

JOHN WAIHEE
GOVERNOR
STATE OF HAWAII



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

HOALIKU L. DRAKE
HOAHIKI
CHAIRMAN
HAWAIIAN HOMES COMMISSION

RECEIVED

'90 APR 30 P4:11

OFC. OF ENVIRONMENTAL
QUALITY CONTROL

April 30, 1990

Dr. Marvin Miura, Director
Office of Environmental Quality Control (OEQC)
State of Hawaii
465 South King Street, Room 104
Honolulu, Hawaii 96813

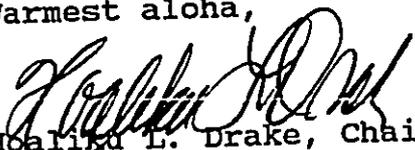
Dear Dr. Miura:

SUBJECT: Nanakuli Residence Lots, Series 7
Nanakuli, Oahu

The Department of Hawaiian Home Lands transmits for your review and approval the environmental assessment for the subject project, which we have accepted as a negative declaration. Enclosed are four (4) copies of the report and OEQC form 89-01. We request publication of the documents in the OEQC Bulletin.

Should there be any questions, please have your staff call Mr. Stanley H.S. Wong, Land Development Division, at 548-2686.

Warmest aloha,


Hoaliku L. Drake, Chairman
Hawaiian Homes Commission

HLD:SW:ss

cc: Engineers Surveyors Hawaii, Inc.
Environmental Communications, Inc.

--- 1990-05-08-0A-FEA

FILE COPY

Environmental Assessment

* Nanakuli Residence Lots
Series 7*

FOR THE
DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

Prepared by
Environmental Communications, Inc.

April 1990

TABLE OF CONTENTS

SECTION	SECTION
I. SUMMARY	1
II. STATEMENT OF OBJECTIVES	2
III. PROJECT DESCRIPTION	3
A. Project Location	3
B. Technical Characteristics	3
C. Economic Characteristics	3
D. Social Characteristics	4
Lower Nanakuli Valley Subdivision (revised) Preliminary cost estimates	5
IV. EXISTING ENVIRONMENT	
A. Geographical Characteristics	6
1. Topography	6
2. LSB Rating	
3. Soils	6
B. Hydrological Characteristics	8
1. Groundwater	8
2. Flood Hazard	8
3. Tsunami Inundation	9
4. Drainage	9
C. Biological Characteristics	9
D. Archaeological Characteristics	9
E. Existing Traffic	10
1. Roadway System	10
2. Traffic Volumes	10

F.	Infrastructure and Utilities	11
1.	Electricity and Telephone Service	11
2.	Water	11
3.	Sewage System	11
G.	Public Facilities and Service	11
1.	Police and Fire Protection	11
2.	Medical Facilities	12
3.	Recreational Facilities	12
4.	School	12
V.	SUMMARY OF MAJOR IMPACTS AND MITIGATIVE MEASURES	13
A.	Level of Service Analysis	13
	Forecasted 1992 Post Development Peak-Hour LOS	14
B.	Signal Warrant Analysis	14
C.	Conclusions and Recommendations	15
VI.	ALTERNATIVES CONSIDERED	16
A.	EIS Preparers and Consultants	17
B.	Agencies Consulted	17

I SUMMARY

**CHAPTER 343, HRS
ENVIRONMENTAL ASSESSMENT (EA)**

Action: Agency
Department of Hawaiian Home Lands (DHHL)
State of Hawaii

Project Name: Nanakuli Residence Lots, Series 7

Project Description: The proposed project consists of the subdivision of 38.5 acres of a 486.7 acre site into 167 residential lots appurtenant and access roads. The remaining 448.2 acres will remain unimproved. The subject project area will be improved with infrastructure; roads, drainage, sewers, water, electrical, telephone, CATV and street light services.

Project Location: The proposed project site is located mauka of Farrington Highway and Nanakuli Beach Park, ewa of Nanakuli Stream in Nanakuli, Waianae, Oahu, Hawaii

Tax Map Key: 8-9-07: 02 & 10

Acreage: 38.5 acres

Present Use: The project site is presently vacant and overgrown.

State Land Use Designation: Agriculture

Development Plan: Agriculture

Zoning: The site is presently zoned Ag-1.

Landowner: State of Hawaii
Department of Hawaiian Home Lands (DHHL)

II. STATEMENT OF OBJECTIVES

The proposed project will create 167 new residential lots by subdividing a portion of the Hawaiian Home Land of Nanakuli into Lots 1 to 170, inclusive; and roadway Lots R-1 to R-5, inclusive. Lot 170 is the remainder lot containing approximately 448.2 acres; Lot 169, which is for drainage purposes and is not included as a residential lot; and Lot 168 is the cemetery site containing 4.5925 acres. This subdivision will be prepared with the construction of site ready infrastructure so lessees can build their homes on the subject lots. The Department of Hawaiian Home Lands (DHHL) will award these lots to beneficiaries on Department of Hawaiian Home Land's waiting list. 130 lots were awarded in 1986; 37 remaining lots will be awarded after construction completion.

In 1984, the Department of Hawaiian Home Lands had identified acceleration of distribution of homestead lands to more than 8,000 persons on Department of Hawaiian Home Lands waiting lists as one of its major priority goals; this project is undertaken to accomplish, in part, this goal. Presently the waiting list numbers approximately 20,000.

In consideration of the limited funding available for capital improvements, the award of more homestead lots at an accelerated pace can be achieved only if the coverage cost to deliver each improved lot is kept to a minimum.

The Department of Hawaiian Home Land is working closely with the concerned City and County and State agencies in all stages of the program, and in the planning, designing and construction of improvements. The project is in the design phase. The tentative schedule to begin the construction of the site improvements for this project is October 1990.

III. PROJECT DESCRIPTION

A. Project Location

The subject parcel is located off Farrington Highway in Nanakuli, Waianae, Oahu, Hawaii. A row of DHHL's residential lots front the project site along Farrington Highway opposite Nanakuli Beach Park. Nanakuli Stream is located adjacent to the project site on the west.

B. Technical Characteristics

The subdivision site is bounded to the North by the Nanakuli Residence Lots, First Series; to the West by Nanaikopono (Residence) Lots; to the South by Land Court Application 1069, owned by James Campbell Trust Estate; and to the East by Hawaiian Home Land (CSF 9989).

The proposed project consists of the development of a residential lot subdivision on Hawaiian Home Lands in Nanakuli, Hawaii. The project's 38.5 acres, which is a part of a larger 486.7 acre parcel, will be subdivided into 167 residential lots and appurtenant roadways. The lots, which will contain 7,500 to 15,900 square feet, will be improved with drainage, sewer, water, drainage, electrical, telephone and cable utilities. Roadways will include a street lighting system.

The proposed subdivision will be served by roadways extending off the existing Piliokahi Avenue. The existing roadway, which is under the jurisdiction of the State of Hawaii Department of Hawaiian Home Lands, is connected to Farrington Highway. Piliokahi Avenue will be widened from 40-ft. to 56-ft. right of way and fully improved with curbs, gutters, sidewalks and asphaltic concrete pavement.

C. Economic Characteristics

The Department of Hawaiian Home Land administers the Hawaiian Home Commission Act by providing benefits to native Hawaiians in the form of 99-year homestead leases at a nominal annual rental. The intent of the homesteading program, of which this project is a part, is to increase the economic self-sufficiency of native Hawaiians through the provision of land.

