



October 7, 1994

DEPARTMENT OF WATER SUPPLY • COUNTY OF HAWAII

25 AUPUNI STREET • HILO, HAWAII 96720  
TELEPHONE (808) 969-4142 FAX (808) 969-6996

OEOC  
QUALITY

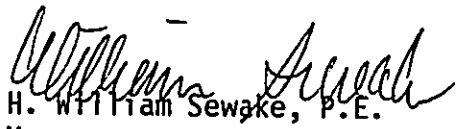
Mr. Bruce Anderson, Interim Director  
State of Hawaii  
Office of Environmental Quality Control  
220 South King Street, 4th Floor  
Honolulu, HI 96813

FINAL ENVIRONMENTAL ASSESSMENT AND NEGATIVE DECLARATION FOR PIIHONUA WELL NO. 3  
TAX MAP KEY 2-5-9:3

The Department of Water Supply, County of Hawaii, has not received any comments during the 30-day public comment period which began on September 8, 1994. This agency has determined that this project will not have significant environmental effect and has issued a negative declaration. Please publish this notice in the next October bulletin.

We have enclosed a completed OEOC Bulletin Publication Form - Revised 8/92 and four (4) copies of the final environmental assessment and negative declaration.

Please contact Mr. William Atkins at 969-1421 if you have any questions.

  
H. William Sewake, P.E.  
Manager

WA

Encs.

... *Water brings progress...*

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1994-10-23-HI-PEA-Piihonua Production Well <sup>OCT 23 1994</sup>

FINAL ENVIRONMENTAL ASSESSMENT  
AND  
NEGATIVE DECLARATION

D.W.S. JOB NO. 94-592  
PIIHONUA PRODUCTION WELL  
WELL NO. 4208-01  
SOUTH HILO, HAWAII

PURSUANT TO CHAPTER 343 HAWAII REVISED STATUTES

COUNTY OF HAWAII  
DEPARTMENT OF WATER SUPPLY  
OCTOBER 7, 1994

NOTICE OF DETERMINATION

NEGATIVE DECLARATION FOR

PIIHONUA PRODUCTION WELL NO. 3  
PIIHONUA, SOUTH HILO, HAWAII

BY: DEPARTMENT OF WATER SUPPLY  
COUNTY OF HAWAII

This action will have no significant effect on the environment and therefore does not require the preparation of an Environmental Impact Statement.

This Notice of Determination, together with the supporting Environmental Assessment, is being filed as a Negative Declaration.

DEPARTMENT OF WATER SUPPLY  
COUNTY OF HAWAII  
HILO, HAWAII

FINAL ENVIRONMENTAL ASSESSMENT/NEGATIVE DECLARATION

PIIHONUA PRODUCTION WELL NO. 3 AND PROVISIONS FOR BOOSTER PUMP  
PIIHONUA, SOUTH HILO, ISLAND OF HAWAII

I. Proposing Agency:

Department of Water Supply, County of Hawaii.

II. Parties to be Consulted:

Division of Water and Land Development, Department of Land and Natural Resources.

Department of Public Works, County of Hawaii.

Department of Health, State of Hawaii.

III. Project Description:

The project scope consists of installing one 2,100-gpm (gallon per minute) production well pump; provisions for future installation of two 450-gpm booster pumps to provide water to the higher situated reservoirs located at the 1,051-foot, 1,213-foot, and 1,286-foot elevations; and appurtenant electrical equipment located within the Piihonua Reservoir Site No. 1. The site, situated at the 975-foot elevation, is under the jurisdiction of the County of Hawaii, Department of Water Supply, Executive Order No. 224 (Tax Map Key 2-5-9:3), and is located approximately 0.25 mile southwest from the intersection of Waiianuenue Avenue and the access road to the project site.

The purpose of this project is to replace the existing surface sources in the area. The surface sources are susceptible to dry weather conditions, turbidity, surface contamination, and lava from the Mauna Loa Volcano. This well will provide a more dependable source of water. Furthermore, compliance with the Safe Drinking Water Act will be more economical than if a water treatment facility is constructed.

