

DEPARTMENT OF WATER

County of Kauai

"Water has no Substitute -- Conserve It!"

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DEC. OF ENVIRONMENTAL
QUALITY CONTROL

April 1, 1997

Mr. Gary Gill, Director
Office of Environmental Quality Control
235 S. Beretania Street, Suite 702
Honolulu, HI 96813

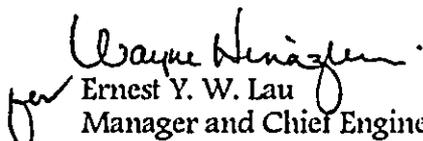
Dear Mr. Gill:

SUBJECT: FINDING OF NO SIGNIFICANT IMPACT FOR PROPOSED COMPLETION
AND OPERATION OF KAPAA HOMESTEADS WELL NO. 2, KAPAA, KAUAI

Notice of the Draft Environmental Assessment was published in The Environmental Notice on December 8, 1996. A single comment was received following the notice. That comment has been included in the Final Environmental Assessment, here submitted.

The Department of Water, County of Kauai, after completing the Environmental Assessment process, has determined that the proposed action would have negligible adverse effect on the human environment. This letter is issued as a Finding of No Significant Impact, as required by HRS Chapter 343.

Sincerely,


Ernest Y. W. Lau
Manager and Chief Engineer

MM:ls
xc: Okahara & Associates, Inc.

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Enclosure: 4 Final Environmental Assessment

44

1997-04-23-KA-*FEA*-Kapaa Homesteads APR 23 1997
Well No. 2 **FILE COPY**

FINAL ENVIRONMENTAL ASSESSMENT

AND

FINDING OF NO
SIGNIFICANT IMPACT

FOR

Job No. 86-7
PUMP, CONTROLS, CONNECTING
PIPELINE AND SERVICE ROAD FOR
KAPAA HOMESTEADS WELL NO. 2 (0622-02)

Kapaa, Kauai, Hawaii

TMK Plats 4-6-01 and 4-6-04

County of Kauai
Department of Water

March 24, 1997

1997-04-23-KA-*FEA*-Kapaa Homesteads APR 23 1997
Well No. 2 **FILE COPY**

FINAL ENVIRONMENTAL ASSESSMENT

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Department of Water

March 24, 1997

APPENDIX A

BIOLOGICAL AND SURFACE-FEATURE
REPORT FOR
FACILITIES AT KAPAA HOMESTEADS WELL NO.2
KAWAIHAU, KAUAI COUNTY

PREPARED FOR:

KAUAI DEPARTMENT OF WATER SUPPLY
Lihue, Hawaii

PREPARED BY:

GRANT GERRISH, Ph.D
NATURAL SCIENCES DIVISION
UNIVERSITY OF HAWAII AT HILO
HILO, HAWAII

March 9, 1995

BIOLOGICAL AND SURFACE-FEATURE REPORT FOR FACILITIES AT
KAPAA HOMESTEADS WELL NO. 2 KAWAIHAU, KAUAI COUNTY

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BIOLOGICAL AND SURFACE-FEATURE REPORT FOR FACILITIES AT
MAKALEHA WELL NO. 2 KAWAIHAU, KAUAI COUNTY

EXECUTIVE SUMMARY

A Biological and Surface-Feature study was conducted to provide documentation for an Environmental Assessment of proposed facilities at Kapaa Homesteads Well No. 2, Kawaihau, Kauai. The well itself has already been drilled and cased. The proposed facilities include a pump, control building, a buried 8 inch diameter connecting pipeline, and service road. Lists of all vascular plant species (Table 1) and all bird species (Table 2) found within the project site were compiled.

The project site traverses pastures, passes several homes and extends to the edge of a forest reserve. All of the vegetation within the project site is secondary regrowth strongly influenced by past and continuing human disturbance. Forty species of introduced (alien) plants and three species of indigenous (native) plants were found within the proposed project site (Table 1). No endangered or other plants considered rare were found within or near the project site. It is very unlikely that any rare plants would occur on such a heavily disturbed site dominated by introduced species.

No mammals were observed within the proposed project site except household pets (dogs and cats). Seven species of introduced and one species of indigenous birds were detected in the immediate vicinity of the project site (Table 2). No endangered or rare bird or mammal species were observed within or near the project site. The project site has no unique resources that would be expected to attract endangered animals.

No flowing streams or wetlands were found within the project site.

The surface of the entire project area has been heavily disturbed in recent years. Artifacts or structures, if any, dating from pre-western contact would probably have been obliterated or buried long ago. No such features, such as piled stones, were observed.

No biological resources or surface features of significant value were found on the site. It is recommended that 1) care be taken to avoid altering the Makaleha Ditch (which is outside the project site) and 2) care be taken to avoid introducing any new species of noxious plants into the Kealia Forest Reserve.

**BIOLOGICAL AND SURFACE-FEATURE REPORT FOR FACILITIES AT
MAKALEHA WELL NO. 2 KAWAIHAU, KAUAI COUNTY**

INTRODUCTION

A Biological and Surface Feature study was conducted to provide documentation for an Environmental Assessment of proposed facilities at Kapaa Homesteads Well No. 2, Kawaihau, Kauai. The well itself has already been drilled and cased. The proposed facilities include a pump, control building, a buried 8 inch diameter connecting pipeline, and service road.

This study was conducted by biologist, Grant Gerrish, Ph.D. The study identified plants and vertebrate animals utilizing the site, and included a search for visible archaeological features. The field survey consisted of an intensive visual search of an area around the well-head of approximately 60 by 40 feet, where all proposed grading and construction would take place; and of the proposed 15 foot-wide pipeline corridor.

METHODS AND SITE DESCRIPTION

The biological study was made up of a flora and fauna field survey at the proposed project area and a literature review of appropriate documents and references. The surface feature survey was limited to a search for visible piled stones and observations of recent human disturbance to the surface soil layer.

The proposed project area is within the Ahupuaa of Kawaihau, Island of Kauai, in the vicinity of Kapaa. Kapaa Homesteads Well No. 2, which has been completed, is within the Kealia Forest Reserve at the foot of the Makaleha Mountains and is about 150 feet down-slope of Makaleha Ditch (USGS Topographic Map, Kapaa Quadrangle 7.5 Minute Series). The pump and control building would be located at the well-head of Kapaa Homesteads Well No. 2, approximately 20 feet above (within) the forest reserve boundary. The proposed pipeline and service road would connect the well-head facilities to an existing water main at Kahuna Rd., near the junction with Kawaihau Road. The pipeline and service road would extend about 1500 feet through a 15 foot-wide corridor which follows existing roads and right-of-ways. The well-head is 522 feet above sea level and the proposed junction with the existing water main is 408 feet above sea level.

The field survey consisted of an intensive visual search of an area around the well-head of approximately 60 by 40 feet, where all proposed grading and construction would take place; and of the proposed 15 foot-wide pipeline corridor. From the well-head down

to approximately 450 above sea level, a distance of approximately 500 feet, the corridor utilizes a little-used public right-of-way, currently overgrown with vegetation. From this point down to the proposed water-main junction, the corridor is superimposed over a frequently-used private gravel road, i.e. the pipe would be buried within the existing roadbed. This survey was conducted between 11:00 AM and 2:00 PM on February 2, 1995, by Dr. Grant Gerrish.

A list of all vascular plant species found within the project site was compiled (Table 1). Plant nomenclature follows Wagner et al. (1990). Observations of birds and mammals were also recorded. Bird names are in accordance with the published list of the Hawaii Audubon Society (HAS 1989). No observations of invertebrate animals were made or recorded. The Federal Register (1990a and 1990b) and updated lists of Endangered Species (USFWS 1994) were consulted to see if any plants found were listed or proposed for listing as Endangered or Threatened Species by the U.S. Fish and Wildlife Service. Finally, the National List (USFWS 1988) was consulted to determine the wetland-indicator status of each plant species.

RESULTS

FLORA

VEGETATION

Overview The project site traverses pastures, passes several homes and extends to the edge of a forest reserve. All of the vegetation within the project site is secondary regrowth strongly influenced by past and continuing human disturbance. Forty species of introduced (alien) plants and three species of indigenous (native) plants were found within the proposed project site (Table 1).

Description of the project site vegetation is divided into two parts, 1) well-site and 2) pipeline corridor. The vegetation surrounding the project area is also briefly described.

Well-Site Vegetation All or most of the vegetation described in this sub-section would be destroyed by proposed grading of the well-site. This vegetation forms a single layer ranging from 1.5 (.5 m) feet to 6 feet (2 m) high and covering about 90% of the ground. Many species of herbs, grasses, shrubs and saplings resprouting from stumps occur here; no dominant species can be recognized.

The vegetation appears to be an early-succession community established after the well-site was cleared several years ago. Some resprouting saplings have more recently been cut down just above ground level.

Pipeline Corridor The upper part of the corridor is through an overgrown public-right-of-way, not recently cleared. This secondary brush includes a few large eucalyptus (Eucalyptus robusta) trees, a tangle of hau (Hibiscus tiliaceus), and some Java plum (Syzigium cuminii). Additionally, this section includes most of the species found on the well-site and a number of other weedy, introduced plants. The lower section of the corridor is a gravel road with very sparsely vegetated shoulders. In some places, cultivated ornamental plants line the corridor.