D. Social Characteristics

The proposed project site is currently vacant with the exception of an old unnamed cemetery site. The remainder of the site is unused and is overgrown with noxious shrubs and weeds. The project is not within an existing residential area but lies adjacent to a row of DHHL's dwellings along Farrington Highway. The easterly side of the project area contains mountainous lands while Nanakuli Stream lie to the west; therefore, the project social character will primarily be unique to the site and will not have any physical impacts to adjacent residential areas except along Farrington Highway.

LOWER NANAKULI VALLEY SUBDIVISION (REVISED)

PRELIMINARY COST ESTIMATE

October 29, 1986

A.	Clearing and Grubbing, Lot Grading and Roadway Construction (no curb, gutter and sidewalk)	\$2,400,000.00
B.	Drainage System (Including interceptor ditches, lot ditches and roadway drainage system)	\$1,460,000.00
C.	Sewer System (To Farrington Highway for connection to future main)	\$ 352,000.00
D.	Water System	\$ 410,000.00
E.	Street Lighting System	<u>\$ 83,000.00</u>
	Sub-Total	\$4,705,000.00
	10% Contingency	<u>470,500.00</u>
	Sub-Total	\$5,175,500.00
	Engineering and Surveying Fee (Civil Engineering, Soils Engineering and Construction Stakeout Services)	<u>\$ 250,000.00</u>
	ESTIMATED COST (Not including Electric, Telephone and Cable Systems and other develop- ment fees and expenses not itemized above.)	\$5,425,500.00

IV. EXISTING ENVIRONMENT

A. Geographical Characteristics

1. Topography

The project site, which lies in the south eastern end of Nanakuli Valley, is presently vacant and overgrown with shrubs and noxious weedy species. A gradual slope occurs from the east down to the west where the project site is bounded by Nanakuli Stream.

2. LSB Rating

The Land Study Bureau has designated the project site as category E64 in the Detailed Land Classification - Island of Oahu L.S.B. Bulletin No. 11, December 1972, Land Study Bureau University of Hawaii

E64 lands are characterized as having poor crop productivity ratings, poor tillability, stony soils over 30 inches deep. The soil which is fine and well drained, are generally located on 11 to 20% slopes. The most common uses on this land type are military and grazing.

3. Soils

According to the Soil Survey of Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii by the United States Department of Agriculture Soil Conservation Service, 1972; the project site is underlain with soils designated in categories Mtb and LPE.

Soil type Mtb consist of Mokulea clay from the Mokuleia Series. This series is characterized in the above reference as follows.

"This series consists of well-drained soils along the coastal plains on the islands of Oahu and Kauai. These soils formed in recent alluvium deposited over coral sand. they are shallow and nearly level. Elevations range from nearly sea level to 100 feet. The annual rainfall amounts to 15 to 40 inches on Oahu and 50 to 100 inches on Kauai. The mean annual soil temperature is 74° F. Mokuleia soils are geographically associated with Hanalei, Jaucas, and Keaau soils.

In this survey area a poorly drained variant of the Mokuleia series was mapped. This soil, Mokuleia clay loam, poorly drained variant, is described in alphabetical order, along with other mapping units of this series."

More specifically Mokuleia clay (Mtb) is characterized as follows.

This soil has a profile like that of Mokuleia clay loam, except for the texture of the surface layer. It is nearly level. Permeability is slow in surface layer. Workability is difficult because of the sticky, plastic clay.

This soil is used for sugarcane and pasture.

Lualualei Series soils are also located on the project site.

This series consists of well-drained soils on the coastal plains, alluvial fans, and on talus slopes on the islands of Kauai, Oahu, Molokai, and Lanai. These soils developed in alluvium and colluvium. They are nearly level and gently sloping. Elevations range from 10 to 125 feet. In most places the annual rainfall amounts to 18 to 30 inches, but it is as low as 10 inches on Lanai and as high as 50 inches on Kauai. Most of the rainfall occurs during storms in the period from November to April. There is a prolonged dry period in summer. The mean annual soil temperature is 75° F. Lualualei soils are geographically associated with Honouliuli, Jaucas, and Kekaha soils.

These soils are used for sugarcane, truck crops, pasture, wildlife habitat, urban development, and military installations. The natural vegetation consists of kiawe, koa haole, bristly foxtail, uhaloa, and fingergrass.

The specific Lualualei type found onsite is LPE, Walualei extremely stony clay located on 3 to 35 percent slopes.

This soil occurs on talus slopes on Oahu and Kauai. The slope range is 3 to 35 percent, but in most places the soil is moderately sloping to steep. This soil is similar to Lualualei clay, 0 to 2 percent slopes, except that there are many stones on the surface and in the profile. It is removed. Runoff is medium to rapid, and the erosion hazard is moderate to severe.

This soil is used for pasture.

B. Hydrological Characteristics

1. Groundwater

The nearest groundwater feature is Nanakuli Stream. No stream quality data for this stream is available; however, the U. S. Geological Survey Water - Data Report HI-88-1 reports that a crest-stage gauge station is located in Nanakuli Stream. This station covers a drainage area of 3.98 square miles and an annual maximum discharge for 1988 was estimated at 375 cfs (cubic feet per second). Over the stations 20 year records, a peak of 3,320 cfs was recorded in 1976 and a low of 30 cfs in 1978.

2. Flood Hazard

According to the FIRM Flood Insurance Rate Map for the City and County of Honolulu, Hawaii, by the Federal Emergency Management agency, 1987, the project site lies primarily in Zone X with a portion of the project site located in Zone D. The Zone X portion, which lies on the Nanakuli Stream side of the site, consists of areas determined to be outside of the 500 year flood plan. The Zone D area consists of areas in which flood hazards are undetermined.

3. Tsunami Inundation

The project site is not located in an area subject to tsunami inundation as indicated on the Civil Defense Tsunami Inundation Maps in the Hawaiian Telephone directory.

4. Drainage

The project site is presently undeveloped and naturally drained. No bodies of standing water were observed onsite. It is assumed that the existing drainage pattern would occur from the north-east to the south-west or down to Nanakuli Stream.

C. Biological Characteristics

The project site is presently undeveloped and exists in its natural state. Vegetation onsite includes keawe, koa haole, other exotic and endemic trees and lowland shrubs and various noxious weedy species such as finger grass and pili grass.

Fauna is expected to be limited to stray domestic animals, mongoose, rats and mice. Avifauna species occurring onsite may include cardinal, dove, mockingbird, golden plover, pueo, ricebird and white eye.

D. Archaeological Characteristics

An archaeological survey was conducted for the project site by the Historic Preservation Program of the Department of Land and Natural Resources. In a letter dated April 11, 1990, (APPENDIX B) the Director of the Historic Preservation Program stated that a survey team had conducted transect sweeps of the entire site and only a tiny scatter of basalt flake and shell food remains were found. Therefore, it was stated that the proposed project would have "no effect" on such sites.

The area marked "cemetery site" was also surveyed however no evidence of a cemetery site was found. It was assumed that this designation was based solely on oral information.

E. Existing Traffic

A traffic impact report was prepared for the proposed project in March of 1990 by Parsons Brinckerhoff Quade & Douglas. A summary of the existing traffic conditions is presented below.

1. Roadway System

In the vicinity of the proposed project, Farrington Highway is a four-lane arterial roadway with two 11-foot wide lanes in each direction, a 6-foot wide shoulder on the makai side of the roadway, and a 4-foot wide shoulder on the mauka side of the roadway. Honolulu-bound and Waianae-bound lanes are separated by solid double yellow strips. Utility poles and an asphalt concrete berm are located on the mauka side of Farrington Highway. An on-street bus stop is located opposite the proposed intersection on the makai side of the highway. The speed limit on Farrington Highway is posted at 35 mph.