The development of the Piihonua Well No. 3 will be done by the Hawaii County, Department of Water Supply. A deep well pump, provisions for a booster pump installation, and necessary mechanical and electrical equipment to operate the pumps will be installed by the Department along with minor improvements to the existing paved access road.

Funding for the proposed project will be by the Department of Water Supply and Housing and Urban Development (HUD) Community Development Block Grant (CDBG) funds. The estimated cost of the project is \$800,000.00. The cost for HELCO's portion is not included.

#### IV. Technical Characteristics:

The Hilo Water System is one of the Department of Water Supply's larger water systems on the island. It extends north along Hamakua Coast to Honolii, west of Kaumana and Waiakea-Uka, and south to the Panaewa Forest Reserve. The system serves Hilo's commercial and industrial areas and residential areas of Keaukaha, Waiakea Houselots, Waiakea Homesteads, Waiakea-Uka, and Panaewa.

The present daily consumption of the Hilo Water System is approximately 12.0 mgd (million gallons per day). During normal operation, about 3.5 mgd is provided by the surface source, 6.4 mgd is pumped from the Panaewa Wells, and 1.9 mgd is pumped from the Piihonua Wells No. 1 and No. 2. Each well has a capacity of 3.0 mgd. Piihonua Well No. 3 will have a pumping capacity of 3.0 mgd. As it was mentioned in Part III of the Project Description, Piihonua Well No. 3 will be used primarily to replace the surface sources located in upper Piihonua.

Lava flows from Mauna Loa, an active volcano, is a menace to the Hilo Water System's surface sources. The possibility of lava flows from Mauna Loa entering the river system and/or encompassing the other surface sources will result in contamination of the water supply with organic material and partial drying up of the streams.

During recent droughts, additional surface sources were tapped to add to the supply of surface water. Groundwater from the Piihonua Well No. 3 will serve the higher service area (elevation 300 to 1,300 feet) to relieve the surface sources as well as to supplement the lower service area of Hilo (elevation 0 to 200 feet).

The proposed project, when completed, will increase the reliability and dependability of water that can be available for use in the Hilo Water System and comply with the Safe Drinking Water Act.

The Piihonua Well No. 3 taps the Hilo Basal Aquifer which is of great size. Records obtained from the Piihonua Well No. 2, located at Reservoir No. 3, pump test indicate that the static water level is approximately 40 feet above sea level; and the drawdown when pumping at a rate of 2,365 gpm is 5+ feet with immediate recovery.

H. T. Stearns and G. A. MacDonald's Bulletin 9 - Geology and Groundwater Resources of the Island of Hawaii, states that the Puna and South Hilo areas which comprise the eastern slopes of Kilauea and Mauna Loa are abundant with basal water of good quality.

The following is the technical data of the proposed project:

1. Piihonua Production Well No. 3:

Ground Elevation:	975.5 feet
Casing Diameter:	20 inches
Length of Solid Casing:	975 feet
Length of Open Hole:	0 feet
Length of Perforated Casing:	85 feet
Total Depth:	1,060 feet
Pump Design Capacity:	2,100 gpm

2. Provisions For Booster Pumps:

Design Capacity:	2 - 450 gpm
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3. Length of Project: 8 months

4. Estimated Construction Cost: \$800,000.00

V. Description of the Environment:

The proposed improvements will be installed within the existing Department of Water Supply's Piihonua Reservoir No. 3 site located approximately 2.2 miles southwest from the mouth of the Wailuku River, along Waianuenue Avenue, and 0.25 mile south from the intersection of the access road to the project site.

The land on which the proposed improvements will be located is under the jurisdiction of the County of Hawaii, Department of Water Supply, by Executive Order No. 224 (Tax Map Key: 2-5-9:3). The site is bordered on the east, west, and north by mostly vacant State conservation land. However, adjacent to the site is a small farm with a single-family residence thereon; and approximately one-quarter mile east near Waianuenue Avenue are several single-family dwellings. Bordering the southern portion of the property are privately owned large tracts of land that are sparsely inhabited. The mean rainfall of the area is 90 to 150 inches a year.

