BENJAMIN J. CAYETANO
GOVERNOR
STATE OF HAWAII

KALI WATSON
CHAIRMAN
HAWAIIAN HOMES COMMISSION

JOBIE M. K. M. YAMAGUCHI
DEPUTY TO THE CHAIRMAN

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



August 2,1996

Mr. Gary Gill, Director
Office of Environmental Quality Control
220 South King Street, Suite 400
Honolulu, Hawaii 96813

Dear Mr. Gill:

SUBJECT: Negative Declaration
Keonepoko-Nui 2 Exploratory Well
TMK: 3rd Div. 1-5-08: Portion of 1
Puna, Island of Hawaii

Enclosed are four (4) copies of the Final Environmental Assessment (Negative Declaration) for the proposed Keonepoko-Nui 2 Exploratory Well. The Department of Hawaiian Home Lands has reviewed the comments received during the 30-day public comment period which began on July 8,1996. Based on the analysis of the conditions and impacts presented in the Final Environmental Assessment, we have concluded that the proposed project will have no significant effect on the environment, and we have issued a negative declaration.

We request that this notice be published in the next OEQC Bulletin. A completed OEQC Bulletin Publication Form is enclosed as required.

Should you have any questions, please have your staff contact Gerald Lee, Chief of our Design and Construction Branch, at 586-3815.

Sincerely,

Mike Crozier, Administrator
Land Development Division

Enclosure

cc: Engineers Surveyors Hawaii, Inc.

99

~~1998~~-09-08-HI-FEA Keonepoko Nui 2 Exploratory Well
1996



Chapter 343, Hawaii Revised Statutes (HRS)

FINAL
Environmental Assessment
(Negative Declaration)

# KEONEPOKO - NUI 2
# EXPLORATORY WELL
# PAHOA, PUNA, HAWAII

Prepared for:

Department of Hawaiian Home Lands
State of Hawaii

Prepared by:

Engineers Surveyors Hawaii, Inc.
1020 Auahi Street
Suite No. 1, Building No. 6
Honolulu, Hawaii 96814

August, 1996

Chapter 343, Hawaii Revised Statutes (HRS)

FINAL
Environmental Assessment
(Negative Declaration)

# KEONEPOKO - NUI 2
# EXPLORATORY WELL
# PAHOA, PUNA, HAWAII

Prepared for:

Department of Hawaiian Home Lands
State of Hawaii

Prepared by:

Engineers Surveyors Hawaii, Inc.
1020 Auahi Street
Suite No. 1, Building No. 6
Honolulu, Hawaii 96814

August, 1996

TABLE OF CONTENTS

EXHIBITS

A. Location Map

B. Proposed Site Development Plan

C. Proposed Well Section

D. Plan Showing Existing and Proposed Water Wells in Relation to Dry Wells Under Construction

APPENDIX

A. "Hydrologic Feasibility of Additional Well Source at Keonepoko Reservoir Site (DWS), HHL Makuu Farm Lots, Pahoa, Puna, Hawaii," by Water Resource Associates.

B. Comments on the Draft Environmental Assessment

# I. SUMMARY

Chapter 343, Hawaii Revised Statutes (HRS)
FINAL
Environmental Assessment
For
Department of Hawaiian Home Lands
State of Hawaii

August, 1996

| | |
|---|---|
| PROPOSING AGENCY: | Department of Hawaiian Home Lands<br>State of Hawaii |
| ACCEPTING AUTHORITY: | Department of Hawaiian Home Lands<br>State of Hawaii |
| APPROVING AGENCY: | Department of Land and Natural Resources<br>State of Hawaii |
| PROJECT NAME: | Keonepoko - Nui 2 Exploratory Well |
| PROJECT LOCATION: | Keonepoko Reservoir and Well Site<br>Pahoa, Puna, Hawaii<br>Tax Map Key: Third Division: 1-5-08: Portion of 1 |
| STATE LAND USE DESIGNATION: | Agricultural District |
| COUNTY GENERAL PLAN DESIGNATION: | Orchard |
| COUNTY ZONING: | AG-20-A |
| LANDOWNER: | Land Division<br>Department of Land and Natural Resources<br>State of Hawaii |
| PERMITS REQUIRED: | Well Construction Permit<br>State Commission on Water Resource Management, DLNR |
| APPROVAL REQUIRED: | Well Design and Construction - County DWS |

## II. GENERAL DESCRIPTION OF THE ACTION'S CHARACTERISTICS

### A. INTRODUCTION

The Department of Hawaiian Home Lands (DHHL) needs to develop a source of potable water supply for its Makuu Farm and Agricultural Lots. This environmental assessment is for drilling, casing and testing of an exploratory well at the existing DWS Keonepoko weil and reservoir site. The site is located alongside Highway 130 at an approximate elevation of 605 feet, just south of the Makuu Farm and Agricultural Lots, TMK: 1-5-08: portion of 1. It's location is approximately 2000 feet from the Pahoa Landing Airstrip on the opposite side of the highway in the Pahoa direction. (See Exhibit "A", Location Map). The area of the project site is 2.113 acres.

A hydrologic feasibility report was made by Water Resource Associates, which concludes that an exploratory well to provide additional potable water supply for the Makuu Farm and Agricultural Lots can be successfully located within the Keonepoko Reservoir and Well Site. The report is included in this assessment in Appendix "A". The County of Hawaii, Department of Water Supply (DWS) has reviewed this report and they have no objections.

If the exploratory well test results are satisfactory, the next phase will be the planning and design for converting the exploratory well into a production well with supporting production facilities including permanent pump, piping and controls. However, if the exploratory well testing is unsatisfactory or show any adverse effects to the existing source, then DHHL shall pursue another alternative source.

B. TECHNICAL CHARACTERISTICS

DHHL will be drilling and testing an exploratory well for potable water required for its Makuu Farm and Agricultural Lots. The well will be drilled to a depth of approximately 680 feet. The drilling and testing phase will be put out to bid and the successful bidder will employ a drilling method suitable for the project. This exploratory drilling and testing will provide data on well capacity and drawdown and water quality to determine compliance with applicable potable water quality standards.

The proposed exploratory well will be located a minimum of 100 feet from the existing Keonepoko Nui 1 well (See Exhibit "B", Proposed site Development Plan).

The proposed drilling site is at the 603 ft. elevation, the proposed well casing will be 16 inches interior diameter and the hole diameter will be 22 inches. The solid casing will be 590 ft. of 3/8 inch steel and the screen casing will be 60 ft. below that. For the screen casing, the openings will be 80 square inches per linear foot and the steel wall thickness will be 5/16 inch. There will be an open hole extending 30 ft. below the screen casing if field conditions warrant it. The proposed Well Section (See Exhibit "C") is being reviewed by DWS and is subject to change. Final elevations of the well components will be submitted to DLNR in the well completion/abandonment report.

Proposed pump capacity for the well is 700 gallons per minute.

An application for a well construction permit will be made to "Commission on Water Resource Management" (CWRM), DLNR.

The exploratory well drilling site will require a minimum of clearing and grubbing. Upon confirmation of successful yield and water quality from the exploratory drilling, a source facility will be designed and developed such that potable water from this second production well will be pumped into the existing 0.5 mg Keonepoko reservoir by a submersible pump whenever operation requires. A control building and ancillary equipment will be provided by DHHL during the production well phase. The production well, building and equipment will be turned over to DWS who will become the operators and be responsible for maintenance. Conversion of the exploratory well into a production well will require a pump installation permit from the Commission on Water Resources Management.

Per review comments from the Office of Environmental Quality Control (See Appendix "B"), if the exploratory well test results are satisfactory, a new environmental assessment must be prepared before converting the exploratory well into a production well.

DHHL has under construction their Makuu Farm and Agricultural Lots Subdivision. Per consultation with DWS, DHHL was informed and assured that water will be available for those lots below the 520 ft. elevation from their existing Keonepoko 623 ft. elevation reservoir upon completion of DHHL's production well.

However, all lots above the 520 ft. elevation must be served by a separate higher source service system. DHHL has prepared a "Master Plan Water System Study for Makuu Farm and Agricultural Lots" (MPWSS). In the plan the high service water system must be developed and constructed if the lots above 520 ft. elevation are provided with potable water. A separate Environmental Assessment will be required for this separate high service system which will include source, storage and transmission.

This environmental assessment covers the exploratory well at the existing Keonepoko well and reservoir site. This well (if the well test results are satisfactory) will provide potable water for the 99 lots in the low service or below the 520 ft. elevation area of Makuu Farm and Agricultural Lots Subdivision. It will also serve for an additional 30 future DHHL farm lots being planned on the adjacent lot leased by FAA. Based upon the MPWSS, the projected average daily water demand is 2,400 gallons per day (gpd) per farm lot. So for the 99 lots in the low service area, the projected average daily demand is 237,600 gpd. For the 30 future lots, the projected average daily demand is 72,000 gpd. The combined projected average daily demand of 309,600 will translate to a maximum daily demand of 464,400 gpd. Allocation of the excess potable water yield will be under the jurisdiction of DWS.

C. FUNDING AND PHASING

This exploratory well drilling project is planned to be done in one phase with an estimated construction cost is $600,000.00. DHHL has funding allocated for this project and will be advertising for construction bids as soon as approvals are obtained.

## III. THE AFFECTED ENVIRONMENT

### A. PHYSICAL CHARACTERISTICS

The ground underlying the site are classified as Lava Flows, Pahoehoe (rLW) according to the "Soil Survey of Island of Hawaii, State of Hawaii" produced in 1973 by the U.S. Department of Agriculture, Soil Conservation Service.

Lava flows, Pahoehoe (rLW), has been mapped as a miscellaneous land type. This lava has a billowy, glassy surface that is relatively smooth. In some areas, however, the surface is rough and broken, and there are hummocks and pressure domes.