Piliokahi Avenue is proposed for construction within a 56-foot wide right-of-way (R/W). Adjoining the 56-foot wide R/W are several DHHL's residential lots which take direct access to Farrington Highway. The proposed Piliokahi Avenue will connect to a series of internal circulation streets within the project.

Surrounding land uses are generally rural and suburban in character. Population of the surrounding community is low and was assumed to be less than 20,000.

2. Traffic Volumes

Existing traffic counts on Farrington Highway were collected from the State Department of Transportation. These historical counts revealed a traffic growth rate of 6.5 percent per year. Existing year 1990 and future year 1992 traffic volumes were estimated by applying a 6.5 percent per year growth rate to existing 1988 traffic volumes.

F. Infrastructure and Utilities

1. Electricity and Telephone Service

Electricity and telephone lines can be made available to the project site from the existing service in Farrington Highway.

2. Water

There are existing eight inch and twenty-four inch Board of Water Supply water lines in Farrington Highway just West of the project site. Details of providing water to the project site will be worked out between Department of Hawaiian Home Land and Board of Water Supply. Water will be from the Board of Water Supply Puu O Hulu (Lualualei) 242 Reservoir which means the limit of water service will be at elevation 142 feet. The proposed residential lots will be within the limit of water service. The estimated maximum daily water demand for 167 units is 125,300 GPD.

3. Sewage System

The estimated peak flow for sanitary sewage is 122,000 GPD or 0.122 MGD. This flow will be routed to the City System at the Nanakuli Wastewater Pump Station and Force Main which was completed in April 1988. This connection was approved by the Division of Wastewater Management on March 2, 1990 APPENDIX C.

G. Public Facilities and Services

1. Police and Fire Protection

Both police and fire protection services are readily available at the Waianae Police Sub-Station and Waianae Fire Station located approximately 6 and 6.5 miles away respectively.

2. Medical Facilities

The Waianae Coast Comprehensive Health Center currently offers the closest medical facility in the Leeward area. The Saint Francis West Medical Center, which is scheduled to open in March of 1990, will offer a full range of services including emergency facilities and a helicopter pad. This facility is located on Fort Weaver Road.

3. Recreational Facilities

Nanakuli Beach Park is located directly makai of the project site across Farrington Highway.

4. Schools

Nanakuli Elementary, Intermediate and High schools are located approximately 1 mile from the project site. Nanaikapono Elementary School is located approximately 1/2 mile from the project site.

V. SUMMARY OF MAJOR IMPACTS AND MITIGATIVE MEASURES

Nanakuli Residence Lots, Series 7 is presently in the design phase. The construction of the site improvements (lot grading, roads and utilities) are tentatively scheduled to begin in October 1990 and be completed in September 1992 or sooner. 130 of the 167 lots were awarded in 1986. The remaining 37 lots will be awarded when construction is completed. Home construction can begin as soon as the infrastructures are installed.

The existing residential nature of the adjacent environment provides for the land use compatibility of the proposed action. Therefore, there are no foreseeable significant impact as a result of the proposed action.

Traffic impacts do warrant concern therefore a traffic impact study was prepared for the proposed project by Parson Brinkerhoff Quade & Douglas in March of 1990. A summary of traffic impact conditions not mitigation measures is presented below. The complete report is attached as Appendix A.

A. Level of Service Analysis

Peak hour traffic volumes tend to represent the worst case conditions on suburban streets and highways. For this reason, level of service (LOS) calculations were conducted for both the 1992 AM-peak and 1992 PM-peak hours at the proposed Piliokahi Avenue/Farrington Highway intersection. Levels of service calculations using intersection configurations with and without separate left-turn lanes on Piliokahi Avenue were performed, with the results shown below. Unnecessary stop delay to right-turning vehicles could be minimized by providing separate left-turn and right-turn lanes. Exclusive lanes would preclude right-turning vehicles being stopped behind a vehicle waiting to turn left at Farrington Highway.

Forecasted
1992 Post Development Peak-Hour LOS
For Critical Lane Movements

Approach	LOS W/Separate LT Lane		LOS W/ Shared Lanes	
	AM	PM	AM	PM
Farrington (Honolulu Bound)				
Left Turn Movement	--	--	C	E
Piliokahi Avenue				
Left Turn Movement	E	E	E	E
Right Turn Movement	A	C	E	E

B. Signal Warrant Analysis

The installation of a traffic signal at the Farrington Hwy/Piliokahi Street intersection would improve the levels of service for the left-turn movements into and out of Piliokahi Street. A traffic signal would, however, interrupt through traffic on Farrington Hwy which would otherwise pass freely through the intersection.

Nationally accepted traffic signal warrants have been established to aid in identifying locations that justify traffic signalization. Traffic signals should only be installed at locations that meet these nationally accepted signal warrants.

Traffic signal warrants were reviewed at the future Farrington Hwy/Piliokahi Street intersection for the future year 1992 with project conditions. Projected traffic volumes do not meet any of the traffic signal warrants.

C. Conclusions and Recommendations

The proposed 167 residential lot development will increase traffic volumes in Farrington Hwy by less than three percent during both the AM and PM peak hours. The left-turn movement into Piliokahi Street from Farrington Hwy will experience LOS E conditions during the PM peak hour. The left-turn movement out of Piliokahi Street onto Farrington Hwy will experience LOS E conditions during both the AM and PM peak hours. This is due to the high volume of highway traffic on Farrington Highway.

At unsignalized intersections, it is not uncommon for left-turn movements to experience LOS E or LOS F conditions. Capacity analyses and field reviews conducted at similar unsignalized intersections indicate the methodology outlined in the 1985 Highway Capacity Manual is conservative in nature.

A preliminary review of traffic signal warrants as outlined in the Manual on Uniform Traffic Control Devices reveals that this intersection does not justify signalization.

It is recommended that the future Piliokahi Street be striped to provide an exclusive left-turn and right-turn lane in the makai-bound direction at Farrington Hwy to minimize the delay to makai-bound right-turning vehicles.

VI. ALTERNATIVES CONSIDERED

No alternatives other than the "no action" alternative were considered. The no action alternative was not considered viable. The site is in State of Hawaii Department of Hawaiian Home Lands, (DHHL), ownership and would not be of any benefit to the community or the State DHHL if it is not utilized. Affordable housing and Hawaiian Home Land grants are a paramount concern to the Waianae/Nanakuli community and to the State and the proposed project adds significantly to the homestead inventory in the District.