Vegetation Surrounding the Project Site The well-site is within the Kealia Forest Reserve and is surrounded on North, East and West sides by the reserve. However, this lower portion of the Forest Reserve is heavily disturbed. The vegetation immediately surrounding the surveyed well-site is a similar secondary growth of mostly non-woody, weedy plants. This weedy zone extends up-slope, into the forest reserve, approximately 150 feet to the Makaleha Ditch, a man-made irrigation ditch carrying water from Makaleha Stream. The vegetation across the ditch has not been recently disturbed. It is dominated by indigenous hala trees (Pandanus tectorius) mixed with many introduced tree and shrub species, and several other indigenous species.

To the south (down-slope) of the well-site is a fenced pasture that appears to be well-grazed. The proposed pipeline corridor is also surrounded by pastures.

ENDANGERED PLANTS No endangered plants or other plants considered rare were found within or near the project site. It is very unlikely that any rare plants would occur on such a heavily disturbed site dominated by introduced species.

FAUNA

MAMMALS No mammals were observed within the proposed project site except household pets (dogs and cats). It is probable that feral dogs and cats and introduced rats and mice utilize the project site.

BIRDS Seven species of introduced and one species of indigenous birds were heard or seen in the immediate vicinity of the project site (Table 2). Other species of introduced birds may also utilize the site.

ENDANGERED ANIMALS No endangered or otherwise rare bird or mammal species were observed within or near the project site. The project site has no unique resources that would be expected to attract endangered animals. The proximity of the site to homes and farms indicates that it is highly probable that dogs and cats range through the site, making it unusable by endangered ground-nesting seabirds.

STREAMS AND WETLANDS

No flowing streams or wetlands were found within the project site.

The gravel road to be utilized by the pipeline corridor crosses a ditch by means of a small bridge about 250 feet above the Kahuna Road junction. No water was visible at the time of the field survey. The presence of pasture grasses in the ditch outside the project site appears to indicate that flow is infrequent. Within the project site, the ditch is almost completely under the road so wetland vegetation is not present, nor was it observed nearby.

Makaleha Ditch, well up-slope from and outside the project area, was flowing at the time of the field survey. This irrigation ditch runs nearly parallel to the contour and has steep banks 10 to 15 feet high. Ludwigia octovalis and Job's Tears (Coix lachrymarijoi), 'obligate' and 'facultative wetland' species (USFWS 1988), respectively, occur on the bottom of the stream. No fringing wetlands were observed. Tadpoles (larval stages) of an unidentified amphibian species were observed in the ditch.

California grass (*Brachiaria mutica*), a 'facultative wetland' species (USFWS 1988) occurs within parts of the pipeline corridor. The slope at this site is moderate and the soil is well-drained; no other wetland-indicator species were found in association with the California grass.

SURFACE FEATURES

The surface of the entire project area has been heavily disturbed in recent years. The well-site itself was graded by construction equipment at the time the well was constructed. At the present time, the surface appears to be covered with soil with a few scattered rocks. The upper part of the proposed pipeline corridor, from 450 to 522 feet above sea level, extends through a public right-of-way that receives little use at the present time. This right-of-way is vegetated with weeds, shrubs and trees. The surface of the right-of-way is several feet (about 1 m) lower than the surrounding surface, apparently caused by erosion associated with human or livestock use at an earlier time. The surface itself is soil with scattered rocks. The lower portion of the proposed pipeline corridor, 408-450 feet above sea level, is a well-used gravel road. No remnants of the former surface are visible.

These observations indicate that the site has been heavily disturbed in recent years and that these disturbances have probably been continuing over a long period of time. Artifacts or structures, if any, dating from pre-western contact would probably have been obliterated or buried long ago. No such features, such as piled stones, were observed. No structures from the historic period were found, other than pasture fences and others named above.

DISCUSSION AND RECOMMENDATIONS

BIOLOGICAL RESOURCE VALUES OF THE FLORA AND FAUNA

Resource values of flora and fauna can be either 1) general, or 2) biodiversity. General resource value is the benefit that any plant and animal community provide, regardless of the plant and animal species. These values include prevention of soil erosion, moderation of climatic extremes, biomass production and aesthetic values. Biodiversity, on the other hand, refers to the number of species present or the variety of vegetation types within the landscape. In the Hawaiian Islands, communities considered to have biodiversity value are those that are 1) habitat to endangered or rare species, 2) unique communities that occur in only a few places or a limited area, 3) communities dominated by endemic species with a minimum of interruption by alien species or other human activities. In addition to these biodiversity values, listed Threatened or Endangered species and wetland communities are legally protected under State and Federal law.

For the most part, the flora and fauna within and near the Kapaa Homesteads Well project area have only general resource value. These species and their communities have little biodiversity value because they do not contain plants endemic to the Hawaiian Islands nor are the communities themselves unique.

RECOMMENDATION No special measures need be taken to protect individual species found within the study area. Appropriate measures should be taken to preserve the general resource values of the vegetation, especially to reduce the probability of soil erosion whenever vegetation is removed.

ENDANGERED PLANTS AND ANIMALS

No listed Threatened, Endangered or species otherwise considered rare were found within the project site. Furthermore, the domination of the site by introduced plants and its history of repeated human disturbance make it unlikely that any rare plants or animals utilize the site.

RECOMMENDATION Because of the absence of endangered species, no precautions need be taken.

STREAMS AND WETLANDS

No perennial flowing streams occur within the project site. The Makaleha ditch is well away from the area proposed to be graded. A ditch or drainage-way does cross the proposed pipeline corridor near Kahuna Road. No wetlands occur near this ditch or anywhere else within the project area.

RECOMMENDATION Care should be taken to avoid any filling or other alteration to Makaleha Ditch.

It is probably essential for drainage that the ditch near Kahuna Road be left open.

FOREST RESERVE CONSIDERATIONS

It appears that the proposed action's potential for adverse impact within the Kealia Forest Reserve is slight. The vegetation at the well-site is already heavily disturbed and consists almost entirely of introduced species. The vegetation of the surrounding forest reserve is also heavily influenced by the introduced plants of the region. However, it would be undesirable to introduce more species of noxious plants into the Forest Reserve. The use of construction equipment on this project would present an opportunity for noxious weeds to enter the Forest Reserve.

RECOMMENDATION Following construction and throughout the operation of the well, periodic surveys of the well-site and pipeline corridor should be undertaken to identify and eradicate noxious weeds not already present in the forest reserve.

REFERENCES

- Berger, AJ. 1990. Bird Life in Hawaii. 7th ed. Island Heritage, Honolulu, Hawaii.
- Corps of Engineers. 1987. Corps of Engineers Wetlands Delineation Manual. US Corps of Engineers, Washington, DC.
- Federal Register. 1990a. Endangered & threatened wildlife and plants; review of plant taxa proposed for listing as endangered or threatened species; notice of review. 50 CFR Part 17. Feb. 21, 1990.
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- HAS. 1989 Hawaii's Birds. Hawaii Audubon Society, Honolulu, Hawaii.
- USFWS. 1988. National List of Plant Species That Occur in Wetlands: Hawaii (Region H). US Department of the Interior, Washington, DC.
- USFWS. 1994. Hawaiian Islands Species Listed or Proposed by the Federal Government as Endangered or Threatened: Updated July 9, 1993. Unpublished. Provided by the Honolulu Office of the US Fish and Wildlife Service.
- Wagner WL, Herbst DR, Sohmer SH. 1990. Manual of the Flowering Plants of Hawaii. University of Hawaii Press/Bishop Museum Press, Honolulu, Hawaii.

Table 1. List of vascular plant species found within the Kapaa Homesteads Well No. 2 Project Site. STATUS: A = Alien (Introduced), P = Polynesian Introduction, I = Indigenous.

STATUS	BOTANICAL NAME	COMMON NAME
A	<u>Acacia mearnsii</u> De Wild.	Black Wattle
A	<u>Arundinia bambusifolia</u> (Roxb.) Lindl.	bamboo orchid
A	<u>Axonopus fissifolius</u> (Raddi) Kuhlms.	narrow-leaved
A	<u>Brachiaria mutica</u> (Forsk.) Stapf	California grass
A	<u>Clidemia hirta</u> (L.) D. Don	Koster's curse
A	<u>Chamaecrista nictans</u> (L.) Moench	partridge pea
A	<u>Chamaesyce hirta</u> (L.) Millsp.	garden spurge
A	<u>Conyza bonariensis</u> (L.) Cronq.	hairy horseweed
P	<u>Cordyline fruticosa</u> (L.)	ti
A	<u>Desmodium sandwicense</u> E. Mey.	Spanish clover
A	<u>Elephantopus mollis</u> Kunth	elephant's foot
A	<u>Emilia sonchifolia</u> (L.) DC	Flora's paintbrush
A	<u>Eucalyptus robusta</u> Sm.	swamp mahoganey
A	<u>Leucaena leucocephala</u> (Lam.) de Wit	koa haole
A	<u>Mangifera indica</u>	mango
A	<u>Melastoma candidum</u> D. Don	ncn
A	<u>Microsorium scolopendria</u> (Burm.) Copel.	laua'e
A	<u>Mimosa pudica</u> L.	sensitive plant
A	<u>Nephrolepis hirsutula</u> (Forst.) Presl	swordfern
I	<u>Pandanus tectorius</u> S.	hala
A	<u>Carica papaya</u> L.	papaya

Table 1. (Continued) List of vascular plant species found within the Kapaa Homesteads Well No. 2 Project Site. STATUS: A = Alien (Introduced), P = Polynesian Introduction, I = Indigenous.

