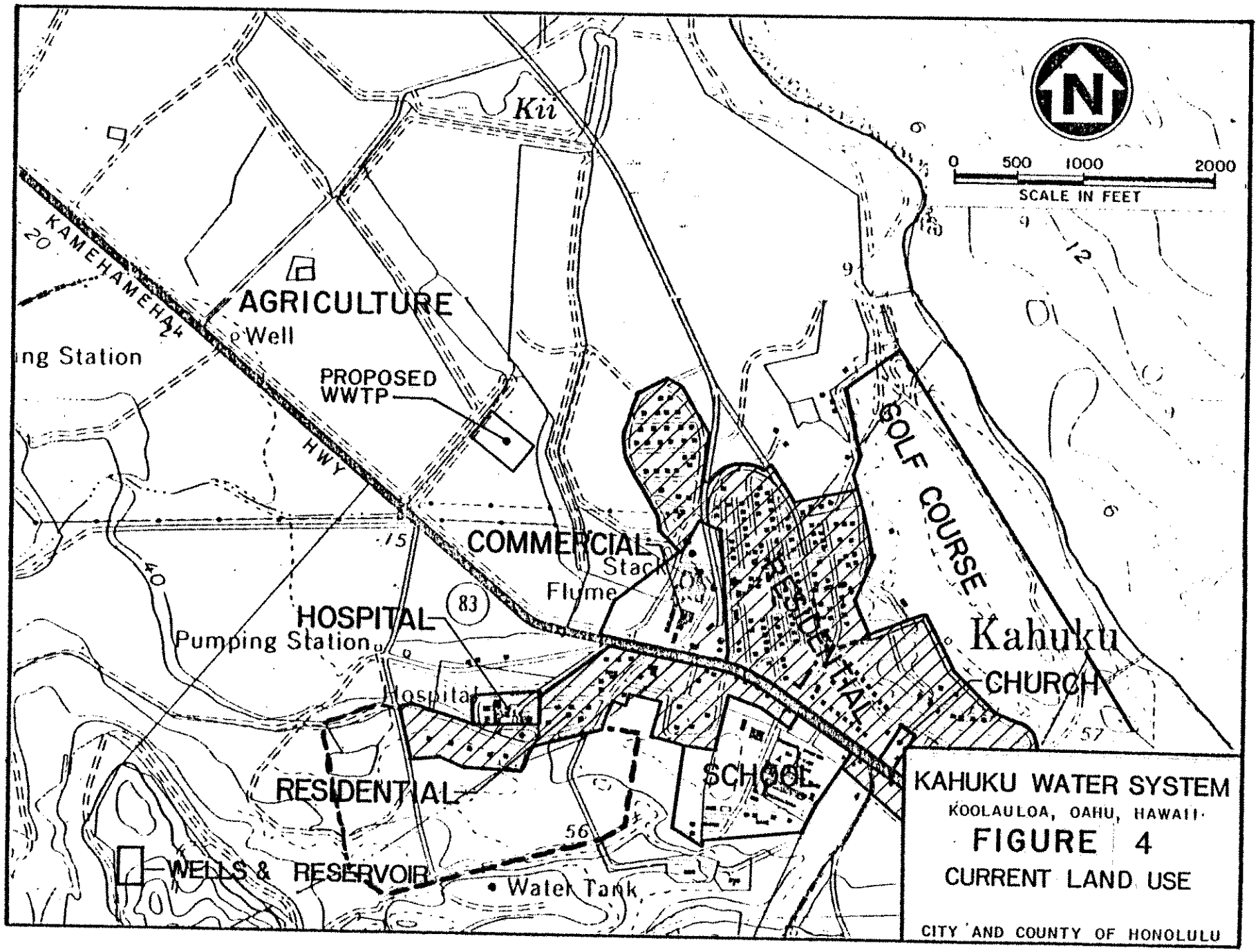
Mean annual rainfall in the area, as shown in Figure 8 is less than 40 inches, and a majority of this rainfall occurs between October and April. The average annual temperature is approximately 75° F., with an annual relative humidity of about 70 percent. The cooling northeast tradewinds, varying from 0 - 14 miles per hour are usually present, thus creating a comfortable climate.

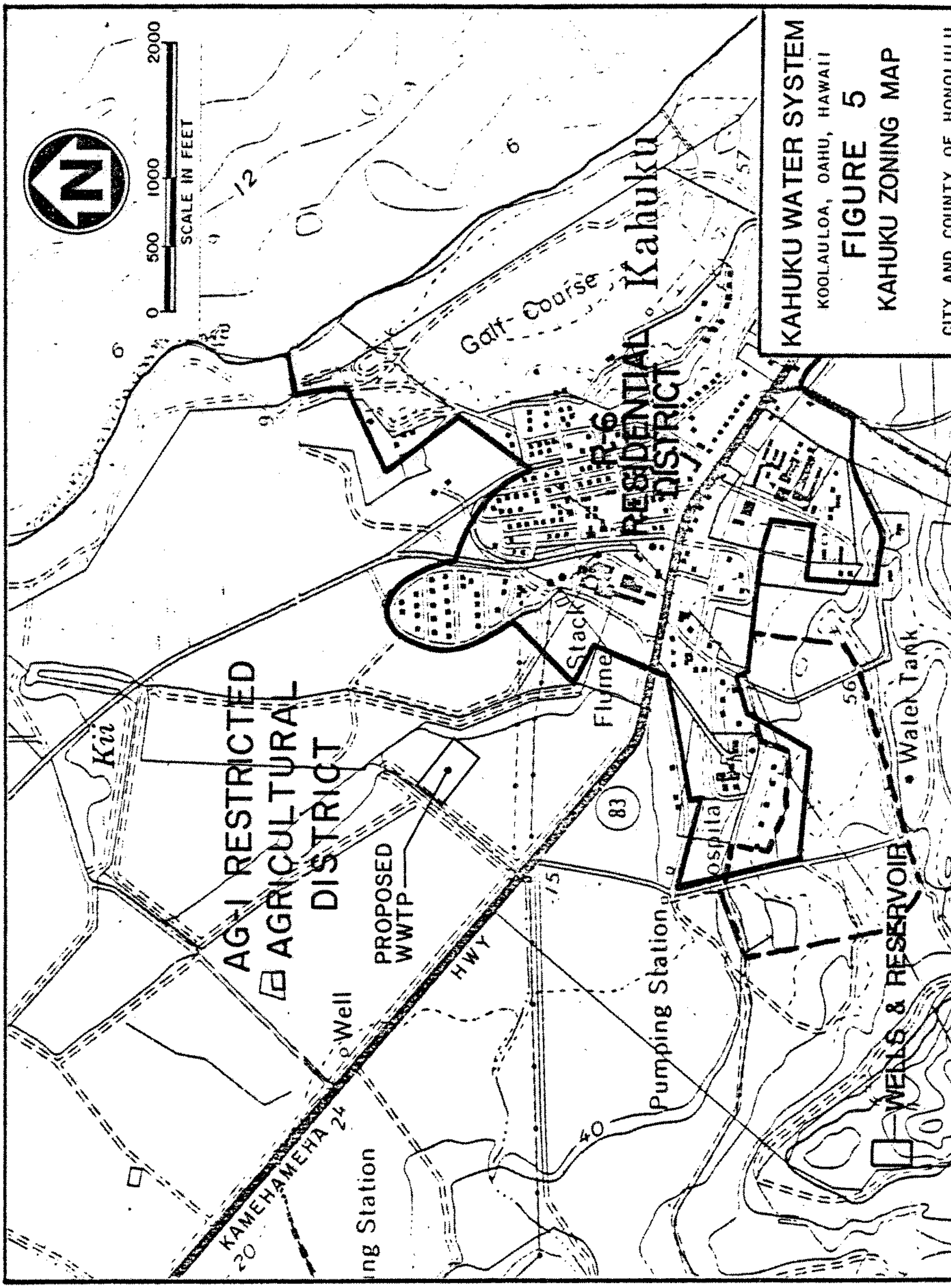
Soils

The major soil types found in the Kahuku Town area include Jaucas sand (JaC), Kaloko clay (Kfa), Kawaihapai clay loam (KIA), Lahaina silty clay (LaB & LaC), Mokuleia clay loam (Mt), Pearl Harbor clay (Ph), and Waialua silty clay (WkA), with minor occurrences of beach sand (BS), coral outcrops (CR) and fill lands (Fd). The soil at the well and reservoir site is Paumalu silty clay (PeC), 8-15% slope, and on this soil, runoff is slow to medium and the erosion hazard is slight to moderate (USDA, 1972).

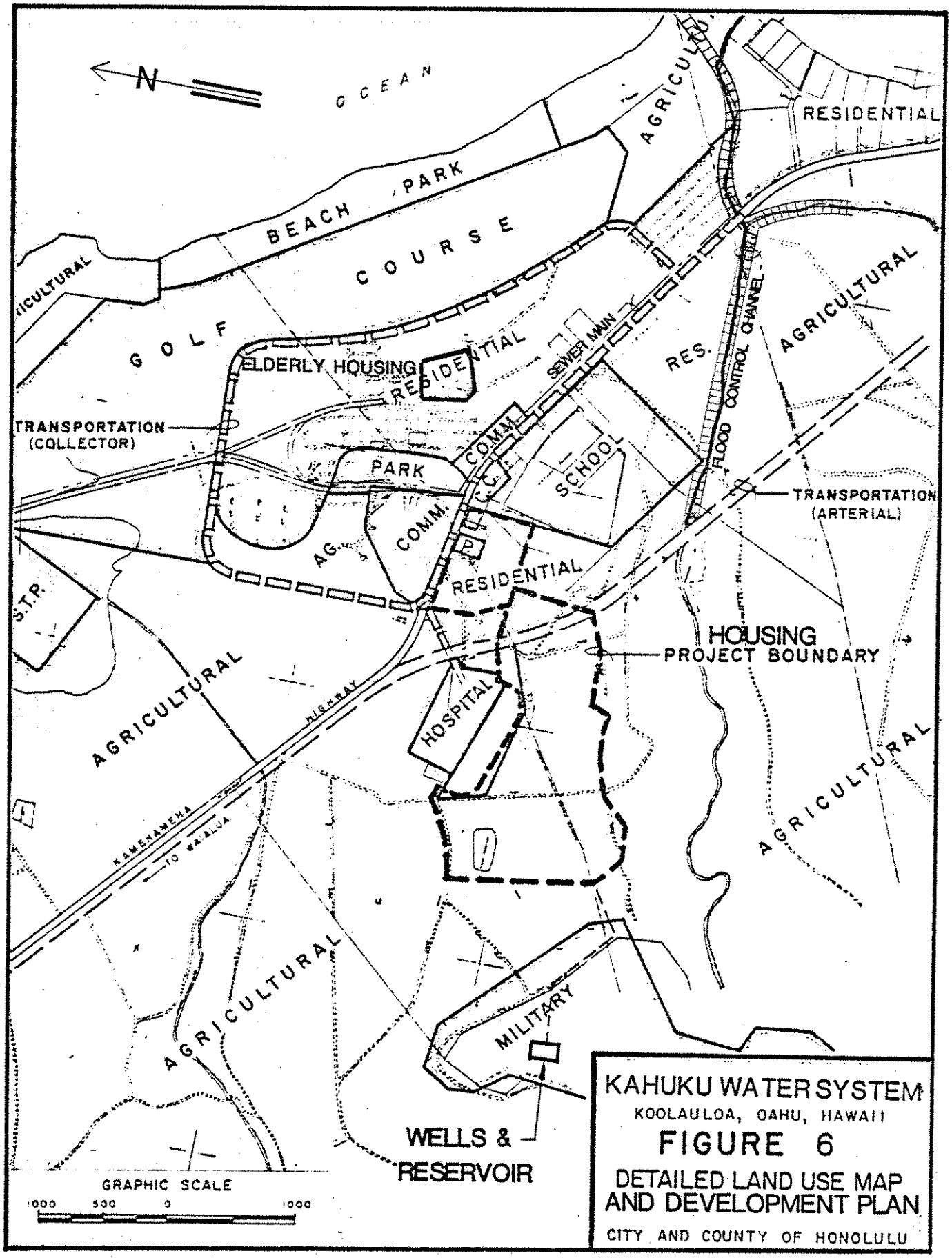
Geohydrology and Water Quality

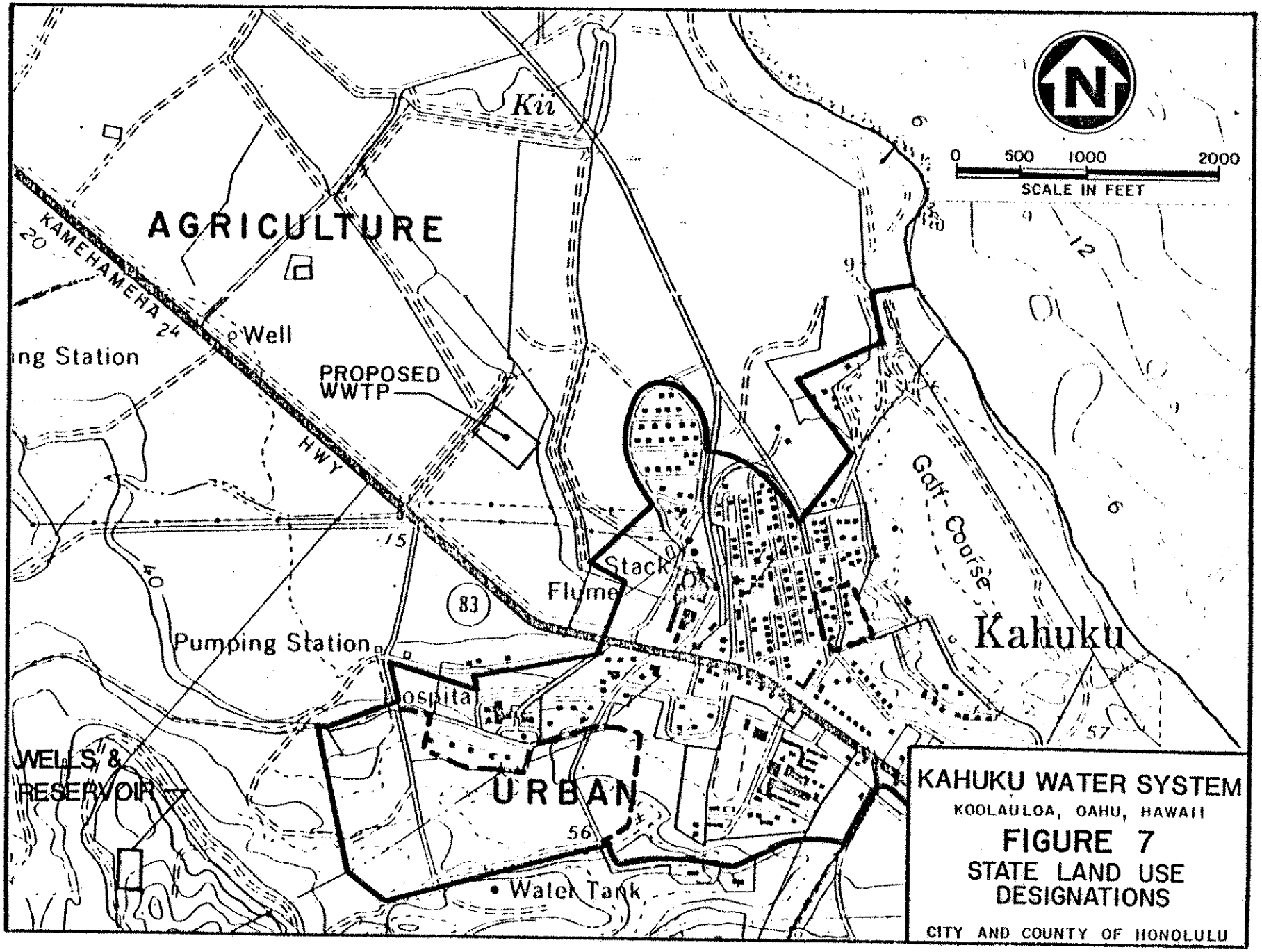
The geologic features found within the region of Kahuku Town greatly influence the area's hydrologic characteristics. These features include permeable to highly permeable marine and terrestrial sedimentary coastal

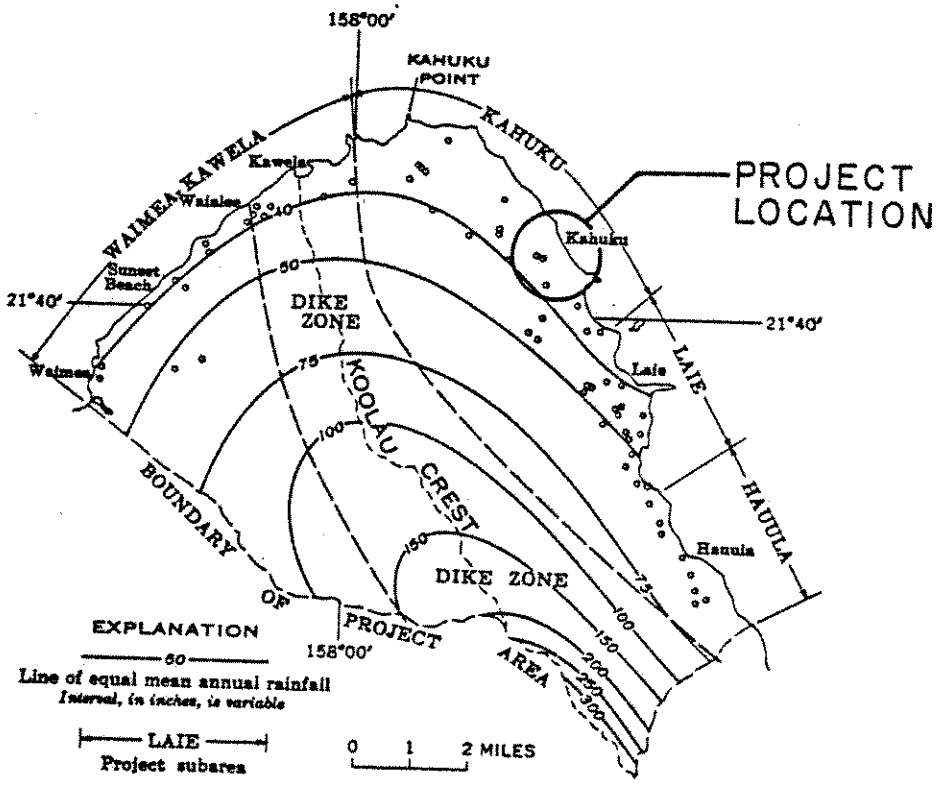

N
0 500 1000 2000
SCALE IN FEET
Kii
KAMEHAMEHA
AGRICULTURE
Well
ng Station
PROPOSED
WWTP
HWY
COMMERCIAL
Stack
Flume
HOSPITAL
Pumping Station
Hospital
83
GOLF COURSE
RESIDENTIAL
Kahuku
CHURCH
SCHOOL
RESIDENTIAL
WELLS & RESERVOIR
Water Tank
KAHUKU WATER SYSTEM
KOOLAULOA, OAHU, HAWAII
FIGURE 4
CURRENT LAND USE
CITY AND COUNTY OF HONOLULU



KAHUKU WATER SYSTEM
KOOLAULOA, OAHU, HAWAII
FIGURE 5
KAHUKU ZONING MAP
CITY AND COUNTY OF HONOLULU
N
0 500 1000 2000
SCALE IN FEET
AG-1 RESTRICTED AGRICULTURAL DISTRICT
R-6 RESIDENTIAL DISTRICT
PROPOSED WWTP
WELLS & RESERVOIR
Kahuku
Golf Course
Water Tank
Pumping Station
Flume
Stack
Well
KAMEHAMEHA HWY
Kii
83


N
OCEAN
BEACH PARK
COURSE
GOLF
AGRICULTURAL
RESIDENTIAL
ELDERLY HOUSING
RESIDENTIAL
SEWER MAIN
RES.
AGRICULTURAL
FLOOD CONTROL CHANNEL
TRANSPORTATION (COLLECTOR)
PARK
COMM.
SCHOOL
TRANSPORTATION (ARTERIAL)
AG.
COMM.
RESIDENTIAL
S.T.P.
HOUSING PROJECT BOUNDARY
AGRICULTURAL
HOSPITAL
HIGHWAY
KAMEHAMEHA
TO WAIALUA
AGRICULTURAL
AGRICULTURAL
MILITARY
WELLS & RESERVOIR
GRAPHIC SCALE
1000 500 0 1000
KAHUKU WATER SYSTEM
KOOLAULOA, OAHU, HAWAII
FIGURE 6
DETAILED LAND USE MAP AND DEVELOPMENT PLAN
CITY AND COUNTY OF HONOLULU