The Soil Conservation Service's Soil Survey of the Island of Hawaii classifies the soil at the project site as belonging to the Keei series which consists of well drained, thin organic soils overlying Pahoehoe lava bedrock. (See Exhibit C.) Keaukaha extremely rock muck 6 to 20 percent slopes (rKGD) is described as undulating to rolling and follows the topography of the underlying Pahoehoe lava. The surface layer is very dark-brown muck about 10 inches thick and is underlain by Pahoehoe lava bedrock. This soil is strongly acid. The soil above the lava is rapidly permeable, while the Pahoehoe lava is very slowly permeable.

However, water permeates the lava rapidly through the cracks. Run-off is medium, and the erosion hazard is slight.

The Island of Hawaii is the youngest of the Hawaiian Islands and is geologically still growing. The project area is underlain with layers of basaltic lava flows from the Mauna Loa Volcano. The Geologic and Topographic Map of the Island of Hawaii (Bulletin 9, Plate 1), shows that lava from the Ninole Volcanic Series (Tn) first covered the project site which was then covered by lava from the Kahuku Volcanic Series (Pk1) and finally by lava from the Ka'u Volcanic Series (QK1). Based on lavas of the various volcanic series, these two types are highly permeable and excellent medium to convey fresh water.

VI. The Assessment Process:

Due to the excellent hydrologic and geologic characteristics of the existing reservoir site in terms of its water-bearing qualities, the Department of Water Supply's Master Plan for proposed improvements calls for the development of the well to meet the expanding requirements of the Hilo area.

Geologic and Hydrologic information and reference materials were obtained from Bulletin 9 - Geology and Groundwater Resources of the Island of Hawaii by H. T. Stearns and G. A. MacDonald - October 1946.

The assessment is based upon similar technical conditions to that of the existing Pihonua Wells No. 1 and No. 2 which were completed in 1976 and 1987 respectively.

VII. Probable Impacts and Mitigative Measures:

Impacts are expected from the proposed action which include site preparation and installing the production well pump and provisions for booster pump units and electrical equipment.

Site preparation will involve clearing and grubbing an area approximately 5,000 square feet, presently covered with California grass, to prepare a work area for the production pump unit installation. The area has no unique species of plant or animal life that would be susceptible to adverse impacts as a result of the site preparation. A portion of the cleared area will be landscaped after the pumping unit is installed.

Grading work will be minimal or not be required. Dust, noise, and erosion resulting from construction activities shall conform to Section 11, "Environmental Protection," of the Department of Water Supply's General Requirements and Covenants. These requirements for pollution control will be enforced.

During the construction phase of the proposed project, noise will be generated by the construction equipment. Inconveniences to nearby residents may not result from the noise due to the isolation of the location. In any case, noise from construction activities will be subject to applicable regulations of the Hawaii State Department of Health. Work will be restricted to eight (8) hours during the day. No work will be permitted during weekends and holidays without prior approval from the Department of Water Supply. Since most construction equipment emit noise in excess of 70 dbA (See Exhibit D), the contractor will be required to install and maintain mufflers and other noise-suppressing devices on his equipment. Upon completion of the installation of the pump units and electrical equipment, pump tests will be conducted. The tests will be conducted to determine if the pumps and electrical equipment are performing according to the design requirements of the project. Generally, the tests consist of operating the pumps at various pumping rates and recording the performance characteristics of the pumps. Noise levels from the pumps are not in the range that will create inconveniences for nearby residents. If any, inconveniences to nearby residents caused by excess noise will be of a short duration and should not have any adverse effect on the environment.

During the testing of the pumps, water will be withdrawn from the Basal Aquifer; and a quantity will be discharged into an existing drainage ditch and/or a natural drainage way. Due to the permeability of the soil and the use of the drainage ditch, no flooding of the site or nearby properties is anticipated.