STATUS	BOTANICAL NAME	COMMON NAME
A	<u>Passiflora</u> sp.	passion fruit
A	<u>Paspalum conjugatum</u> Berg.	Hilo grass
A	<u>Paspalum urvillei</u> Steud.	vaseygrass
A	<u>Plantago major</u> L.	common plantain
A	<u>Pluchea odorata</u> (L.) Cass.	sourbush
A	<u>Polygala paniculata</u> A	Milkwort
A	<u>Psidium cattleianum</u> Sabine	waiawi
A	<u>Psidium guajava</u> L.	common guava
A	<u>Richardia brasiliensis</u> Gomes	ncn
I	<u>Hibiscus tiliaceus</u> L.	hau
A	<u>Rubus rosifolius</u> Sm.	thimbleberry L.
A	<u>Sacirolepis indica</u> (L.) Chase	Glenwoodgrass
A	<u>Sida acuta</u> N. L. Burm.	ncn
A	<u>Spathoglottis plicata</u> Blume	Philippine ground orchid
A	<u>Sphenomeris chusana</u> (L.) Copel.	palaa, lace fern
A	<u>Stachytarpheta jamaicensis</u> (L.) Vahl	Jamaica vervain
A	<u>Syzygium cumini</u> (L.) Skeels	Java plum
A	<u>Tristania conferta</u> (R. Br.) Peter G. Wilson & Waterhouse	brush box
A	<u>Verbena litoralis</u> Kunth	vervain
I	<u>Waltheria indica</u> L.	'uhaloa
A	<u>Wedelia trilobata</u> (L.) Hitchc.	wedelia
A	<u>Xanthium stumarium</u> L.	cocklebur

Table 2. List of bird species detected within or in the immediate vicinity of the Kapaa Homesteads Well No. 2 Project Site. STATUS: A = Alien (Introduced), I = Indigenous.

STATUS	SCIENTIFIC NAME	COMMON NAME
A	<u>Bubulcus ibis</u>	Cattle Egret
A	<u>Cardinalis cardinalis</u>	Northern Cardinal
A	<u>Lonchura malacca</u>	Cinamon Mannequin
I	<u>Pluvialis fulva</u>	Kolea
A	<u>Passer domesticus</u>	House Sparrow
A	<u>Paroaria coronata</u>	Red-crested Cardinal
A	<u>Streptopelia chinensis</u>	Spotted Dove
A	<u>Sturnella neglecta</u>	Western Meadowlark

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BIOLOGICAL AND SURFACE FEATURE REPORT APPENDIX A

I. PROPOSING AND ACCEPTING AGENCY

Department of Water (DOW), Kauai County
PO Box 1706
Lihue, Hawaii 96766

II. AGENCIES CONSULTED

State Historic Preservation Office
Department of Land and Natural Resources
Division of Forestry and Wildlife, Kauai District
Engineering Branch
Logistics and Technical Services Branch

III. DESCRIPTION AND OBJECTIVES OF PROPOSED ACTION

A. Location

The proposed project area is within the Kapaa Homesteads in the Ahupuaa of Kapaa, Island of Kauai, in the vicinity of Kawaihau (Figure 1). Kapaa Homesteads Well No. 2, which has been completed, is at the foot of the Makaleha Mountains within the Kealia Forest Reserve (Figure 2). The well-site is approximately 20 feet mauka (above) of the lower boundary of the Forest Reserve. The pump and control building would be located at the well-site.

The proposed 8-inch pipeline and service road would connect the facilities at the well-head to an existing 12-inch water main at Kahuna Rd., near the junction with Kawaihau Road (Figures 3 and 4). The service road would be approximately 1500 feet long, and would be built over an existing gravel road. The pipeline would be buried beneath the service road. The route of the service road and pipeline would follow the existing road across private land (TMK 4-6-04:46) for about 1000 feet then jogs left into the public right-of-way of Piliamoo Road. This route was selected as the most practical. There is a public easement for Piliamoo Road between Kahuna Rd. and the well-site (Figure 4) However, there is an existing, well-maintained, gravel driveway immediately adjacent on the east side of the right-of-way. An agreement has been reached with the private owner to use this route. Where that existing road ends, about 500 feet below the well-site, the proposed service road would jog into the public right-of-way for the remainder of the distance to the well-site (Figure 5).

The well-head is 522 feet above sea level and the proposed junction with the existing water main is 408 feet above sea level.

B. Project Background

A Final Environmental Assessment and Negative Declaration For the drilling of Kapaa Homesteads Well No. 2 was accepted by the Department of Land and Natural Resources, Division of Water and Land Development in 1987. The well was drilled 1000 feet to a depth of 480 feet below sea level. Solid 12 inch casing was set in the upper 570 feet of the well. The well was completed and a pumping test conducted in November 1989.

C. Project Objectives

The project objective is to complete and operate a well that will serve as a backup source to the DOW water system to be used in the event that the existing source either cannot meet the users' demand or is out of service.

D. Proposed Action

The proposed action is to develop the facilities needed to put the well into production. These facilities would generally include a 10-inch submersible pump with an 8-inch submersible 25 horsepower motor within the proposed well-site, which will be improved with an asphalt paved driveway, a hollow-tile control building, retaining walls, and fencing. An 8-inch ductile iron pipe and a paved service road would be constructed connecting the well-site to Kahuna Rd. The pipe would be buried beneath the service road.

The proposed action includes operating and maintaining the well-site facilities to support the water system of the Wailua-Kapaa area. Three water tunnels in the Moalepe-Keiwa ridge watershed are, and will remain, the primary water source for this area. The proposed well would be one of two existing wells that could be pumped when flow from the tunnels is insufficient to meet the demand.

The proposed action includes the legal subdivision of TMK 4-6-1:01 to create a new parcel containing the well-site. It is anticipated that this parcel would be conveyed from the State to the County of Kauai by Executive Order.

**IV. GENERAL DESCRIPTION OF THE ACTION'S TECHNICAL,
ECONOMIC, SOCIAL, AND ENVIRONMENTAL CHARACTERISTICS**

A. Technical Description

Grading of the well-site would be required to provide a level surface to construct the control building described below. A rock wall (CRM) will be built around the perimeter of the well site.

The control building would house the pump, a chlorination unit and controls. Floor plan dimensions are 14 ft. 8 in. by 16 ft. 8 in.; the roof would rise approximately 16 ft. above grade. Walls would be constructed from CMU (concrete) blocks. The roof would be "tile-like" metal, similar to Stile type manufactured by Metal Sales Manufacturing Corporation.

The pipeline and service road would extend about 1500 feet from the well-head to an existing water main at Kahuna Rd., near the intersection with Kawaihau Rd. An 8-inch diameter pipeline would be buried for 1000 feet in private property and the remaining 500 feet within an existing 15-foot wide right-of-way. A paved, 12-ft. wide service road would be constructed over the pipeline within this alignment.

The well would be operated in accordance with the recommendations of the State Commission on Water Resource Management (October 1, 1990). Pumping would be limited to 500 gpm with the pump intake set in the well at mean sea level. The pump could be switched on and off remotely from a float level controller in the Makaleha Reservoir tank when the water fell below a preset level. The water level in the well would be continuously monitored and chloride content would be periodically checked.

B. Social Characteristics

This project would provide additional water to the customers of the Department of Water, County of Kauai. Increasing development in the Kapaa area has strained the existing water sources. These sources are now insufficient during dry periods to meet the growing demand. The proposed action would make water from the completed Makaleha No. 2 well available to the Department of Water system. (From the DLNR Environmental Assessment for Drilling Exploratory Well No. II Makaleha, Kapaa, Kauai.)

C. Economic Characteristics

This project would be funded by the Department of Water, County of Kauai. Completion of this proposed action would permit the Department of Water to obtain economic benefits from Kapaa Homesteads Well No. 2. This project would be part of basic infrastructure development necessary for continued economic growth.

Failure to complete this proposed action would result in the loss of benefit of the funds and resources used to construct Kapaa Homesteads Well No. 2.

D. Environmental Characteristics

Completion of this project would disturb all or most of the vegetation currently within the project site. This vegetation contains no rare species and consists almost entirely of alien plant species, such as eucalyptus, java plum, and many common grasses and weeds. In the long-term, the site and its vicinity would be little changed, with the exception of the presence of the small control building and the paving of a roadway that is currently gravel or dirt.