N
0 500 1000 2000
SCALE IN FEET
Kii
AGRICULTURE
KAMEHAMEHA
Well
ng Station
PROPOSED
WWTP
HWY
Golf Course
Stack
Flume
83
Pumping Station
Kahuku
Hospital
WELLS &
RESERVOIR
URBAN
Water Tank
KAHUKU WATER SYSTEM
KOOLAULOA, OAHU, HAWAII
FIGURE 7
STATE LAND USE
DESIGNATIONS
CITY AND COUNTY OF HONOLULU



SOURCE: "WATER IN THE KAHUKU AREA, OAHU, HAWAII"

KAHUKU WATER SYSTEM
KOOLAULOA, OAHU, HAWAII
FIGURE 8
MEAN ANNUAL RAINFALL
CITY AND COUNTY OF HONOLULU

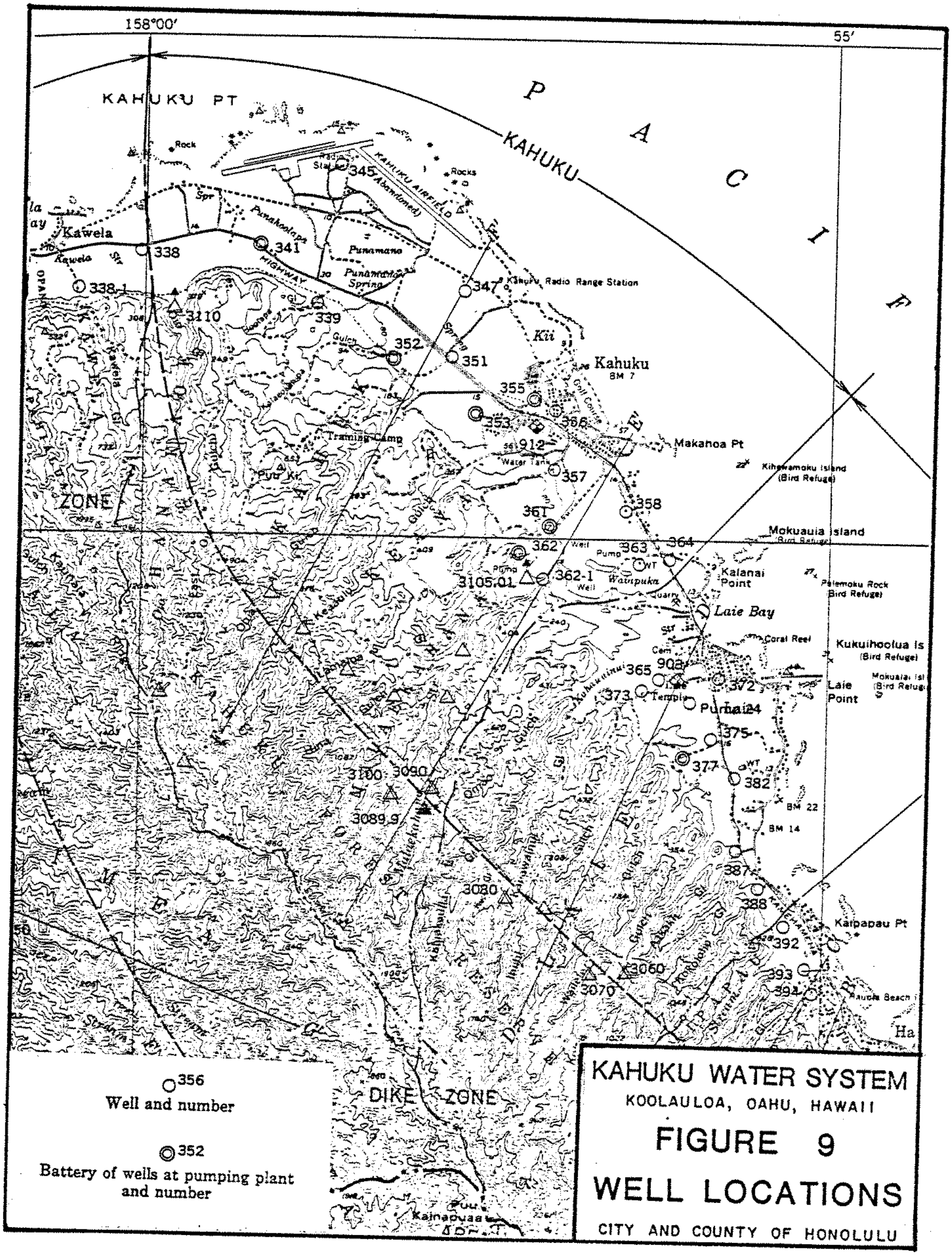
plain deposits (caprock) and valley-filling alluvium, permeable dike-free basaltic lava flows, and lava flows intruded by numerous impermeable dikes. Generally speaking, the permeable basaltic formations allow for considerable recharge at the higher elevations while the caprock tends to retard the flow of basaltic water to the ocean. The dike formations are also important elements in the groundwater hydrology because they provide the mechanism for storage in the form of dike compartments.

Streams in the area are characteristically intermittent in the lower reaches where rainfall is light, but perennial in the dike zone above 1,000 feet due to heavy rainfall, as well as due to discharge from the dike compartments. Stream water infiltrates back into the ground to either reappear on the coastal plain, or to recharge the basal lens. Malaekahana Stream, the nearest major stream to Kahuku Town, exhibits these characteristics.

Groundwater in the Kahuku Town area includes both dike and basal water. Figure 9 locates the area's wells, while Tables 1 and 2 summarize the status and water quality for each.

Groundwater quality in this area has been greatly affected by past pumping practices. These past practices involved a net overdraft situation which contributed to the steady degradation of groundwater in Kahuku. To illustrate, recharge to the dike compartments and basal lens from precipitation has been estimated to be 12 million gallons per day (mgd). However, during the time Kahuku Sugar Mill was in operation, spanning some 40 years, pumpage averaged 22 mgd. This resulted in an overdraft of 10 mgd. When recharge from return irrigation water is considered (estimated to be about 5 mgd), the estimated net overdraft was 5 mgd.

As a result of overdrafting the resource during this 40 year period, chloride levels at a number of wells increased. The chloride content at Well 352 (see Figure 9) rose from 150 mgd to nearly 1,600 mg/l, and at Well 357 from 100 mg/l to 1,600 mg/l. Return irrigation water of poor quality may have compounded the problem of rising chlorides in some areas of cultivation.



KAHUKU WATER SYSTEM
KOOLAULOA, OAHU, HAWAII
FIGURE 9
WELL LOCATIONS
CITY AND COUNTY OF HONOLULU

TABLE 1

WELL USAGE DATA

OLD WELL NO.	NEW WELL NO.	WATER QUALITY DATA	PUMPAGE (MGD)	CAPACITY (GPM)	PRESENT DISPOSITION	FUTURE DISPOSITION
338-2	4100-03	1969: 32 ppm Cl^- 55 ppm NO_3 48 ppm Alk 55 ppm Hardness	None		No Pump	Will be used by BWS
338-1	4100-02	1940-1955: Av. 150 ppm Cl^- Range: 111-390 ppm Cl^-	Unknown	Unknown	Not in use	Kuilima may use in future
338	4100-01	1978: 1500 ppm Cl^- after installation of 600 gpm pump, water quality should be better.	Est. 0.3	600	Use for golf course at Kuilima Hotel	Same
339 A, B	4158-12, 13	1942-1958: 151-344 ppm Cl^-	1977: .039	Unknown	One well (B) is capped, other well supplying water to non-military residents (18 services) near air field. Also delivers water to nudist camp.	Unknown
341 A, B Pump 2	4159-01, 2	Pump A 1959-1964: 138-434 ppm Cl^- Pump B 1962-1963: 356-574 ppm Cl^-	Est. 5.0	8,300	One well used by Air Force other is used by farmer.	Unknown
345	4258-04	1942-1959: 243-531 ppm Cl^-	None	Unknown	Not in use.	Unknown
348	4157-03	1939-1959: 78-524 ppm Cl^-	None	Unknown	Not in use.	Unknown
351	4157-04	1959-1964; 50-710 ppm Cl^-	Total: 1.5	1,000	Pump 15 is used by both Army and Lowe, Inc.	Same
352 A-E Pump 5	4158-01-11	1959-1964; 255-1552 ppm Cl^-	None	7,200	Not in use.	Unknown
353 A-E Pump 1, 11, 14	4051-01,02, 08, 13, 14	Pump 1:1959-1964:119-266 ppm Cl^- Pump 11 & 14:1959-1964: 67-353 ppm Cl^-	Pump 1:1.13 Pump 11:0.95	Pump 1: 4,250 Pump 11: 1,250 Pump 14: 600	Pump 11 & 14 used by Kahuku Housing Corp. for Kahuku residents, hospital, school. Pump 14 stand-by not in use. Pump 1 used by Kahuku Farmers Association to irrigate 250 acres of land.	Pump 11 & 14 Pump 1 - modification expected.
354	4057-03	Unknown	Unknown	Unknown	Free flow into sump. Pump delivers water from sump to cane wash area.	Unknown
355 A-D	4057-04, 09, 11, 12	1957: 1,560 ppm Cl^-	Unknown	Unknown	Use for sewage treatment and wash down.	Unknown
356	4057-05	Average: 400 ppm Cl^-	None	None	USGS has water level recorder on it.	Same
357 Pump 8	4057-06	1959-1964: 301-1,653 ppm Cl^-	Unknown	High Lift: 1300 Low Lift: 1300	Low lift used by T. Nakamura for papayas and by Campbell Estate Nursery. High lift not in use.	Low lift continue use. Nursery will move, water will then be used by Fire Station which will be at Nursery site. High lift will be used by Thomas Yamabe of Kahuku Agricultural Co.
358	4056-01	1939-1959:74-197 ppm Cl^-	350 gpd	Unknown	Use by Kekaulike & Kawanankoa for ranch	Unknown
361 A, B	4057-07, 10	1959-1964:53-133 ppm Cl^-	Pump 12: .40 Pump 12A: 1.5	High Lift: 1250 Low Lift: 1250	Pump 12 (high lift) used by Thomas Yamabe of Kahuku Agricultural Co. Pump 12 A (low lift) used by Bruce Smith for prawn farm.	Same
362 A-F Pump 3 & 17	3957-01-06	1959-1964:30-241 ppm Cl^-	None	Pump 3:6400 Pump 17: 1740	Not in use.	Unknown
362-1 Pump 6	3957-07	2175:50 ppm Cl^- Ave. .81A NO_3	1977:.130	Pump 6: 1300	Used by MRJ Ranch	Unknown
363 Pump 7	3956-01	1959-1964:100-381 ppm Cl^-	1977: .025	1300	Malaekahana Domestic System 50 meter connections. No MRJ Ranch use in last 2 years	Unknown

TABLE 2
WATER QUALITY DATA

WELL NO.	DATE	SIO2	CA	MG	NA	K	HCO3	CO3	SO4	CL	F	NO3	SOLIDS DET	SOLIDS CALC	HARD CA,MG	HARD NONC	ALK CARB	COND	PH	TEMP C	LAB
3956-01	02/23/68	34	46	35	50	5.4	63	0	19	220	0.0	1.5	640	441	261	209	52		7.6		3
	09/04/68	40	55	47	50	2.8	63	0	24	242	0.6	0.4		496	330	279	52		7.8	25.0	7
	10/31/68	42	52	35	51	2.9	60	0	23	230	0.0	1.1		468	272	225	49		7.5	25.0	7
	01/30/69	45	48	39	44	2.5	65	0	24	238	0.3	1.4		444	282	227	53		7.2	22.0	7
	05/01/69	42	51	35	53	3.3	65	0	23	209	0.0	0.9		450	270	217	53		7.5	22.0	7
	08/12/69	59	53	33	45	4.1	64	0	23	200	0.0	1.8		452	266	220	52		7.7	22.0	7
	11/13/69	31	48	37	48	3.0	64	0	22	214	0.2	1.4		458	270	218	52		7.8	22.5	7
	01/20/70	42	40	29	44	3.2	66	0	21	205	0.2	2.8		442	270	215	54		7.7	22.0	7
	07/30/71	26	55	36	51	2.9	58	0	24	228	0.2	0.8		452	285	238	48	883	6.8		1
3957-07	02/06/69	61	14	12	51	1.0	106	0	16	58	0.9	5.0		273	88	2	87		7.4	25.0	7
	05/01/69	61	14	11	40	1.2	86	0	12	57	0.1	3.4		243	80	9	70		7.4	22.5	7
	08/12/69	96	16	15	39	1.1	96	0	19	61	0.1	4.2		294	106	31	70		7.4	23.6	7
	11/13/69	60	15	16	45	1.2	98	0	20	68	0.7	4.8		265	102	31	72		7.6	23.0	7
	01/20/70	47	19	12	41	1.6	102	0	13	56	0.4	4.4		246	97	13	84		7.5	23.0	7
	07/30/71	52	13	11	37	1.2	96	0	11	52	0.2	3.6		223	78	7	71	341	7.1		1
	04/12/72	53	12	9.7	44	1.3	99	0	11	52	0.1	3.7		235	70	0	81	350	7.7	22.1	1
4056-01	09/04/68	40	32	28	46	2.6	68	0	19	155	0.6	1.2		370	194	138	56		7.9	21.5	7
	10/31/68	42	34	21	47	3.1	68	0	17	148	0.1	2.1		351	170	116	56		7.4	21.5	7
	01/30/69	47	27	19	40	2.4	72	0	16	123	0.3	1.6		312	145	87	59		6.7	22.0	7
	05/01/69	42	30	26	42	3.2	70	0	18	140	0.1	1.2		338	184	125	57		7.7	21.5	7
	08/12/69	55	33	29	40	3.1	72	0	28	141	0.1	0.0		368	200	143	59		7.7	22.0	7
	11/13/69	30	34	26	41	3.0	70	0	11	153	0.2	1.7		332	194	136	57		7.8	21.8	7
	01/20/70	41	40	22	40	3.0	68	0	19	150	0.2	2.8		353	190	135	56		7.7	22.0	7
	07/30/71	39	34	24	47	3.0	67	0	17	152	0.2	0.9		350	184	129	55	642	6.9		1
4057-05	09/04/68	3.0	78	50	48	3.4	26	0	1.0	455	0.2	0.0		707	400	378	21		8.0	26.0	7
	10/31/68	2.5	76	61	46	4.0	25	0	0.0	452	0.0	1.1		706	440	414	20		6.9	26.0	7
	01/30/69	1.5	76	75	84	3.4	27	0	1.0	428	0.2	0.0		682	500	477	22		6.5	21.0	7
	05/01/69	2.0	71	64	92	4.0	22	0	1.0	425	0.0	0.0		678	442	423	18		8.2	23.0	7
	08/12/69	2.5	70	51	96	3.7	22	0	0.5	408	0.0	3.2		649	384	365	18		7.9	25.0	7
	11/13/69	1.0	69	55	100	4.0	24	0	11	418	0.1	0.4		671	400	380	19		8.2	22.5	7
	01/20/70	2.5	90	41	82	3.8	24	0	3.0	407	0.2	0.0		645	394	374	19		7.6	22.0	7
4057-06	02/06/69	9.5	95	67	65	2.5	46	0	30	353	0.5	0.0		665	490	452	37		7.3	25.0	7
	05/01/69	45	25	277	165	8.0	83	0	85	1030	0.0	1.2		1660	1200	1150	37		7.5	22.0	7
4100-01	09/04/68	49	19	19	48	2.5	64	0	17	118	0.5	1.6		309	126	73	52		7.8	25.0	7
	01/30/69	45	19	20	43	2.6	66	0	17	118	0.6	2.0		301	132	78	54		7.3	22.0	7
	05/01/69	52	17	16	45	2.8	66	0	15	97	0.1	1.7		281	110	56	54		7.7	22.0	7
	08/12/69	77	17	16	50	2.8	66	0	21	99	0.5	1.8		319	110	54	54		7.6	22.0	7
	11/13/69	36	18	27	43	2.7	66	0	25	104	0.2	2.1		311	162	103	54		7.8	22.5	7
	07/29/71	46	116	107	265	8.0	79	0	113	802	0.1	0.0		1490	730	666	65	2840	6.8		1
	08/27/71	54	144	153	462	11	68	0	179	1300	0.1	2.8		2340	985	934	56	4310	6.7		1
4100-02	09/21/68	52	12	20	46	1.3	64	0	17	92	0.5	2.3		276	114	60	52		7.3	23.0	7
	10/31/68	51	15	15	51	1.7	68	0	16	98	0.3	1.8		284	100	45	56		7.2	23.0	7
	05/01/69	54	15	17	49	1.6	66	0	13	94	0.0	1.5		283	106	52	54		7.2	22.0	7
	08/12/69	77	15	13	44	1.9	66	0	20	84	0.0	1.5		291	92	37	54		7.4	22.5	7
	11/13/69	36	23	25	55	1.8	64	0	17	134	0.2	2.4		337	160	91	69		7.1	22.0	7
	01/20/70	50	18	15	50	1.6	70	0	18	98	0.1	3.4		291	106	49	57		7.2	22.0	7
4101-03	09/04/68	45	10	8.5	27	1.4	61	0	7.0	43	0.4	1.6		174	60	10	50		6.9	22.0	7
	10/31/68	51	10	8.5	26	1.5	62	0	7.2	43	0.1	2.9		180	60	9	50		6.0	21.5	7
4157-03	09/04/68	1.0	56	17	35	1.2	10	0	1.0	208	0.5	0.0		327	210	202	8		8.0	26.0	7
4137-04	09/04/68	52	59	44	58	1.8	76	0	25	255	0.5	3.7		538	328	266	62		7.4	21.5	7
	10/31/68	51	54	33	60	2.2	78	0	23	220	0.2	4.1		486	370	207	63		7.2	21.5	7
	02/06/69	47	54	39	63	1.8	110	0	26	208	0.6	0.0		493	296	206	90		7.1	24.0	7
	08/12/69	72	56	34	60	2.3	81	0	34	218	0.0	4.3		525	280	210	66		7.4	21.5	7
	11/13/69	32	53	37	73	2.3	96	0	41	224	1.0	7.1		518	286	207	79		6.8	23.5	7
	01/20/70	49	66	23	.54	2.0	102	0	22	198	0.3	10		476	260	175	84		7.7	23.0	7
	08/27/71	54	53	33	60	2.0	86	0	22	222	0.1	4.2		492	268	197	71	901	6.9		1
4158-12	06/12/56	44	47	52	93		85	0	34	340	0.0	4.0	1010	655	332	262	70		6.9		3
	09/04/68	54	52	52	96	1.2	93	0	27	342	0.6	5.5		676	342	276	68		7.3	23.0	7
	10/31/68	54	54	62	102	2.6	84	0	28	342	0.1	4.6		692	390	321	69		7.2	23.5	7
	01/30/69	61	52	58	86	2.4	86	0	30	333	0.5	5.8		682	410	340	70		6.5	22.5	7
	05/01/69	56	52	53	120	2.9	92	0	27	350	0.4	5.4		710	348	280	67		7.4	22.5	7
	08/12/69	87	52	54	96	4.2	84	0	41	328	0.1	1.4		706	352	280	69		7.4	22.5	7
	11/13/69	40	52	60	95	2.7	86	0	50	322	0.2	5.6		672	376	300	70		7.2	22.5	7
	01/20/70	50	65	53	92	2.6	86	0	25	323	0.2	8.8		665	380	310	70		7.4	22.0	7
	07/29/71	49	55	53	97	2.6	84	0	25	332	0.1	3.3		658	355	286	69	1260	7.0		1
4139-01	07/29/71	44	57	56	99	3.2	78	0	29	350	0.1	5.0		686	373	309	64	1320	6.7		1
4258-04	06/12/56	32	94	61	112		56	0	37	480	0.0	0.4	1390	843	484	438	46		7.0		3
	07/29/71	50	116	76	117	4.6	56	0	41	550	0.1	1.2		983	603	557	46	1930	6.7		1
	03/30/72	48	121	74	130	4.3	60	0	43	570	0.1	0.0		1020	607	558	49	1960	7.4	22.5	1

SOURCE: "Chemical Quality of Groundwater in Hawaii"

Since the end of 1971, pumpage has declined drastically due to the demise of sugar in the area. Although diversified agriculture has utilized many of the Kahuku Plantation sources since 1972, draft has nevertheless still been reduced by approximately 66 percent over pre-1971 levels. A best estimate for draft at the present time is 7 mgd, of which slightly less than 1 mgd is domestic. Present head levels are in the vicinity of 12 feet (msl).