VII. LIST OF PREPARERS

A. EIS Preparers and Consultants

Engineers Surveyors Hawaii, Inc. - Engineering
Environmental Communications, Inc. - EA Preparers
Parsons Brinkerhoff Quade & Douglas - Traffic Study

B. Agencies Consulted

Department of Hawaiian Home Lands
Department of Land and Natural Resources

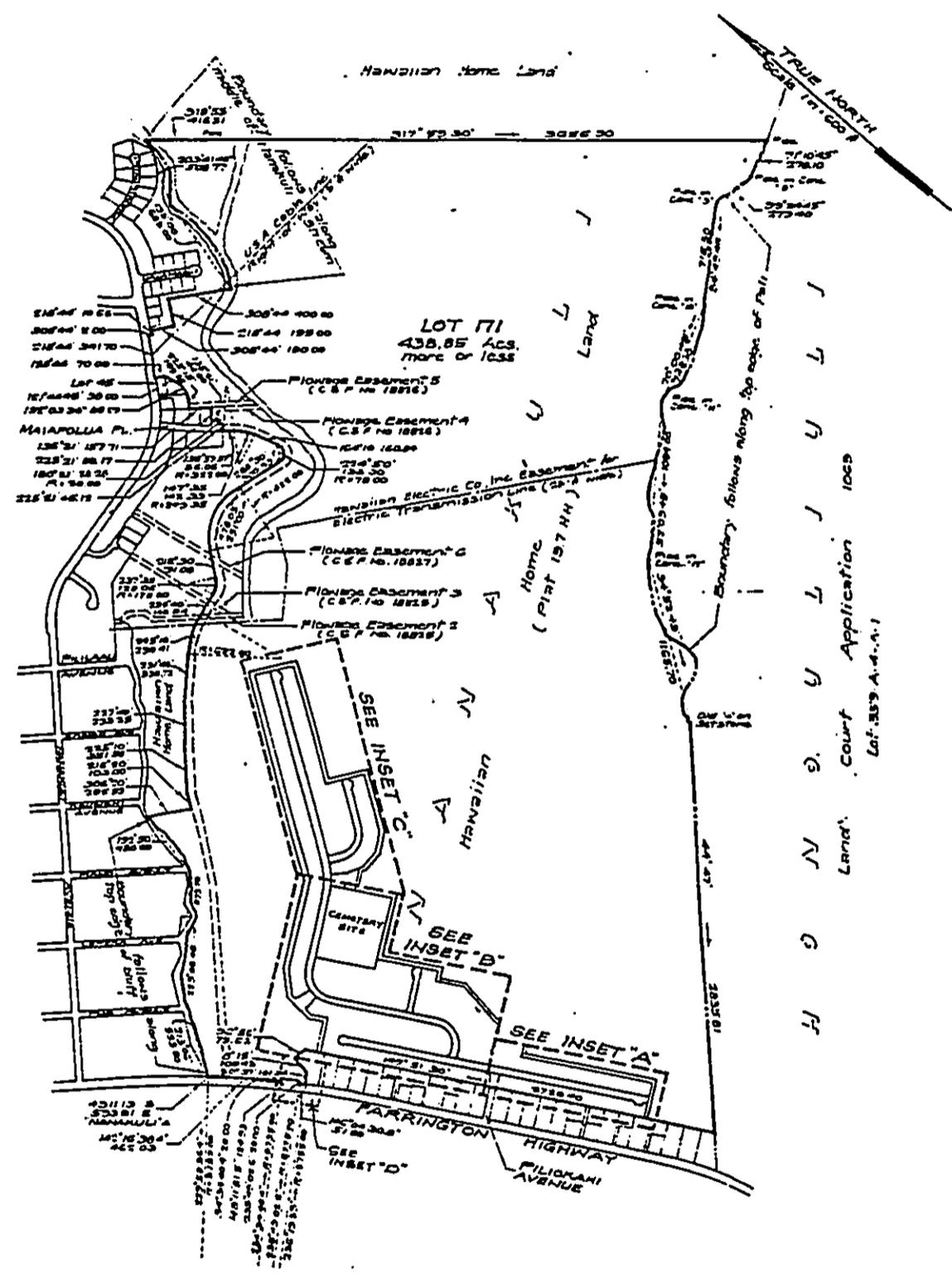


FIGURE 2
SITE PLAN

DRAFT

NANAKULI RESIDENTIAL LOTS

NANAKULI, HAWAII

TRAFFIC IMPACT REPORT

March 9, 1990

Prepared For:

DEPARTMENT OF HAWAIIAN HOME LANDS

Prepared By:

PARSONS BRINCKERHOFF QUADE & DOUGLAS

APPENDIX A

**Department of Hawaiian Home Lands
Nanakuli Residence Lots, Series 7
February 1990**

INTRODUCTION

This study was conducted for the Department of Hawaiian Home Lands to assess the traffic impacts of developing 168 single family residential lots adjacent to Farrington Highway in Nanakuli, Waianae, Hawaii (see Figure 1). Access to the proposed residential development will be provided through Piliokahi Avenue, a new two-lane mauka-makai roadway that will form a T-intersection with Farrington Highway. The analysis includes a suggested intersection configuration for the proposed Farrington Highway/Piliokahi Avenue intersection.

Existing and future conditions were evaluated on Farrington Highway at the proposed intersection with Piliokahi Avenue to determine the traffic impacts of the proposed development. It was assumed that this proposed development will be complete and occupied by the future year 1992. Trip generation rates published by the Institute of Transportation Engineers were applied to the development to estimate the number of trips attributed to the proposed residential development. Project generated trips were then distributed to/from the study area. Levels of service at the unsignalized intersections were identified using procedures outlined in the 1985 Highway Capacity Manual (HCM) "Methodology for Unsignalized Intersections". Levels of service are defined as qualitative measures which describe traffic operational conditions considering traffic interruptions and delays, driver comfort and convenience, and safety. The analysis for unsignalized intersections evaluates gaps in the major street traffic flow, and calculates the capacities available for left turns from the major street and minor street traffic wishing to enter or cross the major street. Traffic signal warrants were also evaluated at the proposed Piliokahi Avenue/Farrington Highway intersection following criteria outlined in the Manual of Uniform Traffic Control Devices (MUTCD).

Because peak hour traffic conditions tend to demonstrate the worst case for intersection operations, both the AM-peak and the PM-peak hours were analyzed for LOS conditions and signal requirements.