Potential adverse environmental effects of pumping water from the aquifer could include disturbing existing surface waters and altering the equilibrium of the ground water. Over-pumping the aquifer could, at least theoretically, result in invasion of sea water into the freshwater aquifer. Since Kapaa Well No. 2 and Makaleha Well No. 1 appear to tap the same aquifer, the two wells would have combined effects. The aquifer would be protected from over-pumping by the mitigation measures described below.

Operation of the pump would require the continuing consumption of a small amount of electricity. Site maintenance would require periodic control of vegetation within the project site.

V. SUMMARY DESCRIPTION OF THE AFFECTED ENVIRONMENT

A. Project Site

The project site consists of a 100 by 80-foot rectangle at the well-site of Kapaa Homesteads Well No. 2 and a 15 by 1500-foot corridor connecting the well-site to Kahuna Rd, of which only 500 feet near the well-site would contain the new road and pipeline. The well-site portion of the project site is within the Kealia Forest Reserve at the foot of the Makaleha Mountains. The well-head is 522 feet above sea level. The corridor passes through cattle pastures and near several residences. From the well-head down to 450 above sea level, a distance of approximately 500 feet, the corridor utilizes a little-used public right-of-way known as Piliamoo Rd., currently overgrown with vegetation. From this point down to the proposed water-main junction at Kahuna Rd., the corridor is superimposed over a frequently-used private gravel road.

B. Existing Facilities

Facilities within the project site are limited to the cased well-head of Kapaa Homesteads Well No .2, a privately-owned gravel road extending through 1000 feet of the proposed connecting corridor, and privately-owned cattle fences along both sides of the corridor.

C. Adjacent Areas and Regional Setting

The well-site is within the Kealia Forest Reserve. The connecting corridor passes by privately owned agricultural lands and several homes. The entire region is a rural setting of small farms and residences abutting the forest reserve. The well-site is approximately 4.4 miles from the center of Kapaa and 2 miles from the smaller community of Kawaihau.

D. Climate and Geology

The climate of the eastern side of the Island of Kauai is dominated by the northeast trade winds (Armstrong 1983). Mean annual rainfall is approximately 60 inches (1500 mm) (DLNR 1986). Temperature records from nearby Kealia indicate that the annual temperature range is between an average minimum of 63 degrees F and an average maximum of 90 degrees F (Armstrong 1983).

The project area is within the Kapaa Dissected Uplands on Post-erosional lava; the soil that has developed from this substrate is classified as Oxisol (Armstrong 1983).

E. Land Use

The well-site of Kapaa Homesteads Well No. 2, where it is proposed to construct the control house, is within Kealia Forest Reserve. The well-head is about 20 feet above (within) the forest reserve boundary. In the vicinity of the well-site, an approximately 200-foot wide strip at the lower edge of the forest reserve is heavily disturbed by encroachment in the form of access roads and fence lines from the bordering agricultural areas. The well-site portion of the project site is within this disturbed band.

The pipeline and service road connecting corridor would pass through a private lot (TMK 4-6-04:46) part of the way and jog into the existing Piliamoo Road right-of-way the remainder of the way. The lower portion (privately-owned) is a maintained, gravel road giving access to several residences, farms and the Forest Reserve. It is proposed that the connecting pipeline would be buried within this right-of-way and the road be upgraded to a 12-foot wide paved service road. The lands on either side of the right-of-way are managed pastures currently used for cattle grazing.

The State Land Use Classification of the well-site (TMK 4-6-1:01 is Conservation. The lands along Piliamoo have a State Land Use Classification of Agricultural and are zoned Open by Kauai County.

F. Flora and Fauna

A Flora and Fauna study of the project area was conducted (Appendix). All of the vegetation within the project site is secondary regrowth strongly influenced by past and continuing human disturbance. Forty species of introduced (alien) plants and three species of indigenous (native) plants were found within the proposed project site (Appendix Table 1).

The vegetation on the well-site is an early-succession weed community established after the well-site was cleared several years ago. This vegetation forms a single layer ranging from 1.5 feet to 6 feet high and covering about 90% of the ground. Many species of herbs, grasses, shrubs and saplings resprouting from stumps occur here; no dominant species can be recognized.

The upper part of the corridor is through Piliamoo Road, an overgrown public right-of-way. This secondary brush includes a few large eucalyptus (Eucalyptus robusta) trees, a tangle of hau (Hibiscus tiliaceus), and some Java plum (Syzigium cuminii). Additionally, this section includes most of the species found on the well-site and a number of other weedy, introduced plants. The lower section of the corridor is a gravel road with very sparsely vegetated shoulders. In some places, cultivated ornamental plants line the corridor.

No rare or endangered plants nor any plant communities with unique conservation value occur within the project area.

Seven species of introduced and one species of indigenous birds were heard or seen in the immediate vicinity of the project site (Appendix, Table 2). No endangered or otherwise rare bird or mammal species were observed within or near the project site. The project site has no unique resources that would be expected to attract endangered animals.

G. Historical and Cultural Sites

No historical or cultural sites are known within the project area. A thorough survey of the surface of the project site detected no archaeological artifacts (Appendix). Intensive recent agricultural and other use (road) of the site make it unlikely that any surface archaeological sites occur.

H. Drainage and Hydrology

The average slope of the well-site and the upper portion of the connecting corridor is 12%. The lower portion of the connecting corridor averages 4% and includes some near-level areas. Within this lower portion, a culvert passes under Piliamoo Road to allow drainage. The drainageway is vegetated with pasture grasses and appears to carry water only infrequently. There are no wetlands associated with this drainageway within the project site (Appendix).

An irrigation channel, known as Makaleha Ditch (Figure 2: USGS Map, Kapaa Quadrangle), is 150 feet up-slope from the well-head and outside the project area. This irrigation ditch runs nearly parallel to the contour and has steep banks 10 to 15 feet high. No fringing wetlands were observed along the ditch (Appendix).

The well-site is underlain with alluvial sediments. Beneath this layer are highly permeable lava beds of the Napali formation of the Waimea Canyon volcanic series, consisting mostly of olivine basalt. Test wells drilled in this formation have encountered basal waters with high heads due to impoundment by dikes and confinement by lavas of the Koloa volcanic series which overlie the Napali formation.

The underlying aquifer is classified as water perched on ash, soil, or alluvium with underlying basal water floating on salt water (Armstrong 1983).

VI. IDENTIFICATION AND SUMMARY OF MAJOR IMPACTS AND PROPOSED MITIGATION MEASURES

A. Primary Short-Term Impacts

Construction-related impacts are the primary short-term impacts identified. These include production of noise, dust and emissions from construction equipment. Construction activity may briefly interrupt normal use of Piliamoo Road inconveniencing residents of the area.

Construction would remove or damage most of the existing vegetation on the project site. There would be some potential for soil erosion.

B. Primary Long-Term Impacts

No major long-term adverse impacts are foreseen from the proper operation of the well.

Regulated withdrawal of water from the aquifer is not likely to cause significant adverse impact. The water is a renewable resource, constantly replenished by rainfall percolating downward through the soil and the permeable basalt. Testing of the well has been completed to determine the rate at which the aquifer can safely be pumped to result in no salinification or other harm. Recommended pumping protocol is described under mitigations below. These recommendations consider the combined effects of pumping this well and Makaleha No. 1.

Long-term adverse social impact would be negligible. The proposed action would not significantly change the rural character of the area. No change of employment or residential patterns are anticipated within the project area due to the proposed action, since operation of this well will be used to meet existing demand.

Availability of water from Kapaa Homesteads Well No. 2 is the major long-term beneficial impact. The proposed action would allow the County of Kauai to derive the social and economic benefits of the funds already committed to constructing the well. These benefits include increased reserve capacity and reliability of the public water supply.

The proposed action does not irretrievably commit any known natural resources on the site. Resources committed would be limited to the materials and energy used during construction. Operation of the pump would require the use of electrical power and minimal maintenance costs.

C. Mitigation Measures

Adverse impacts during construction will be minimized by use of Best Management Practices to control erosion and sedimentation. Adverse impacts from construction noise will be mitigated to limiting activity to daylight hours.

Use of an electric pump will prevent adverse noise impacts in the vicinity during operation of the well.

The adverse visual impact of the presence of the control building, expected to be insignificant, will be mitigated by appropriate landscaping using vegetation to screen the facilities from view.

Adverse impacts to the aquifer will be avoided by not exceeding the safe pumping rate recommended by the State Commission on Water Resource Management (Letter to DOW, October 1, 1990). These recommendations are 1) Kapaa Homesteads Well No. 1 be equipped with a pump not to exceed 500 gpm capacity and with its intake at mean sea level; 2) The aquifer serving both wells (Makaleha No. 1 and Kapaa Homesteads No. 2) not be continually pumped at their maximum combined rate of 1500 gpm; 3) Water levels and chloride content of both wells be monitored.