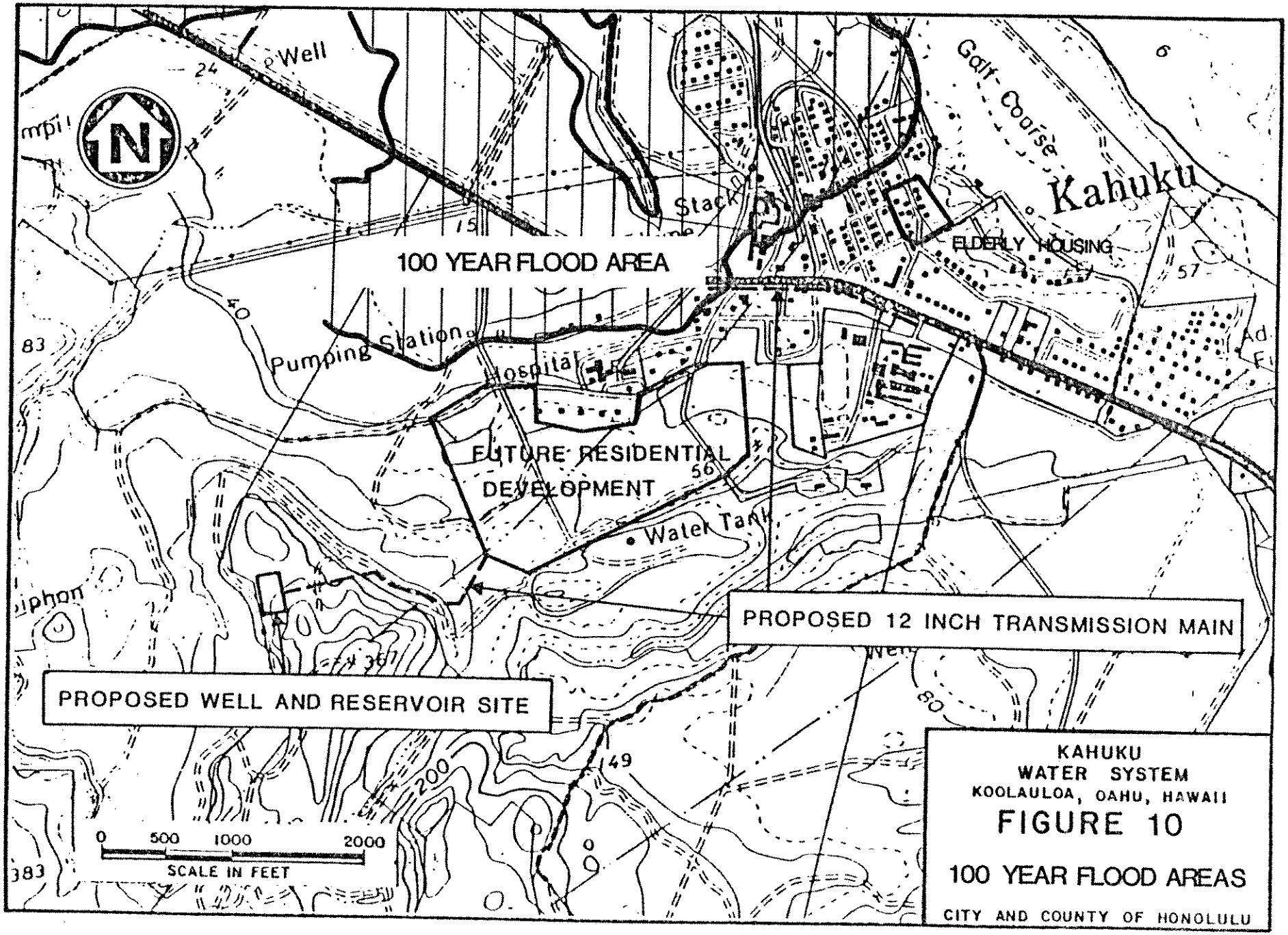
This reduction in pumpage has resulted in a general improvement in water quality as evidenced by Department of Health data from the domestic source (Well 353, Pump 11) serving the Kahuku community.

Date	Chloride Content, mg/l	Total Dissolved Solids, mg/l
9-25-72	120	480
1-16-73	130	388
1975	117	314

Future Board of Water Supply Water projects include installation of pump and pumping stations at the Opana Well (Well No. 338-2) and possible development of water in Malaekahana Valley and/or between Opana and Malaekahana. As described previously, water quality in the Kahuku area has been subject to great fluctuation due to response to plantation pumping. It is important that future water development recognizes this condition and should not exceed the recoverable portion of the 12 mgd recharge in the area. In addition, water development should not be concentrated geographically, rather it should be spread out over a greater area. Finally, caution must be exercised in design inasmuch as some of the existing sources have wells which are too deep and pump poor quality water and induce upconing by sea water.

Flooding

The Kahuku coastal plain is susceptible to flooding in its lowlying and swampy areas. The Flood Insurance Rate Map, City and County of Honolulu (#15,0001-0005A), delineates the 100-Year Flood Area as shown in Figure 10. Tsunamis, commonly known as tidal waves, have caused


Well
Golf Course
Kahuku
ELDERLY HOUSING
100 YEAR FLOOD AREA
Pumping Station
Hospital
FUTURE RESIDENTIAL DEVELOPMENT
Water Tank
PROPOSED 12 INCH TRANSMISSION MAIN
PROPOSED WELL AND RESERVOIR SITE
0 500 1000 2000
SCALE IN FEET
KAHUKU
WATER SYSTEM
KOOLAULOA, OAHU, HAWAII
FIGURE 10
100 YEAR FLOOD AREAS
CITY AND COUNTY OF HONOLULU

extensive flooding and damage along the coast. Past tsunamis, generated by strong earthquakes near the Aleutian Islands, caused runups to about the 9 foot elevation with 500 feet of inland flooding.

Other Projects

There are several projects in the development stage within Kahuku Town. The Kahuku Support Housing and the Kahuku Elderly Housing, by the Department of Housing and Community Development, are two of the projects. Another is the Department of Public Works, Kahuku Sewer Improvement Project, which consists of a collection system, wastewater treatment facility and disposal system. This system will replace the present method of wastewater disposal by cesspool.

The Kahuku Ambulance, Fire and Police Station project will be located on a four-acre parcel next to Kahuku High School. The project consists of a new district police station, a fire station complex, emergency ambulance facility and a helicopter landing pad.

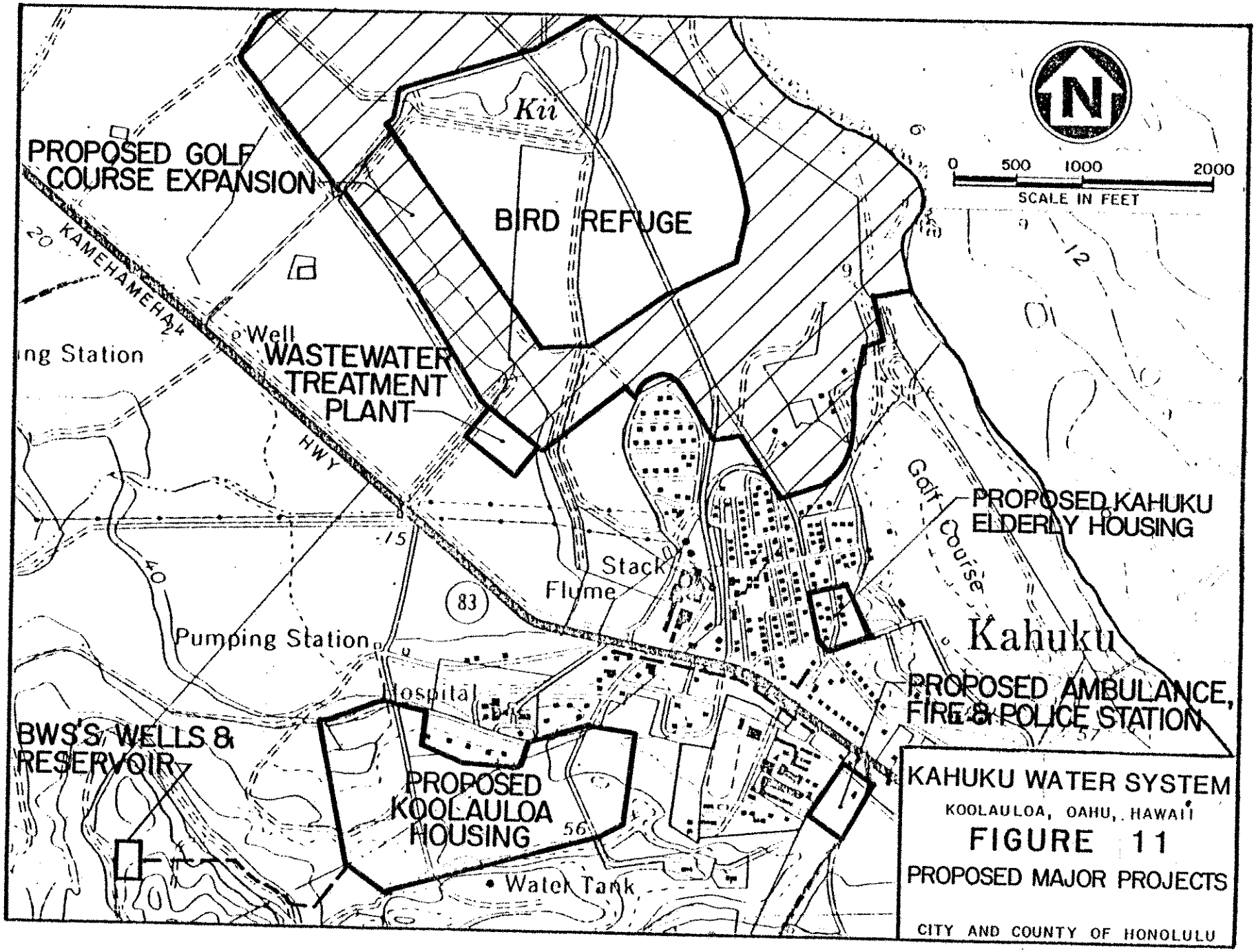
The Fish and Wildlife Service, U.S. Department of the Interior is developing a bird refuge at Kii Pond, the boundary of which is shown in Figure 11.

B. IMMEDIATE PROJECT AREA

Topography and Drainage

The proposed well and reservoir site is situated on the saddle portion between two knolls. Slopes from the knolls are generally between 15 and 20 percent, but may be as much as 40 percent in some areas. The surrounding lower land areas are fairly level with slopes between 6 and 8 percent.

The drainage pattern in the project area has been shaped by past agricultural activities. Presently, storm runoff from the project area flows overland into an existing swale which is part of a system of swales and ditches that were used in the past.


PROPOSED GOLF COURSE EXPANSION
Kii
BIRD REFUGE
N
0 500 1000 2000
SCALE IN FEET
KAMEHAMEHA
Well
WASTEWATER TREATMENT PLANT
HWY
Stack
Flume
Golf Course
PROPOSED KAHUKU ELDERLY HOUSING
Kahuku
PROPOSED AMBULANCE, FIRE & POLICE STATION
Pumping Station
Hospital
BWS'S WELLS & RESERVOIR
PROPOSED KOOLAULOA HOUSING
Water Tank
KAHUKU WATER SYSTEM
KOOLAULOA, OAHU, HAWAII
FIGURE 11
PROPOSED MAJOR PROJECTS
CITY AND COUNTY OF HONOLULU

Historic and Archeological Sites

The Historic Sites Division of the Department of Land and Natural Resources shows no record of any historic sites within the project area. Inasmuch as most of the project area was under extensive sugarcane cultivation prior to 1971, it is very doubtful that any historical or archeological artifacts exist within the project boundary today. However, if during construction any artifacts are uncovered, the Historic Sites Division will be notified.

Soils

The on-site soils are classified by the U.S. Soil Conservation Service as being Paumalu-Badland Complex, Pz, - 10 to 70 per cent slopes, rapid runoff, and severe erosion; and Lahaina silty clay, LaB, 3 to 7 per cent slopes, well drained, moderate permeability, slow runoff and slight erosion hazard.

Flora and Fauna

A plant life survey was conducted within the project site by a registered landscape architect and the following flora was identified:

Common Name	Scientific Name
Guava	Psidum Guajava
Christmas Berry	Schinus Terebinthifolius
Swollen Finger Grass	Chloris Inflata
Koa Haole	Leucaena Leucocephala
Scarlet-Fruited Passion Flower	Passiflora Foetida
Creeping Rose or 'Ulei	Osteomeles Anthyllidifolia
Sugarcane	Saccharum officinarum

Animal life found in the area (Koolauloa Housing Project and Sewer Treatment Plant, November 30, 1977) are:

Common Name	Scientific Name
Mongooses	Herpestes auropunctatus
Rats	Rattus exulans
House Mice	Mus musculus
Feral Cats	Felis catus
Pigs	Sus scrofa
Golden Plovers	Plurialis dominica fulva
Cardinals	Cardinalis cardinalis
Barred Doves	Geopelia striata striata
Spotted Doves	Streptopelia chinensis chinensis
Mynahs	Acridotheres tristis
Ricebirds	Lonchura punctulata
House Sparrow	Passer domesticus
White Eyes (Mejiros)	Zosterops japonica japonica

No rare or endangered species have been reported in the project area. However, about 6,000 feet seaward of the project site, the Kii Pond bird refuge has attracted the Hawaiian Stilt, Coot and Gallinule, all of which are considered endangered species.

Existing Facilities

The existing water system, which serves the Kahuku area, was formerly owned and operated by the Kahuku Plantation Company until the plantation ceased operations in 1971. Subsequently, former employees of the plantation formed the Kahuku Housing Cooperative to maintain water service to the Kahuku area.

The source of supply consists of two artesian wells within a battery of wells known as Wells 353A-C, located at the Kahuku Plantation Plant One building. The wells and pumps are near the landward edge of the coastal plain in a below-ground pit which makes the source potentially susceptible to contamination from flooding.

Pump 14 was installed in 1926 and was rated at 600 gallons per minute (gpm). Pump 14 is presently not in use and is kept as a standby. Pump 11 was installed in 1937 and was rated at 1,250 gpm. Pump 11 presently supplies the total pumping requirements of Kahuku Housing Cooperative.

The existing well casings are about 50 years old and may be near the end of their life. Size of the well casings are 8 inches for one well and 12 inches for the remainder. These well casings probably do not have sanitary seals since most of the well casings were installed prior to this common sanitary practice.

Water is stored in a 250,000-gallon capacity reinforced concrete reservoir located on a knoll, 1,800 feet from the Wells. The main supply lines from the reservoir are in private roads and the service lines wander through private property "every which way". Most of the pipelines were installed during the turn of the century and no accurate records of their locations have been kept. Also, the plantation housing system is so thoroughly integrated with the sugar mills system that a clear separation between the two systems does not exist.

Land Use and Ownership

The reservoir and well site is zoned agricultural and portions of the transmission main are on lands zoned residential or within the state highway right-of-way. The existing land uses include diversified farming and residential habitation with some vacant areas.

Except for the portion of transmission main within the State highway right-of-way, the reservoir and well site and access road are situated on land presently owned by the James Campbell Trust Estate. The reservoir and well site will be conveyed to the Board of Water Supply in fee by the Campbell Estate, together with the necessary easements for access, water pipeline, drainage and utilities.

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

The proposed Kahuku Water Development project does not conflict with any approved or proposed, State or County land use plans, policies and controls.

The proposed water facility is an allowable landuse in the AG-1 Restricted Agricultural District of the Kahuku Zoning Map, Figure 5, and the Military District of the Detailed Land Use Map (DLUM), Figure 6. The proposed facility is also an allowable land use in the Agriculture District of the State Land Use Designations, Figure 7; however, a Special Use permit must be obtained.

Preliminary studies on the City's "Development Plans" of the Kahuku area will begin in the second half of 1978. The new water facility will be incorporated into the plan at that time.

IV. PROBABLE IMPACT OF THE PROPOSED ACTION ON THE ENVIRONMENT

A. SHORT TERM (CONSTRUCTION)

During construction, some dust, noise and traffic will be generated.

Dust

Dust will be created during the construction period, primarily from activities such as clearing, grading, excavation and backfilling. This could cause minor disturbances to residents in the proximity of the site. Such an impact would be temporary, and no long-term air quality impairment should occur.

The contractor will be required to conform to dust control measures incorporated into the contract documents to minimize dust.

Noise

Construction noise will be limited to normal construction hours. Reservoir site construction noise is not expected to interfere with classroom activities at Kahuku High and Elementary School or Kahuku Hospital, approximately 0.9 miles and 0.5 miles, respectively, from the reservoir site where the heavy construction work will occur. The closest points of the transmission main installation are approximately 300 feet from the hospital and 200 feet from the school. However, since the noise of the transmission main installation is transitory in nature, the impact of the noise is not expected to be significant.

Traffic

An increase in traffic due to workmen and material deliveries can be expected, however, the rise will be temporary.

Traffic on Kamehameha Highway will be affected by installation of the transmission main. The contractor shall comply with State and Federal regulations concerning public safety and governing construction along streets and highways.

Drainage

Testing of the pumps will generate about 700 gallons of water which will be discharged toward an existing ditch adjacent to the site. Since the water is potable and the quantity is small, no adverse effects are expected from this temporary discharge.

Site drainage will be by overland flow toward an existing ditch near the well site.

B. LONG TERM

Land Transformation

The reservoir will be constructed to blend with the surroundings. Landscaping will be implemented. Due to topography and the distance from future improvements, the reservoir will have limited visibility from Kamehameha Highway.

Grading and Excess Material Disposal

Grading and the excess material disposal site shall conform to the City and County of Honolulu Grading Ordinance.

Noise

The pump motors will generate some noise. However, since the closest homes will be about 1,400 feet away, the noise impact to existing homes should be negligible.

The sound pressure level (SPL), three feet from the pump motor is approximately 71 dbA (Westinghouse MAC Motor Manual). From the pump motors to the property line, a minimum reduction of 17 decibels can be expected without utilizing motor mutes, lowering the SPL at the property line below the allowable maximum noise levels in agricultural districts. However, motor mutes will be installed, if it is found that normal attenuation is not sufficient after operation has begun.

Drainage

Pump operations will generate small quantities of water. During start up, pumps will discharge 700 gallons per minute for approximately one (1) minute into the existing drainage ditch at the rear of the site.

High water level alarms will be provided for the reservoir. When the water level in the reservoir reaches a predetermined level, an alarm will be triggered in the Beretania Pumping Station. Pumping units can be shut down by remote control from the Beretania Station. Overflow water will flow through the overflow line into the ditch at the rear of the site. However, this would only occur when the "normal level" controls malfunction.

Draining the reservoir will be through the effluent line. A blow off line, connected to an underground drainage system, will be provided in the proposed subdivision. This function is a rare manual operation performed under BWS control and is only necessary when contamination has occurred or a washdown is required.

The water from these operations is potable and no adverse affects on the environment is expected. Discharge velocities will be less than City and County Drainage Standards for unlined channels. The vicinity of the outlet will be rip-rapped to protect the area from erosion.

Traffic

Permanent on-site maintenance personnel are not required to monitor or maintain the pumps or reservoir.

Periodic maintenance will be required but no significant increase in traffic can be attributed to the installation.

Ground Water Quality

There should be minimal impact to the ground water quality since the new source is replacing the existing domestic wells, and subsequently the pumpage will remain about the same. However, the private wells used for irrigation in the surrounding area could affect groundwater quality through excessive pumpage. The Board of Water Supply would control the operation of these private wells under Chapter III of their Rules and Regulations.

Sewerage

Wastewater generated at the reservoir and well site will be collected in a concrete sewage vault and removed on an as needed basis. Since the site will not be permanently manned, wastewater quantities will be small (about 30 gallons per week).

Impact on BWS System

Planned improvements, for this project, are compatible with Board of Water Supply planning objectives. The Kahuku Water System can be integrated at a later date with the existing BWS water system network, thereby improving water service reliability.

Social and Economic Impact

The degree to which the project will affect the growth rate and lifestyle of the area is reflected in the City's Koolauloa Housing Development.

Secondary Impacts

As previously mentioned, the water project will supply the water needs of the proposed Koolauloa Housing project. The impacts of this housing project have been evaluated in the "Environmental Impact Statement for the Koolauloa Housing Project and Sewer Treatment Plant, Kahuku, Oahu." The reader is hereby referred to this document for impacts relating to the housing project.