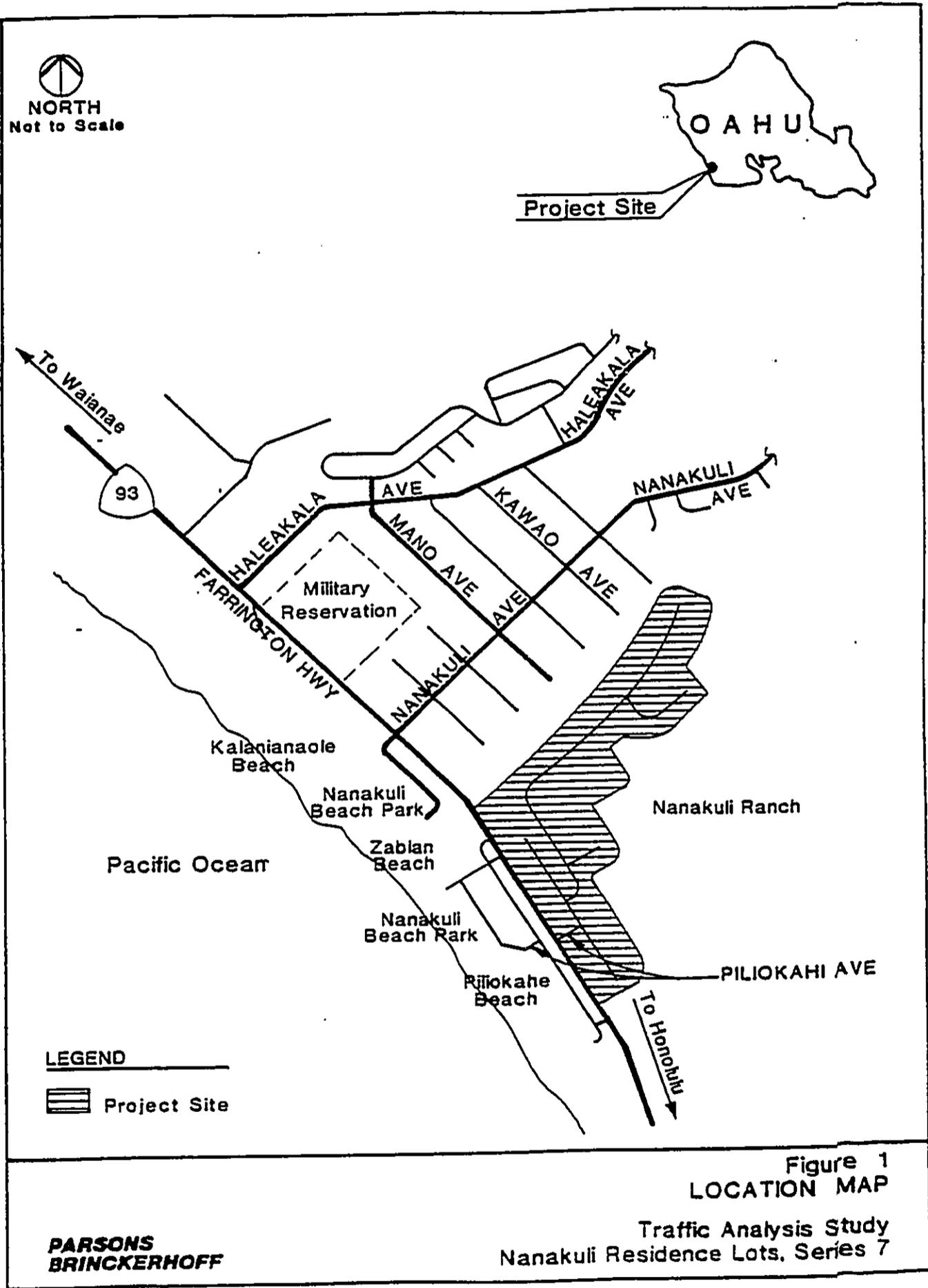


Figure 1
LOCATION MAP

Traffic Analysis Study
Nanakuli Residence Lots, Series 7

**PARSONS
BRINCKERHOFF**

EXISTING CONDITIONS

ROADWAY SYSTEM

In the vicinity of the proposed project, Farrington Highway is a four-lane arterial roadway with two 11-foot wide lanes in each direction, a 6-foot wide shoulder on the makai side of the roadway, and a 4-foot wide shoulder on the mauka side of the roadway. Honolulu-bound and Waianae-bound lanes are separated by solid double yellow stripes. Utility poles and an asphalt concrete berm are located on the mauka side of Farrington Highway. An on-street bus stop is located opposite the proposed intersection on the makai side of the highway. The speed limit on Farrington Highway is posted at 35 mph.

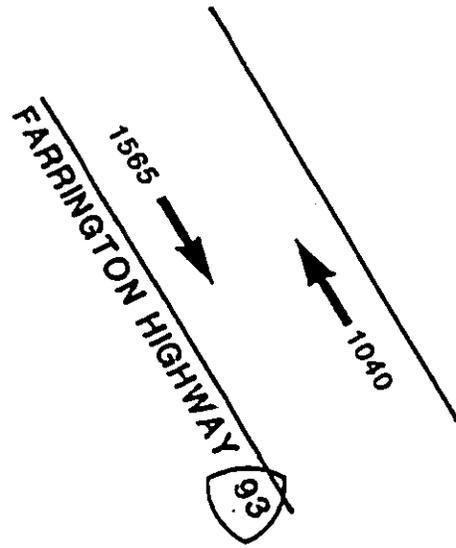
Piliokahi Avenue is proposed for construction within a 56-foot wide easement. Adjoining the 56-foot wide easement are several private residential lots which take direct access to Farrington Highway. The proposed Piliokahi Avenue will connect to a series of internal circulation streets within the project. These streets are shown in Figure 1.

Surrounding land uses are generally rural and suburban in character. Population of the surrounding community is low and was assumed to be less than 20,000.

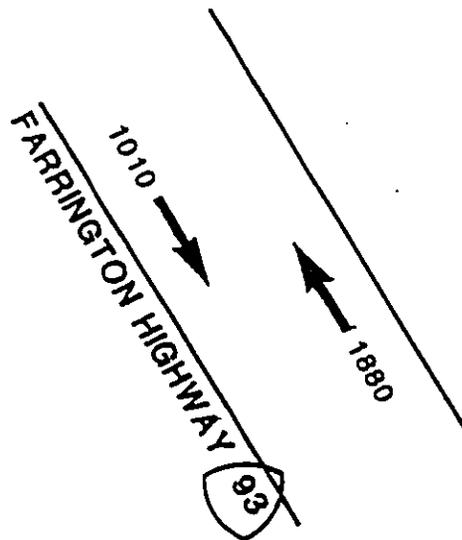
TRAFFIC VOLUMES

Existing traffic counts on Farrington Highway were collected from the State Department of Transportation. These historical counts revealed a traffic growth rate of 6.5 percent per year. Existing year 1990 and future year 1992 traffic volumes were estimated by applying a 6.5 percent per year growth rate to existing 1988 traffic volumes. Estimated traffic volumes on Farrington Highway, for both the 1990 AM-peak and 1990 PM-peak hour are displayed in Figure 2.


NORTH
Not to Scale



1990 AM - PEAK TRAFFIC VOLUMES



1990 PM - PEAK TRAFFIC VOLUMES

Figure 2
1990 TRAFFIC VOLUMES

Traffic Analysis Study
Nanakuli Residence Lots, Series 7

**PARSONS
BRINCKERHOFF**

FUTURE CONDITIONS

The No-build Alternative

The no-build alternative (based year 1992) assumes that the Hawaiian Homelands project would not be developed by 1992, and that the proposed construction of a T-intersection of Piliokahi Avenue and Farrington Highway would not be required. Traffic from other land uses would still be expected to grow at the 6.5% growth rate, calculated from historical counts. The resulting traffic volumes in vehicles per hour (vph) on Farrington Highway, given the no-build alternative, appears in Table 1.

Table 1
The "No-build" Alternative
Traffic Distribution on Farrington Highway

<u>Time Period</u>	<u>Honolulu Bound</u>	<u>Walanae Bound</u>
AM-Peak:	1745	1165
PM-Peak:	1100	2130

The Build Alternative

The build alternative assumes that in 1992, the proposed Hawaiian Homelands project is fully constructed and that all the houses are occupied. Project generated traffic was added to base year 1992 traffic volumes.

To determine the impact of the proposed project, traffic generated by the development was estimated using techniques documented in the Institute Of Transportation Engineers, Trip Generation Manual (1987). The appropriate trip rates used to determine the traffic generated by the proposed residential project are shown in Table 2.

CORRECTION

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

FUTURE CONDITIONS

The No-build Alternative

The no-build alternative (based year 1992) assumes that the Hawaiian Homelands project would not be developed by 1992, and that the proposed construction of a T-intersection of Piliokahi Avenue and Farrington Highway would not be required. Traffic from other land uses would still be expected to grow at the 6.5% growth rate, calculated from historical counts. The resulting traffic volumes in vehicles per hour (vph) on Farrington Highway, given the no-build alternative, appears in Table 1.

Table 1
The "No-build" Alternative
Traffic Distribution on Farrington Highway

<u>Time Period</u>	<u>Honolulu Bound</u>	<u>Waiānāe Bound</u>
AM-Peak:	1745	1165
PM-Peak:	1100	2130

The Build Alternative

The build alternative assumes that in 1992, the proposed Hawaiian Homelands project is fully constructed and that all the houses are occupied. Project generated traffic was added to base year 1992 traffic volumes.

To determine the impact of the proposed project, traffic generated by the development was estimated using techniques documented in the Institute Of Transportation Engineers, Trip Generation Manual (1987). The appropriate trip rates used to determine the traffic generated by the proposed residential project are shown in Table 2.