As determined during the yield test of Piihonua Well No. 3, due to the excellent recharge characteristic of the Basal Aquifer, the amount of water that will be withdrawn during the pump test has no detrimental effect on this aquifer.

The proposed improvements, when completed, will not change the existing environmental conditions. As it was stated in preceding paragraphs, the new pump units will serve as standby units to the existing pumps and will not create any impact on the environment in addition to what is occurring presently at the reservoir site. The only changes that may occur will be during the construction phase of the project.

#### VIII. Alternatives:

The proposed production well pump and booster pump installations have the advantage of being located in an area where there is an abundant supply of basal water and of being located near existing infrastructures of the Piihonua Reservoir No. 1 site.

The "No Action" alternative will deprive the Hilo Water System of an additional groundwater source which is needed for present and future developments in Hilo.



IX. Determination:

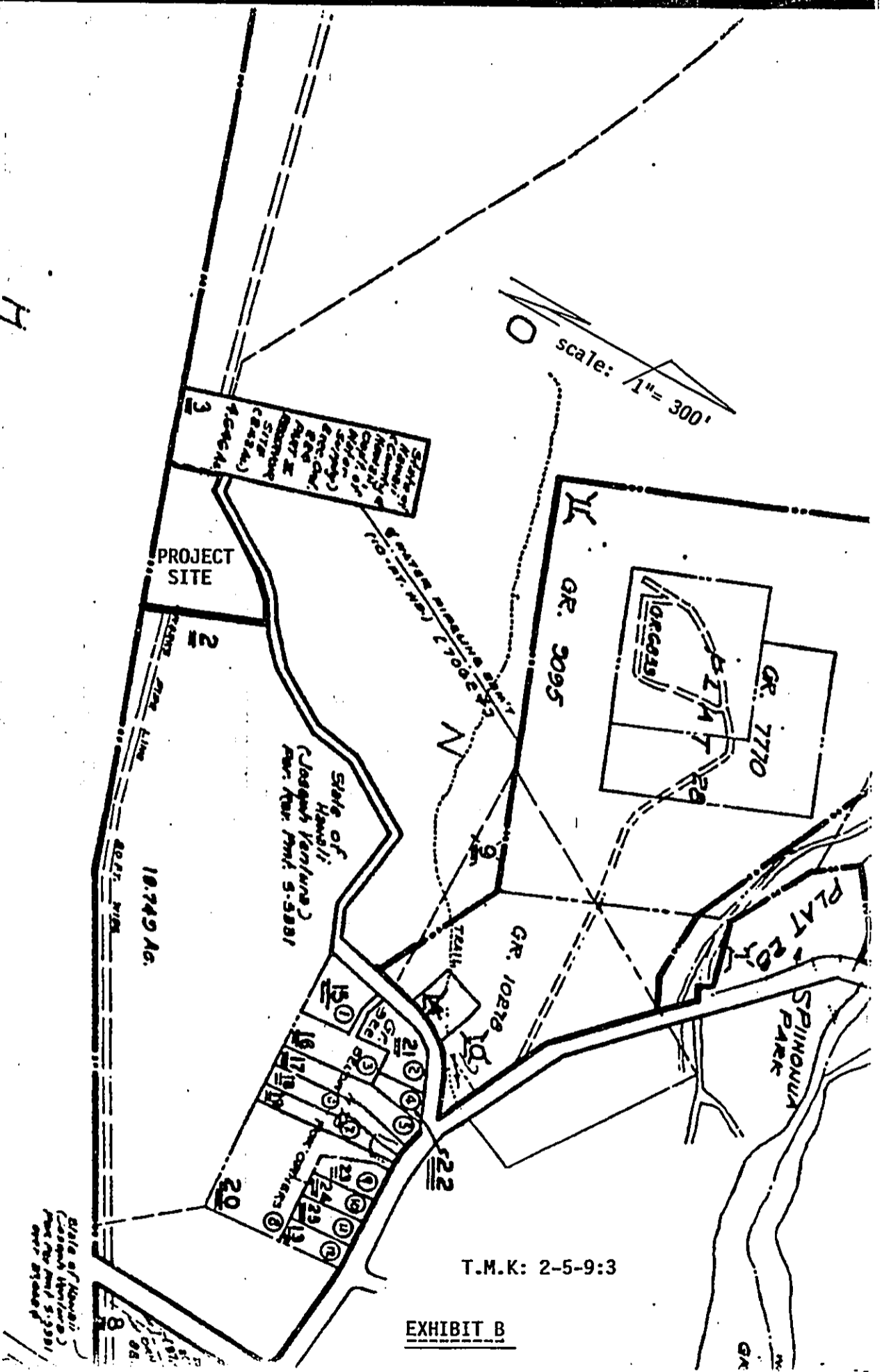
The preceding environmental assessment has indicated that this action will not significant long-term adverse impact on the environment. The adverse impacts are of short duration and can be minimized by corrective measures. It is therefore determined that an Environmental Impact Statement is not required and this assessment is to be filed as a negative declaration.