Pahoehoe lava has no soil covering and is typically bare of vegetation except for mosses and lichens. In the areas of higher rainfall, however, scattered ohia trees, ohelo berry, and aalii have gained a foothold in cracks and crevices.

This miscellaneous land type is at an elevation from sea level to 13,000 feet. The annual rainfall ranges from 10 inches to more than 140 inches.

Some flat slabs of pahoehoe lava are used as facings on buildings and fireplaces. In areas of higher rainfall, this lava contributes to the ground-water supply. (Capability subclass VIIIs, nonirrigated).

B. GEOLOGICAL CHARACTERISTICS

This discussion is covered in the report "Hydrologic Feasibility of Additional Well Source at Keonepoko Reservoir Site (DWS), HHL, Makuu Farm Lots, Pahoa, Puna, Hawaii" (See Appendix A).

C. SITE DESCRIPTION

The terrain of the parcel is relatively flat, vegetated mostly with bushes and grass. Other vegetation include few ohia and guava trees. The area is inhabited mainly by rodents, such as mongoose. No known endangered species of plant or animal life exist in the area. Furthermore, no known historical sites are present in this portion of the parcel.

Land use designations for the parcel are as follows: County General Plan - orchards; State Land Use - Ag; and Zoning Ag. 20-A. Electricity and telephone lines serves this parcel.

The existing reservoir and control building are visible from the Keaau - Pahoa Highway which fronts the project site. The existing improved site has been landscaped for aesthetics. There will be no adverse long term visual or aesthetic impacts since the well, future control building, fencing and piping will be developed adjacent and inland of the existing facilities and will be properly landscaped.

D. HYDROLOGIC CHARACTERISTICS

As shown on the Flood Insurance Rate Map, the project site is in Zone "X." Areas in Zone "X" have been determined to be outside of the 500-year flood plain.

At elevation 600 plus ft. And approximately 5 miles from the coastline, tsunami inundation is rather remote. At the site an existing drywell mainly disposes reservoir overflow when they occur.

Drywells are being constructed within the Makuu Farm Lots Subdivision to dispose of storm runoff. However, in accordance with State Department of Health regulations, all drywells are outside of the minimum one quarter mile setback from the existing and proposed water wells (See Exhibit "D", Plan Showing Existing and Proposed Water Wells in Relation to Drywells Under Construction).

## IV. SUMMARY OF MAJOR IMPACTS AND MITIGATION MEASURES

The proposed project will not create adverse long term environmental impacts on the site or surrounding area.

On a short term basis, there will be dust and noise increases due to construction activities. These factors should not be a problem since project specifications will require proper methods be used to achieve noise reduction and dust prevention. Such methods could include mufflers attached to construction equipment and watering.

## V. ALTERNATIVES CONSIDERED

### A. DO NOTHING ALTERNATIVE

Per consultation with DWS, this is not a viable alternative. An additional potable water source is required to serve the DHHL Makuu Farm and Agricultural Lots. This proposed project will meet the needs of the subdivision's low pressure lots which includes 99 farm lots under construction and 30 future farm lots. Without this additional source of water, these DHHL homesteads will be without DWS supplied water. The goal of DHHL is to provide their lessees with water service that's up to county standards, as funding permits.

B. ALTERNATIVE SITE

An alternative site has been identified and studied. This is described in the "Master Plan Water System Study for Makuu Farm and Agricultural Lots." That well site is planned to be at the roughly 800-foot elevation (See Exhibit A). However, that site is not developed, is over a mile above the subdivision and the development cost is much more excessive than available funds. Therefore, this alternative was not considered because the DWS's existing Keonepoko well and reservoir site is immediately available, has the approval of DWS and construction will cost much less at the Keonepoko well and reservoir site than at the alternative site.

## VI. DETERMINATION, FINDINGS AND REASONS SUPPORTING DETERMINATION

After completing an assessment of the potential environmental effects of the proposed exploratory well drilling and consulting with other governmental agencies, it has been determined that an Environmental Impact Statement (EIS) is not required. Therefore, the Department anticipates the issuance of a Negative Declaration.

1. The proposed action consists primarily of drilling and testing an exploratory well to determine well capacity, drawdown and water quality during this phase.

2. There will be no permanent degradation of existing ambient air and noise quality levels. During the actual drilling, there will be minor air pollution and noise resulting from the actual drilling, but these will not be permanent and will be within the State Department of Health Air Quality Standards.

3. There are no known endangered species of animal or plants within the project drilling sites.

4. There are no natural, historic, or archaeological sites within the project drilling sites.

5. The project is consistent with DWS plans for water source development. Exploratory well development by the Department is a permitted use by the State and County zoning designations.

6. This project, if successful as planned, will provide potable water for the low pressure service system of DHHL's Makuu Farm and Agricultural Lots Subdivision which is under construction. Any adverse impacts of the proposed project have been determined to be insignificant. The applicant will comply with applicable statutes, ordinances, and rules of the Federal, State, and county governments during the implementation of the actual drilling, casing and testing phase.

## VII. LIST OF AGENCIES CONSULTED IN THE PREPARATION OF THIS ENVIRONMENTAL ASSESSMENT

Commission on Water Resource Management
Department of Land and Natural Resources
State of Hawaii

Department of Water Supply
County of Hawaii

Planning Department
County of Hawaii

Land Division
Dept. Of Land and Natural Resources
State of Hawaii

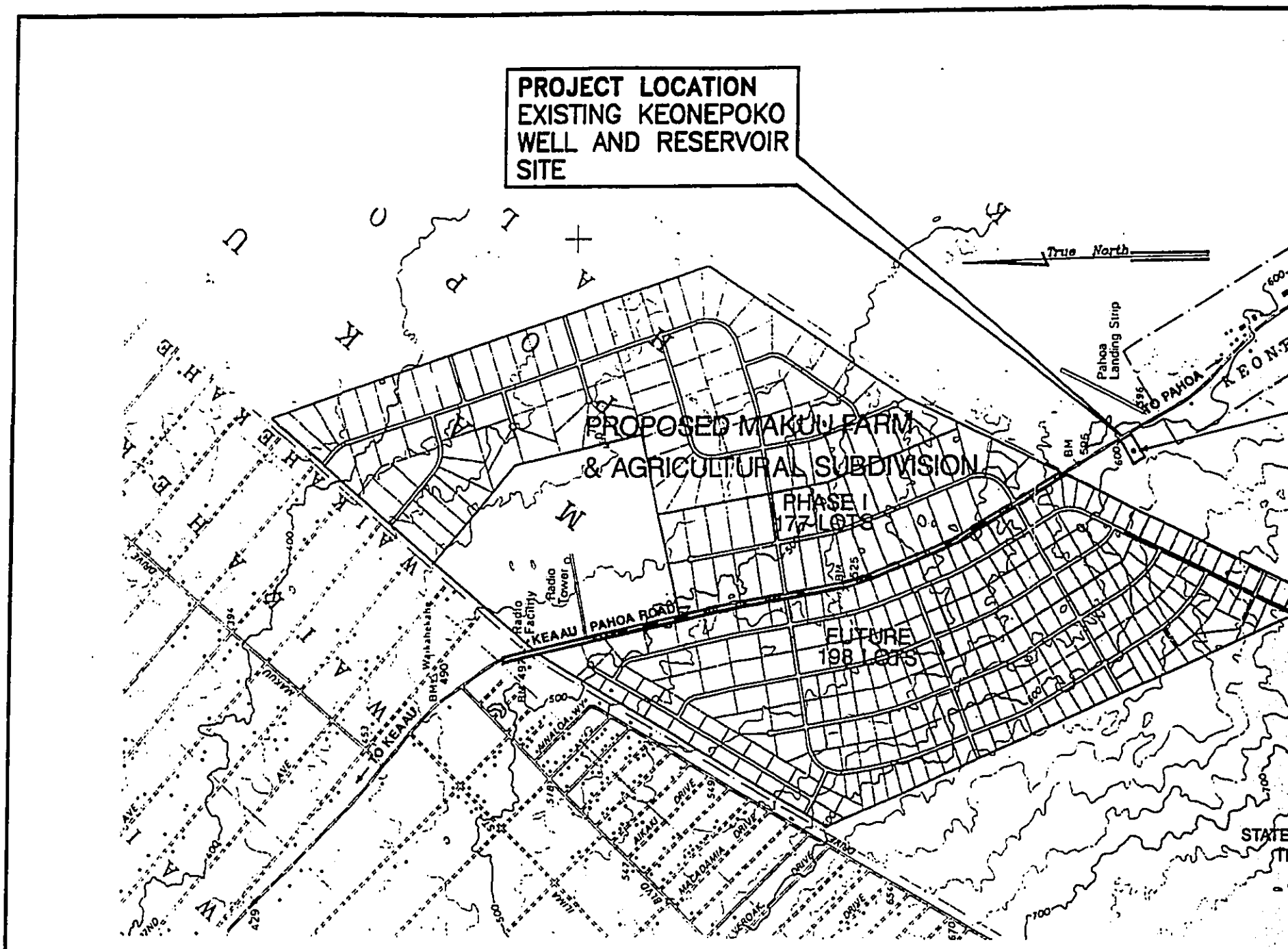
## VII. LIST OF AGENCIES CONSULTED IN THE PREPARATION OF THIS ENVIRONMENTAL ASSESSMENT

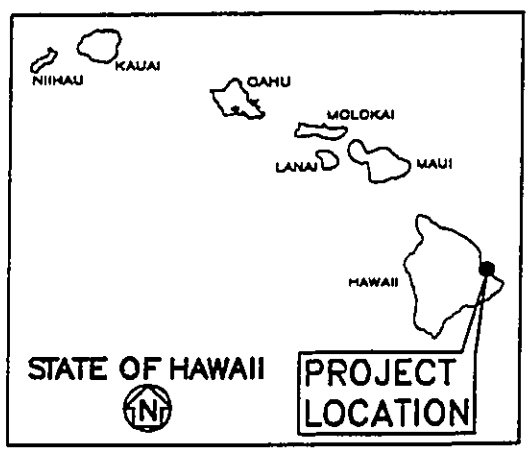
Commission on Water Resource Management
Department of Land and Natural Resources
State of Hawaii