Table 2
Residential Trip Generation Rates
Nanakuli Residential Project

<u>Peak Period</u>	<u>Trip Generation Rate (Trips / d.u.)*</u>	<u>Total Trip Production (Total trips)</u>
AM -	0.754	125
enter	27%	35
exit	73%	90
PM -	1.005	170
enter	63%	105
exit	37%	65

* number of trips per dwelling unit

Trip Distribution

The estimated trips by the proposed development were distributed in accordance with existing directional traffic splits observed on Farrington Highway. Project generated trips were then added to the base year 1992 traffic volumes. The distribution of project generated trips is presented in Table 3. The future year 1992 with project traffic volumes are presented in Figure 3. In Figure 3, through traffic on Farrington Highway represents the 1992 background traffic volumes, while traffic turning left or right into/out of Piliokahi Avenue, represents traffic generated by the proposed development.

Table 3
Distribution of Project Generated Trips
(vph)

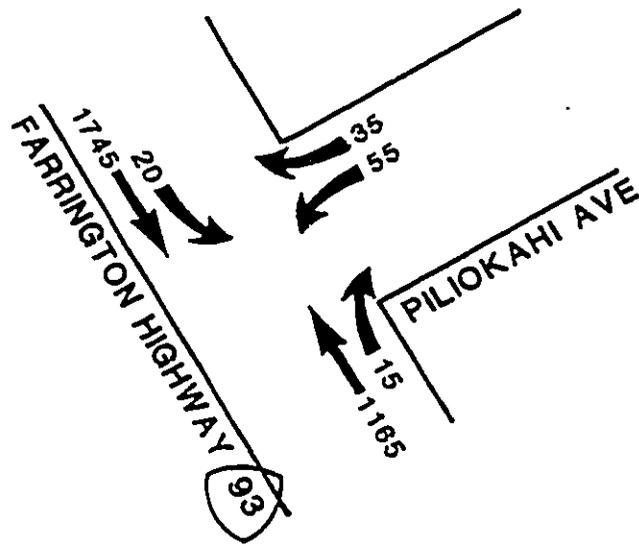
AM-Peak

<u>Destination</u>	<u>From Project</u>	<u>From Waianae</u>	<u>From Honolulu</u>
To Proposed Project	0	20	15
To Waianae	35	0	0
To Honolulu	55	0	0

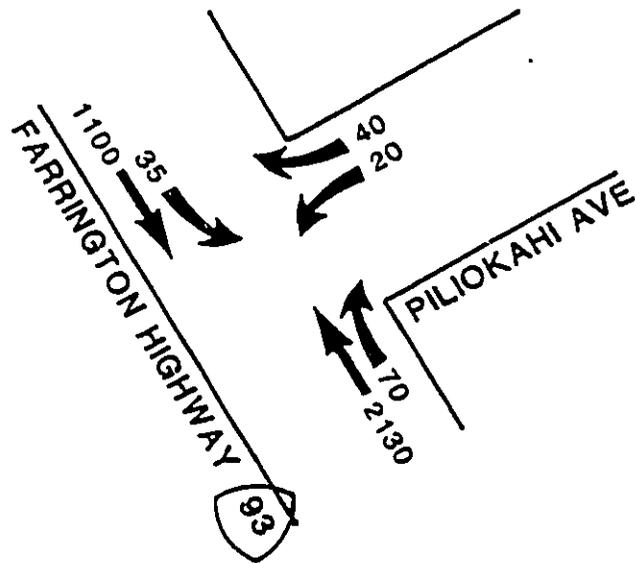
PM-Peak

<u>Destination</u>	<u>From Project</u>	<u>From Waianae</u>	<u>From Honolulu</u>
To Proposed Project	0	35	70
To Waianae	40	0	0
To Honolulu	20	0	0


NORTH
Not to Scale



1992 AM - PEAK TRAFFIC VOLUMES



1992 PM - PEAK TRAFFIC VOLUMES

**PARSONS
BRINCKERHOFF**

Figure 3
1992 TRAFFIC VOLUMES
Traffic Analysis Study
Nanakuli Residence Lots, Series 7

LEVEL OF SERVICE ANALYSIS

Peak hour traffic volumes tend to represent the worst case conditions on suburban streets and highways. For this reason, level of service (LOS) calculations were conducted for both the 1992 AM-peak and 1992 PM-peak hours at the proposed Piliokahi Avenue/Farrington Highway intersection. Levels of service calculations using intersection configurations with and without separate left-turn lanes on Piliokahi Avenue were performed, with the results shown in Table 4. Unnecessary stop delay to right-turning vehicles could be minimized by providing separate left-turn and right-turn lanes. Exclusive lanes would preclude right-turning vehicles being stopped behind a vehicle waiting to turn left at Farrington Hwy.

Table 4
Forecasted
1992 Post Development Peak-Hour LOS
For Critical Lane Movements

<u>Approach</u>	<u>LOS W/ Separate Lane</u>		<u>LOS W/ Shared Lanes</u>	
	<u>LT AM</u>	<u>PM</u>	<u>AM</u>	<u>PM</u>
Farrington (Honolulu Bound)				
Left Turn Movement	--	--	C	E
Piliokahi Avenue				
Left Turn Movement	E	E	E	E
Right Turn Movement	A	C	E	E

SIGNAL WARRANT ANALYSIS

The installation of a traffic signal at the Farrington Hwy / Piliokahi Street intersection would improve the levels of service for the left-turn movements into and out-of Piliokahi Street. A traffic signal would, however, interrupt through traffic on Farrington Hwy which would otherwise pass freely through the intersection.

Nationally accepted traffic signal warrants have been established to aid in identifying locations that justify traffic signalization. Traffic signals should only be installed at locations that meet these nationally accepted signal warrants.

Traffic signal warrants were reviewed at the future Farrington Hwy / Piliokahi Street intersection for the future year 1992 with project conditions. Projected traffic volumes do not meet any of the traffic signal warrants.

CONCLUSIONS AND RECOMMENDATIONS

The proposed 168 residential lot development will increase traffic volumes in Farrington Hwy by less than three percent during both the AM and PM peak hours. The left-turn movement into Piliokahi Street from Farrington Hwy will experience LOS E conditions during the PM peak hour. The left-turn movement out of Piliokahi Street onto Farrington Hwy will experience LOS E conditions during both the AM and PM peak hours. This is due to the high volume of highway traffic on Farrington Highway.

At unsignalized intersections, it is not uncommon for left-turn movements to experience LOS E or LOS F conditions. Capacity analyses and field reviews conducted at similar unsignalized intersections indicate that the methodology outlined in the 1985 Highway Capacity Manual is conservative in nature.

A preliminary review of traffic signal warrants as outlined in the Manual on Uniform Traffic Control Devices reveals that this intersection does not justify signalization.

It is recommended that the future Piliokahi Street be striped to provide an exclusive left-turn and right-turn lane in the makai-bound direction at Farrington Hwy to minimize the delay to makai-bound right-turning vehicles.

TECHNICAL APPENDIX

The Highway Capacity Manual defines "Levels of Service" as qualitative measures which describe traffic operational conditions considering speed and travel time, freedom to maneuver, traffic interruptions and delays, comfort and convenience, and safety. Six levels of service, from "A" (best) to "F" (worst), are defined.