Hawaii  
 River Hydroelectricity Ltd.  
 (Incorporated in Hawaii)  
 Per. RP 5-5832

scale: 1" = 300'

- 13 Toshio Demaru & wf. Sues - 7/8  
10,280 sq
- 15 Isho Kishimoto & wf.  
Iwao Kishimoto 4/8  
20,075 sq
- 18 Yumoto Akioki

- 20 Jihyo Ota & wf.  
Satoru Ota 4/8  
8,375 sq
- 21 Takashi Akamine & wf. Mildred T. 7/8  
20,891 sq



T.M.K: 2-5-9:3

EXHIBIT B

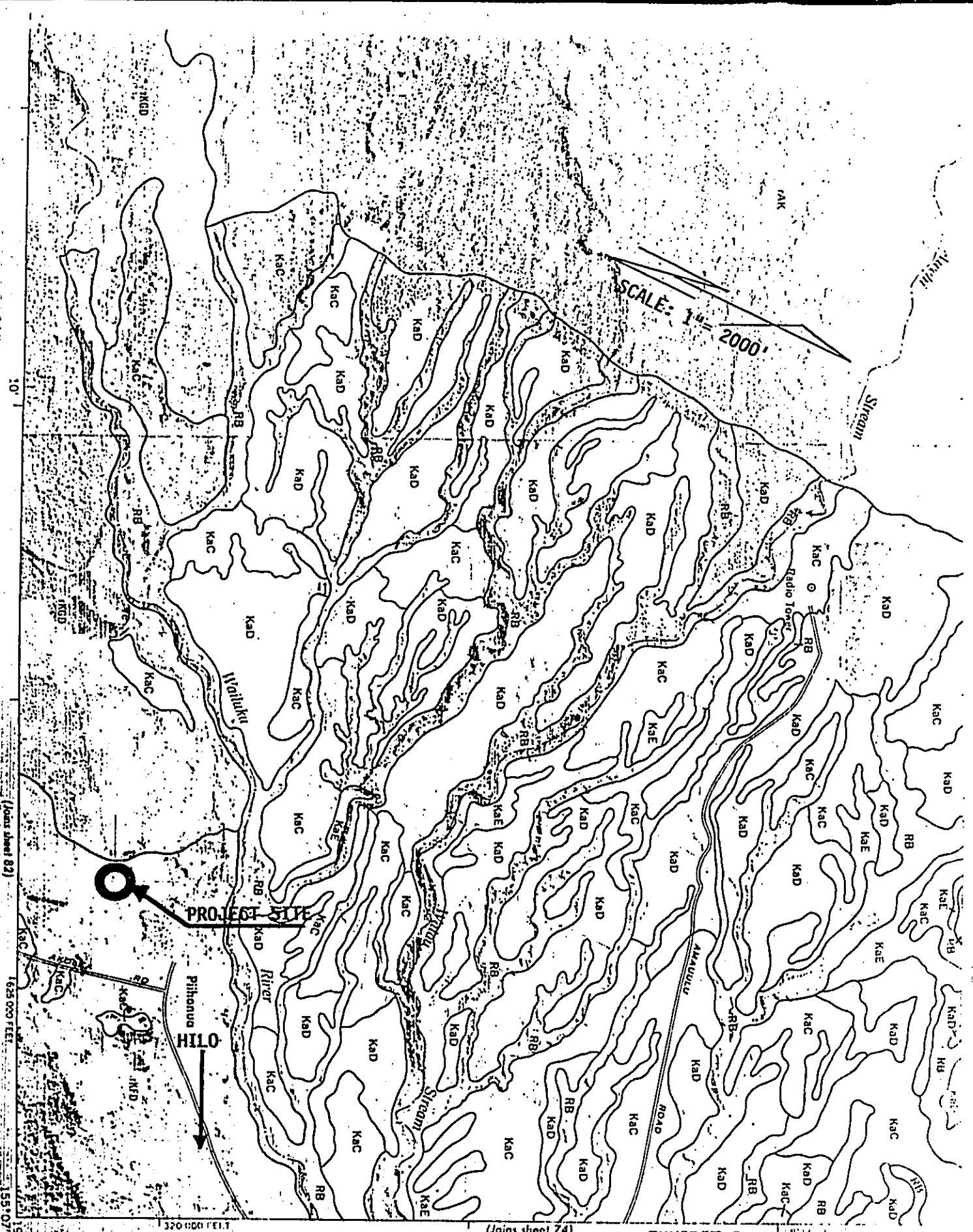
CONSTRUCTION EQUIPMENT NOISE RANGES

		NOISE LEVEL (dba) AT 50 FT						
		60	70	80	90	100	110	
EQUIPMENT POWERED BY INTERNAL COMBUSTION ENGINES	EARTH MOVING	COMPACTERS (ROLLERS)		H				
		FRONT LOADERS		-----				
		BACKHOES		-----				
		TRACTORS		-----				
		SCRAPERS, GRADERS		-----				
		PAVERS				H		
		TRUCKS			-----			
EQUIPMENT POWERED BY INTERNAL COMBUSTION ENGINES	MATERIALS HANDLING	CONCRETE MIXERS		-----				
		CONCRETE PUMPS			H			
		CRANES (MOVABLE)		-----				
		CRANES (DERRICK)				H		
EQUIPMENT POWERED BY INTERNAL COMBUSTION ENGINES	STATIONARY	PUMPS		H				
		GENERATORS		-----				
		COMPRESSORS		-----				
IMPACT EQUIPMENT		PNEUMATIC WRENCHES			-----			
		JACK HAMMERS AND ROCK DRILLS			-----			
		PILE DRIVERS (PEAKS)				-----		
OTHER		VIBRATOR		-----				
		SAWS		-----				

Note: Based on Limited Available Data Samples

Source: Noise From Construction Equipment and Operations Building Equipment, and Home Appliances, EPA, 1971

EXHIBIT D



SCALE: 1" = 2000'

PROJECT SITE

HILO

Pihouua River

Waihihiki Stream

Akauiui Stream

Stream

Radio Tower

EXHIBIT C

(Joins sheet 82)

1628 000 FEET

155° 07' 30" W

(Joins sheet 74)