In accordance with these recommendations, Kapaa Homesteads Well No. 2 will

- 1) Be equipped with a 500 gpm capacity pump with intake at mean sea level.
- 2) Be used only as an emergency back-up well for the Wailua/Kapaa Water System.
- 3) Be controlled by a float level switch in the Makaleha Reservoir. Makaleha Well No. 1 will also be used as an emergency back-up controlled by a similar switch. The switching mechanisms will be programmed so that both wells will not ordinarily operate at the same time.
- 4) The water level in both wells will be continuously monitored and recorded.
- 5) Chloride content of the water of both wells will be periodically tested.

VII. ALTERNATIVES CONSIDERED

Possible alternatives include choice of a different connecting corridor for the pipeline and "No Action".

The proposed pipeline and service road route is the shortest distance possible between the well-head and the existing water system and makes use of existing right-of-ways and roads. No reasons have been identified to choose a different route.

"No Action" would preclude the use of water from the already-constructed Kapaa Homesteads Well No. 2. Need for the water this well would provide could be met from developing other wells or water sources at other locations. Customer demand for water could also be reduced by voluntary conservation or by mandatory restrictions.

The "No Action" alternative would result in the loss of public funds used to construct the well.

VIII. FINDING OF NO SIGNIFICANT IMPACT

The potential adverse impacts identified are all negligible and short-term in nature. Based on this Finding of No Significant Impact, an Environmental Impact Statement is not required.

IX. FINDINGS AND REASONS SUPPORTING DETERMINATION

1. This proposal is part of the County of Kauai Department of Water Supply's plan to provide reliable water sources for users. The well has already been constructed. The proposed action is necessary to make water from the well available.

2. Former and continuing use of the site has eliminated the native flora and fauna and their habitat from the site. The remaining biological resources are of little conservation value. No rare or endangered species utilize the site. The small area (8000 sq. ft.) of the site within Kealia Forest Reserve is already heavily disturbed. The proposed action would not further damage the Forest Reserve. There are no known historical or cultural sites on the project area due to past land use. The proposed action would not adversely affect environmentally sensitive areas such as wetlands, flood plains or coastal areas.

3. No adverse social impacts were identified.

4. The potential impacts of the proposed action are determined to be not significant according to the "significance Criteria" of Hawaii Administrative Rules Title 11 Chapter 200 Subchapter 12. Specifically, the proposed action as here described:

(1) would not irrevocably commit to the loss of natural or cultural resources because a) the water to be produced from the aquifer is a renewable resource that would be replaced by rainfall, and b) the land area to be utilized has been previously disturbed by human use or is currently utilized for uses similar to the uses proposed;

(2) would not adversely curtail the range of beneficial uses of the environment;

(3) does not conflict with state policies;

(4) would not adversely affect the economic or social well-being of the community or state; conversely, the proposed action would provide social and economic benefits in the form of a reserve water supply to Department of Water customers;

(5) would not adversely affect public health, but has the potential of providing a public health benefit of a more reliable public water supply;

(6) would have minimal secondary impacts since it would provide a reserve water source for the existing distribution system rather than make water available for new development;

(7) would not cause a degradation of environmental quality;

(8) would not have significant cumulative impacts since no similar actions are proposed in the vicinity, nor would the proposed action involve a commitment for larger actions;

(9) would not affect any rare or Listed Threatened or Endangered species or their habitat;

(10) would not adversely affect ambient air or water quality or noise levels;

(11) would not affect an environmentally sensitive area.

X. COMMENTS AND REVISIONS OF THE DRAFT ENVIRONMENTAL ASSESSMENT

Notice of the Draft Environmental Assessment was published in The Environmental Notice on December 8, 1996.

A. Comments Received

A single letter of comment was received (attached as the next page). This letter from the State of Hawaii Office of Hawaiian Affairs commented that the Office had no objection to the proposed action.

B. Other Revisions

Following the completion of the Draft Environmental Assessment, a Conservation District Use Application was prepared for use of the portion of the project area within the Conservation District (i.e. the portion within Kealia Forest Reserve). During informal consultations with the Department of Land and Natural Resources, it was suggested that the application include greater hydrological detail of the aquifer to be utilized by the well. This expanded hydrological information has also been incorporated into the Final Environmental Assessment at Section IV(H). The proposed protocol to govern operation of the well, designed to prevent over-pumping the aquifer, has been added to Section VI(C), "Mitigations". Other minor revisions to the Draft Environmental Assessment have also been incorporated.

REFERENCES

Armstrong RW. 1983. Atlas of Hawaii. 2nd ed. University of Hawaii Press. Honolulu.

DLNR. 1986. Rainfall Atlas of Hawaii. Department of Land and Natural Resources. Honolulu.

910573



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RECEIVED

JAN 28 1996

OKAHARA, & ASSOC., INC.

January 22, 1996

Mr. Bruce Meyers.
Okahara & Associates, Inc.
Engineering Consultants
470 N. Nimitz Hwy., Suite 212
Honolulu, HI 96817

Dear Mr. Meyers:

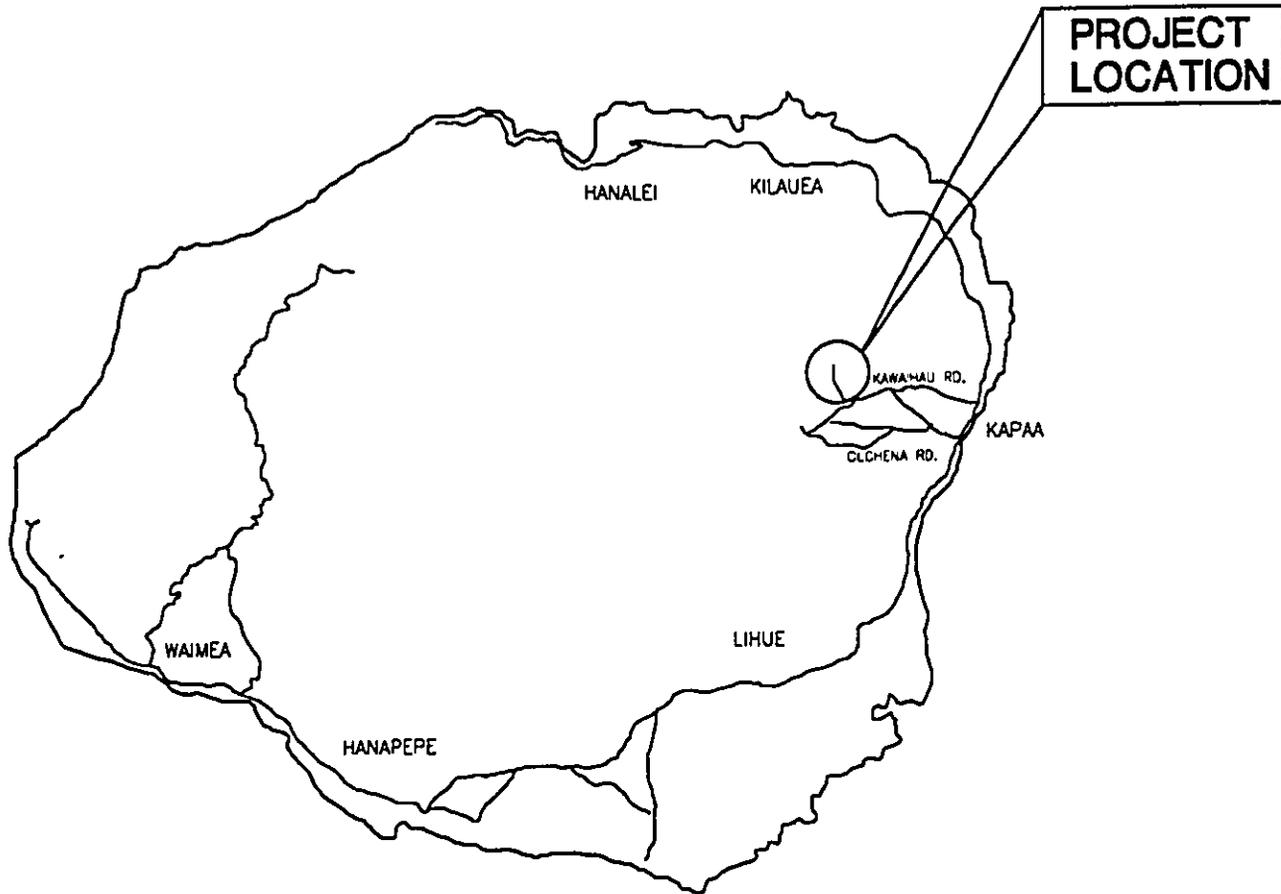
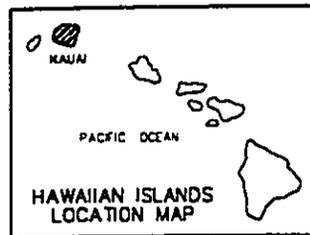
Thank you for the opportunity to review the Draft Environmental Assessment (DEA) for Pump, Controls, Connecting Pipeline and Service Road for Kapaa Homesteads Well No. 2, Island of Kauai. The County of Kauai is proposing to construct Well No. 2 and associated facilities as an alternative source to the existing water system.

The Office of Hawaiian Affairs has no objections at this time to the proposed well development. Based on information contained in the DEA, the project apparently bears no significant long-term adverse impacts on adjacent areas nor upon existing flora or fauna habitats. Furthermore, no known archaeological remains exist and the proposed well facilities will not significantly affect scenic resources. Please contact me or the Land and Natural Resources Division should you have any questions on this matter.