- o Level of Service A represents free flow. Individual users are virtually unaffected by the presence of others. For a two-lane highway, passing demand is well below passing capacity: platooning of three or more vehicles is rare. For unsignalized intersections, little or no delay is experienced.
- o Level of Service B represents stable flow where the presence of other users in traffic becomes noticeable. On a two-lane highway, platooning is common as passing demand approaches passing capacity. Short traffic delays occur at unsignalized intersections.
- o Level of Service C describes stable flow with greater constraints on maneuvering. Long platoons and lower speeds are experienced on two-lane highways. Delays at unsignalized intersections are described as "average."
- o Level of Service D represents high density, stable flow. Significant restrictions in speed and maneuverability begin to occur. The opposing traffic streams of a two-lane highway operate separately as passing capacity approaches zero. Delays at unsignalized intersections are long as acceptable gaps in the main traffic stream become infrequent.
- o Level of Service E represents capacity or near-capacity conditions. Speeds are low and flow is considered unstable. Passing on two-lane highways is virtually impossible and platooning becomes intense where there are slow moving vehicles or other interruptions. Very long delays occur at unsignalized intersections.
- o Level of Service F describes a condition in which traffic demands exceed capacity. Forced flow, with extreme delays and long queues, occur.

SIGNAL WARRANT ANALYSIS

4C-10.3 Warrant 11, Peak Hour Volume

The peak hour volume warrant is also intended for application when traffic conditions are such that for one hour of the day minor street traffic suffers undue traffic delay in entering or crossing the major street.

The peak hour volume warrant is satisfied when the plotted point representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicle per hour of the higher volume minor street approach (one direction only) for one hour (any four consecutive 15-minute periods) of an average day falls above the curve in Figure 4-5 for the existing combination of approach lanes.

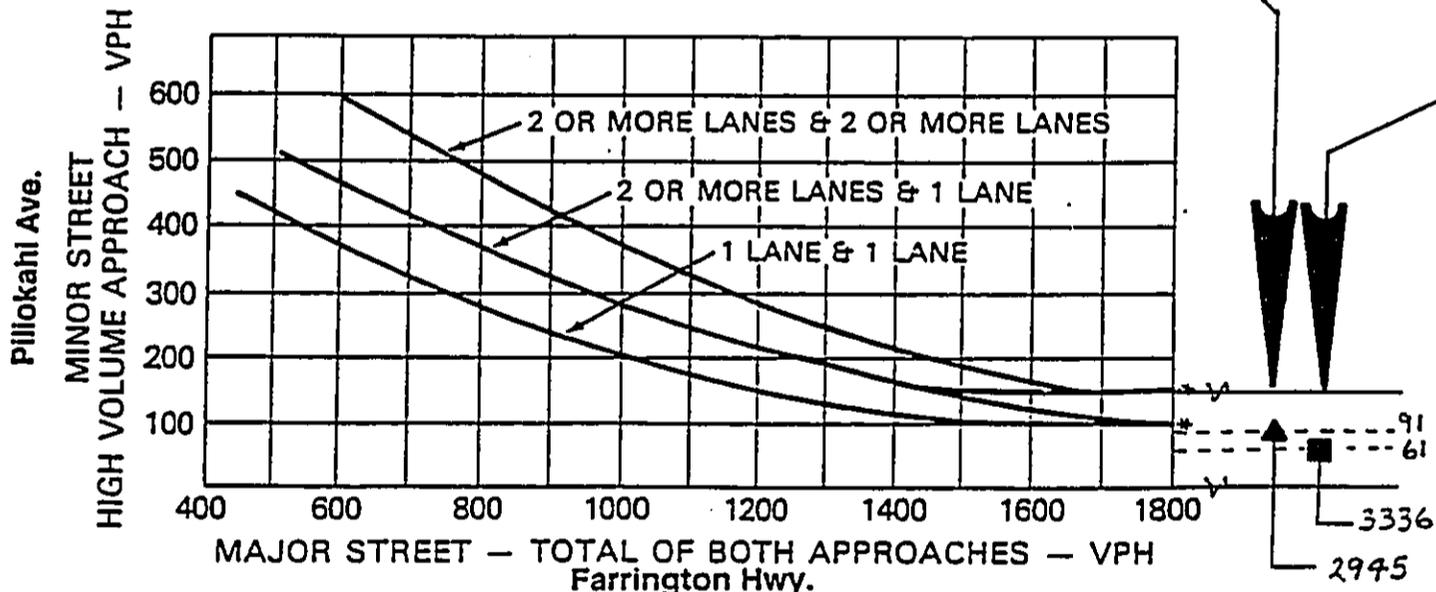
When the 85th percentile speed of major street traffic exceeds 40 mph or when the intersection lies within a built-up area of an isolated community having a population less than 10,000, the peak hour volume requirements is satisfied when the plotted point referred to above falls above the curve in Figure 4-6 for the existing combination of approach lanes.

RESULTS

AM-Peak Volumes
 Farrington: 2945 Vehicles
 Piliokahi: 91 Vehicles
 (Does not warrant signal)

PM-Peak Volumes
 Farrington: 3336 Vehicles
 Piliokahi: 61 Vehicles
 (Does not warrant signal)

FIGURE 4-5. PEAK HOUR VOLUME WARRANT



*NOTE: 150 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

Source: MUTCD

JOHN WAIHEE
GOVERNOR OF HAWAII



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

WILLIAM W. PATT, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DEPUTIES
Keith W. Ahue
MANABU TAGOMORI
RUSSELL N. FUKUMOTO

AQUACULTURE DEVELOPMENT
PROGRAM
AQUATIC RESOURCES
CONSERVATION AND
ENVIRONMENTAL AFFAIRS
CONSERVATION AND
RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
LAND MANAGEMENT
STATE HISTORIC PRESERVATION
STATE PARKS
WATER AND LAND DEVELOPMENT

April 11, 1990

Mr. Hardy Spoehr
Planning Office
Department of Hawaiian Home Lands
State of Hawaii
335 Merchant Street, 3rd Floor
Honolulu, Hawaii 96813

Dear Mr. Spoehr:

SUBJECT: Chapter 6E (HRS) Historic Preservation Review
Housing Project -- Nanakuli (Dept. Hawaiian Home Lands)
Nanakuli, Waianae, O'ahu

Our archaeological survey team working under contract for your department surveyed this project area on March 28-30, 1990. The area surveyed is approximately the area shown in black on the attached map and the white area marked "cemetery site" (Attachment 1). Mr. Bill Sanborn of your department was on-site on March 28, 1990, with current project maps, and those current maps were the ones used for the survey.

The survey was done by 3 crew members, with Dr. Ross Cordy of our office overseeing the work. The entire project area was covered in transect sweeps, with the crew separated 3-7 meters apart. No historic sites were found, except a tiny surface scatter of basalt flakes and shell food remains. This scatter was completely collected, and a test unit placed at the scatter showed it was only on the surface. Thus, no significant historic sites are in the project area. The project will have "no effect" on such sites.

The area marked "cemetery site" was included in the above survey, and there were no surface remains of any historic sites, including graves, visible within the area. Thus, the bounds of this area must be based solely on oral information at this time.

An archaeological report on the survey will be completed within the next two weeks.

Sincerely,

A handwritten signature in dark ink, appearing to read "Don Hibbard".