V. PROBABLE ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED

In the short-term, the primary adverse impacts that will result from the proposed project are those associated with the construction activities. Temporary air pollution from dust, possible erosion hazard, noise pollution from construction equipment, and traffic congestion from water pipe placement will no doubt result.

In the long-term, potential primary adverse impacts are those associated with the operation of the facility, including 1) increased energy requirements for pumping, and 2) noise from mechanical devices which are typical of most deepwell pumping facilities.

VI. ALTERNATIVES TO THE PROPOSED PROJECT

A. NO ACTION

A no action alternative was considered, but discarded as a viable alternative since this action would not fulfill the need for this project.

B. UTILIZE EXISTING WELLS AND CONSTRUCT NEW TRANSMISSION MAIN

The alternative to the proposed wells are to utilize the existing wells. These wells, as previously mentioned, are located at the landward edge of the coastal plain. Location of the pumps in a below ground pit makes the source potentially susceptible to contamination by flooding. Furthermore, the cesspools of some homes located in areas infiltrating water to the basal groundwater body may be sources of contaminants although no known incidences have occurred thus far.

Drilled 37 to 50 years ago, the older well casings may be near the end of their life. Size of the casings are 8 inches for one well and 12 inches for the remainder. Further reduction of casing diameters would restrict the quantity of water available to pumps to less than 0.3 mgd for the smaller casing and to about 0.5 mgd for the larger casing. Thus, use of these old wells may not meet the combined requirements of the new homes, the present homes, and large scale irrigation of diversified crops.

Other wells west of Well 353 are presently in use for irrigation and for supply of domestic water to military installations. However, almost all wells in the Kahuku area are 40 years old when practices for sanitary seals on casings were probably not observed. Their age, plus questionable construction argues against incorporation into a modern system.

The proposed wells would be located away from present housing and would be better protected by modern construction from entry of contaminants through old leaky casings or along the annulus, or by flooding of the pump room.

VII. RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES AND LONG-TERM PRODUCTIVITY

The proposed Kahuku Water Development project will result in the long-term loss of 3.2 acres of land, in favor of improved, and also long-term, health protection and community development for Kahuku Town. From a practical standpoint, the proposed action may foreclose future options for use of the land which is presently vacant, however, only at the expense of reducing long-term risks to public health and building the foundation for revitalizing the Kahuku community.

VIII. MITIGATIVE MEASURES

Short-term impacts associated with construction activity are expected. The surrounding area will be subjected to some dust, erosion, noise and traffic generated by construction.

Dust will be generated during excavation and embankment construction. Water, as needed, will be sprayed to abate the dust, and exposed areas will be grassed as soon as practicable.

The proposed project site will be subjected to erosion hazard during construction. To minimize the potential adverse impact on water quality, the contractor shall be required to adhere to the Soil Erosion Standards and Guidelines of the City and County of Honolulu. In addition, soil retention should be improved since the project site will be landscaped.

Noise from construction equipment will be audible during construction. The usual noise control procedures of construction, such as limiting operations to normal working hours will be utilized.

Existing roadways will remain open to local traffic during construction. Traffic control devices to safeguard public traffic will be provided and used in conformity with the "Rules and Regulations Governing the use of Traffic Control Devices on or Adjacent to Public Streets and Highways" adopted by the State Highway Safety Coordinator.

Air pollution from motor exhausts of construction equipment is not expected to materially affect air quality. For a project of this nature, the number of equipment operating at any one time is small.

Long-term impacts associated with the normal operation of the water facility are expected. Pumps, motors and other equipment will generate noise, but provisions will be included in the design to reduce the noise levels to the limits specified in Chapter 44B of the State Public Health Regulations.

IX. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

The proposed Kahuku Water Development Project will irreversibly commit land, labor, material and energy resources required for its design, construction and operation.

Approximately 3.2 acres of agricultural land will be lost to the water facility site.

Labor involved in the construction and operation of this system will be essentially irreversible and irretrievable. Materials such as concrete, cast iron, reinforcing steel, etc. required for construction, will be for all practical purposes irreversibly and irretrievably committed.

Also committed would be the energy resource needed for the operation of the pump and appurtenances, estimated at 34,000 kilo watt hours per month.

X. AGENCIES AND ORGANIZATIONS CONSULTED

City and County of Honolulu
- Department of Housing and Community Development
- Department of Public Works
- Division of Refuse Collection and Disposal

State of Hawaii
- Department of Planning and Economic Development
- Department of Health
- Department of Land and Natural Resources

Federal
- Farmers Home Administration, Department of Agriculture
- U. S. Fish and Wildlife Service, Department of Interior

Private Organizations
- Kahuku Housing Corporation
- Kahuku Community Association
- Campbell Estate

XI. LIST OF NECESSARY APPROVALS

Permits will be required from the following agencies:

1. A permit for grading, excavation and fills will be required pursuant to Ordinance No. 3968 (1972) and 4538 (1975), Chapter 23, Revised Ordinance of Honolulu, 1969 as amended. The contractor will obtain said permit from the Department of Public Works.

2. A Conditional Use Permit for Construction Activities under Chapter 44B, Community Noise Control for Oahu, of the Public Health Regulations may be required. The contractor should obtain said permit from the Deparment of Health.

3. A Special Use Permit will be required pursuant to the State Land Use District Regulations of the State Land Use Commission.

4. A Construction Permit will be required from the Land Transportation Facilities Division of the State Department of Transportation.

BIBLIOGRAPHY

1. City and County of Honolulu, "General Plan, Statement of Objectives and Policies", Resolution No. 238, January 18, 1977.

2. Department of General Planning, "Detailed Land Use Map of the Oahu General Plan", City and County of Honolulu, 1964.

3. Department of Land and Natural Resources, Division of Water and Land Development, "Kahuku Flood Hazard Area, Kahuku, Oahu, Hawaii", prepared in cooperation with the Department of the Army, Honolulu District, Corps of Engineers, June 1971.

4. Department of Planning and Economic Development, Hawaii Urban Planning Information Center, "Community Profiles for Hawaii", State of Hawaii, February 1973.

5. Department of Planning and Economic Development, Land Use Commission, "Land Use District Boundaries", State of Hawaii, December 20, 1974.

6. Department of Public Works, "Koolauloa Housing Project and Sewer Treatment Plant, Kahuku, Oahu," City and County of Honolulu, November 30, 1977.

7. Honolulu Board of Water Supply, "Oahu Water Plan", City and County of Honolulu, July 31, 1975.

8. Real Estate Data, Inc., "Real Estate Atlas of the State of Hawaii, Geographical Ownership", Volume 2, Tenth Edition, 1977.

9. Sunn, Low, Tom & Hara, Inc., Engineering Sciences, Inc., and Dillingham Corporation, "Water Quality Program for Oahu with Special Emphasis on Waste Disposal", prepared for Department of Public Works, City and County of Honolulu, February 1972.

10. Takasaki, K. J. and Santos Valenciano, "Water in the Kahuku Area, Oahu, Hawaii", U.S.G.S. Water Supply Paper 1874, 1969.

11. U. S. Department of Agriculture, "Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii", Soil Conservation Service in conjunction with the University of Hawaii Agricultural Experiment Station, August 1972.

12. U. S. Geological Survey, "Chemical Quality of Groundwater in Hawaii", prepared in cooperation with the Department of Land and Natural Resources, State of Hawaii, May 1973.

13. Wilson, Okamoto & Associates, Inc., "Environmental Impact Statement, Kahuku Ambulance, Fire, and Police Station, Kahuku, Oahu", prepared for Building Department, City and County of Honolulu, February 1977.

A P P E N D I X

COMMENTS AND REPLIES TO THE EIS

UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
P. O. Box 50004, Honolulu, HI 96850

RECEIVED
PERSONNEL OFFICE
JUL 6 1 29 PM '78

July 5, 1978

Mr. Richard L. O'Connell
Director, Office of Environmental
Quality Control
550 Halekauwila St., Room 301
Honolulu, HI 96813

Dear Mr. O'Connell:

Subject: Kahuku Water Development, Kahuku, Oahu

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

Thank you for the opportunity to review this document.

Sincerely,

Jack P. Kanalz
State Conservationist

cc: Board of Water Supply
City & County of Honolulu
630 South Beretania Street
Honolulu, HI 96813

July 17, 1978

Mr. Jack P. Kanalz
State Conservationist
Soil Conservation Service
U.S. Department of Agriculture
P.O. Box 50004
Honolulu, Hawaii 96859

Dear Mr. Kanalz:

Your letter of July 5, 1978 Relating to the Environmental Impact Statement for Kahuku Water Development, Kahuku, Oahu, Hawaii

Thank you for your response regarding the subject Environmental Impact Statement. Your letter will be appended to the final EIS.

Very truly yours,

for EDWARD Y. HIRATA
Manager and Chief Engineer

cc: Office of Environmental Quality Control

RECEIVED
BD OF WATER SUPPLY
JUN 27 2 11 PM '78

Phone: 808-546-7510

16475

JUN 22 1978

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

Dear Sir:

This office has completed a review of the Kahuku Water Development Environmental Impact Statement.

It has been determined that the project does not affect any Coast Guard mission areas directly and as such the Coast Guard has no comment on the proposed project and Environmental Impact Statement.

Thank you for the opportunity to comment.

Sincerely,

J. V. CAFFREY
Captain, U. S. Coast Guard
Chief of Staff
Fourteenth Coast Guard District

Copy to:
Commandant (G-WEP)
EPA Washington
C&C Honolulu, Board of Water Supply

July 17, 1978

J. V. Caffrey
Captain, U.S. Coast Guard
Commander, 14th Coast Guard District
Prince Kalanianaole Federal Building
300 Ala Moana Blvd., Ninth Floor
Honolulu, Hawaii 96850

Dear Captain Caffrey:

Your Letter of June 22, 1978 Relating to the Environmental Impact Statement for Kahuku Water Development, Kahuku, Oahu, Hawaii

Thank you for your response regarding the subject Environmental Impact Statement. Your letter will be appanded to the final EIS.

Very truly yours,

FOR EDWARD Y. HIRATA
Manager and Chief Engineer

cc: Office of Environmental Quality Control

RECEIVED
BD OF WATER SUPPLY
5 JUL 1978

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

ATTN OF: DEEV (Mr. Nakashima, 449-1831)

SUBJECT: Environmental Impact Statement (EIS) for Kahuku Water Development Project, Kahuku, Koolauloa, Oahu, Hawaii

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

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

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

ROBERT Q. K. CHING
Chief, Engineering, Construction
and Environmental Planning Div
Directorate of Civil Engineering

1 Atch
EIS

Cy to: Board of Water Supply wo Atch
City and County of Honolulu
630 South Street
Honolulu, Hawaii 96813

cc: Board of Water Supply

July 17, 1978

Mr. Robert Q. K. Ching
Chief, Engineering, Construction
and Environmental Planning Division
Directorate of Civil Engineering
Department of the Air Force
Headquarters 15th Air Base Wing (PACAF)
Hickam Air Force Base
Honolulu, Hawaii 96853

Dear Mr. Ching:

Your Letter of June 5, 1978 Relating to the Environmental Impact Statement for Kahuku Water Development, Kahuku, Oahu, Hawaii

Thank you for your response regarding the subject Environmental Impact Statement. Your letter will be appended to the final EIS.

Very truly yours,

FOR EDWARD Y. HIRATA
Manager and Chief Engineer

cc: Office of Environmental Quality Control

DEPARTMENT OF THE ARMY
PACIFIC OCEAN DIVISION, CORPS OF ENGINEERS
BUILDING 230
FT. SHAFTER, HAWAII 96858

RECEIVED
BOARD OF WATER SUPPLY
Jun 12 1 11 PM '78

PODED-PV

11 July 1978

Mr. Edward Y. Hirata
Manager and Chief Engineer
Board of Water Supply
City and County of Hawaii
630 South Beretania
Honolulu, Hawaii 96813

Dear Mr. Hirata:

We have reviewed the Environmental Impact Statement (EIS) for Kahuku Water Development, Kahuku, Koolauloa, Oahu, Hawaii, which was forwarded to us on 5 June 1978 by the Environmental Quality Comission, Office of Environmental Quality Control.

The project does not affect any U.S. Army Corps of Engineers projects. However, we are concerned with the withdrawal of water affecting the wetland areas of Kii Wildlife Refuge, and the EIS should evaluate possible impacts on wetlands and endangered species. We suspect that the proposed water withdrawal rates could be lower than withdrawal rates during the operation of Kahuku Sugar Mill. We suggest that a comparision of withdrawal rates be made in the final environmental statement as a method of addressing the affect of the project on groundwater resources and the Kii Wildlife Refuge.

We also suggest direct consultation with the State Historic Preservation Officer to determine if an archaeological reconnaissance survey should be conducted in areas to be directly affected by the project.

According to the existing Flood Insurance Rate Map (Incl 1) and Flood Boundary and Floodway Map, the western portion of the proposed 12-inch transmission line along Kamehameha Highway lies within the 100-year flood hazard area, contrary to the information provided in the environmental statement.

4

PODED-PV

10 July 1978

Mr. Edward Y. Hirata

We thank you for the opportunity of participating in the environmental impact statement review process.

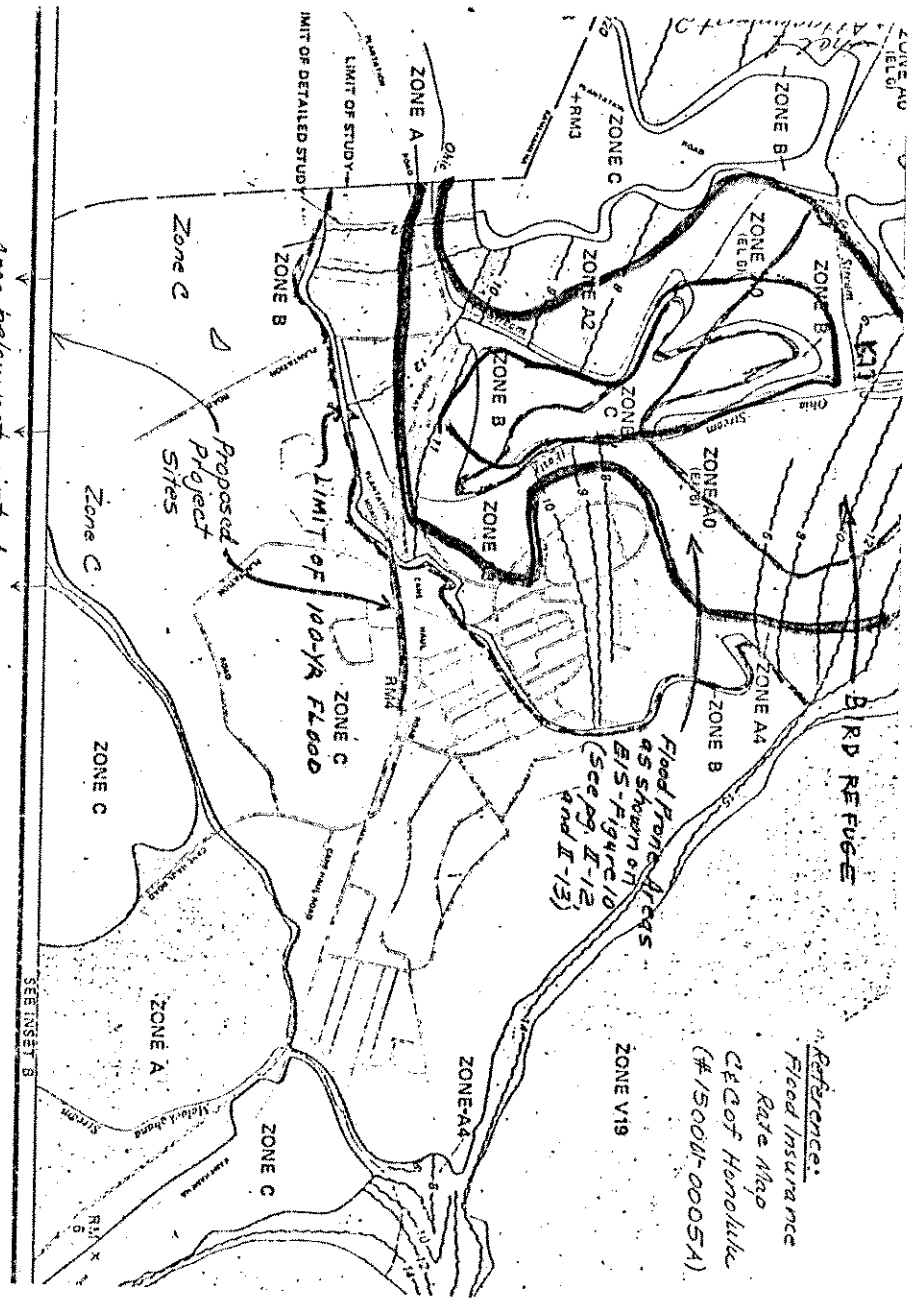
Sincerely yours,

for KISUK CHEUNG
Chief, Engineering Division

1 Incl
As stated

Copy Furnished:
Office of Environmental
Quality Control
550 Halekauwila Street, Rm 301
Honolulu, Hawaii 96813

2



July 25, 1978

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

Dear Mr. Cheung:

Your Letter of July 11, 1978 Relating to the Environmental Impact Statement for Kahuku Water Development, Kahuku, Oahu, Hawaii

This is in response to your comments on the Environmental Impact Statement. The proposed project is not anticipated to have any significant adverse effects on the wetland areas of Kii Wildlife Refuge. Comments received from the Fish and Wildlife Service of the U.S. Dept. of Interior on the Environmental Impact Statement also state that the project will have minimal effects on fish and wildlife resources.

Our estimates of the proposed water withdrawal is 7 million gallons per day (mgd). Kahuku Sugar Mill pumped in excess of 20 mgd at times (see page II-8 of EIS). Therefore we do not anticipate any adverse effect on the wetlands.

The State Historic Preservation Officer has assured us that the project will have no effect upon any known historical or archeological site on or likely to be eligible for inclusion on the Hawaii and/or National Registers of Historic Places.

Your corrections to our Flood Prone Area Map will be incorporated into the final Environmental Impact Statement. The portion of the proposed 12-inch transmission main which lies within the 100-year flood hazard area will not be adversely affected by this condition.

If there are any further questions on this matter, please call Lawrence Whang at 548-5221.

Very truly yours,

L.B. Kathburn

for EDWARD Y. HIRATA
Manager and Chief Engineer

cc: Office of Environmental Quality Control

United States Department of the Interior
FISH AND WILDLIFE SERVICE
300 ALA MOANA BOULEVARD
P.O. BOX 50167
HONOLULU, HAWAII 96850
Division of Ecological Services
Room 5302

IN REPLY REFER TO:
ES

June 13, 1978

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

Re: EIS for Kahuku Water Development, Kahuku Oahu

Dear Sir:

We have reviewed the referenced EIS and find that it will have minimal effects on fish and wildlife resources. Therefore, we have no further comment to make on the project. We would appreciate the opportunity to re-evaluate this project if future changes occur in its design or method of operation.

We appreciate the opportunity to comment on this EIS.

Sincerely yours,

for Maurice H. Taylor
Field Supervisor

cc: HA
Board of Water Supply
HDF&G
NMFS

CONSERVE AMERICA'S ENERGY

Save Energy and You Serve America!

June 29, 1978

Mr. Maurice H. Taylor, Field Supervisor
Division of Ecological Service, Room 5302
Fish and Wildlife Service
United States Department of the Interior
P.O. Box 50167
Honolulu, Hawaii 96850

Dear Mr. Taylor:

Your Letter of June 13, 1978 Relating to the Environmental Impact Statement for Kahuku Water Development, Kahuku, Oahu, Hawaii

Thank you for your comments regarding the subject EIS. We will inform you if there are any future changes in the design or method of operation in order to give you an opportunity to re-evaluate the project.

Very truly yours,

FOR EDWARD Y. HIRATA
Manager and Chief Engineer

cc: Office of Environmental Quality Control

HEADQUARTERS
FOURTEENTH NAVAL DISTRICT
BOX 110
PEARL HARBOR, HAWAII 96860

RECEIVED
BD OF WATER SUPPLY
'78

IN REPLY REFER TO:
002A:FWD:mf
Ser 1191
12 JUN 1978

Environmental Quality Commission
Office of the Governor
State of Hawaii
550 Halekauwila Street, Room 301
Honolulu, Hawaii 96813

Gentlemen:

Kahuku Water Development
Environmental Impact Statement

The Environmental Impact Statement for the Kahuku Water Development in Kahuku, Oahu forwarded by your letter of 5 June 1978 has been reviewed, and the Navy has no comments.