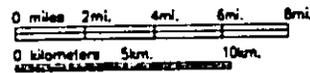
Sincerely yours,

Martha Ross
Deputy Administrator

LM:lm



ISLAND OF KAUAI

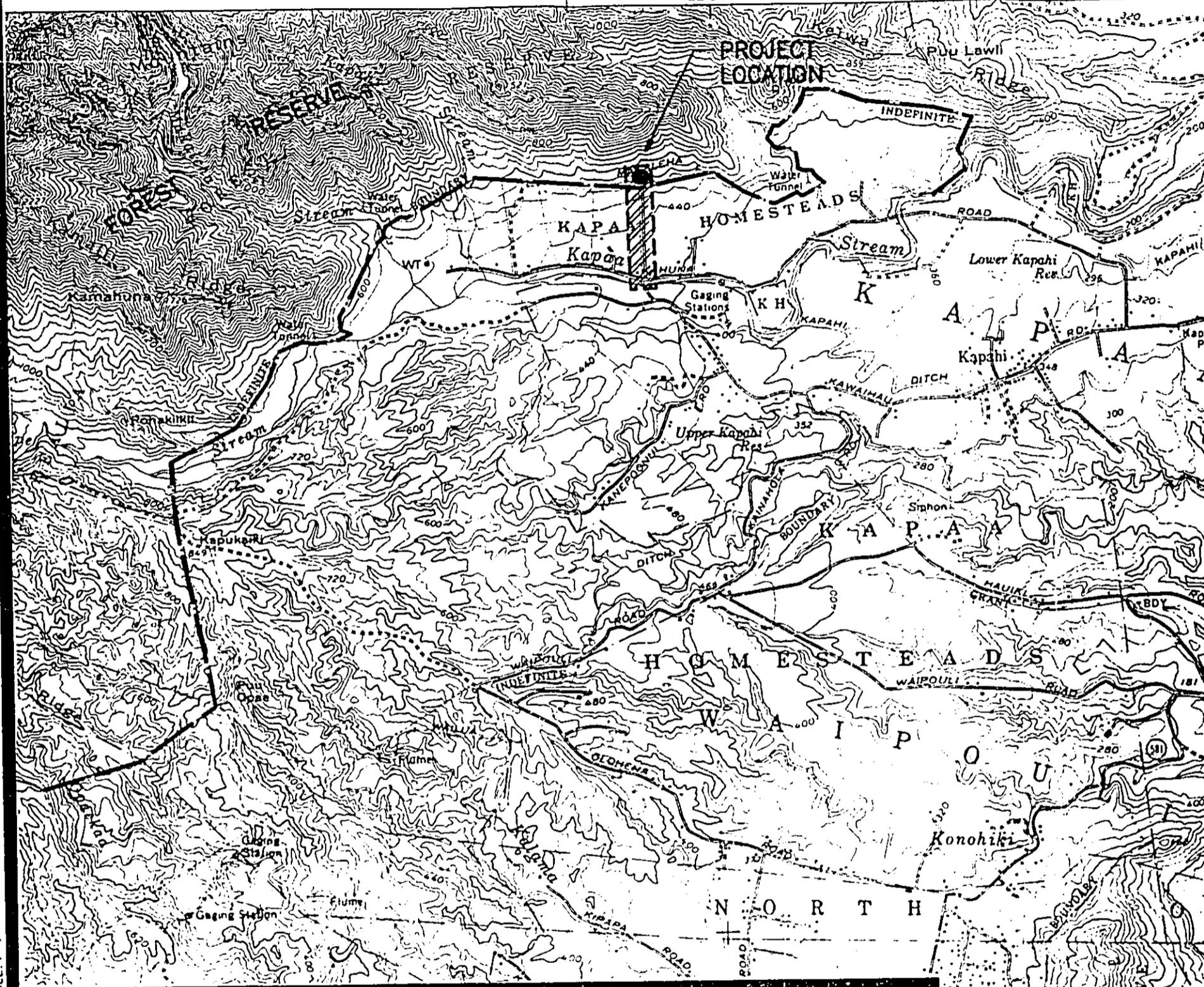


91057/91057/SL.DWG/SCALE: 1=1

TITLE	AREA MAP COUNTY OF KAUAI, STATE OF HAWAII	FIGURE 1
PROJECT	KAPAA HOMESTEAD WELL NO. 2 KAPAA, KAUAI, HAWAII	DATE OCT. 1996

22'30"

(ANAHOLA)



91057/EXS1 DWG/SCALE: 1"=100'

TITLE **PROJECT LOCATION MAP**
 COUNTY OF KAUAI, STATE OF HAWAII

FIGURE
2

PROJECT **KAPAA HOMESTEAD WELL NO. 2**
 KAPAA, KAUAI, HAWAII

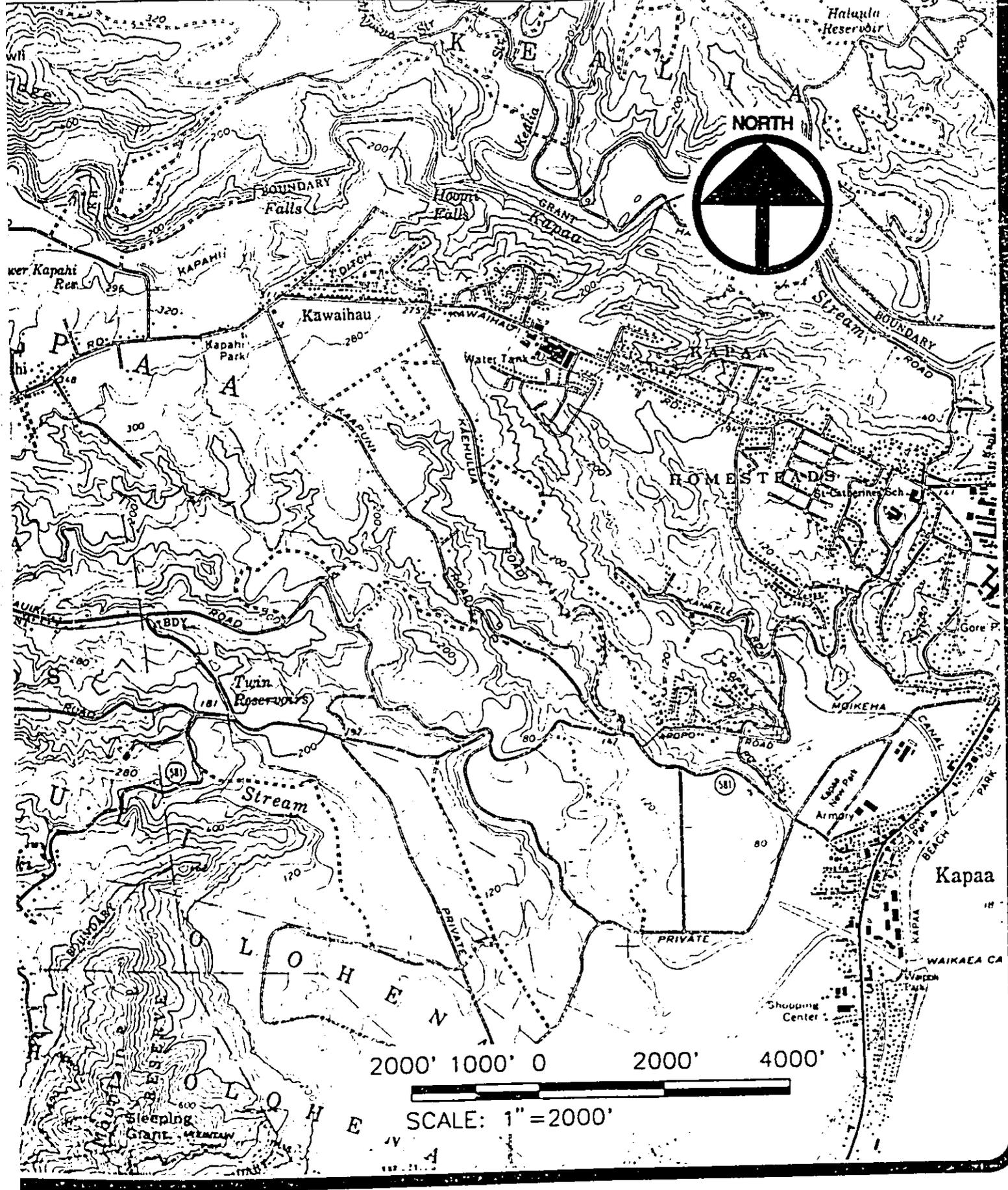
DATE
 OCT. 1996



(ANAHOLA)

20'