Department of Water Supply
County of Hawaii

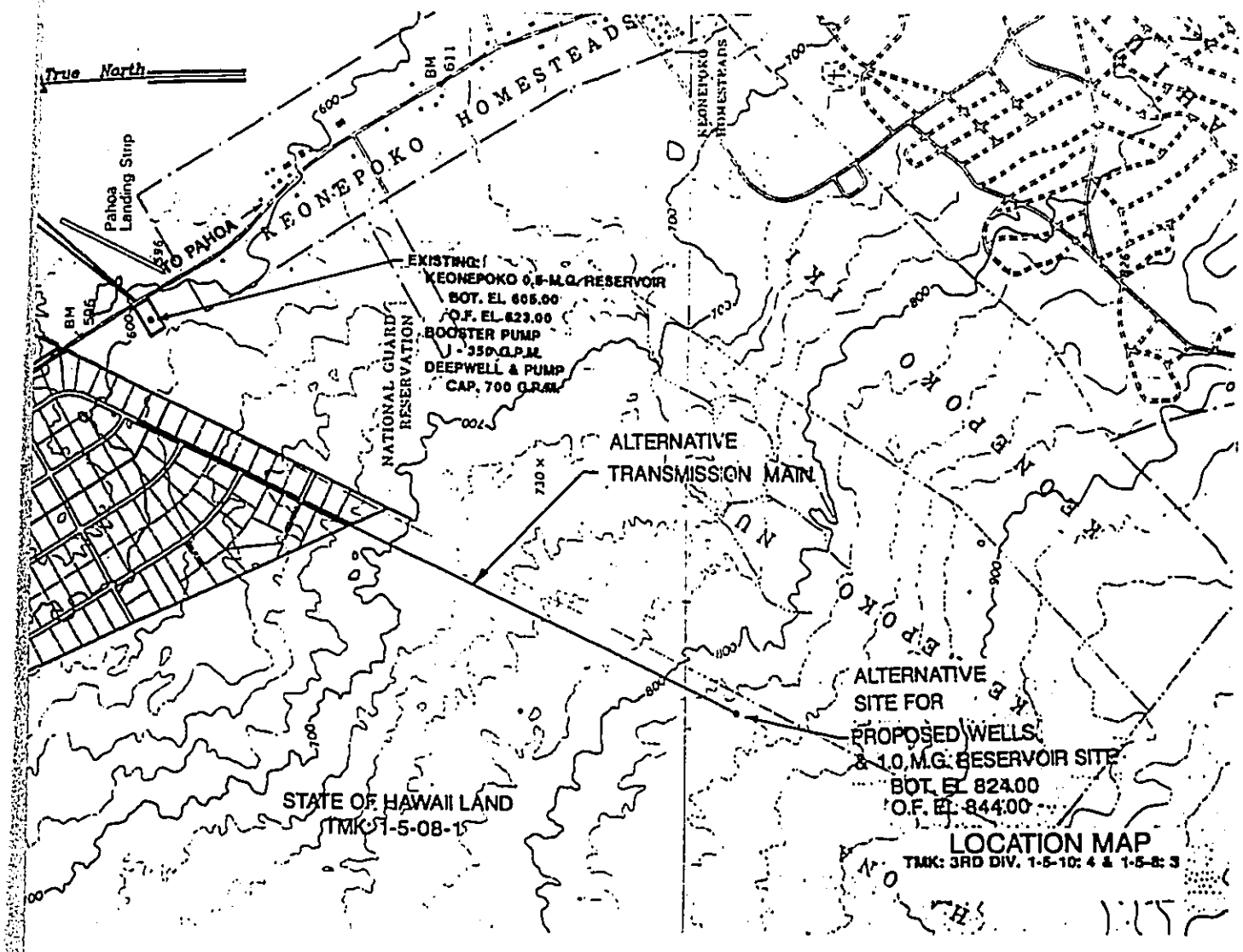
Planning Department
County of Hawaii

Land Division
Dept. Of Land and Natural Resources
State of Hawaii



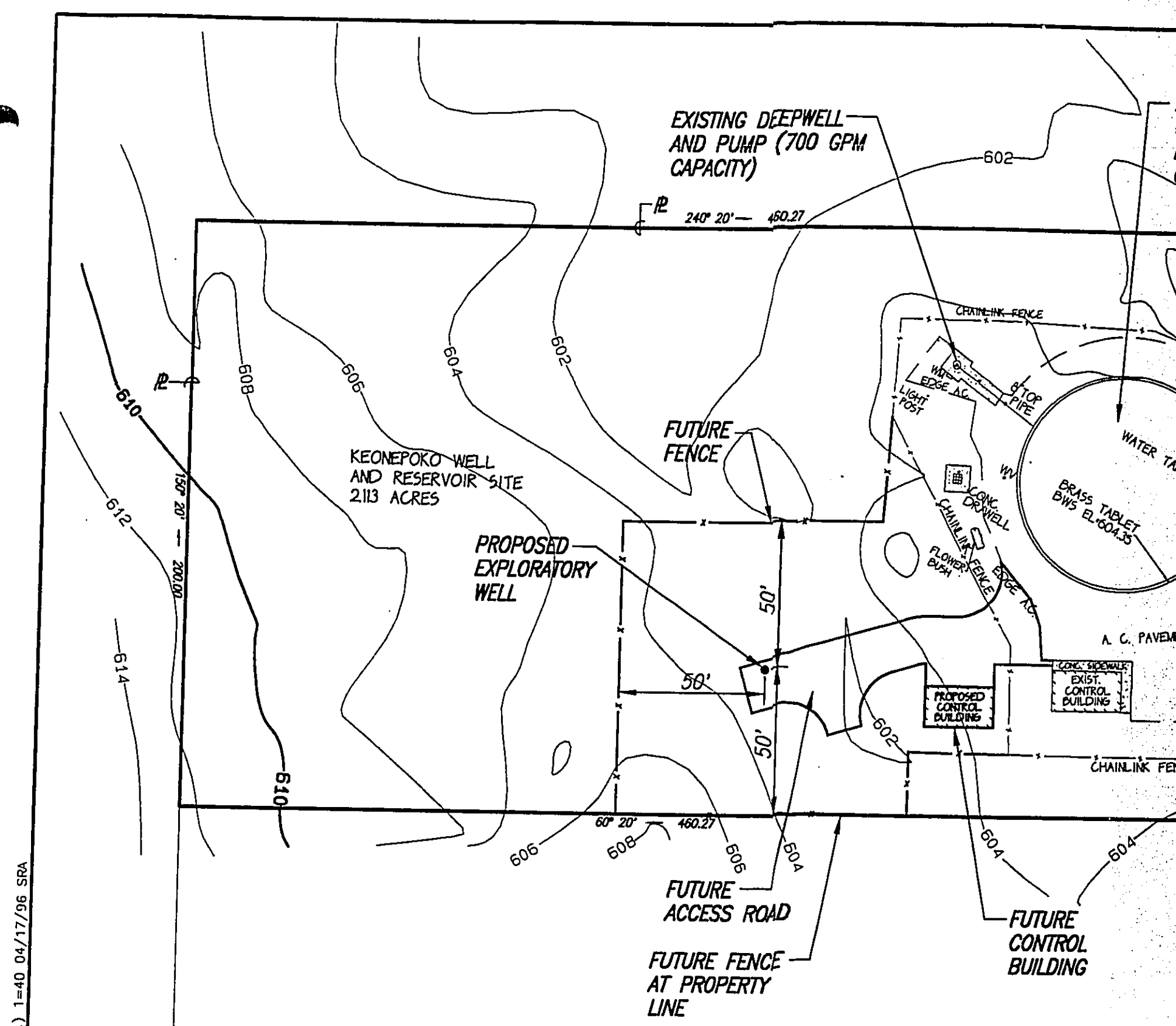




REFERENCE: "MASTER PLAN WATER SYSTEM STUDY FOR MAKUU FARM AND AGRICULTURAL LOTS", PREPARED BY ENGINEERS SURVEYORS HAWAII, INC., JULY 1994.




# EXHIBIT – A
# LOCATION MAP

SCALE: 1 IN. = 2000 FT.