PIHONOUA PRODUCTION WELL NO. 3



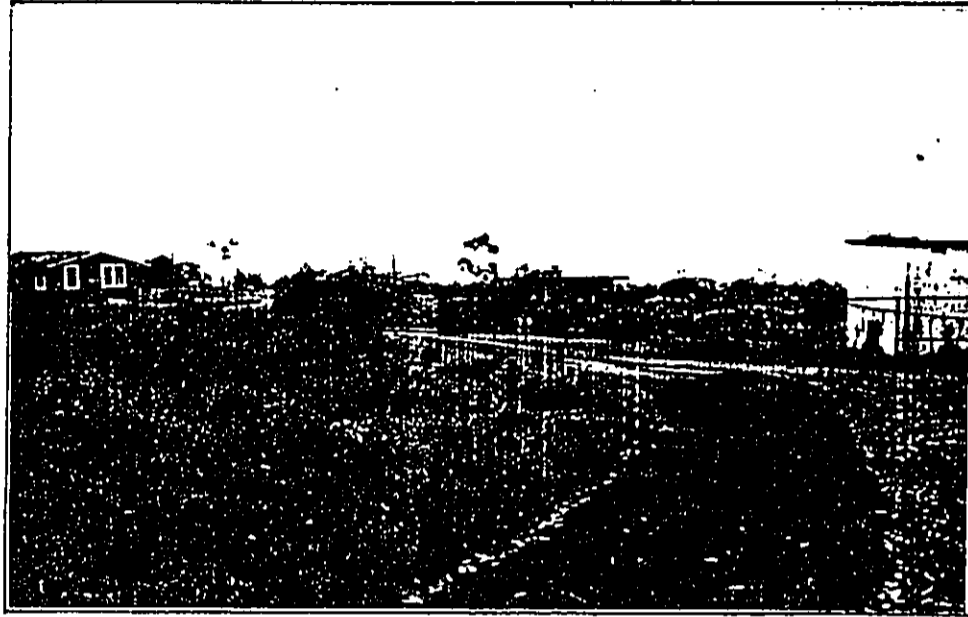
AREA OF SITE IMPROVEMENTS LOOKING EAST



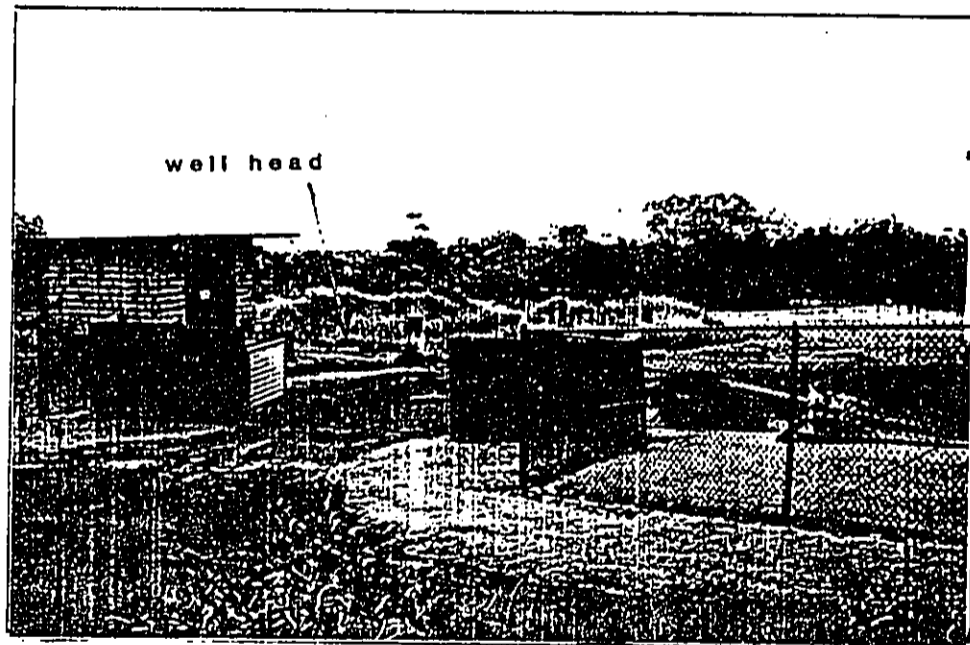
AREA OF SITE IMPROVEMENTS LOOKING EAST



PIIHONOUA PRODUCTION WELL NO.3



APPROACH FROM WEST LOOKING EAST