560 000 FEET

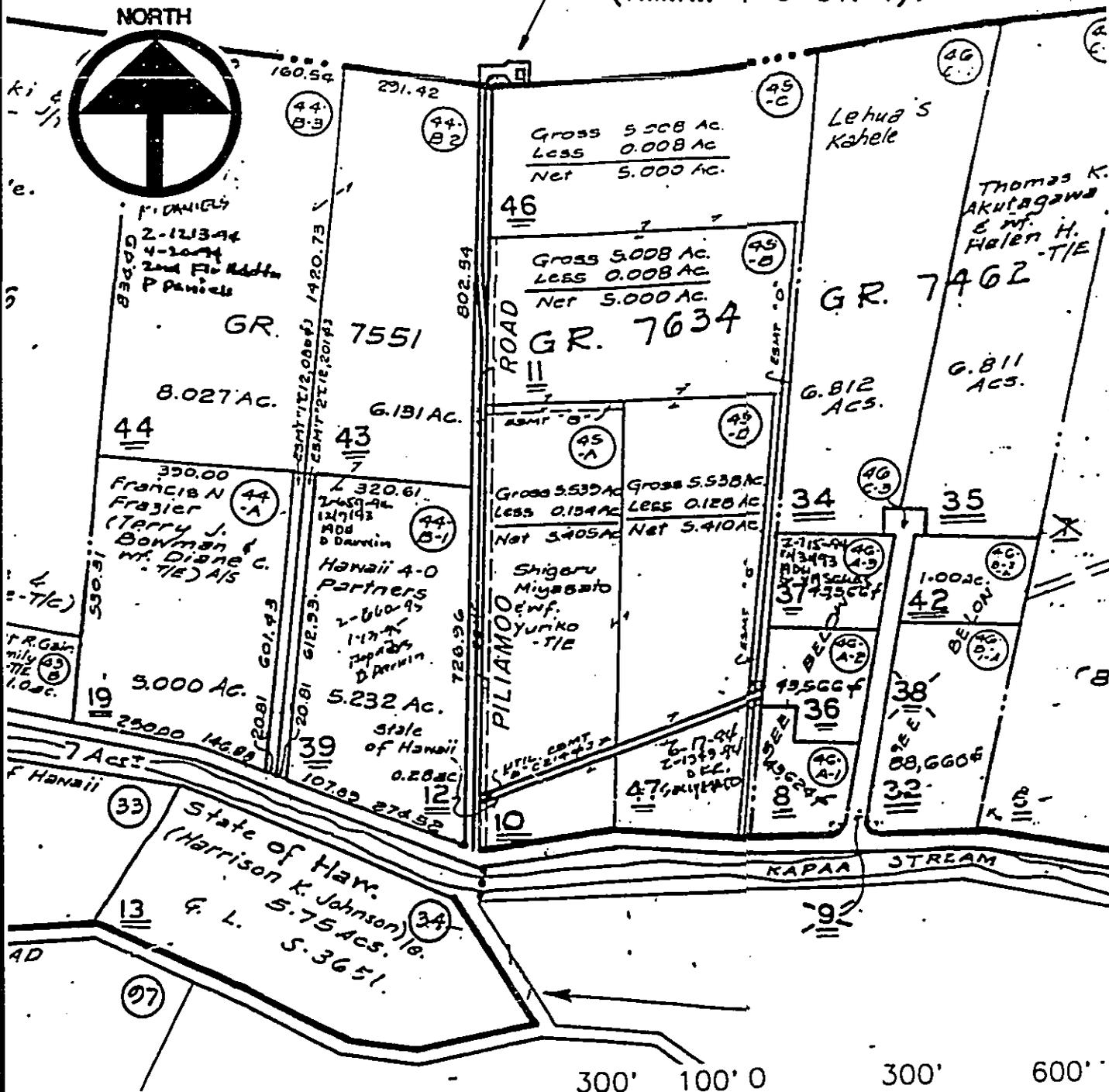


2000' 1000' 0 2000' 4000'

SCALE: 1" = 2000'

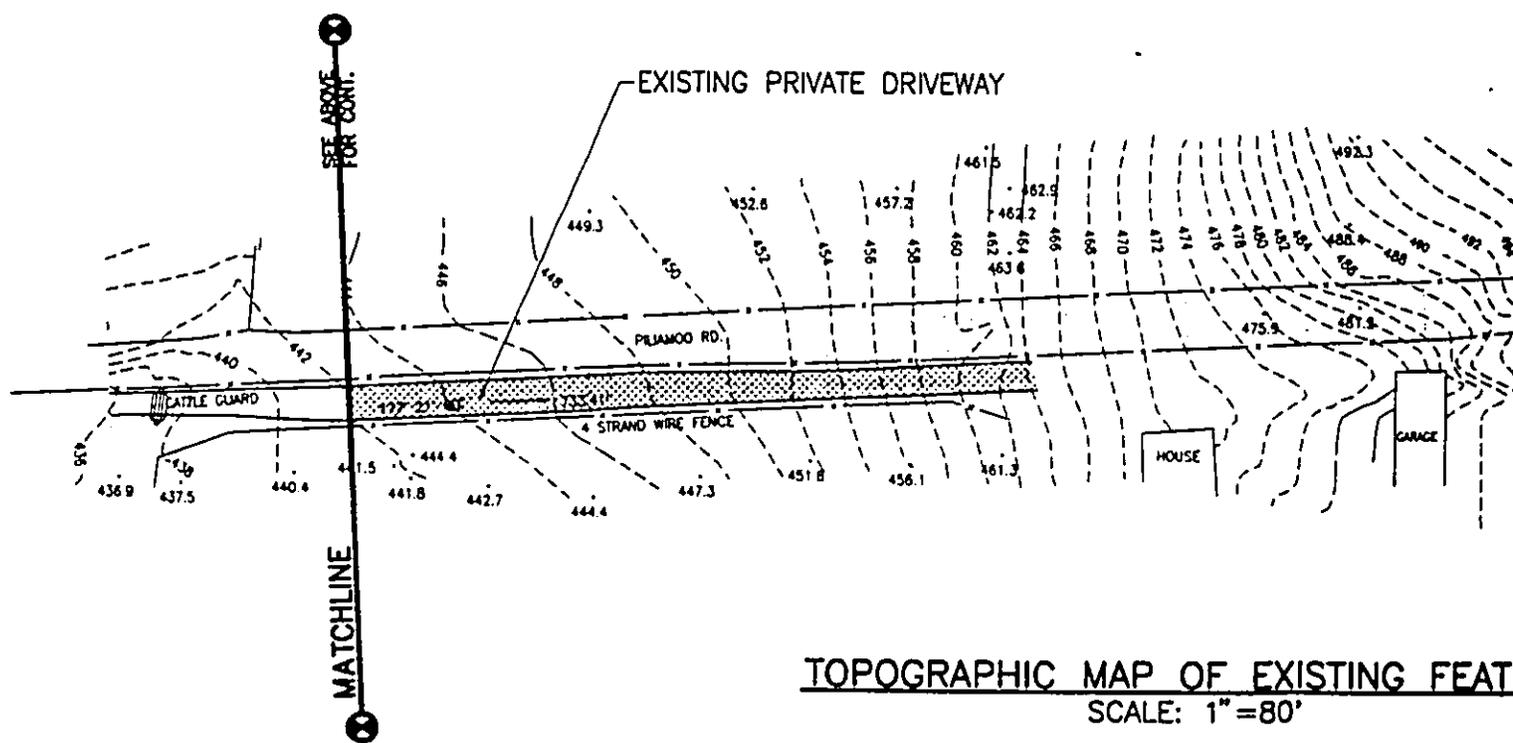
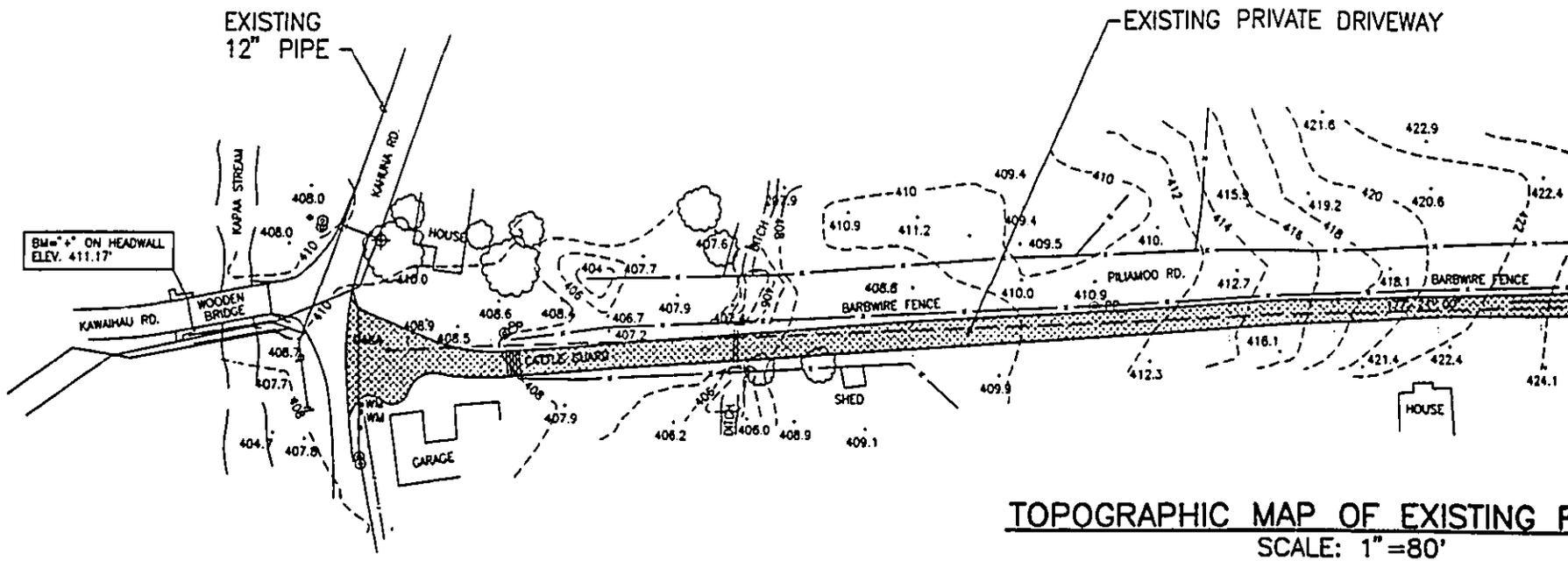
KEALIA FOREST RESERVE

WELL SITE LOCATION
(T.M.K.: 4-6-01: 1).