85-180.9 f:EXH-A d:MAKUU (1) 1=40 04/17/96 SRA

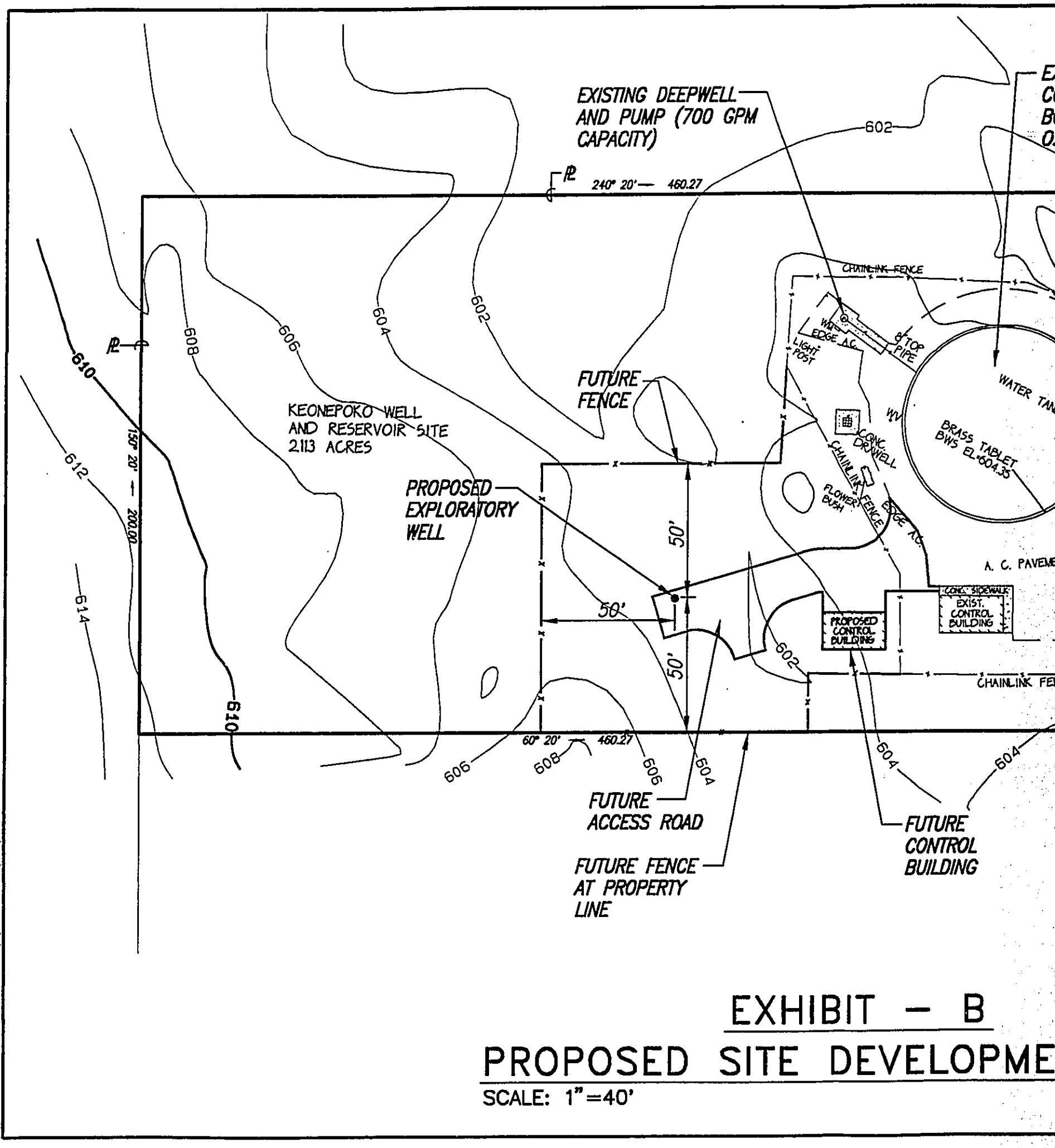
# EXHIBIT – B

# PROPOSED SITE DEVELOPME

SCALE: 1"=40'

# CORRECTION

THE PRECEDING DOCUMENT(S) HAS BEEN REPHOTOGRAPHED TO ASSURE LEGIBILITY
SEE FRAME(S)
IMMEDIATELY FOLLOWING

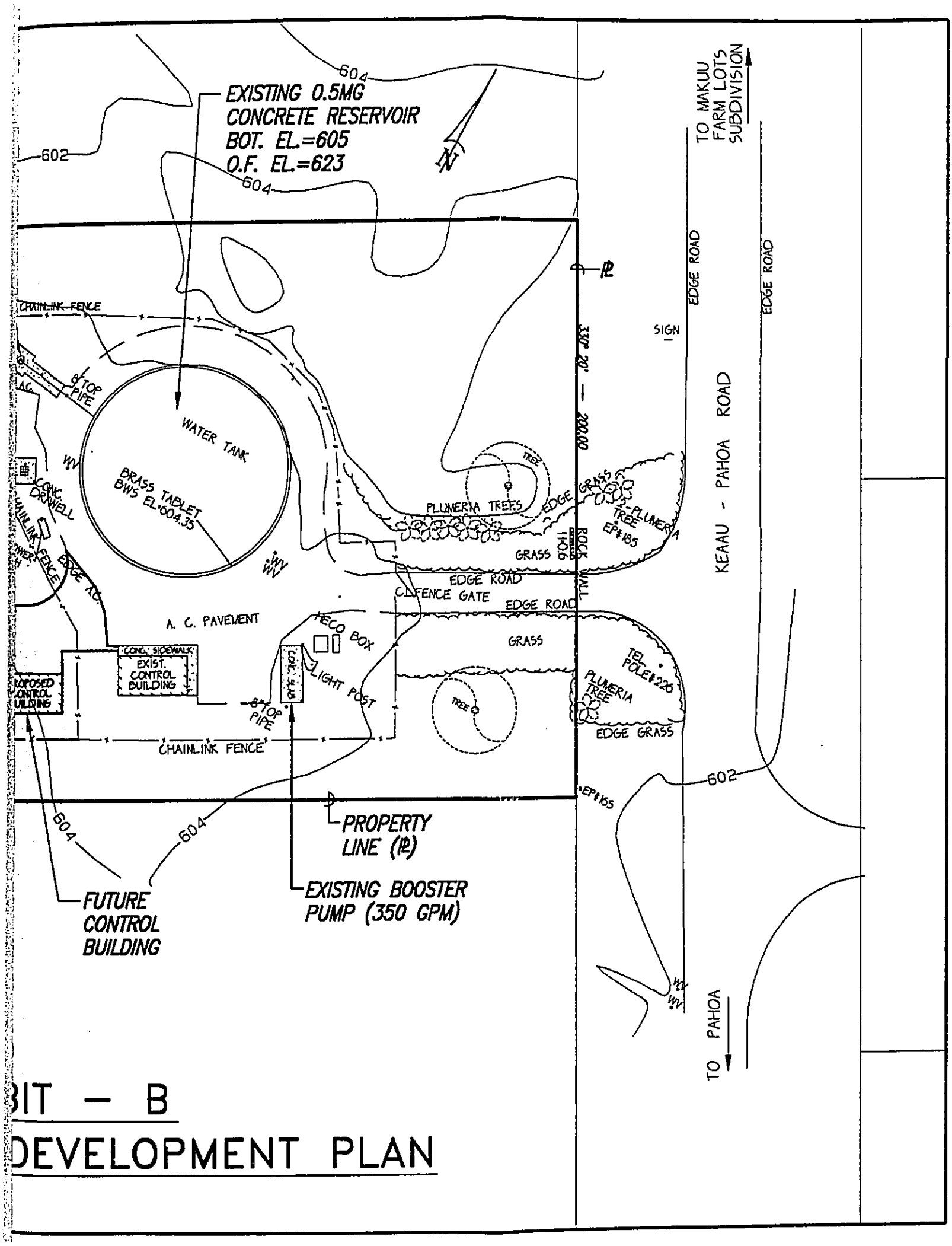



85-180.9 f:EXH-A d:MAKUU (1) 1=40 04/17/96 SRA

# EXHIBIT - B

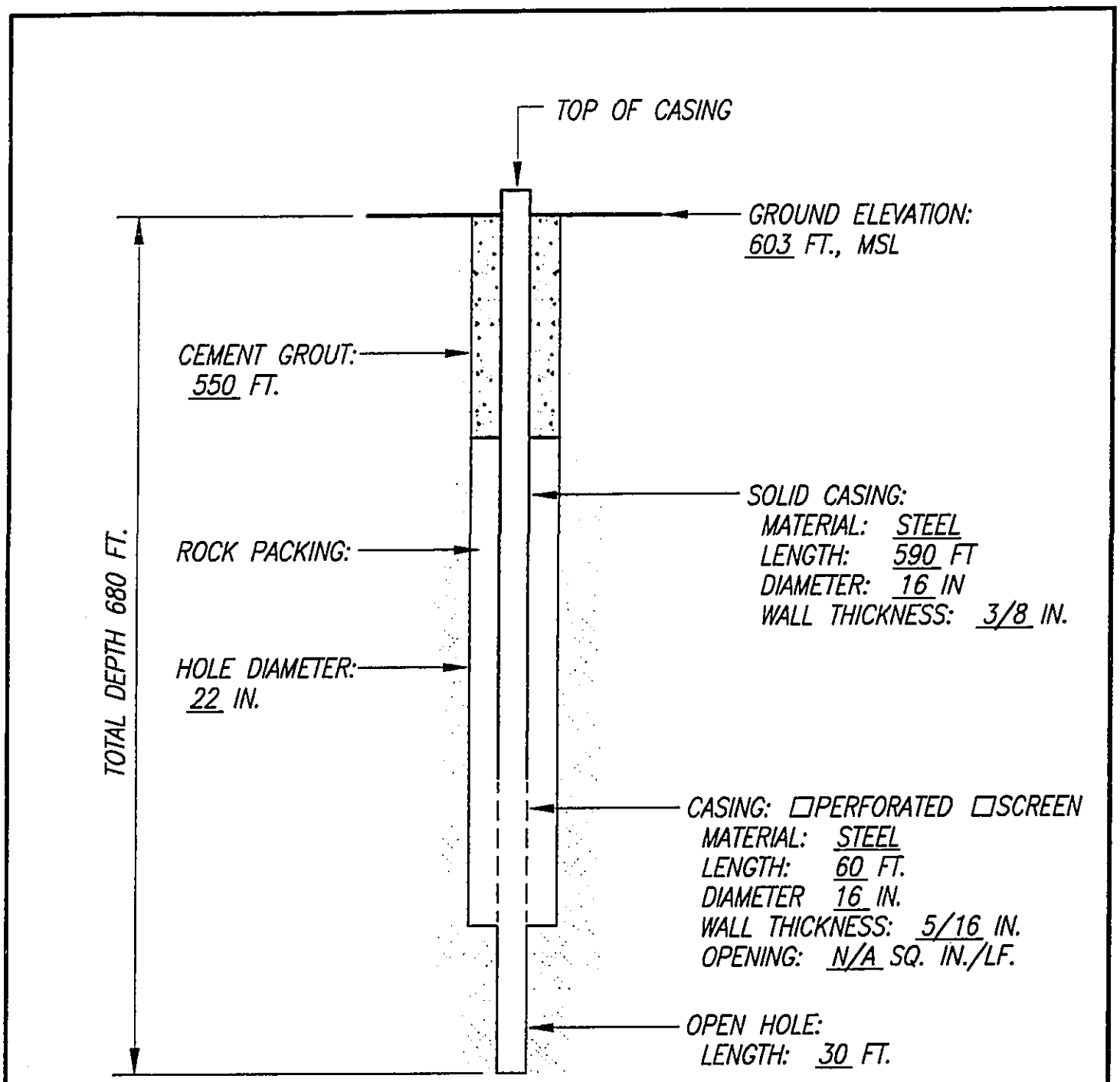
# PROPOSED SITE DEVELOPME

SCALE: 1"=40'