As requested, the subject EIS is returned.

Thank you for the opportunity to review the EIS.

Sincerely,

L. H. RUFF
CAPTAIN, CEC, USN
DISTRICT CIVIL ENGINEER
BY DIRECTION OF THE COMMANDANT

Encl

Copy to: (w/o encl)
OEQC
Board of Water Supply

June 29, 1978

L. H. Ruff
Captain, CEC, USN
District Civil Engineer
Headquarters Fourteenth Naval District
P.O. Box 110
Pearl Harbor, Hawaii 96860

Dear Captain Ruff:

Your Letter of June 12, 1978 Relating to the Environmental Impact Statement for Kahuku Water Development, Kahuku, Oahu, Hawaii

Thank you for your response regarding the subject Environmental Impact Statement.

Very truly yours,

A. D. Rathburn

FOR EDWARD Y. HIRATA
Manager and Chief Engineer

cc: Office of Environmental Quality Control

University of Hawaii at Manoa

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

Office of the Director

July 10, 1978

RE:0253

Mr. Richard L. O'Connell
Office of Environmental Quality Control
550 Halekauwila Street
Honolulu, Hawaii 96813

Dear Mr. O'Connell:

Draft Environmental Impact Statement for the
Kahuku Water Development
Kahuku, Oahu

The Environmental Center has reviewed the above cited EIS with the assistance of Donald Bell, Finance Department; Larry Olson, Archaeology Department; Paul Ekern and Stephen Lau, Water Resources Research Center; Margaret Kimmerer and Barbara Vogt, Pacific Urban Studies Planning Program; and Jacquelin Miller and Doak Cox, Environmental Center.

The brief EIS filed by the Board of Water Supply for a water development project in Kahuku covers most of the significant impacts of the proposed project. There are several areas, however, in which our reviewers would like more clarification.

Soils (p. II-2)

The statement "all soils are similar with respect to runoff...permeability" is misleading. Jaucas sand and Pearl Harbor clay do not display the same permeability characteristics, for example.

Geohydrology and Water Quality (pp. II-2 to II-12)

Since the artificial recharge from irrigation water is estimated to be 5 mgd, is there any information available on nitrate levels in the water supply?

The greatest environmental concerns associated with a groundwater development of the kind proposed apply to the relation between the average total draft from the aquifer and the sustainable yield of the aquifer. According to the EIS (p. II-8) there was a net overdraft of 5 mgd from the basal groundwater aquifer at Kahuku during the period when the Kahuku Sugar Company was in operation. This overdraft appears to have been calculated as the difference between the average total draft (22 mgd) and the sum of the average natural recharge (12 mgd) and the average artificial recharge (return irrigation = 5 mgd). The present average draft is estimated as 7 mgd (p. II-12). The EIS indicates that the

maximum draft of the new wells will be 1 mgd (p. I-7), but does not indicate what the average draft will be, either from the new wells alone or in total from the aquifer.

We understand that the new wells are intended simply to replace present wells which are unsatisfactory. If so, the draft from the new wells will not be entirely an addition to the total draft, but this is not clear from the EIS. We note that the proposed new well development is a component of the City's Koolauloa Housing project (p. I-7). From the EIS on that project (November 1977) we note that the average water demand of the housing project will be only about 0.1 mgd. The EIS should state the actual increase in average draft that will result from the proposed water development.

The EIS does not indicate whether there is still significant artificial recharge to the aquifer, or if so how large it is on the average. It appears to recognize (p. II-12) that the average total future draft should not exceed the sustainable yield and that the sustainable yield is less than the average recharge. (What it actually states is that "Future water development...should not exceed the recoverable portion of the 12 mgd recharge in the area.") It also appears to recognize that the sustainable yield will depend upon the pattern of development in its statement that "water development should not be concentrated geographically, rather it should be spread out over a greater area." It does not appear to recognize the relationship between permissible excesses of total draft over recharge and the storage in the aquifer. Most importantly it fails to present any estimate of the sustainable yield of the aquifer or of the range of uncertainty in such an estimate.

The failure to relate the total draft from the aquifer after the proposed BWS development (and the total draft after other developments anticipated (p. II-12)) to the sustainable yield is a deficiency in the EIS, although from our understanding of the magnitude of the quantities involved there is no significant danger of overdraft resulting from the proposed development.

Archaeology (p. II-16)

Although the Historic Sites Division of the Department of Land and Natural Resources does not show any record of historic sites within the project area, it is still possible for sites to exist which have not been previously recorded. The earliest site in all of the Hawaiian Islands is located on the windward side of Oahu. Site and road excavations may possibly expose prehistoric or early historic occupation or cultural levels which would not normally be identified by construction personnel, such as midden deposits, buried agricultural terraces, and pavements, to name a few. For this reason we recommend that an archaeological survey be conducted prior to construction or that a qualified archaeologist be present for monitoring during the initial land cutting phases of construction.

Social and Economic Impacts (p. IV-4)

Based on the figure given in the DEIS, the proposed water development would apparently serve a population of approximately seven times the expected population of 1,370. A brief summary of the potential social and economic impacts, both primary and secondary, previously cited in the Koolauloa Housing EIS should be included in the

final EIS of this project. What is the relationship, for example, between this project and the future resort-condominium developments of the Kuilima and Malaekahana Valley areas?

Yours truly,

Doak C. Cox
Director

DCC/ek

cc: ✓Board of Water Supply
Donald Bell
Larry Olson
Paul Ekern
Stephen Lau
Margaret Kimmerer
Barbara Vogt
Jacquelin Miller

August 11, 1978

Mr. Doak C. Cox
Director
Environmental Center
University of Hawaii at Manoa
2550 Campus Road
Honolulu, Hawaii 96822

Dear Mr. Cox:

Your letter of July 10, 1978 Relating to the Environmental Impact Statement for the Kahuku Water Development, Kahuku, Oahu

In response to your comments on the EIS, we have the following:

Soils

We agree that the statement "all soils are similar with respect to runoff...permeability," is misleading and we shall delete it from the EIS.

Geohydrology and Water Quality

Table 2, page II-11, has a listing of nitrate and other water quality data for wells in the Kahuku area.

The average total draft should remain essentially the same, provided that the other users in the area do not increase their use. As reported in the EIS, the average expected demand from the Koolauloa Housing Project is 0.1 mgd. The demand from the proposed Kahuku Elderly Housing project is estimated at 0.03 mgd. Even if these amounts represent additional draft, the total draft would be about 7.2. The primary purpose of the proposed water development project is to transfer the source of domestic water to a more dependable and safe one. The growth stimulating effects from the two future federally funded housing projects are considered secondary impacts to the project.

Future Opana Wells is expected to have two wells each at 1.25 mgd. This figure added to the present draft will

be 8.25 mgd, which is less than the recharge figure of 12 mgd for that area.

Archaeology
The State Historic Preservation Officer has reviewed the EIS and the construction plans and has assured us that the proposed project will have no effect upon any known archaeological site on or likely to be eligible for inclusion on the Hawaii or National Registers of Historic Places. However, as a precaution, we will instruct our construction inspectors to observe for any unusual subterranean formations. If any materials of historic value are encountered during the course of construction, we will contact the State Department of Land and Natural Resources for appropriate action.

Social and Economic Impacts
Since this project is designed to operate with only one 700 gpm pump, it is not anticipated to promote any significant growth in the area beyond the proposed Koolauloa Housing and Kahuku Elderly Housing projects. Any new developments in the area will be required to provide their own water source.

There are no relationships between this project and the future Kuilima and Malaekahana Valley developments. Kuilima will obtain its water from our Waiale-Waialua system which includes the Opana Wells. Malaekahana Valley would have to develop its own source of supply.

If you have any further questions on this matter, please call Lawrence Chang at 548-5221.

Very truly yours,

EDWARD Y. HIRATA
Manager and Chief Engineer

cc: Environmental Quality Commission

10

GEORGE R. ARIYOSHI
GOVERNOR

RICHARD L. O'CONNELL
DIRECTOR
TELEPHONE NO.
548-6915

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

July 13, 1978

Mr. Edward Hirata, Director
Board of Water Supply
City and County of Honolulu
630 South Beretania Street
Honolulu, HI 96813

Dear Mr. Hirata:

SUBJECT: ENVIRONMENTAL IMPACT STATEMENT FOR KAHUKU WATER DEVELOPMENT, KAHUKU, KOOLAULOA, OAHU, HAWAII

We have reviewed the subject document and offer the following comments for your consideration:

1. Page I-1

The EIS indicates that the proposed action is intended to insure adequate water resources for a 300-unit housing project by the City and County of Honolulu's Department of Housing and Community Development. We note that an EIS was prepared and accepted on this housing project. Since the water project is directly related to the housing project, we question why the water resources were not covered in the previous EIS since there should be only one EIS for the housing project which included the water project. According to section 1:12 c. of the EIS Regulations, it states,

> A group of proposed actions shall be treated as a single action when: (1) the component actions phases or increments of a larger total undertaking; (2) an individual project is a necessary precedent for a larger project; (3) an individual project represents a commitment to a larger project; or (4) the actions in question are essentially the same and a single Statement will adequately address the impacts of any single action.

For future water projects of this type, a single comprehensive environmental impact statement should be considered. Reduced costs and time should result.

11

2. Page I-6

Since federal funding is involved with the proposed project, how will the National Environmental Policy Act of 1969 be met?

3. Page II-8

The EIS refers to some streams in the area. They should be identified. How will the pumping affect stream flows? If the volume of flow is reduced by the proposed action, there should be discussion as to the impact on agricultural production, water quality, aquatic life, etc.

4. There needs to be discussion of the amount of water that will be pumped and the maximum capacity of the system. What is the existing and future water demand? Why are two deepwells being drilled for 300 units? Besides Koolauloa housing project, who will use water from this project? Will some of the water be used to supply the Inscon Development and Prundential Insurance Company's Kuilima Resort Community? In order to fully analyze the EIS, a discussion is warranted.

5. Page III-1

This statement, "To the extent that the project will insure adequate water for a City housing project and provide an improved water system for the existing and future residences, the project can be said to conform with the approved land use plans for the area," needs elaboration. What does "approved land use plans" imply? How much future development will be project supply? What is the ultimate population that the proposed action will serve? Is this ultimate development consistent with land use plans?

6. Page VII-1

The topic short-term uses vs. long-term productivity should be expanded. Throughout the EIS, there is no consideration given to the growth stimulating character of the project. Does the project fulfill only the present water demand or does this project encourage growth for the "rural area"? What trade offs and benefits will result? What is the long-term effect?

7. Because there has been little information presented beyond water demand and its service population, we recommend that the EIS be revised to reflect additional data and information so as to permit a complete analysis.

The EIS Regulations state that responses to comment should be made within fourteen days after the end of the comment period. However, we will exercise the discretion provided by the regulations and will consider responses made after the prescribed fourteen day response period.

We thank you for the opportunity to review this document. We trust that these comments will be helpful to you in preparing the revised EIS.

Sincerely,

Richard L. O'Connell
Director

Attachment

12

August 9, 1978

Mr. Richard L. O'Connell, Director
Office of Environmental Quality Control
State of Hawaii
550 Halekauwila Street, Room 301
Honolulu, Hawaii 96813

Dear Mr. O'Connell:

Your Letter of July 13, 1978 Relating to Environmental Impact Statement for Kahuku Water Development, Kahuku, Koolauloa, Oahu

In answer to your comments on the environmental document we offer the following:

Comment #1 (Page I-1):

The EIS indicates that the proposed action is intended to insure adequate water resources for a 300-unit housing project by the City and County of Honolulu's Department of Housing and Community Development. We note that an EIS was prepared and accepted on this housing project. Since the water project is directly related to the housing project, we question why the water resources were not covered in the previous EIS since there should be only one EIS for the housing project which included the water project. According to section 1:12 c. of the EIS Regulations, it states,

> A group of proposed actions shall be treated as a single action when: (1) the component actions phases or increments of a larger total undertaking; (2) an individual project is a necessary precedent for a larger project; (3) an individual project represents a commitment to a larger project; or (4) the actions in question are essentially the same and a single Statement will adequately address the impacts of any single action.

For future water projects of this type, a single comprehensive environmental impact statement should be considered. Reduced costs and time should result.

Response #1:

The Koolauloa Housing Project is dependent upon our building the new Kahuku water system as the existing system is considered inadequate in meeting the proposed water requirement for the proposed housing development. In addition, the existing system does not meet Safe Drinking Water Standards. In regard to Section 1:12 c of the EIS Regulations, the actions are not essentially the same. The EIS for the housing project is for one specific development within the community while the water development is for both the housing project and existing development within Kahuku Town.

During the early 1970's the department was considering accepting the Kahuku water system. Studies made at that time indicated that the entire water system was in poor condition and would require considerable cost to upgrade the system before the department would accept it. At the request of the Kahuku Housing Corporation, the department applied for a loan with the Farmers Home Administration in 1975 to install a new domestic water source and storage facility that would meet our Water System Standards and the recently implemented Safe Drinking Water Act. The Kahuku Housing Corporation could not apply for the loan since only community development projects sponsored by a governmental agency can. In the meantime the City's Department of Housing and Community Development prepared an EIS on their proposed housing project. The EIS did not incorporate the water development project because the water project was not proposed solely for their development.

Comment #2 (Page I-6):

Since federal funding is involved with the proposed project, how will the National Environmental Policy Act of 1969 be met?

Response #2:

Farmers Home Administration has been asked what requirements they may have in respect to NEPA. On receipt of their reply, we will address your question in a following letter.

Comment #3 (Page II-8):

The EIS refers to some streams in the area. They should be identified. How will the pumping affect stream flows? If the volume of flow is reduced by the proposed action, there should be discussion as to the impact on agricultural production, water quality, aquatic life, etc.

Response #3:

There are only two major streams in the area which are Malaekahana and Oio Streams. These two streams are perennial in their upper reaches at elevations 400 feet or greater due to the high amounts of rainfall and discharge from dike compartments.

Pumping will not have any effect on stream flows above the 400 foot elevation. The effects on the lower stream reaches are considered negligible due to the intermittent nature of the flows.

Total pumpage by all water users has the effect of lowering the regional head which would affect an unknown amount of spring discharge. As long as the total pumpage does not exceed the estimated 12 mgd flux in the area, we do not anticipate any adverse effects to water quality.

Agricultural production will not be affected as the proposed well is not anticipated to affect the draft or water quality from the existing, active wells.

No aquatic life will be affected. Also, the Kii Wildlife Preserve which is located down gradient from the proposed project is not anticipated to be adversely affected. We have not had any adverse comments in regard to this matter from the State Department of Land and Natural Resources of U.S. Fish and Wildlife Service. Also, there are no known reports of significant affects to the Kii Wildlife Preserve when Kahuku Sugar Mill was pumping as much as 20 mgd prior to its ceasing operations in 1971.

Comment #4:

There needs to be discussion on the amount of water that will be pumped and the maximum capacity of the system. What is the existing and future water demand? Why are two

deepwells being drilled for 300 units? Besides Koolauloa housing project, who will use water from this project? Will some of the water be used to supply the Inscon Development and Prudential Insurance Company's Kuilima Resort Community? In order to fully analyze the EIS, a discussion is warranted.

Response #4:

Two 1-mgd wells are being proposed. Although the installed capacity will be 2 mgd, both wells will be alternately pumped with either well acting as a back-up source in case of a well shut-down. The new wells are to serve Kahuku community in addition to the 300-unit housing development.

Existing water demand for the whole Kahuku Town area is about 7 mgd with 1 mgd for domestic use and the remaining 6 mgd for agricultural use.

Water from the new facility will serve the Kahuku Housing Corporation, the Koolauloa Housing Project, and the Kahuku Elderly Housing Project. The proposed system is not designed to serve any other future developments.

All existing water demands from the Kuilima Resort Community are from our existing Waialee-Waialua water system. Any other resort development in the area will be required to install their own water system, including source.

Comment #5 (Page III-1):

This statement, "To the extent that the project will insure adequate water for a City housing project and provide an improved water system for the existing and future residences, the project can be said to conform with the approved land use plans for the area," needs elaboration. What does "approved land use plans" imply? How much future development will the project supply? What is the ultimate population that the proposed action will serve? Is this ultimate development consistent with land use plans?

Response #5:

The phrase "to conform with the approved land use plans for the area" is used in a general sense to mean that the project

is designed to support the urban uses of Kahuku Town. However, the last sentence of the first paragraph on Page III-1 is confusing and will be deleted from the final document.

In addition to meeting the existing water demands, the proposed water development project is designed to meet the water demands of the Koolauloa Housing Project and the Kahuku Elderly Housing. A total of 414 units are projected for the two residential developments. Besides these two developments, the proposed water system will be able to support between 50 to 70 additional residential units.

It is estimated that the ultimate population that can be supported by our proposed project is 2500 people and is consistent with existing land use plans.

Comment #6 (Page VII-1):

The topic short-term uses vs. long-term productivity should be expanded. Throughout the EIS, there is no consideration given to the growth stimulating character of the project. Does the project fulfill only the present water demand or does this project encourage growth for the "rural area"? What trade offs and benefits will result? What is the long-term effect?

Response #6:

The proposed water development project is designed only to meet the existing water demands of the Kahuku Housing Corporation and the projected demands of the Koolauloa Housing Project and the Kahuku Elderly Housing projects. The project is not designed to accommodate demands from any future developments in the area.

The only trade-off is the loss of 3.2 acres of land that could be used for agriculture. However, the benefits are:

1. A source that will be reliable in delivering water,

2. Water of good quality that will meet the recently implemented Safe Drinking Water Act,

3. Allow for the construction of low-income housing for residents whose leases on their plantation homes will expire in 1983,

4. Allow for the construction of low-rent homes for the elderly,

5. Double the storage capacity of the existing system for more uniform system pressure during peak demand periods, and

6. Adequate fire protection facilities will be provided for the two residential developments meeting our Water System Standards.

The long-term effect is to provide continuous water service meeting the Safe Drinking Water standards to Kahuku Town and the two proposed housing projects.

Comment #7:

Because there has been little information presented beyond water demand and its service population, we recommend that the EIS be revised to reflect additional data and information so as to permit a complete analysis.

Response #7:

The intent of the proposed project is to replace the existing water source with a newer, more reliable one. The only significant consequence of the project is the secondary impact of the Koolauloa Housing and Kahuku Elderly Housing projects being able to be built. We will be revising the environmental document to address all the concerns on the project and appending all comments and responses.

Thank you for your comments and we hope that our responses adequately answered the concerns you had regarding this project.

If you have any further questions on this matter, please call Lawrence Whang at 548-5221.

Very truly yours,

EDWARD Y. HIRATA
Manager and Chief Engineer

September 15, 1978

Mr. Richard L. O'Connell
Director
Office of Environmental Quality Control
State of Hawaii
550 Halekauwila Street
Room 301
Honolulu, Hawaii 96813

Dear Mr. O'Connell:

Follow Up to Our Letter of August 9, 1978
Relating to Environmental Impact Statement
for Kahuku Water Development, Kahuku,
Koolauloa, Oahu

The Farmers Home Administration has informed us that our loan was approved on the basis that we met all the requirements of NEPA.

If there are any further questions on this matter, please call Lawrence Whang at 548-5221.

Very truly yours,

EDWARD Y. HIRATA
Manager and Chief Engineer

L. Whang

RECEIVED
BD OF WATER SUPPLY
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UNIVERSITY OF HAWAII

Water Resources Research Center

6/22/78

Office of the Director

June 13, 1978

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

Gentlemen:

Subject: Kahuku Water Development EIS

The EIS is not explicit on how water service will be improved for present residents now served by the Kahuku Housing Cooperative--is the expected change in terms of quantity, quality, reliability of service, increased fire protection, etc.

The needs for regional water supply resource management are expressed (p. II-12, 3 E), however, it is not clear how this control will be accomplished. If it is not, then the historical overdraft situation may reoccur.

Some information should be provided on the well design, regional head, drewdown, etc.

Yours very truly,

Reginald H. F. Young
Asst. Director, WRRC

RHFY:jan

cc: Env. Ctr.
Board of Water Supply

2540 Dole Street · Honolulu, Hawaii 96822
AN EQUAL OPPORTUNITY EMPLOYER

July 19, 1978

Dr. Reginald H. F. Young
Assistant Director
Water Resources Research Center
University of Hawaii
2540 Dole Street
Honolulu, Hawaii 96822

Dear Dr. Young:

Your Letter of June 13, 1978 Relating to
The Kahuku Water Development EIS

In response to your comments on the EIS, we have the following clarifications.