ENTRANCE TO RESERVOIR SITE NO.1 PIIHONOUA WELL NO 3



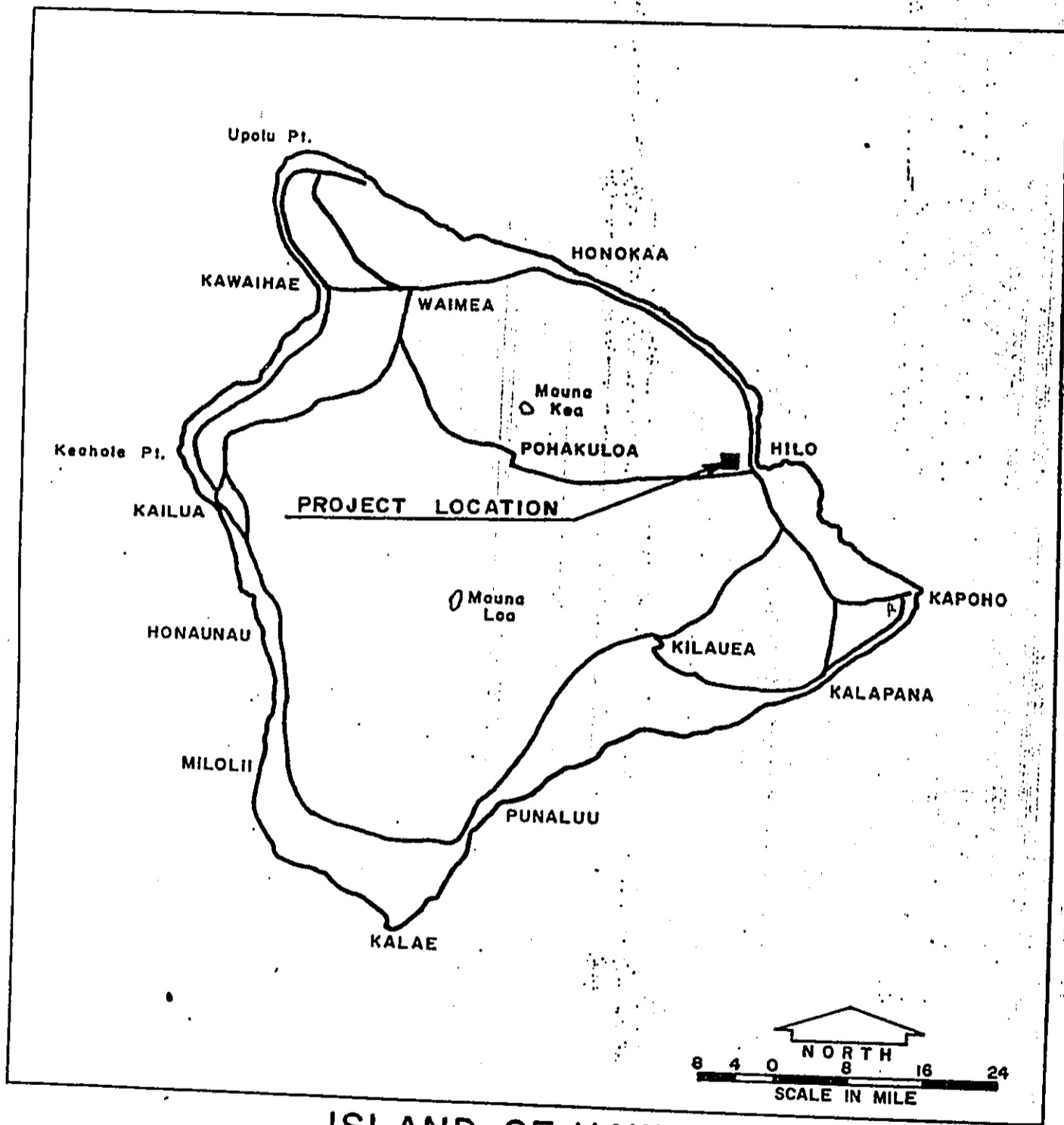
PIIHONOUA PRODUCTION WELL NO. 3



APPROACH FROM HILO LOOKING NORTH WEST



RESERVOIR SITE NO. 1. PIIHONOUA WELL NO.3



# ISLAND OF HAWAII

EXHIBIT A