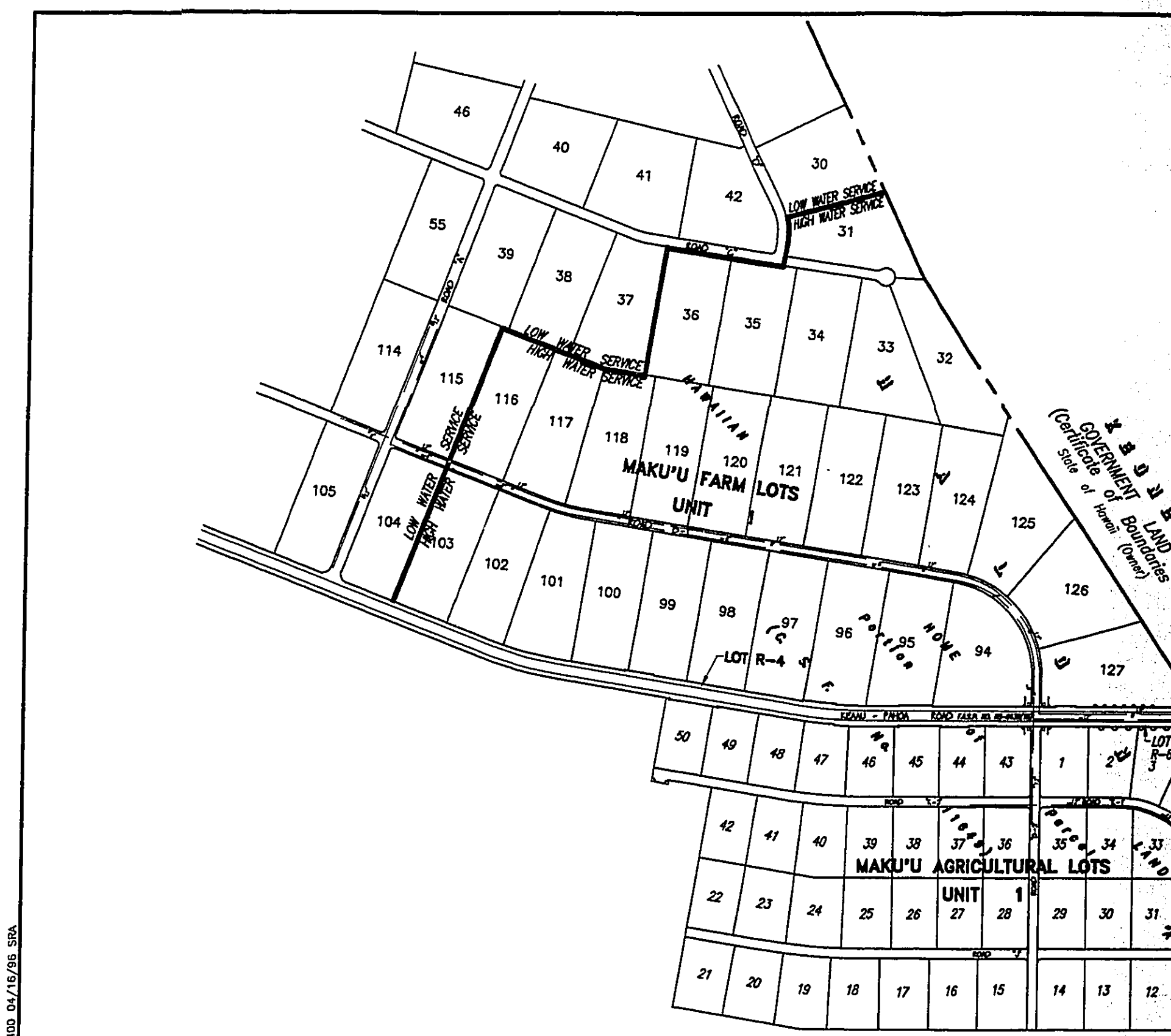

BIT – B

DEVELOPMENT PLAN




# EXHIBIT – C
# PROPOSED WELL SECTION
NOT TO SCALE

NOTE:
SUBJECT TO AGENCY REVIEW AND REVISIONS.

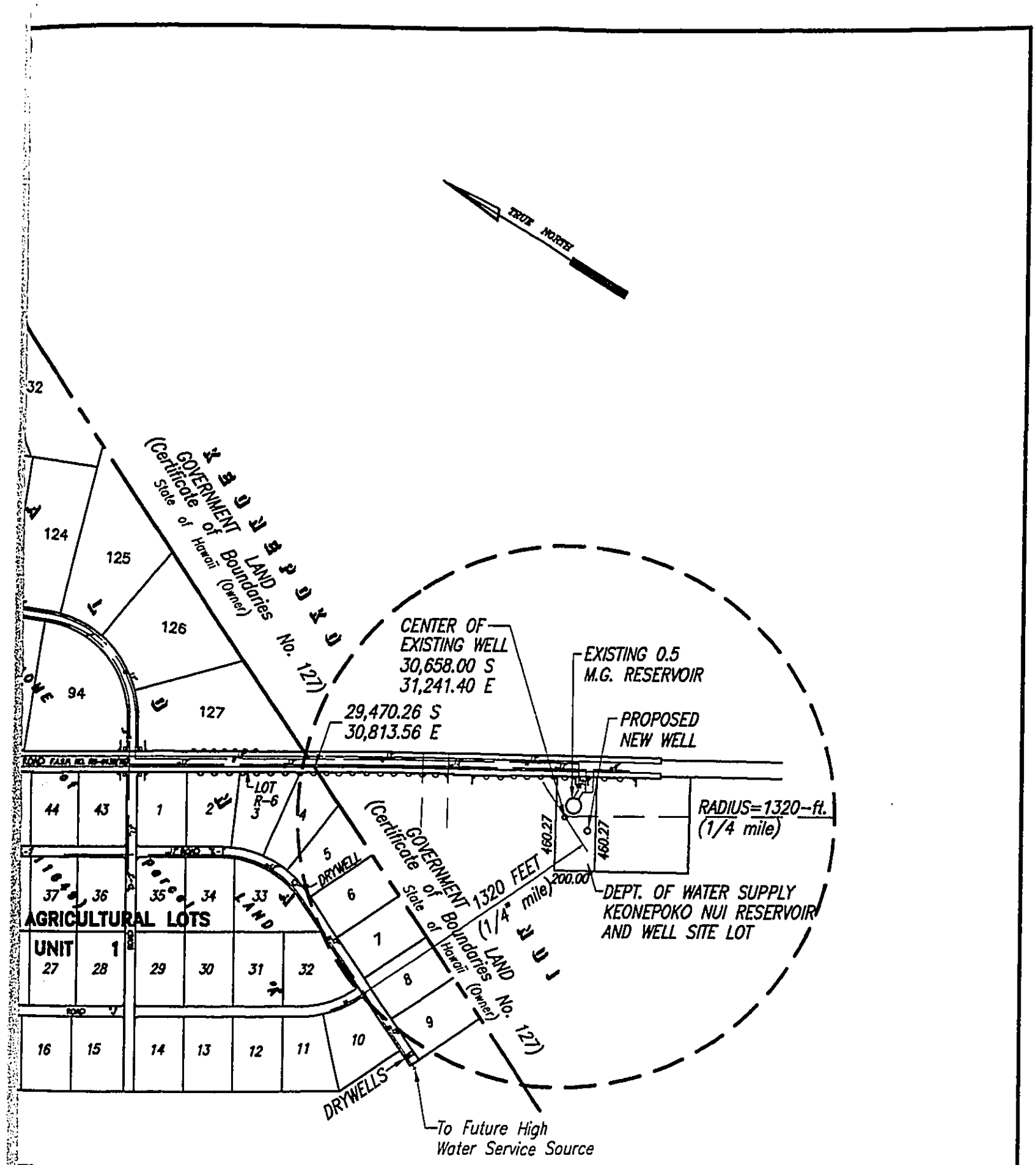



85-180.9 f:EXH-B d:MAKUU ( ) 1=400 04/16/96 SRA

# EXHIBIT – D

## PLAN SHOWING EXISTING AND PROPOSED
## IN RELATION TO DRY WELLS UNDER C

SCALE: 1"=400'




# T – D

# ND PROPOSED WATER WELLS

# LLS UNDER CONSTRUCTION

=400'

**APPENDIX A**

" HYDROLOGIC FEASIBILITY OF ADDITIONAL
WELL SOURCE AT KEONEPOKO RESERVOIR SITE (DWS),
HHL MAKUU FARM LOTS, PAHOA, PUNA, HAWAII, "
BY WATER RESOURCE ASSOCIATES.