91057/EXST.DWG/SCALE: 1=1

<p>TITLE TAX MAP KEY PORTION OF T.M.K. PLAT 4-6-04</p>	<p>FIGURE 3</p>
<p>PROJECT KAPAA HOMESTEAD WELL NO. 2 KAPAA, KAUAI, HAWAII</p>	<p>DATE OCT. 1996</p>

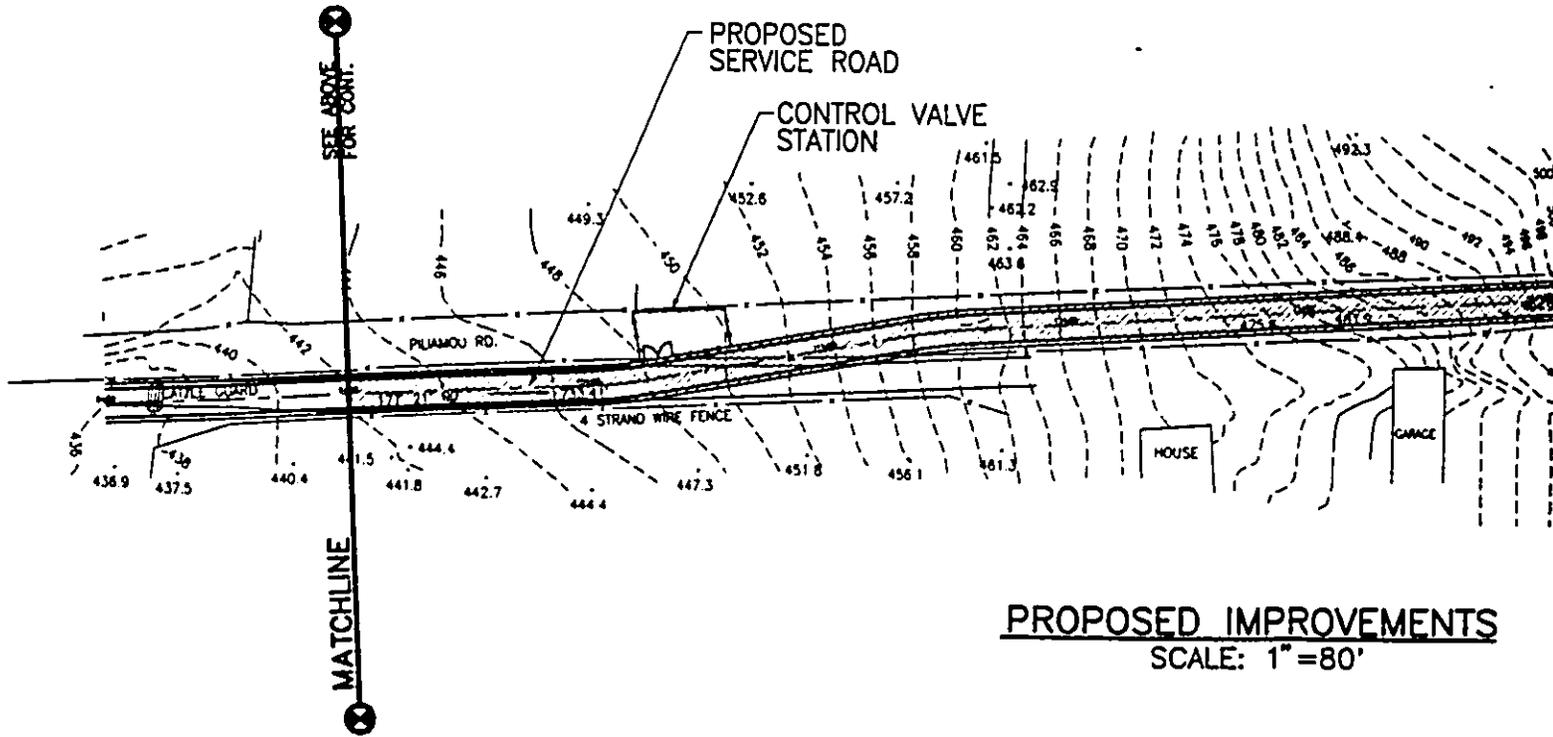
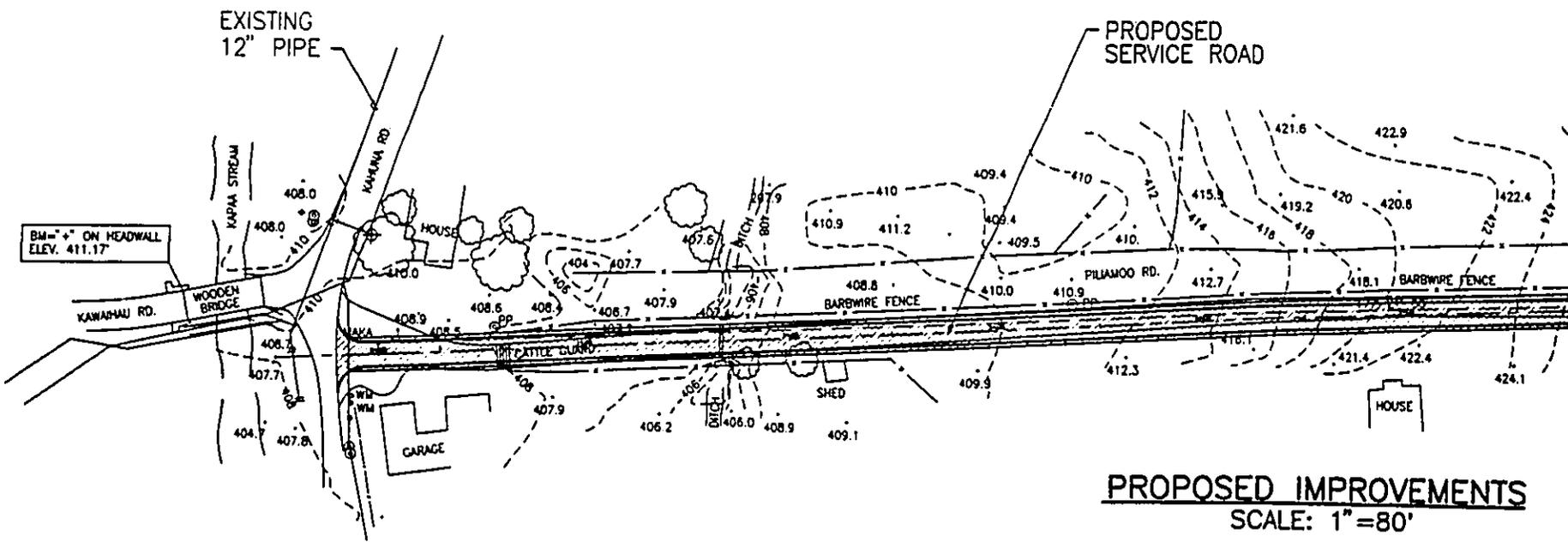


91057/EXST-PLN.DWG/SCALE: 1"=80'

<p>TITLE</p> <p>TOPOGRAPHIC MAP OF EXISTING FEATURES</p>	<p>FIGURE</p> <p>4</p>
<p>PROJECT</p> <p>KAPAA HOMESTEAD WELL NO. 2 KAPAA, KAUAI, HAWAII</p>	<p>DATE</p> <p>OCT. 1996</p>

LEGEND:

 EXISTING PRIVATE DRIVE



91057/PROP-PLN.DWG/SCALE:1=80

<p>TITLE</p> <p>PROPOSED IMPROVEMENTS</p>	<p>FIGURE</p> <p>5</p>
<p>PROJECT</p> <p>KAPAA HOMESTEAD WELL NO. 2</p> <p>KAPAA, KAUAI, HAWAII</p>	<p>DATE</p> <p>OCT. 1996</p>

LEGEND:

 PROPOSED SERVICE ROAD