The proposed project will improve water service to the present residents now served by the Kahuku Housing Cooperative in the following aspects:

(a) Quantity

The capacity of each of the two new pumps is 700 gallons per minute and the system is designed to operate with only one pump at a time. One pump will be maintained as a "back-up." Although this is less than the existing 1,250 gpm capacity, the new pump will be able to meet the present domestic water needs of the community including the proposed housing projects. The existing system will be retained for agricultural use.

(b) Quality

Water from the proposed system will meet all State and Federal Safe Drinking Water Requirements. The existing system does not meet these requirements.

(c) Reliability of Service

The existing pumps and well casings are old and near the end of their useful lives. The new system with the back-up pump will provide a more reliable source.

(d) Fire Protection

The proposed water system will provide the required fire flows for the Koolauloa Housing Project and the Kahuku Elderly Housing. Although the new system will be connected to the existing distribution system, fire protection for the existing community will be limited to the carrying capacity of the existing mains.

A program for regional water supply resource management may be controlled through our well permits process and the proposed State "Ground Water Use Regulations."

Information on well design are:

Well No. 1,	Ground Elevation	=	211 feet
	Casing Length	=	241 "
	Open Hole	=	100 "
	Total Depth	=	341 "
Well No. 2,	Ground Elevation	=	209 feet
	Casing Length	=	239 "
	Open Hole	=	100 "
	Total Depth	=	339 "

Regional Head is approximately 12 feet Mean Sea Level as mentioned on page II-12 of the EIS.

Drawdown data for Kahuku Wells are not available and would not be reliable since drawdown varies from well to well. Drawdown at our Opana Well, located three miles toward Sunset Beach was 5.5 feet at 800 gpm.

If there are any further questions on this matter, please call Lawrence Whang at 548-5221.

Very truly yours,

FOR EDWARD Y. HIRATA
Manager and Chief Engineer

cc: Office of Environmental Quality Control

STATE OF HAWAII

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

OFFICE OF BUSINESS SERVICES

CHARLES G. CLARK
SUPERINTENDENT

RECEIVED
BD OF WATER SUPPLY
JUN 21 2 35 PM '78

June 15, 1978

Environmental Quality Commission
Office of the Governor
550 Halekauwila Street
Honolulu, Hawaii 96813

Gentlemen:

SUBJECT: Kahuku Water Development
LOCATION: Kahuku, Oahu
CLASSIFICATION: Agency Action

The Department of Education has no objection to the proposed Kahuku Water Development project.

Yours very truly,

KOICHI H. TOKUSHIGE
Assistant Superintendent

KHT:WO:jl

cc Board of Water Supply
DAGS
Windward Oahu District

AN EQUAL OPPORTUNITY EMPLOYER

July 17, 1978

Mr. Koichi H. Tokunaga
Assistant Superintendent
Department of Education
State of Hawaii
P.O. Box 2360
Honolulu, Hawaii 96804

Dear Mr. Tokushige:

Your Letter of June 15, 1978 Relating to the Environmental Impact Statement for Kahuku Water Development, Kahuku, Oahu, Hawaii

Thank you for your response regarding the subject Environmental Impact Statement. Your letter will be appended to the final EIS.

Very truly yours,

ESG EDWARD Y. HIRATA
Manager and Chief Engineer

cc: Office of Environmental Quality Control

GEORGE R. ARIYOSHI
GOVERNOR OF HAWAII

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JUL 11 12 58 PM '78

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

CHRISTOPHER COBB, CHAIRMAN
BOARD OF LAND & NATURAL RESOURCES

EDGAR A. HAMASU
DEPUTY TO THE CHAIRMAN

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

July 5, 1978

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

Dear Sir:

Subject: Kahuku Water Development, EIS
Kahuku, Koolauloa, Oahu Island

The proposed undertaking will have no effect upon any known historic or archaeological site on or likely to be eligible for inclusion on the Hawaii and/or National Registers of Historic Places. This office has no reservations for the project to proceed.

In the event that any unanticipated sites or remains are encountered, please inform the applicant to contact this office.

Sincerely yours,

Jane L. Silverman
Historic Preservation Officer
State of Hawaii

cc: Board of Water Supply
Att: Edward Hirata

19

July 18, 1978

Ms. Jane L. Silverman
Historic Preservation Officer
Department of Land and Natural Resources
State of Hawaii
P.O. Box 621
Honolulu, Hawaii 96809

Dear Ms. Silverman:

Your Letter of July 5, 1978 Relating to the Environmental Impact Statement for Kahuku Water Development, Kahuku, Oahu, Hawaii

Thank you for your comments regarding the subject Environmental Impact Statement. We will inform your office if any historical or archeological sites or remains are encountered.

Very truly yours,

FOR EDWARD Y. HIRATA
Manager and Chief Engineer

cc: Office of Environmental Quality Control

GEORGE R. ARIYOSHI
GOVERNOR OF HAWAII

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

W. Y. THOMPSON, Chairman
BOARD OF LAND & NATURAL RESOURCES

EDGAR A. HAMASU
DEPUTY TO THE CHAIRMAN

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

July 5, 1978

Honorable George R. Ariyoshi
Governor of Hawaii
550 Halekauwila Street
Honolulu, Hawaii

Dear Sir:

We have reviewed the EIS for Kahuku Water Development.

20 On the basis that mitigative measures indicated on page VIII-1 will be implemented, we feel the EIS can be accepted.

Very truly yours,

W. Y. THOMPSON
Chairman of the Board

July 26, 1978

Mr. W. Y. Thompson
Chairman of the Board
Department of Land and Natural Resources
State of Hawaii
P.O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Thompson:

Your Letter of July 5, 1978 Relating to the Environmental Impact Statement for Kahuku Water Development, Kahuku, Oahu, Hawaii

Thank you for your response regarding the subject Environmental Impact Statement. Your letter will be appended to the final EIS.

Very truly yours,

for EDWARD Y. HIRATA
Manager and Chief Engineer

cc: Office of Environmental Quality Control

CLEAN OUR LAND · HAWAII · STATE OF HAWAII

GEORGE R. ARIYOSHI
GOVERNOR

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

JOHN FARIAS, JR.
CHAIRMAN, BOARD OF AGRICULTURE

YUKIO KITAGAWA
DEPUTY TO THE CHAIRMAN

RECEIVED
BD OF WATER SUPPLY
'78 JUL 26 P1:16

July 17, 1978

MEMORANDUM

To: Office of Environmental Quality Control
550 Halekauwila Street, Honolulu

Subject: EIS for Kahuku Water Development
Kahuku, Oahu, Hawaii

The Department of Agriculture has no comments to offer on the subject environmental impact statement.

We appreciate the opportunity to comment.

JOHN FARIAS, JR.
Chairman, Board of Agriculture

cc: Board of Water Supply ✓

July 26, 1978

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

Dear Mr. Farias:

Your Letter of July 17, 1978 Relating to the Environmental Impact Statement for Kahuku Water Development, Kahuku, Oahu, Hawaii

Thank you for your response regarding the subject Environmental Impact Statement. Your letter will be appended to the final EIS.

Very truly yours,

L.D. Rathbun

for EDWARD Y. HIRATA
Manager and Chief Engineer

cc: Office of Environmental Quality Control

GEORGE R. ARIYOSHI
GOVERNOR

STATE OF HAWAII
DEPARTMENT OF SOCIAL SERVICES AND HOUSING
HAWAII HOUSING AUTHORITY
P. O. BOX 17907
HONOLULU, HAWAII 96817

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FRANKLIN Y. K. SUNN
EXECUTIVE DIRECTOR
WILLIAM A. HALL
ASSISTANT EXEC. DIRECTOR

IN REPLY REFER

TO:

June 14, 1978

MEMORANDUM

TO: Environmental Quality Commission

FROM: Franklin Y. K. Sunn, Executive Director

SUBJECT: Environmental Impact Statement Review
Title: Kahuku Water Development
Location: Kahuku, Oahu
Classification: Agency Action

22 The Hawaii Housing Authority has reviewed the E.I.S. for the subject project and can offer no comments relative to the proposed action.

Thank you for allowing us to comment on this matter.

FRANKLIN Y. K. SUNN
Original Signed

FRANKLIN Y. K. SUNN
Executive Director

Attachment

cc: DSSH
Board of Water Supply

June 29, 1978

Mr. Franklin Y. K. Sunn
Executive Director
Hawaii Housing Authority
State Department of Social
Services & Housing
P.O. Box 17907
Honolulu, Hawaii 96817

Dear Mr. Sunn:

Your Letter of June 14, 1978 Relating to the Environmental Impact Statement for Kahuku Water Development, Kahuku, Oahu, Hawaii

Thank you for your response regarding the subject Environmental Impact Statement.

Very truly yours,

EDWARD Y. HIRATA
Manager and Chief Engineer

cc: Office of Environmental Quality Control

GEORGE R. ARIYOSHI
GOVERNOR

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

VALENTINE A. SIEFERMANN
MAJOR GENERAL
ADJUTANT GENERAL

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6/21/78

HIENG

08 JUN 1978

Board of Water Supply
City and County of Honolulu
630 South Beretania Street
Honolulu, Hawaii 96813

Gentlemen:

Kahuku Water Development
Kahuku, Oahu

We have received a copy of the "Kahuku Water Development, Kahuku, Oahu" Environmental Impact Statement, and have no comments to offer at this time.

Yours truly,

WAYNE R. TOMOYASU
Captain, CE, HANG
Contr & Engr Officer

23

June 29, 1978

Capt. Wayne R. Tomoyasu
Contr. & Engr. Officer
Officer of Adjutant General
Department of Defense
3949 Diamond Head Road
Honolulu, Hawaii 96816

Dear Capt. Tomoyasu:

Your Letter of June 8, 1978 Relating to the Environmental Impact Statement for Kahuku Water Development, Kahuku, Oahu, Hawaii

Thank you for your response regarding the subject Environmental Impact Statement.

Very truly yours,

FOR EDWARD Y. HIRATA
Manager and Chief Engineer

cc: Office of Environmental Quality Control

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P. Higai

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June 16, 1978 STP 8.49[illegible]

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

Gentlemen:

Subject: Kahuku Water Development - EIS
Kahuku, Oahu

Thank you very much for giving us the opportunity to review and comment on the above-captioned Statement. We have no comments to offer which can improve the document.

Very truly yours,

R. Higashionna

ALK:jk

cc: LT-P
Board of Water Supply

24

June 29, 1978

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

Dear Mr. Higashionna:

Your Letter of June 16, 1978 Relating to the Environmental Impact Statement for Kahuku Water Development, Kahuku, Oahu, Hawaii

Thank you for your response regarding the subject Environmental Impact Statement.

Very truly yours,

FOR EDWARD Y. HIRATA
Manager and Chief Engineer

cc: Office of Environmental Quality Control

On

L. Wong

GEORGE R. ARIYOSHI
GOVERNOR OF HAWAII

JUN 22 11 08 AM '78

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

GEORGE A. L. YUEN
DIRECTOR OF HEALTH

Audrey W. Mantz, M.D., M.P.H.
Deputy Director of Health

Henry N. Thompson, M.A.
Deputy Director of Health

James S. Kumagai, Ph.D., P.E.
Deputy Director of Health

In reply, please refer to
File: EPHS - SS

June 20, 1978

6/21/78

MEMORANDUM

To: Mr. Edward Y. Hirata, Manager & Chief Engineer
Board of Water Supply, City & County of Honolulu

From: Deputy Director for Environmental Health

Subject: Environmental Impact Statement (EIS) for Kahuku Water Development, Kahuku, Koolauloa, Oahu, Hawaii

Thank you for allowing us to review and comment on the subject EIS. On the basis that the project will comply with all applicable Public Health Regulations, please be informed that we have no objections to this project.

Please be advised that pursuant to Public Health Regulations, Chapter 49, Potable Water Systems, Department of Health, State of Hawaii, approval by the Director of Health is required prior to the system being used as a new source of raw water.

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 JAMES S. KUMAGAI, Ph.D.

cc: Environmental Quality Commission
Office of Environmental Quality Control

25

June 29, 1978

James S. Kumagai, Ph.D.
Deputy Director for Environmental Health
Department of Health
P.O. Box 3378
Honolulu, Hawaii 96801

Dear Dr. Kumagai:

Your Letter of June 20, 1978 Relating to the Environmental Impact Statement (EIS) for Kahuku Water Development, Kahuku, Oahu, Hawaii

Thank you for your comments regarding the subject EIS. We shall comply to all the provisions of the State Public Health Regulations, Chapter 49, Potable Water Systems, before initiating the use of this new raw water source.

Very truly yours,

FOR EDWARD Y. HIRATA
Manager and Chief Engineer

cc: Office of Environmental Quality Control

DEPARTMENT OF GENERAL PLANNING
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

FRANK F. FASI
MAYOR

DGP6/78-2058(CT)

June 29, 1978

Mr. Edward Y. Hirata
Manager and Chief Engineer
Board of Water Supply
City and County of Honolulu
Honolulu, Hawaii

Dear Mr. Hirata:

Environmental Impact Statement for Kahuku
Water Development, Dated June 5, 1978
Comments Requested June 5, 1978

We offer the following comments.

26

Relationship to Other Plans

Section II shows the proposed wells and reservoir area in relation to existing land use, zoning, detailed land use map (future land use), and State land use designations (Figures 4 through 7). This section should also note the existence of a Development Plan for the area adopted by Council as Ordinance 2952, March 16, 1967. This has possible legal implications for the water development project.

Relationship to Development Plan

In our clearinghouse review of the proposed housing project, we indicated

> ". . . the location of the water system itself, when finally determined, must be identified . . . on the Development Plan for the area as required by the Charter of the City and County of Honolulu." (Letter from Chief Planning Officer to Mr. Shigemitsu, President, Kahuku Housing Corporation, Inc., June 6, 1974. See attachment.)

The requirement still applies. For amendment procedures, please contact Ian McDougall, Phone 523-4485.

Relationship to Other Systems and Projects

Figure 11 (p. II-15) shows the proposed wells and reservoir site to other proposed projects. The proposed Ambulance, Fire and Police Station site is identified; but another City-sponsored housing project, the Kahuku Elderly Housing Project (64 units), is not shown. The EIS should show how water service to these projects will be provided. The Board of Water Supply should consider extension of the proposed water main to the proposed Ambulance, Fire and Police Station site as part of this proposal. Whether providing water service to the elderly housing project can be accomplished through the existing private water system or a separate Board of Water Supply water line should be discussed.

Proposed Agricultural Park

The proposed wells and reservoir site is adjacent to a site previously considered by the State for an agricultural park at Kahuku. Whether or not development of the agricultural park will have an impact on the wells should be indicated.

Impact on Community Development

The EIS indicates that two 700 gallons per minute pumps will be installed as part of this proposal (Technical Characteristics, p. I-1). The EIS should indicate what population or how many households can be serviced after the project is completed, and this should be related to estimates of the existing population and households in the area. In simple terms, the EIS should indicate how much additional population can be served by the project. We are interested in the future growth implications of the project.

Construction Impacts

Construction impacts on school activities can be mitigated if construction activities fronting the schools can be scheduled during the summer, when the schools are not in session. We have indicated that consideration should be given to extension of the water main to the Ambulance, Fire and Police Station site as part of this project. This would reduce the possible impact of construction activities on the schools.

Soils

Major soil types in the Kahuku area as well as the project area are discussed (pp. II-2 and II-16). A map showing soil types would indicate how the wells and reservoir site might be affected.

The soils map from the Department of Housing and Community Development's EIS for the Koolauloa Housing Project, together with the Soil Conservation Service descriptions of the Paumalu series, is attached.

Thank you for affording us an opportunity of reviewing this impact statement.

Sincerely,

RAMON DURAN
Chief Planning Officer

RD:fmt

Attachments (2)

cc: OEQC
DLU

DGP5/74-1120(LP)

June 6, 1974

Mr. Harry Shigemitsu, President
Kahuku Housing Corporation, Inc.
P. O. Box 273
Kahuku, Hawaii 96731

Attention: Mr. John Primacio, Jr., Manager
Kahuku Housing

Dear Mr. Shigemitsu:

Clearinghouse Review of Water Well, Reservoir, and Trunk Main, Kahuku Town Project--State Clearinghouse Identifier No. CH-43-0

The above project, for which notification of intent to apply for Federal assistance was received, was reviewed in accordance with procedures established by the Areawide Clearinghouse pursuant to the provisions of Office of Management and Budget Circular No. A-95.

The following agencies were provided the opportunity to review and comment on the project and to consult with you if they desired:

State

Department of Agriculture
Department of Health
Department of Land and Natural Resources
Department of Education

City

Fire Department
Department of Public Works
Department of Recreation
Board of Water Supply

Other

Kahuku Hospital

Attached, hereto, are the comments of those agencies responding. Please note that the comments of the Board of Water Supply and the Department of Agriculture may be of particular interest to you.

The project is consistent with one of the broad goals of the General Plan which calls for the establishment of "an adequate system of utilities" in order to "develop a wholesome, convenient and attractive living environment." However, the location of the water system itself, when finally determined, must be identified on the General Plan and the Development Plan for the area as required by the Charter of the City and County of Honolulu. Procedures for amending the General Plan are explicit and can be obtained from the Department of General Planning.

On the basis of the above comments and the agency reviews submitted, the Areawide Clearinghouse has no objections to the proposed project provided that the plan for water system when finalized is included on the Development Plan for the area.

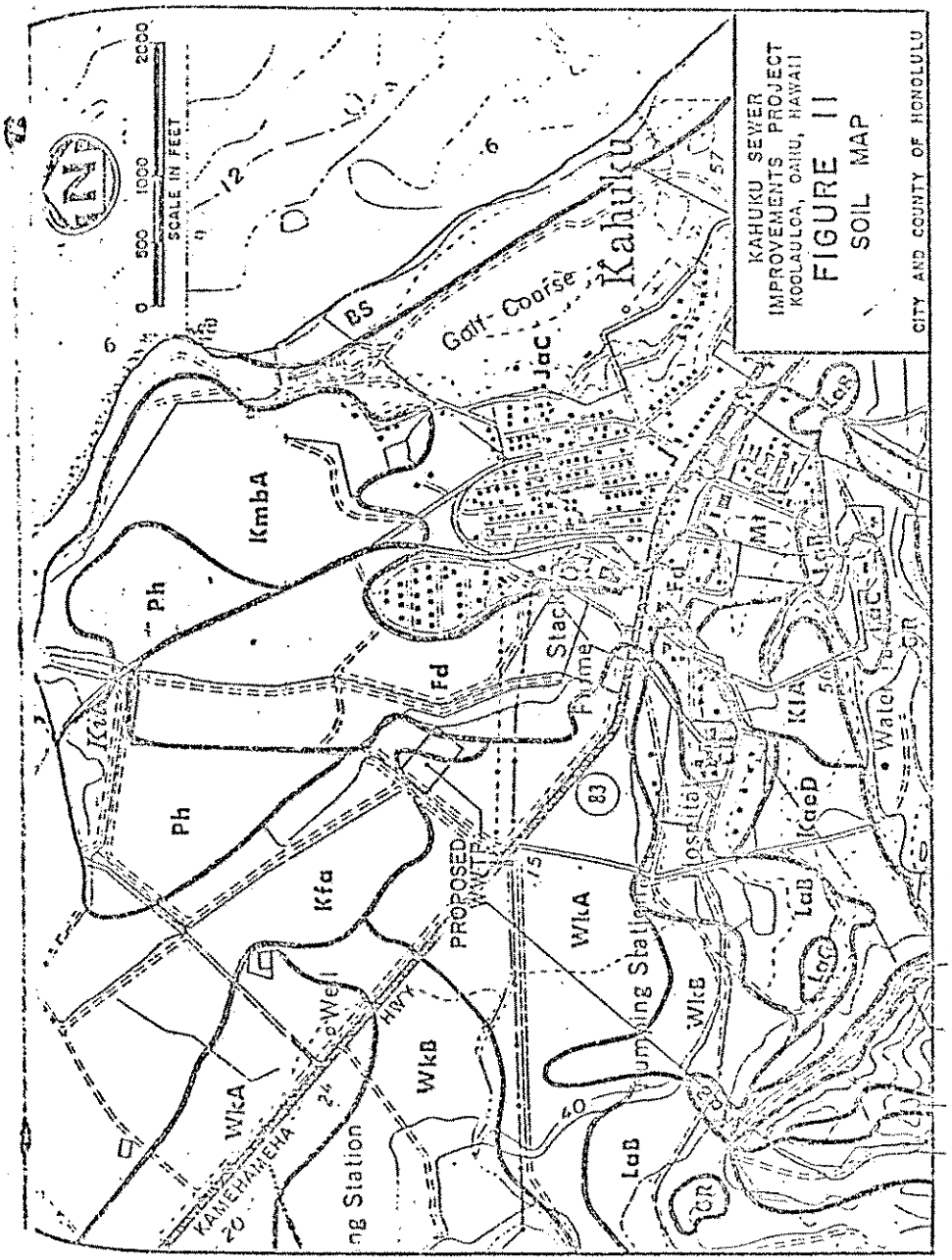
A copy of this letter and the attached comments should accompany your application when it is submitted to the funding agency. The application should be identified by State Clearinghouse Identifier No. CH-43-0.