# Hydrologic Feasibility of Additional Well Source at Keonepoko Reservoir Site (DWS), HHL Makuu Farm Lots, Pahoa, Puna, Hawaii

## INTRODUCTION

Hawaiian Home Lands needs to develop a source of water supply for its Makuu Farmlot Subdivision located north of Pahoa town. One alternative being considered is to drill a well at the Keonepoko Reservoir Site, which belongs to the Hawaii County Department of Water Supply (see Figure 1). The site is located alongside Highway 130 at an approximate elevation of 605 feet, just south of the farm lots.

An existing deep well, Keonepoko Nui 1, is located within the reservoir site and it has an installed pump capacity of 700 gpm. This report discusses the hydrologic feasibility of developing an additional well source within this reservoir site to serve the water needs of the Makuu Farmlots Subdivision.

## PAHOA AQUIFER SYSTEM

***Boundaries.*** The proposed project is located within the Pahoa Aquifer System in an area of high rainfall. The aquifer system, which is a part of the 564 square-mile Kilauea Hydrologic Sector, embraces a wedge-shaped area of 222 square miles extending from Kilauea Crater eastward to the ocean between the Kilauea East Rift Zone and the Volcano-Keaau Highway (see Figure 2).

***Geology.*** The Pahoa Aquifer System is comprised chiefly of basaltic flank flows of the Puna volcanic series. These basaltic flows are geologically young (30 to 10,000 years at the surface), relatively unweathered, highly permeable, and typically yield water readily to wells. The lavas are dike-free, except in the Kilauea East Rift zone.

Due to their young age and lack of weathering, the permeable basalts readily absorb rainfall and streams and streamflows are essentially nonexistent.

***Groundwater Recharge.*** Within the Pahoa Aquifer System, median rainfall ranges from about 75 inches a year near Cape Kumukahi to about 190 inches near the town of Mountain View. The estimated volume of rainfall amounts to 1,530 million gallons per day (mgd) and the estimated groundwater recharge amounts to 994 mgd, or approximately 65% of rainfall (Water Resources Protection Plan, Commission on Water Resource Management. June 1990).

***Sustainable Yield.*** The sustainable yield of the Pahoa Aquifer System has been estimated in the 1990 Water Resources Protection Plan to be 435 mgd, or 44% of groundwater recharge. Sustainable yield, a term used in Hawaii to define the amount of ground water that can be withdrawn from an aquifer system, is based upon selecting a head level which is a fraction of the original, or pre-development, head.

## AVAILABILITY OF GROUND WATER

***Existing Wells and Water Use.*** The only wells within a two-mile radius of the Keonepoko site are the two Department of Water Supply Pahoa Wells 2A and 2B (2986-01, 02) located to the south and two private domestic wells (3185-01, 02) located to the east. These wells, plus the Keonepoko Nui Well, have a combined total pump capacity of approximately 2.4 mgd and an average water withdrawal of only 1.8 mgd (1990-91 data).

The Pahoa area has an abundant supply of basal ground water of high quality. For the future, the Department of Water Supply has contemplated the drilling of additional wells alternatively at the Keonepoko reservoir and well site, the Pahoa well field, or at another site in order to meet anticipated increases in water use and improve system reliability (Hawaii County Water Use and Development Plan).

***Groundwater Flow.*** The Keonepoko reservoir site is centrally located within the Pahoa Aquifer System. This aquifer is the island's largest, in terms of groundwater recharge (994 mgd) and sustainable yield (435 mgd).

Presumably, ground water flows in a general eastward direction, from areas of highest rainfall toward eventual discharge along the northeast coast of Puna. Using the median annual rainfall map (CWRM, 1990) the magnitude of groundwater

flowing eastward through the Keonepoko-Pahoa area is of the order of 50 mgd per mile width. This large amount together with the occurrence of a 600-foot thick basal lens having a head of 15 to 17 feet, the development of individual well fields with a pump capacity of at least 5 mgd should be easily attainable without any adverse effect on the aquifer's sustainable yield and water quality.

*Aquifer Characteristics/Well Spacing.* The basal aquifer underlying the Keonepoko-Pahoa area consists of extensive basaltic lava flows having hydrologic characteristics which rival those of the water-rich Pearl Harbor aquifer on Oahu. Fortunately, the Hawaii County Department of Water Supply conducted a reliable three-day pumping test (1977) on the Keonepoko Nui Well and the data confirms the highly permeable nature of the Puna basalts in the Keonepoko-Pahoa area. With an aquifer penetration of only 65 feet (depth of well = -50 feet, msl), the well has specific well capacity of 1600 gpm per foot drawdown, exceeding the performance of wells in the Pearl Harbor aquifer.

The drawdown and recovery of the Keonepoko Nui Well were essentially instantaneous and during the three days of pumping at 1,000 gpm, the well exhibited a stable drawdown of only 0.6 feet (see Figure 3). The chloride content of the well was also stable at 4.0 mg/l. The temperature of pumped water measured 67.5°F during the night. Elevated temperatures of up to 71°F were measured during the daytime and may have been caused by the use of recirculated pumped water to cool the diesel engine.

The Pahoa 2A Well, located approximately two miles south, has a specific well capacity of 628 gpm per foot of drawdown (about 40% that of the Keonepoko Nui Well). However, the well may not have been fully developed, based on a test pumping rate of only 314 gpm and a drawdown of 0.5 feet.

## CONCLUSION

The Keonepoko-Pahoa area is underlain by a thick, highly permeable basalt aquifer of high quality (6 mg/l chlorides). Based on a head of 15 to 17 feet, the basal lens in the area extends 600 feet or more below sea level. Ground water in the aquifer presumably flows in a general eastward direction from areas of highest rainfall toward ultimate discharge along the northeastern coast of Puna.

Groundwater flux in the area is of the order of 50 mgd per mile width along the Pahoa-Keaau Highway. Consequently, abundant groundwater resources are available in the basal aquifer and well fields with pump capacities of 5 mgd or more probably can be developed.

Pumping test data confirms the geologically expected high permeability of the Puna basaltic aquifer beneath the Keonepoko-Pahoa area. The stable drawdown in the Keonepoko Nui Well of less than a foot at a pumping rate of 1,000 gpm (1.4 mgd) suggests, together with experience, that individual wells within a well field located in the Keonepoko-Pahoa area can be spaced as close as 100 feet apart without any adverse interference between wells.

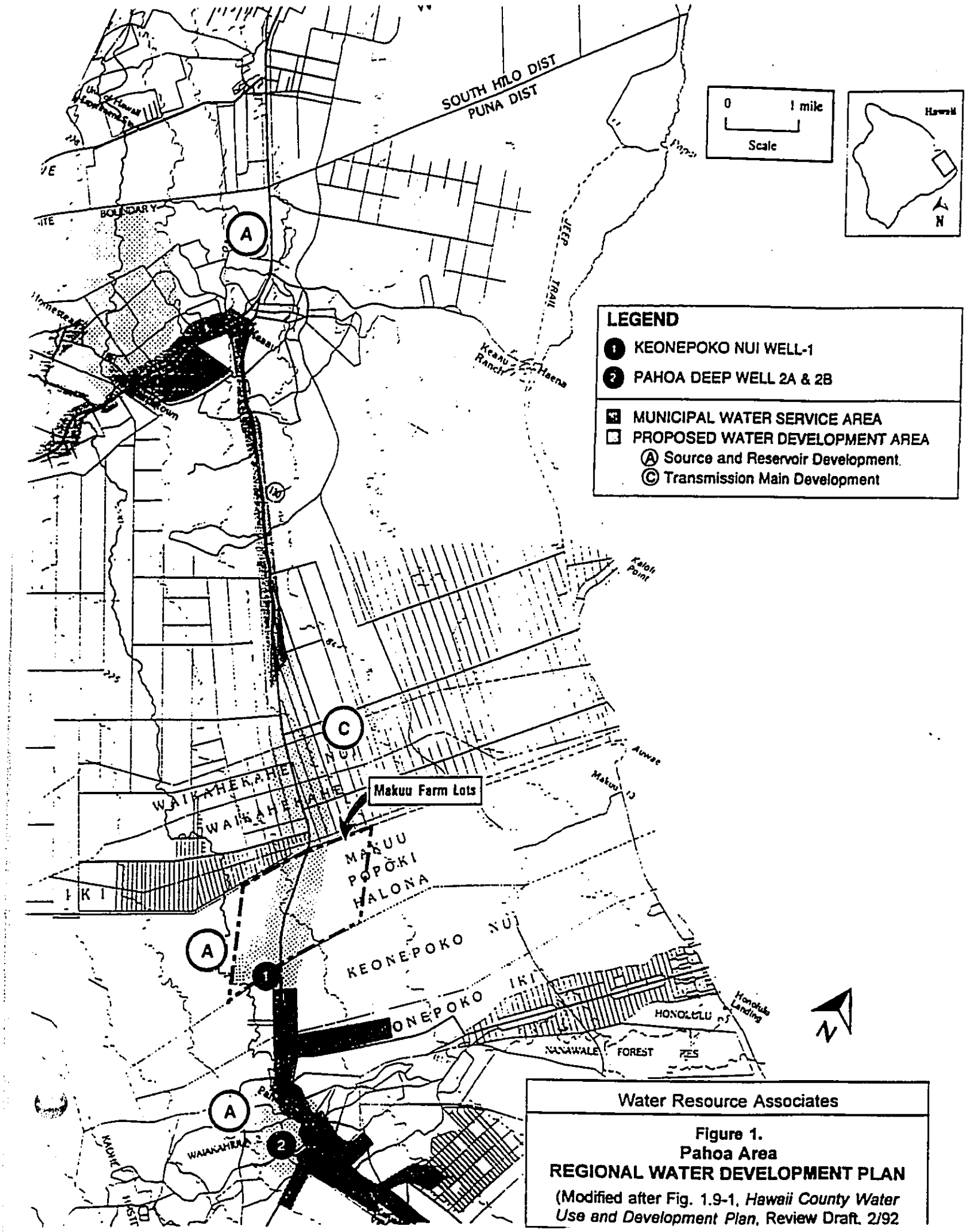
## FINDINGS/RECOMMENDATION

All indications are that an exploratory well to provide additional water supply for the Makuu Farmlot Subdivision can be successfully located within the Keonepoko Reservoir and Well site.

The exploratory well may be located as close as 100 feet from the existing well, if desired.

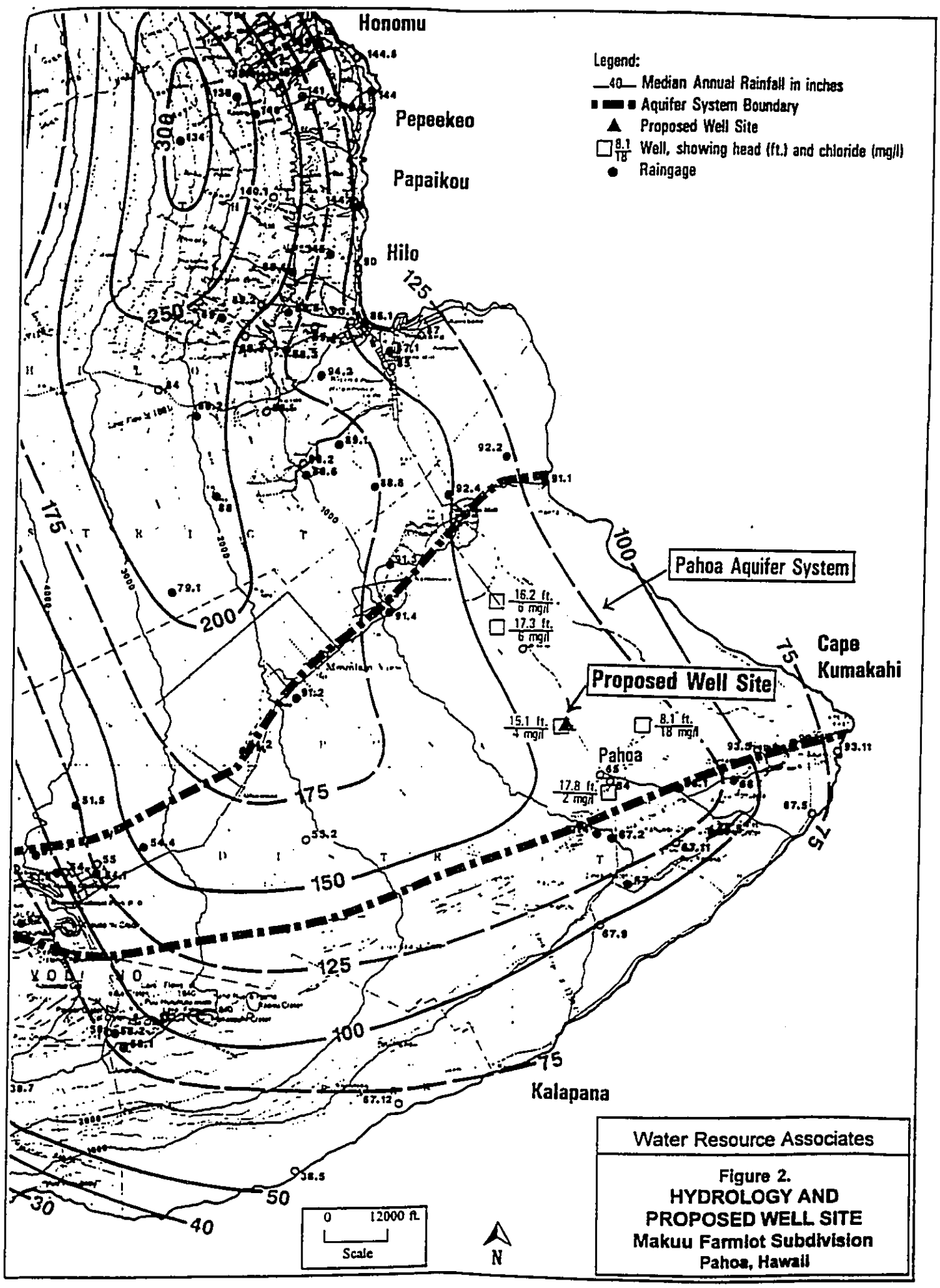
It is recommended that the exploratory well be designed to accommodate a pump capacity of at least 700 gpm.

The exploratory well be pump tested simultaneously with the existing well and the results evaluated to determine the capacity of the well field and permanent pump for the exploratory well.




Water Resource Associates

**Figure 1.**
**Pahoa Area**
**REGIONAL WATER DEVELOPMENT PLAN**
(Modified after Fig. 1.9-1, *Hawaii County Water Use and Development Plan*, Review Draft. 2/92



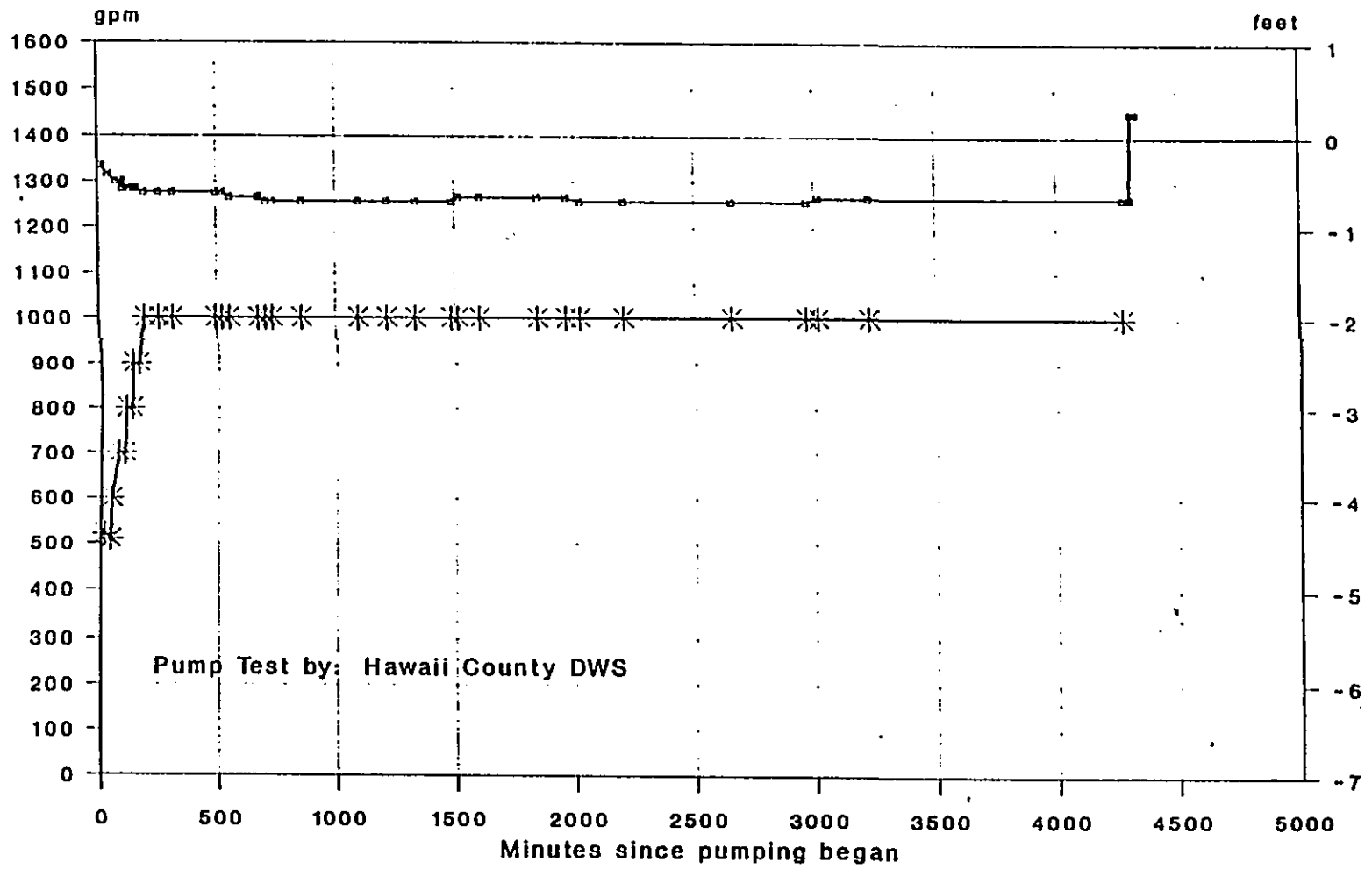

Water Resource Associates

**Figure 2.**
**HYDROLOGY AND PROPOSED WELL SITE**
**Makuu Farmlot Subdivision**
**Pahoa, Hawaii**

# PUMPING TEST RECORD

## Keonepoko Nui Well (3188-01), Puna, HI

### Date of Test: Dec. 6-9, 1977




Water Resource Associates
073\PumpTest

Figure 3

Figure 4. WELL RECORDS

Pahoa-Puna, Hawaii

| Well No. | Well Name | Year Drilled | Elev. (ft.) | Depth (ft.) | Test Rate (gpm) | Draw-down (ft) | Chloride (mg/l) | Head (ft.) |
|---|---|---|---|---|---|---|---|---|
| 2986-01 | Pahoa 2A | 1960 | 705 | -50 | 314 | 0.5 | 4 | 17.8 |
| 2986-02 | Pahoa 2B | 1965 | 711 | | | | 6 | |
| 3185-01 | Hawn Shores | 1964 | 402 | -44 | 425 | 1.7 | 18 | 10.6 |
| 3185-02 | Hawn Shores | 1971 | 380 | -50 | 350 | 3.5 | 23 | |
| 3188-01 | Keonepoko Nui | 1977 | 603 | -47 | 1000 | 0.6 | 4 | 15.1 |

Source of Data: Commission on Water Resource Management.