Sincerely,

Ronald A. Clegg

ROBERT R. WAY
Chief Planning Officer

RRW:ak
Atts.



11-2

Papaa Series

This series consists of well-drained soils on uplands on the island of Oahu. These soils formed in colluvium and residuum derived from basalt. They are moderately sloping to very steep. Elevations range from nearly sea level to 500 feet. The annual rainfall amounts to 30 to 45 inches, most of which occurs between November and April. The mean annual soil temperature is 75° F. Papaa soils are geographically associated with Alaeloa and Kokokahi soils, near Kailua.

These soils are used for pasture. The natural vegetation consists of guava, Java plum, klu, koa haole, Christmas berry, lantana, sourgrass, and ricegrass.

Papaa clay, 35 to 70 percent slopes (PYF).—This soil has convex, very steep slopes. Included in mapping were small areas of Alaeloa soils and small, eroded spots. Also included were small, stony areas and basalt outcrops near the ridgetops.

In a representative profile the surface layer is very dark brown clay about 12 inches thick. The next layers are dark reddish-brown and dark reddish-gray clay that has prismatic structure. They extend to a depth of about 21 inches. Below this is clay to silty clay loam that has a variegated color pattern of grays, browns, and yellows. Soft, weathered rock is at a depth of about 40 inches. The clays in this soil are very sticky and very plastic, and they crack widely when dry. The soil is slightly acid throughout the profile.

Permeability is slow. Runoff is rapid, and the erosion hazard is severe. The available water capacity is about 1.4 inches per foot of soil. Roots penetrate to a depth of 40 inches or more.

Representative profile: Island of Oahu, lat. 21°22′01″ N. and long. 157°11′11″ W.

Ap—0 to 12 inches, very dark brown (10YR 2/2) clay, some dark-brown (7.5YR 4/2) material mixed by churning, very dark gray (10YR 3/1) when dry; moderate, very fine and fine, granular mulch in upper ½ inch to 1 inch and strong, fine, subangular blocky structure below; hard, firm, very sticky and very plastic; abundant fine and medium roots; common, fine and very fine, tubular and interstitial pores; few wormholes and worm casts; common, fine, dark-gray, highly weathered rock fragments; common shiny specks; slight effervescence with hydrogen peroxide; slightly acid; clear, smooth boundary. 6 to 14 inches thick.

AC—12 to 19 inches, dark reddish-brown (5YR 3/2), moist and dry, clay; moderate, coarse, prismatic structure; hard, firm, very sticky and very plastic; abundant fine and medium roots; many, very fine, tubular pores and few, fine, tubular pores; common wormholes and worm casts that are thickly coated with very dark gray gelatinous material; few, fine, angular rock fragments; slight effervescence with hydrogen peroxide; slightly acid; clear, smooth boundary. 6 to 9 inches thick.

C1—19 to 21 inches, dark reddish-gray (5YR 4/2), moist and dry, clay; weak, coarse, prismatic structure; hard, very firm, very sticky and very plastic; abundant fine and medium roots; common, very fine and fine, tubular pores; root channels lined with very dark gray material; common prominent slickensides; few fine rock fragments; slight effervescence with hydrogen peroxide; slightly acid; abrupt, wavy boundary. 1 to 8 inches thick.

C2—21 to 28 inches, variegated color pattern of grayish-brown (10YR 5/2) and dark grayish-brown (10YR 4/2) clay; strong, coarse, prismatic structure; extremely hard, firm, very sticky and very plastic; abundant fine and medium roots; common fine and medium pores; peds coated with shiny specks; many thick, deeply grooved slickensides; slightly acid; abrupt, wavy boundary. 2 to 10 inches thick.

C3—28 to 40 inches, mixture of brown (10YR 5/3), dark yellowish-brown (10YR 4/4), and dark grayish-brown (10YR 4/2) silty clay loam; massive; slightly hard, friable, slightly sticky and slightly plastic; plentiful fine and medium roots; common, fine, tubular pores; few, fine, highly weathered rock fragments; slightly acid.

C4—40 inches, slightly to moderately weathered basalt.

The depth to bedrock is more than 40 inches. The amount of stones in the profile ranges from 5 to 40 percent. The A horizon ranges from 5YR to 10YR in hue and from 2 to 3 in value when moist. The AC and C horizons range from 10YR to 5YR in hue.

This soil is used for pasture. (Capability classification VIIe, nonirrigated; pasture group 3; woodland group 1)

Papaa clay, 6 to 20 percent slopes (PYD).—On this soil, runoff is slow to medium and the erosion hazard is slight to moderate. Workability is difficult.

This soil is used for pasture. (Capability classification IVe, nonirrigated; pasture group 3; woodland group 1)

Papaa clay, 20 to 35 percent slopes (PYE).—On this soil, runoff is medium to rapid and the erosion hazard is moderate to severe. Workability is difficult.

This soil is used for pasture. (Capability classification VIe, nonirrigated; pasture group 3; woodland group 1)

Paumalu Series

This series consists of well-drained silty clay soils on uplands in the northern part of Oahu. These soils developed in old alluvium and colluvium derived from basic igneous rock. They are gently sloping to very steep. Elevations range from 700 to 1,000 feet. The annual rainfall amounts to 50 to 70 inches and is well distributed throughout the year. The mean annual soil temperature is 71° F. Paumalu soils are geographically associated with Kemoo soils, near Kahuku.

These soils are used for pasture and sugarcane. The natural vegetation consists of guava, waiwe, Christmas berry, ricegrass, and carpetgrass.

Paumalu silty clay, 15 to 25 percent slopes (PeD).—This soil occurs as small, irregularly shaped areas. Included in mapping were, small, eroded areas.

In a representative profile the surface layer and the subsoil are dark reddish-brown silty clay that has subangular and angular blocky structure. The surface layer is about 9 inches thick, and the subsoil is 30 to more than 60 inches thick. The substratum is highly weathered gravel. The soil is very strongly acid in the surface layer and strongly acid to medium acid in the subsoil.

Permeability is moderately rapid. Runoff is medium, and the erosion hazard is moderate. The available water capacity is about 1.3 inches per foot of soil. In places roots penetrate to a depth of 5 feet or more. Workability is difficult because of the slope.

Representative profile: Island of Oahu, lat. 21°40′15″ N. and long. 158°01′02″ W.

A1—0 to 9 inches, dark reddish-brown (5YR 3/2) silty clay, reddish brown (5YR 4/3) when dry; strong, fine, subangular blocky structure; hard, firm, sticky and plastic; abundant fine and medium roots; many, very fine and fine, interstitial and tubular pores; few highly weathered pebbles; very strongly acid; abrupt, smooth boundary. 8 to 12 inches thick.

B21—9 to 17 inches, dark reddish-brown (5YR 3/4) silty clay, reddish brown (5YR 4/4) when dry; moderate, fine, subangular blocky structure; hard, firm, sticky and plastic; abundant fine roots; common, fine and very fine, tubular pores; few highly weathered pebbles; common black stains; strongly acid; clear, smooth boundary. 5 to 9 inches thick.

B22—17 to 33 inches, dark reddish-brown (5YR 3/4) silty clay, reddish brown (5YR 4/4) when dry; moderate, very fine and fine, angular and subangular blocky structure; hard, firm, sticky and plastic; few very fine roots; common, very fine, tubular pores; common black stains; thin, continuous clay films on peds and in pores; few highly weathered pebbles; medium acid; gradual, smooth boundary. 10 to 16 inches thick.

B23—33 to 48 inches, dark reddish-brown (5YR 3/4) silty clay, reddish brown (5YR 4/4) when dry; strong, fine, blocky structure; few fine roots; few, fine, tubular pores; thin, continuous, dark-red (2.5YR 3/6) clay films on peds and in pores; common highly weathered pebbles; medium acid; clear, wavy boundary. 12 to 15 inches thick.

IIB24—48 to 70 inches, dark reddish-brown (5YR 3/4) silty clay, reddish brown (5YR 4/4) when dry; strong, fine, blocky structure; few, fine, tubular pores; thin, continuous, dark-red (2.5YR 3/6) clay films on peds and in pores; 40 to 50 percent highly weathered gravel; medium acid; clear, wavy boundary.

The depth to highly weathered gravel ranges from 30 to more than 60 inches. The B horizon ranges from 3 to 4 in value when moist and from 4 to 6 in chroma, moist or dry. Effervescence with hydrogen peroxide ranges from none to moderate in the A horizon.

This soil is used for pasture and sugarcane. (Capability classification IVe, irrigated or nonirrigated; pasture group 8; woodland group 7)

Paumalu silty clay, 3 to 8 percent slopes (PeB).—On this soil, runoff is slow and the erosion hazard is slight. Workability is easy.

This soil is used for sugarcane and pasture. (Capability classification IIe, irrigated or nonirrigated; pasture group 8; woodland group 7)

Paumalu silty clay, 8 to 15 percent slopes (PeC).—On this soil, runoff is slow to medium and the erosion hazard is slight to moderate. Workability is slightly difficult.

This soil is used for sugarcane and pasture. (Capability classification IIIe, irrigated or nonirrigated; pasture group 8; woodland group 7)

Paumalu silty clay, 25 to 40 percent slopes (PeE).—On this soil, runoff is medium to rapid and the erosion hazard is moderate to severe.

This soil is used for pasture and sugarcane. (Capability classification VIe, irrigated or nonirrigated; pasture group 8; woodland group 7)

Paumalu silty clay, 40 to 70 percent slopes (PeF).—On this soil, runoff is rapid and the erosion hazard is severe.

This soil is used for pasture. (Capability classification VIIe, nonirrigated; pasture group 8; woodland group 1-6)

Paumalu-Badland complex (PZF).—In this complex Paumalu soils make up 40 to 80 percent of the acreage. The slope is 10 to 70 percent.

The Paumalu soils are similar to Paumalu silty clay, 15 to 25 percent slopes, except for the slope. Runoff is medium to rapid, and the erosion hazard is moderate to severe.

Badland consists of nearly barren land that has remained after the Paumalu soils were removed by wind and water erosion. Runoff is rapid, and the erosion hazard is very severe. About 80 percent of the Badland part occurs in the direction of the trade winds. Rock outcrop, Stony land, Stony steep land, and Rock land were included in mapping, and they make up as much as 25 percent of the area.

This complex is used for pasture and military purposes. (Paumalu part is in capability classification VIIe, nonirrigated; pasture group 8; woodland group 7. Badland part is in capability classification VIIIe, nonirrigated)

Pauwela Series

This series consists of well-drained soils on uplands on the island of Maui. These soils developed in material weathered from basic igneous rock. They are gently sloping to moderately steep. Elevations range from 150 to 1,500 feet. The annual rainfall amounts to 70 to 120 inches; it is well distributed throughout the year. The mean annual soil temperature is 70° F. Pauwela soils are geographically associated with Haiku and Kailua soils.

These soils are used for pasture and water supply. Small acreages are used for pineapple and woodland. The natural vegetation consists of californiagrass, guava, and ricegrass.

Pauwela clay, 3 to 7 percent slopes (PfB).—This soil is on smooth uplands. Included in mapping were small areas of Haiku and Kailua soils.

In a representative profile the surface layer is dark grayish-brown clay about 12 inches thick. The subsoil, about 21 inches thick, is dark reddish-brown clay that has angular blocky and subangular blocky structure. The substratum is soft, weathered basic igneous rock. The soil is very strongly acid to extremely acid in the surface layer and subsoil.

Permeability is moderately rapid. Runoff is slow, and the erosion hazard is slight. The available water capacity is about 1.3 inches per foot of soil. In places roots penetrate to a depth of 3 feet or more.

Representative profile: Island of Maui, lat. 20°55′26″ N. and long. 156°16′24″ W.

Ap1—0 to 6 inches, dark grayish-brown (2.5Y 4/2) clay, grayish brown (2.5Y 5/2) when dry; moderate, fine, subangular blocky structure; hard, firm, sticky and plastic; abundant very fine and fine roots; many fine pores; common sand-size aggregates that are resistant to crushing; many, very fine, glistening specks; high bulk density; few yellowish-red (5YR 4/6) particles from the upper part of the B horizon mixed in by plowing; slight effervescence with hydrogen peroxide; very strongly acid; clear, wavy boundary. 4 to 7 inches thick.

Ap2—6 to 12 inches, dark grayish-brown (2.5Y 4/2) clay, grayish brown (2.5Y 5/2) when dry; moderate, fine, subangular blocky structure; hard, firm, sticky and plastic; abundant very fine and fine roots; many fine pores; common sand-size aggregates that are resistant to crushing; many, very fine, glistening specks; high bulk density; few yellowish-red (5YR 4/6) particles from the upper part of the B horizon mixed in by plowing; slight effervescence with hydrogen

August 15, 1978

TO: MR. RAMON DURAN
CHIEF PLANNING OFFICER
DEPARTMENT OF GENERAL PLANNING

FROM: EDWARD Y. HIRATA

SUBJECT: YOUR LETTER OF JUNE 29, 1978 COMMENTING ON OUR ENVIRONMENTAL IMPACT STATEMENT FOR KAHUKU WATER DEVELOPMENT

The following responses are made on your comments:

"Relationship to Other Plans"

We will note the existence of the Kahuku-Kawela Bay-Pupukea Development Plan adopted by the Council as Ordinance 2952, March 16, 1967, in the paragraph "Land Use", page II-2.

"Relationship to Development Plan"

As per Tyrone T. Kusao's conversation with you (memorandum attached), no amendment of the Development Plan will be required.

"Relationship to Other Systems and Projects"

The Kahuku Elderly Housing Project which is located makai of Kamehameha Highway will be shown on Figure 11. This project will be served by the new water system and will be installing 735 linear feet of 8-inch water main from Kamehameha Highway to their site. The proposed Ambulance, Fire, and Police Station will likewise have to install their own water main to their proposed site.

"Proposed Agricultural Park"

Should a State agricultural park be developed in Kahuku, the State Department of Agriculture has proposed to install its own water system, including source.

"Impact on Community Development"

In addition to meeting the existing demands of Kahuku Housing Corporation, the proposed water development project is designed to meet the water demands of the Koolauloa Housing Project and the Kahuku Elderly Housing. A total of 414 units are projected for the two residential developments. Besides these two developments, the proposed water system will be able to support between 50 to 70 additional residential units.

Any future developments in the area will be required to develop their own sources of supply.

"Construction Impacts"

Construction of the proposed water system will have minimal impact on the area. The pipeline work along the main highway will be done in increments with little disruption to vehicular and pedestrian traffic.

"Soils"

Your transmitted soils map and Soil Conservation Service descriptions of the Paumalu series will be incorporated in the EIS.

If you have any further questions on this matter, please call Lawrence Whang at 548-5221.

EDWARD Y. HIRATA
Manager and Chief Engineer

Enc.

cc: Richard L. O'Connell
Director, OEQC (with enc.)

DEPARTMENT OF LAND UTILIZATION
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

GEORGE S. MORIGUCHI
DIRECTOR

78/EC-5(SE)
LU6/78-3059

June 19, 1978

MEMORANDUM

TO : MR. EDWARD HIRATA, MANAGER & CHIEF ENGINEER
BOARD OF WATER SUPPLY

FROM : WILLIAM E. WANKET, ACTING DIRECTOR

SUBJECT : ENVIRONMENTAL IMPACT STATEMENT
KAHUKU WATER DEVELOPMENT
KAHUKU, KOOLAULOA, OAHU, HAWAII

We have reviewed the above and offer the following comments and questions:

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1. Reference: Page I-7.

   Comment: Where will the 7,400 cubic yards of earth to be excavated and removed from the site be disposed?

2. Reference: Pages II-8 to II-12.

   What is the use breakdown of the 6 mgd non-domestic water which is presently being pumped?

3. Reference: Page IV-4.

   Comment: Reference is made to the EIS for the Koolauloa Housing Project for impacts which relate to this project. On page IV-2 of this document, it is mentioned that the proposed new water system will be used to irrigate the Kahuku Golf Course. If this is the case, why is water which has domestic use capability being put to a use which does not require water of such high purity? Why can't the golf course be irrigated with water of inferior quality from other wells? Has the possibility of recycling secondary sewage effluent for irrigation purposes been investigated?

4. Reference: Page II-14.

   Comment: The proposed Agricultural Park at Kahuku is a noticeable omission from the list of "other projects." Should the AG Park be implemented, it would become a major user of groundwater resources in the area. The potential impact of this project should be addressed in the EIS.

Should you have any questions regarding the above comments, please contact Mr. Scott Ezer of our staff at 523-4256.

WILLIAM E. WANKET
Acting Director

WEW:sl

cc: OEQC

July 17, 1978

TO: MR. GEORGE MORIGUCHI, DIRECTOR
DEPARTMENT OF LAND UTILIZATION

FROM: EDWARD Y. HIRATA

SUBJECT: YOUR MEMORANDUM OF JUNE 19, 1978 RELATING TO ENVIRONMENTAL IMPACT STATEMENT FOR KAHUKU WATER DEVELOPMENT, KOOLAULOA, OAHU

In response to your comments:

1. Comment: "Where will the 7,400 cubic yards of earth to be excavated and removed from the site be disposed?"

Answer: The disposal site of the excavated material will be the responsibility of the contractor. The disposal site will be determined when the contractor obtains his grading permit from the City's Department of Public Works.

2. Comment: "What is the use breakdown of the 6 mgd non-domestic water which is presently being pumped?"

Answer: One mgd is for domestic use and the remaining 5 mgd is for agricultural uses.

3. Comment: "Reference is made to the EIS for the Koolauloa Housing Project for impacts which relate to this project. On page IV-2 of this document, it is mentioned that the proposed new water system will be used to irrigate the Kahuku Golf Course. If this is the case, why is water which has domestic use capability being put to a use which does not require water of such high purity? Why can't the golf course be irrigated with water of inferior quality from other wells? Has the possibility of recycling secondary sewage effluent for irrigation puposes been investigated?"

Answer: Our department supports recycling of wastewater for irrigation purposes as long as the wastewater will not be detrimental to potable water resources. In the case of the golf course, water is presently provided by the Kahuku Housing Corporation (KHC). When water is provided to KHC, their existing distribution system will remain to serve the golf course (estimated water demand of 6,000 gallons per day).

The Kahuku Sewer Improvement Project EIS, page I-5, states that "the effluent will then be used for irrigation of the proposed expansion to the golf course." "Ultimately, golf course irrigation will be practiced," page IV-2. At that time, the potable water piping would have to be isolated from the irrigation system.

4. Comment: "The proposed Agricultural Park at Kahuku is a noticeable omission from the list of 'other projects.' Should the AG Park be implemented, it would become a major user of groundwater resources in the area. The potential impact of this project should be addressed in the EIS.

Answer: In our discussions with the State Department of Agriculture, the AG Park will provide its own water system, utilizing several of the existing wells formerly used for sugarcane irrigation.

On page II-12, we did mention that total draft (existing and future) should not exceed 12 mgd. This leaves an excess of 5 mgd. that still may be developed in the area.

We hope we have satisfactorily answered your concerns. If you have any further questions on this matter, please call Lawrence Whang at 548-5221.

Very truly yours,

[signature]

FOR EDWARD Y. HIRATA
Manager and Chief Engineer

cc: Park Engineering
Office of Environmental Quality Control
(copy of DLU letter dated June 19, 1978)

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT

CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET
HONOLULU, HAWAII 96813
PHONE 523-4161

FRANK F. FASI
MAYOR

RICHARD K. SHARPLESS
MANAGING DIRECTOR

TYRONE T. KUSAO
DIRECTOR

I. HARRY ENDO
DEPUTY DIRECTOR

July 28, 1978

TO: Mr. Edward Y. Hirata
Manager and Chief Engineer

FROM: Tyrone T. Kusao
Department of Housing and Community Development

SUBJECT: Proposed water well site in relation to Development Plan
Koolauloa Housing Project

33

In my recent conversation with Ron Duran, he informed me that because of the proximity of the proposed water well site in relation to the subject project, the Department of General Planning would be willing to consider the well as part of the housing project. As such, according to Ron, no further action is necessary to include the well site in the Development Plan.