DEPARTMENT OF WATER SUPPLY • COUNTY OF HAWAII
25 AUPUNI STREET • HILO, HAWAII 96720
TELEPHONE (808) 969-1421 • FAX (808) 969-6996

March 30, 1995

Rec'd 4/3/95
L.T.

Jgn 4/5/95

Mr. Hajime Tanaka
P.O. Box R
Kurtistown, HI 96760

HYDROLOGIC FEASIBILITY OF ADDITIONAL WELL
DEPARTMENT OF WATER SUPPLY - KEONEPOKO NUI RESERVOIR SITE
FOR MAKUU FARM LOTS - STATE OF HAWAII DEPARTMENT OF HAWAIIAN HOME LANDS

We have reviewed the draft of the subject report.

At this point, we have no objections to the report as drafted. The reason for the report is due to State of Hawaii, Department of Hawaiian Home Lands' (DHHL) urgency to provide for the needs for the Makuu Farm Lots project. An additional source within the Department's existing site may be a viable and immediate alternative to the DHHL's sources as planned within its Makuu property at the roughly 800-foot elevation.

To reiterate our earlier concern, should the exploratory well drilling and testing show any detrimental effects to the existing source, then DHHL shall pursue another alternative source.

Milton D. Pavao, P.E.
Manager

QA

**APPENDIX B**

COMMENTS ON THE DRAFT
ENVIRONMENTAL ASSESSMENT

DEPARTMENT OF WATER SUPPLY • COUNTY OF HAWAII
25 AUPUNI STREET • HILO, HAWAII 96720
TELEPHONE (808) 969-1421 • FAX (808) 969-6996

April 30, 1996

Engineers Surveyors Hawaii, Inc.
Suite No. 1, Building No. 6
1020 Auahi Street
Honolulu, HI 96814

KEONEPOKO-NUI 2 EXPLORATORY WELL
*DEPARTMENT OF HAWAIIAN HOME LANDS - MAKUU FARM LOTS*
DRAFT ENVIRONMENTAL ASSESSMENT

We have reviewed your draft environmental assessment and following are our comments:

1) The subject reservoir and well site is still owned by the State of Hawaii. We are still waiting for the formal conveyance through an executive order from the Governor, State of Hawaii.

2) In viewing the source requirements, our demand figures are based on maximum daily usage. Therefore, your projected average daily demand of 309,600 will translate to a maximum daily demand of 464,400 gallons per day.

3) A source engineering report in accordance with requirements of the State of Hawaii, Department of Health, will be required and approved prior to having this new source come on line.

If there are any questions, please contact Mr. Gary Kawasaka at 969-1421.

Milton D. Pavao, P.E.
Manager

GK

## DEPARTMENT OF LAND AND NATURAL RESOURCES

State Office Building
P. O. Box 621
Honolulu, Hawaii 96809

Suspense: _____

Mr. Eric Hee 591-8116
TO: Engineers Surveyors Hawaii Inc.

FOR:

Please correct name of Approving Agency and Landowner per attached sheet.

- ☐ Governor of Hawaii
- ☐ Lt. Governor
- ☐ Chairperson
- ☐ Bd. of Land & Natural Resources, Member
- ☐ Attorney General
- ☐ Surveyor
- ☐ Dept. of Transportation
- ☐ City & County of Honolulu
- ☐ County of _____
- ☐ Registrar of Land Court
- ☐ Bureau of Conveyances
- ☐ Land Agent of _____
- ☐ _____

- ☐ Return
- ☐ Retention
- ☒ for further processing
- ☐ Approval
- ☐ Approval as to Form
- ☐ Signature
- ☐ Comment
- ☐ Recommendation
- ☐ Investigation & Report
- ☐ Appropriate Action
- ☐ Draft reply for Governor's signature
- ☐ _____
- ☐ _____

*Approved by the Board at its meeting held on* September 29, 1995 F-2

REMARKS: (5 COPIES) Draft Environmental Assessment for Keonepoko-Nui 2 Exploratory Well, Pahoa, Puna, Island of Hawaii, TMK: 3rd/1-5-08: Portion of 1

Signature

JUN 17 1996 19 ____

I. SUMMARY

Chapter 343, Hawaii Revised Statutes (HRS)
DRAFT
Environmental Assessment
For
Department of Hawaiian Home Lands
State of Hawaii

April 18, 1996

| | |
|---|---|
| APPLICANT: | Department of Hawaiian Home Lands<br>State of Hawaii |
| APPROVING AGENCY: | ~~Department of Hawaiian Home Lands~~ Department of Land and Natural Resources<br>State of Hawaii |
| PROJECT NAME: | Keonepoko - Nui 2 Exploratory Well |
| PROJECT LOCATION: | Keonepoko Reservoir and Well Site<br>Pahoa, Puna, Hawaii<br>Tax Map Key: Third Division: 1-5-08: Portion of 1 |
| STATE LAND USE DESIGNATION: | Agricultural District |
| COUNTY GENERAL PLAN DESIGNATION: | Orchard |
| COUNTY ZONING: | AG-20-A |
| LANDOWNER: | ~~Land Management Division~~ Land Division<br>Department of Land and Natural Resources<br>State of Hawaii |
| PERMITS REQUIRED: | Well Construction Permit<br>State Commission on Water Resource Management, DLNR |
| APPROVAL REQUIRED: | Well Design and Construction - County DWS |

# ESH

ENGINEERS SURVEYORS HAWAII, INC.
SUITE NO. 1, BUILDING NO.6
HONOLULU, HAWAII 96814
TELEPHONE (808) 591-8116
FAX (808) 592-2603

**FACSIMILE TRANSMITTAL**

Date: June 19, 1996

TO: Eric Leong, DLNR 587-0455

Sent By: Eric Hee
Job No: 85-180.9
This Page + 1

PROJECT: KEONEPOKO NUI 2 EXPLORATORY WELL

SUBJECT: DRAFT EA

Remarks:

Per DLNR's review comments dated June 17, 1996, attached for your files is the corrected name of the Approving Agency: Department of Land and Natural Resources and Landowner: Land Division, DLNR.

Cc: Dept. Of Hawaiian Home Lands (Mr. Gerald Lee)

BENJAMIN J. CAYETANO
GOVERNOR

GARY GILL
DIRECTOR

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL

220 SOUTH KING STREET
FOURTH FLOOR
HONOLULU, HAWAII 96813
TELEPHONE (808) 586-4185
FACSIMILE (808) 586-4186

August 7, 1996

Mr. Kali Watson, Chair
Department of Hawaiian Homelands
335 Merchant Street
Honolulu, Hawaii 96813

Dear Mr. Watson:

Subject: Draft Environmental Assessment for the Keonepoko-Nui 2 Exploratory Well

Thank you for the opportunity to review the subject document. We have the following comments.

1. If the exploratory well test results are satisfactory, a new environmental assessment must be prepared before converting the exploratory well into a prodcution well. The new environmental assessment must: 1) include results obtained from the various tests; and 2) disclose the impacts associated with supporting production facilities such as permanent pumps, transmissions lines, and storage tanks.

2. Please indicate whether the proposed water facilities will be dedicated to the County of Hawaii Department of Water Supply.

Should you have any questions, please call Jeyan Thirugnanam at 586-4185.

Sincerely,

Gary Gill
Director

c: Eric Hee, Engineers Surveyors Hawaii

BENJAMIN J. CAYETANO
GOVERNOR
STATE OF HAWAII

KALI WATSON
CHAIRMAN
HAWAIIAN HOMES COMMISSION

JOBIE M. K. M. YAMAGUCHI
DEPUTY TO THE CHAIRMAN

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

August 29,1996

Mr. Gary Gill, Director
Office of Environmental Quality Control
220 South King Street, Suite 400
Honolulu, Hawaii 96813

Dear Mr. Gill:

SUBJECT: Keonepoko-Nui Exploratory Well
TMK: 3rd Division 1-5-08: Portion of 1
Puna, Island of Hawaii

Thank you for your review of the subject document, this is a response to your August 7,1996 letter.

1. We anticipate that the exploratory well test results will satisfy the County of Hawaii Department of Water Supply and allow the DHHL to convert this well to a production well. We acknowledge that a new environmental assessment must be prepared for this conversion.

2. The proposed water facility will be licensed to the County of Hawaii Department of Water Supply for operation and maintenance.

Should you have any questions, please contact Mr. Patrick Young, Land Development Division, at 586-3818.

Sincerely,

Mike Crozier, Administrator
Land Development Division

cc: Engineers Surveyors Hawaii, Inc.
OEQC.WEL/PkmY

ENGINEERS SURVEYORS HAWAII, INC.

1020 AUAHI STREET
STE. NO. 1 • BLDG. NO. 6
HONOLULU, HAWAII 96814

808 • 591-8116 HONOLULU
808 • 592-2603 FACSIMILE

808 • 885-4590 KAMUELA

~~808 • 422-7319 HICKAM AFB~~
~~808 • 422-8065 FACSIMILE~~

August 27, 1996

Department of Water Supply
County of Hawaii
25 Aupuni Street
Hilo, Hawaii 96720

ATTENTION: Mr. Gary Kawasaka

Gentlemen:

SUBJECT: KEONEPOKO-NUI 2 EXPLORATORY WELL
ENVIRONMENTAL ASSESSMENT

Thank you for your review of the draft environmental assessment. We have incorporated your comments into the final environmental assessment and we are sending you herewith a copy.

We look forward to working with you to complete this well project.

If there are any questions, please call me at 591-8116.

Very truly yours,

ENGINEERS SURVEYORS HAWAII, INC.

Eric Hee

Eric Hee, P.E.

cc: Dept. of Hawaiian Home Lands

85-180.9