TYRONE T. KUSAO
Director

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KAHUKU WATER DEVEL

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT

CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET
HONOLULU, HAWAII 96813
PHONE 523-4161

FRANK F. FASI
MAYOR

RICHARD K. SHARPLESS
MANAGING DIRECTOR

TYRONE T. KUSAO
DIRECTOR

I. HARRY ENDO
DEPUTY DIRECTOR

June 15, 1978

MEMO TO: Environmental Quality Commission
State of Hawaii

FROM: Department of Housing & Community Development

SUBJECT: Review/Comments on Kahuku Water
Development Project

Thank you for the opportunity to review the environmental impact statement for the subject undertaking.

As you are aware, the Department of Housing & Community Development has a stake in the planned 300-lot residential subdivision. Of special interest is the comments on pages II - 17/18 as follows:

"The wells and pumps (of the existing water system) are ...in a below ground pit which makes the source potentially susceptible to contamination from flooding.

"The existing well casings are about 50 years old and may be near the end of their life.

"Water is stored in a 250,000 gallon capacity reinforced concrete reservoir... Most of the pipelines were installed during the turn of the century and no accurate records of their locations have been kept."

The department's goal is to provide adequate housing for the low- and moderate-income groups at the lowest possible price. This proposed housing project will require a new water system, replacing the existing source, from the standpoint of a more reliable water source and storage facility.

We support the proposed action in the environmental impact statement.

TYRONE T. KUSAO
Director

July 26, 1978

Mr. Tyrone T. Kusao
Director
Department of Housing and Community Development
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Kusao:

Your Letter of June 15, 1978 Relating to the Environmental Impact Statement for Kahuku Water Development, Kahuku, Oahu, Hawaii

Thank you for your response regarding the subject Environmental Impact Statement. Your letter will be appended to the final EIS.

Very truly yours,

for EDWARD Y. HIRATA
Manager and Chief Engineer

cc: Office of Environmental Quality Control

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PB 78-489

June 20, 1978

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

Gentlemen:

Subject: Kahuku Water Development

This is in response to your June 5, 1978 letter and submittal of an Environmental Impact Statement document for the subject project.

We concur with the objectives and believe the document has basis for the determination.

Thank you for the opportunity to review this matter.

Very truly yours,

HOWARD M. SHIMA
Director and Building Superintendent

AF:jo
cc: J. Harada
Board of Water Supply

July 3, 1978

TO: MR. HOWARD M. SHIMA
DIRECTOR AND BUILDING SUPERINTENDENT
BUILDING DEPARTMENT

FROM: EDWARD Y. HIRATA

SUBJECT: YOUR LETTER OF JUNE 20, 1978 REGARDING THE ENVIRONMENTAL IMPACT STATEMENT FOR KAHUKU WATER DEVELOPMENT, KAHUKU, OAHU, HAWAII

Thank you for your comments regarding the subject Environmental Impact Statement.

EDWARD Y. HIRATA

cc: Office of Environmental Quality Control

ENV 78-183

June 14, 1978

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

Gentlemen:

Subject: EIS for the Proposed Kahuku Water Development, Kahuku, Oahu, Hawaii

We have reviewed the subject EIS and have the following comments.

1. Construction plans for the proposed project should be coordinated with the Divisions of Engineering and Wastewater Management.

2. The latest revision to the grading ordinance (page XII-1) is Ordinance Number 4533, approved December 31, 1975.

Very truly yours,

WALLACE MIYAHIRA
Director and Chief Engineer

cc: Board of Water Supply

36

June 29, 1978

TO: MR. WALLACE MIYAHIRA
DIRECTOR AND CHIEF ENGINEER
DEPARTMENT OF PUBLIC WORKS

FROM: EDWARD Y. HIRATA

SUBJECT: YOUR LETTER OF JUNE 14, 1978 RELATING TO THE ENVIRONMENTAL IMPACT STATEMENT FOR KAHUKU WATER DEVELOPMENT, KAHUKU, OAHU, HAWAII

Thank you for your comments regarding the subject EIS.

Construction plans for the proposed project will be coordinated with the Divisions of Engineering and Wastewater Management.

The latest revision to the grading ordinance will be incorporated into the final EIS.

FOR EDWARD Y. HIRATA
Manager and Chief Engineer

cc: Office of Environmental Quality Control

DEPARTMENT OF PARKS AND RECREATION
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

FRANK F. FASI
MAYOR

ROBERT T. FUKUDA
DIRECTOR

June 14, 1978

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Office of Environmental Quality Commission
Office of the Governor
550 Halekauwila Street, Room 301
Honolulu, Hawaii 96813

Gentlemen:

SUBJECT: KAHUKU WATER DEVELOPMENT PROJECT
ENVIRONMENTAL IMPACT STATEMENT
(KAHUKU DISTRICT PARK AND GOLF COURSE)

A review of the Environmental Impact Statement for the Kahuku Water Development Project has been made and is acceptable from our point of view.

Sincerely,

ROBERT T. FUKUDA, DIRECTOR

cc: Office of Environmental Quality Control
Board of Water Supply

37

June 29, 1978

TO: MR. ROBERT T. FUKUDA, DIRECTOR
DEPARTMENT OF PARKS AND RECREATION

FROM: EDWARD Y. HIRATA

SUBJECT: YOUR LETTER OF JUNE 14, 1978 RELATING TO THE ENVIRONMENTAL IMPACT STATEMENT FOR KAHUKU WATER DEVELOPMENT, KAHUKU, OAHU, HAWAII

Thank you for your response regarding the subject Environmental Impact Statement.

FOR EDWARD Y. HIRATA
Manager and Chief Engineer

cc: Office of Environmental Quality Control

DEPARTMENT OF TRANSPORTATION SERVICES

CITY AND COUNTY OF HONOLULU

HONOLULU MUNICIPAL BUILDING
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

FRANK F. FASI
MAYOR

JUN 21 1978

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JUN 21
KAZU HAYASHIDA
DIRECTOR

TE6/78-2349

6/22/78

Environmental Quality Commission
550 Halekauwila St., Room 301
Honolulu, Hawaii 96813

Gentlemen:

Environmental Impact Statement for the Kahuku
Water Development Project
Kahuku, Koolauloa, Oahu, Hawaii

We have no comments on the subject Environmental Impact Statement.

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Very truly yours,

(for) KAZU HAYASHIDA
Director

cc: OEQC
BWS

June 29, 1978

TO: MR. KAZU HAYASHIDA, DIRECTOR
DEPARTMENT OF TRANSPORTATION SERVICES

FROM: EDWARD Y. HIRATA

SUBJECT: YOUR LETTER OF JUNE 20, 1978 RELATING TO THE ENVIRONMENTAL IMPACT STATEMENT FOR KAHUKU WATER DEVELOPMENT, KAHUKU, OAHU, HAWAII

Thank you for your response regarding the subject Environmental Impact Statement.

FOR EDWARD Y. HIRATA
Manager and Chief Engineer

cc: Office of Environmental Quality Control

853

LIFE OF THE LAND
A GROUP FOR ENVIRONMENTAL RESEARCH AND ACTION

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August 29, 1978

COMMENTS TO BWS KAHUKU WATER DEVELOPMENT

George Hudes

1. Data supporting the need for the new wells is insufficient.

   a) It appears that maximum demand for the new City & County housing project will be approximately 200,000 g.p.d. The existing wells, even with recasing, can deliver 800,000 g.p.d. In other words, a surplus of domestic water seems available utilizing existing facilities.

   b) If there are bacteriological conditions in the water from the existing wells which make it undesirable or in violation of drinking water standards, these conditions should be specified.

   c) It is not clear whether all the residents of Kahuku Village will be relocated and served by the proposed system.

   d) Has contamination through flooding of the existing system ever occurred in the past?

   e) How likely is cesspool water infiltration, given past experience and new sewage treatment facility plans?

2. Data indicating integration of this project with projected population, water and agricultural industry development for Koolauloa is lacking.

   a) Projected population increase (above existing pop.) for the project area (Kahaluu-Kahuku) till the year 2000 is 2,110 based on the E-2 1978 revision. If we add up expected population increases in the Kahaluu-Kahuku area from other ongoing and proposed developments (eg. Hokuloa Unit C, Trousdale, Ikeia Meadows, Waikane) this Kahuku

404 PIIKOI STREET HONOLULU HAWAII 96814 TELEPHONE 521-1390

39

Support Housing Project will result in surpassing the population projections for the year 2000 for this area by the early 1980's. Is the BWS basing its water development program on E-2 revised projections or on some more arbitrary case by case basis?

   b) Page IV-4, para. 4 states "the project will aid in the orderly and controlled growth of the Kahuku area" after the Kahuku Support Project. This indicates an exacerbation of the population growth rate problem indicated in the previous paragraph.

   c) How does this project relate to the two well field planned by the BWS for the Kahuku area in the 1975 Oahu Water Plan (each field 2.5 mgd = total 5 mgd)?

   d) Possible future conflict between agricultural and domestic water supplies is already implied on page IV-4, para. 1. The presently planned water development will bring area water development up to near capacity.

      6 mgd - present agriculture use
      2 mgd - capacity of this project
      1 mgd - for 12,000 acres of ag land not presently cultivated
      total 9 mgd = safe yield of 75% of the area recharge of 12 mgd.

   Does the BWS maintain any plans for future additional water development in the Kahuku area? The BWS has primary service commitments and financial dependence on the urban sector. These facts indicate that maintaining the agricultural economic base and lifestyle of the area might be best assured thru over-all water supply development for the Kahuku area by the State Department of Agriculture.

e) Even though the job of the BWS is to supply water when requested and not conduct over-all area planning per se, area planning coordination is necessary to prevent future area overdraft and adverse effects on water supply for certain economic sectors. For example, lack of over-all planning has already resulted in overdraft problems in the Pearl Basin, Honolulu and Punaluu areas. Because of uncertainties regarding groundwater rights, the BWS does not have clear authority to limit future private water development which might result in area overdraft. And where overdraft is likely or occurs, invocation of Ch. 177 (HRS) presently mandates domestic water supply priorities.

Given the fact that it appears the year 2000 projected population for the Kahaluu-Kahuku area will most likely be reached in the early 1980's, given BWS refusals to stand in the way of additional urban development even where substantial overdraft already occurs (eg. Gentry-Waipio and Mililani Town Expansion), and considering the greater costs attendent to piece-meal area water development (coordination of water quality & need, centralized water delivery design in terms of pipe capacity, pressures, etc.) we feel the Kahuku water development should be a part of a more thoroughly developed and coherent Kahaluu-Kahuku plan. This might mean waiting for completion of the Oahu General Plan Revision.

The Kahaluu-Kahuku area is about the last Oahu area where truly integrated water development and use planning seems possible. This opportunity should be utilized.

George M. Hudes

October 13, 1978

Mr. George Hudes
Life of the Land
Room 209
404 Piikoi Street
Honolulu, Hawaii 96814

Dear Mr. Hudes:

Your Letter of August 29, 1978 Commenting on Our Environmental Impact Statement for Kahuku Water Development

In response to your comments on the environmental document, we offer the following:

Comment #1a

"The existing wells, even with recasing, can deliver 800,000 gpd. In other words, a surplus of domestic water seems available utilizing existing facilities."

Response

Development of the proposed wells will not create a surplus of domestic water. Water from the existing wells will be diverted for agricultural purposes. The new wells will in turn serve the existing Kahuku Corp. and the proposed low income housing project.

Comment #1b

"If there are bacteriological conditions in the water from the existing wells which make it undesirable or in violation of drinking water standards, these conditions should be specified."

Response

Frequent occurrence of high coliform counts from samples taken by the State Department of Health from the existing system indicate that the water does not meet the Safe Drinking

Water Standards. The existing system does not have any permanent disinfection equipment installed to mitigate the coliform problem.

Comment #1c

"It is not clear whether all the residents of Kahuku Village will be relocated and served by the proposed system."

Response

The EIS for the Koolauloa Housing Project states in the Description of Action that "the basic intent is to relocate the families in existing Kahuku Plantation homes and to meet low-income housing market in the Koolauloa District. Kahuku Village land leases expire in 1983". Water from the new source will serve the Kahuku Housing Corp. (Kahuku Village), the proposed Koolauloa Housing Project and the proposed Kahuku Elderly Housing Project.

Comment #1d

"Has contamination through flooding of the existing system ever occurred in the past?"

Response

The State Department of Health has no record of floods affecting the quality of the water in the existing system.

Comment #1e

"How likely is cesspool water infiltration, given past experience and new sewage treatment facility plans?"

Response

Contamination of groundwater resources in the area is very unlikely because of the great distance between the new water source and sources of pollution including the sewage facility. The favorable caprock formations are also a mitigating factor in preventing pollution of groundwater resources.

Comment #2a

"Projected population increase (above existing pop.) for the project area (Kahaluu-Kahuku) till the year 2000 is 2,110 based on the E-2 revision. If we add up expected population increases in the Kahaluu-Kahuku area from other ongoing and proposed developments (eg. Hokuloa Unit C, Trousdale, Heeia Meadows, Waikane) this Kahuku Support Housing Project will result in surpassing the population projections for the year 2000 for this area by the early 1980's. Is the BWS basing its water development program on E-2 revised projections or on some more arbitrary case by case basis?"

Response

Our long range projections are based on the revised E-2 projections.

Comment #2b

"Page IV-4, para. 4 states "the project will aid in the orderly and controlled growth of the Kahuku area" after the Kahuku Support Project. This indicates an exacerbation of the Population growth rate problem indicated in the previous paragraph."

Response

That statement is misleading and shall be deleted from the EIS. The proposed system is not designed to serve any other future developments beyond the proposed Koolauloa Housing Project and the Kahuku Elderly Housing Project.

Comment #2c

"How does this project relate to the two well field planned by the BWS for the Kahuku area in the 1975 Oahu Water Plan (each field 2.5 mgd = total 5 mgd)?"

Response

This project is independent from the two well fields planned by the BWS for the Kahuku area in the 1975 Oahu Water Plan.

Comment #2d

Possible future conflict between agricultural and domestic water supplies is already implied on page IV-4, para. 1. The presently planned water development will bring area water development up to near capacity.

6 mgd - present agriculture use
2 mgd - capacity of this project
1 mgd - for 12,000 acres of ag land not presently cultivated
9 mgd = safe yield of 75% of the area recharge of 12 mgd.

Does the BWS maintain any plans for future additional water development in the Kahuku area? The BWS has primary service commitments and financial dependence on the urban sector. These facts indicate that maintaining the agricultural economic base and lifestyle of the area might be best assured thru over-all water supply development for the Kahuku area by the State Department of Agriculture.

Response

According to our Oahu Water Plan, two future well fields with a combined yield of five (5) million gallons per day are planned for the year 2020.

In view of the water use of the area, the project scope may need to be reevaluted. All water development projects by the BWS will be subject to public review through the EIS process and any objections to any particular one may be brought to the attention of the accepting authority.

Comment #2e

Even though the job of the BWS is to supply water when requested and not conduct over-all area planning per se, area planning coordination is necessary to prevent future area overdraft and adverse effects on water supply for certain economic sectors. For example, lack of over-all planning has already resulted in overdraft and adverse effects on water supply for certain economic sectors. For example, lack of over-all planning has already resulted in overdraft problems in the

Pearl Harbor Basin, Honolulu and Punaluu areas. Because of uncertainties regarding groundwater rights, the BWS does not have clear authority to limit future private water development which might result in area overdraft. And where overdraft is likely or occurs, invocation of Ch. 177 (HRS) presently mandates domestic water supply priorities.

Given the fact that it appears the year 2000 projected population for the Kahaluu-Kahuku area will most likely be reached in the early 1980's, given BWS refusals to stand in the way of additional urban development even where substantial overdraft already occurs (eg. Gentry-Waipio and Mililani Town Expansion), and considering the greater costs attendent to piece-meal area water development (coordination of water quality and need, centralized water delivery design in terms of pipe capacity, pressures, etc.) we feel the Kahuku water development should be a part of a more thoroughly developed and coherent Kahaluu-Kahuku plan. This might mean waiting for completion of the Oahu General Plan Revision.

The Kahaluu-Kahuku area is about the last Oahu area where truly integrated water development and use planning seems possible. This opportunity should be utilized."

Response

Our Kahuku water development plan is consistant with our Oahu Water Plan, July 31, 1975. This plan updates the Oahu Water Plan, March 1963 and the 2020 Plan, February 1971. It is continually being revised to reflect new data and information on our groundwater supply obtained from studies and our monitoring program of the groundwater basin. Revisions are also made when population projection data and any development plans of the City and of the State are revised. Therefore, we feel that our water development program is in consonance with all long range population projections and development plans.

If you have any further questions on this matter, please call Lawrence Whang at 548-5221.

Very truly yours,

Edward Y. Hirata

EDWARD Y. HIRATA
Manager and Chief Engineer

cc: Mr. Richard O'Connell
Office of Environmental Quality Control

L Whang

BLACKFIELD HAWAII CORPORATION
1221 KAPIOLANI BOULEVARD
SUITE 700
HONOLULU, HAWAII 96814
(808) 538 3841

RECEIVED
BD OF WATER SUPPLY
AUG 31 4 15 PM '78

August 30, 1978

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

Gentlemen:

RE: ENVIRONMENTAL IMPACT STATEMENT
KAHUKU WATER DEVELOPMENT
KAHUKU, OAHU, HAWAII

Thank you for the opportunity to review the proposed action. I am aware that my comments are tardy, but I feel they should still be made. Blackfield Hawaii's interest is occasioned by the fact that our Kahuku Sugar Mill project will be affected by this action.

In general, our feeling is that the proposed action is a good job, half done and the half that is not being done should be addressed more adequately.

On the summary page, one objective listed is to "upgrade the present domestic water system." Later in a more detailed statement of objectives, it says "to upgrade the present domestic water system from the standpoint of a more reliable water source and storage facility." (My underlining.) This certainly needs to be done and is commendable. A reader not familiar with the situation would not know that the present distribution system is in poor condition and is presently maintained by a non-profit corporation with limited assets. The existing problem will not be solved until a new distribution system is installed to service those already existing residences and businesses. It seems to me that if this cannot be done now, then it should be stated as an alternative that was considered and rejected. Then, reasons for such rejection and the impact of this rejection should be addressed.

Sincerely,

Robert E. Cooper

Robert E. Cooper
Vice President

REC:rp

cc: Board of Water Supply

October 4, 1978

Mr. Robert E. Cooper
Vice President
Blackfield Hawaii Corp.
1221 Kapiolani Boulevard
Suite 700
Honolulu, Hawaii 96814

Dear Mr. Cooper:

Your Letter of August 30, 1978 Relating to Environmental Impact Statement for Kahuku Water Development, Kahuku, Koolauloa, Oahu

This project is to provide adequate and safe drinking water for the existing residences and businesses presently served by the Kahuku Housing Cooperative, the proposed 300 unit Koolauloa Housing Project and the Kahuku Elderly Housing project.

This project will be funded by a loan from the Farmer's Home Administration (FmHA) and the work is for development of a new water source, storage facility and transmission mains.

The upgrading of the existing distribution system is the responsibility of the Housing Corporation and we have already informed them that the system must be upgraded to our standards before we will consider accepting the system.

If you have any further questions on this matter, please call Lawrence Whang at 548-5221.

Very truly yours,

EDWARD Y. HIRATA
Manager and Chief Engineer

cc: Office of Environmental Quality Control

NORTH SHORE NEIGHBORHOOD BOARD NO. 27
P. O. Box 607
HALEIWA, HAWAII 96712

June 29, 1978

Environmental Quality Commission
Office of the Governor
550 Halekauwila Street
Honolulu, Hawaii 96813

SUBJECT: ENVIRONMENTAL IMPACT STATEMENT
FOR KAHUKU WATER DEVELOPMENT

44 Concur in subject Impact Statement which is returned herewith in accordance with your request of June 5, 1978.

Sincerely,

Merl W. Hawthorne
Chairman

Enc: Environmental Impact Statement
for Kahuku Water Development

July 26, 1978

Mr. Merl W. Hawthorne
Chairman
North Shore Neighborhood Board No. 27
P.O. Box 607
Haleiwa, Hawaii 96712

Dear Mr. Hawthorne:

Your Letter of June 29, 1978 Relating to the Environmental Impact Statement for Kahuku Water Development, Kahuku, Oahu, Hawaii

Thank you for your response regarding the subject Environmental Impact Statement. Your letter will be appended to the final EIS.

Very truly yours,

L B Rathburn

for EDWARD Y. HIRATA
Manager and Chief Engineer

cc: Office of Environmental Quality Control