DON HIBBARD, Director
Historic Preservation Program

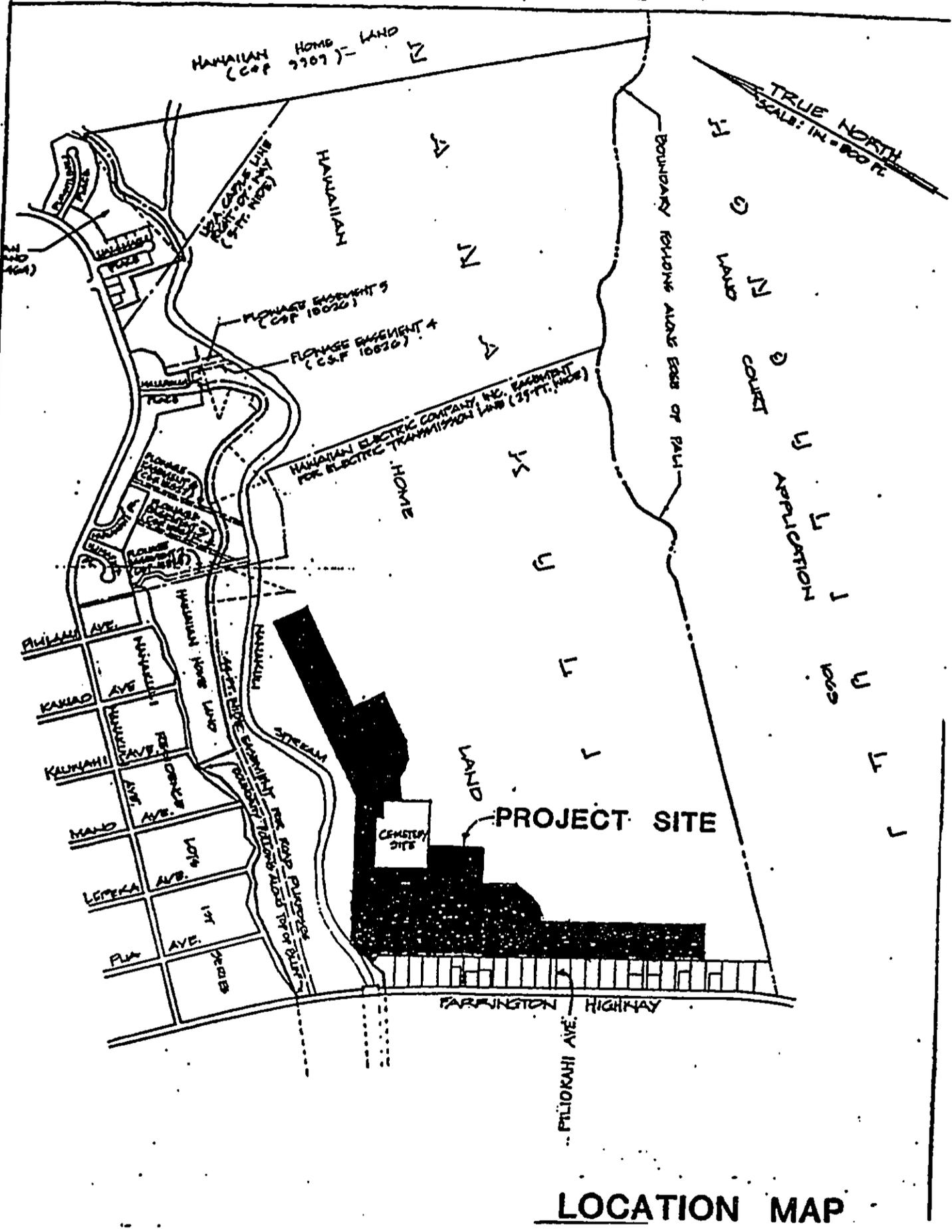
Attachment (map)

cc: Fred Rodrigues, Consulting Planner to DHHL

APPENDIX B

7/89 17:19

012



LOCATION MAP

DIVISION OF WASTEWATER MANAGEMENT
City and County of Honolulu

APPLICATION FOR SEWER CONNECTION
(Allow at least three weeks for processing of application)

26/17

RECEIVED
MAY 11 1990

RECEIVED
MAR 6 1990

PART A - TO BE FILLED BY APPLICANT

1. Project Name: Nanakuli Residential Lot-Series 7
2. Address or Location: Nanakuli, Waiana, Oahu, Hawaii ENGINEERS SURVEYORS HAWAII, INC.
3. Tax Map Key: 8-9-07: 2
4. Type Development: PD-H Cluster Subdiv. xx
Apt. Other:
5. Total No. of Units 168 (Give breakdown below)
Studio 1 Bdrm. 2 Bdrm. 3 Bdrm. 84
4 Bdrm. 84 Other:
6. Sewer Connection Work Desired: (Give length, size, depth, etc.)
Project will include approx. 460 LF of 8" sewer. Sewer will be designed to Wastewater Management standards. Wastewater will be directed to the existing Nanakuli Wastewater Pump Station. (See attached map)
7. Approximate Date Connection is Required: October 1990
8. Number and Type of Existing Structures on Property: None
(Check One: Structures to Remain To be Demolished)
9. Remarks: Mr. Stan Wong of the Dept. of Hawaiian Home Lands said they are within their allotment of wastewater facilities capacity.
10. Information provided By:
Name: Eric Hee Date: Jan. 31, 1990
Firm: Engineers Surveyors Hawaii Phone: 531-3116
Address: 1020 Auahi Street Hon. 96814
Street City Zip Code

PART B - TO BE FILLED BY DIVISION OF WASTEWATER MANAGEMENT

1. Present Zoning: _____ General Plan: _____
2. Sewers: Adequate Inadequate Not Available
Other: _____
3. Charges: Yes No
a. Sewer Assessment Rate X Area _____ sq. ft.... \$ _____
b. Sewer Connection \$ _____
c. Total Estimated Charge \$ _____
4. Remarks: _____
5. Application:
Approved: Imamura Date 3/2/90
(Valid for One Year After Date of Approval)
Not Approved: _____ Date _____

APPENDIX C

CORRECTION

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

DOCUMENT CAPTURED AS RECEIVED

DIVISION OF WASTEWATER MANAGEMENT
City and County of Honolulu

26/17
RECEIVED
DIV. 1
FEB 6 4
PUB. SEC.

APPLICATION FOR SEWER CONNECTION
(Allow at least three weeks for processing of application)

PART A - TO BE FILLED BY APPLICANT

RECEIVED
MAR 6 1990

- Project Name: Nanakuli Residential Lot-Series 7
- Address or Location: Nanakuli, Waiana, Oahu, Hawaii
- Tax Map Key: 8-9-07: 2
- Type Development: PD-H Cluster Subdiv.
Apt. Other:
- Total No. of Units 168 (Give breakdown below)
Studio 1 Bdrm. 2 Bdrm. 3 Bdrm. 84
4 Bdrm. 84 Other:
- Sewer Connection Work Desired: (Give length, size, depth, etc.)
Project will include approx. 460 LF of 8" sewer. Sewer will be designed to Wastewater Management standards. Wastewater will be directed to the existing Nanakuli Wastewater Pump Station. (See attached map)
- Approximate Date Connection is Required: October 1990
- Number and Type of Existing Structures on Property: None
(Check One: Structures to Remain To be Demolished)
- Remarks: Mr. Stan Wong of the Dept. of Hawaiian Home Lands said they are within their allotment of wastewater facilities capacity.
- Information provided By:
Name: Eric Hee Date: Jan. 31, 1990
Firm: Engineers Surveyors Hawaii Phone: 531-3116
Address: 1020 Auahi Street Hon. 96814
Street City Zip Code

PART B - TO BE FILLED BY DIVISION OF WASTEWATER MANAGEMENT

- Present Zoning: _____ General Plan: _____
- Sewers: Adequate Inadequate Not Available
Other: _____
- Charges: Yes No
a. Sewer Assessment Rate Area sq. ft.... \$ _____
b. Sewer Connection \$ _____
c. Total Estimated Charge \$ _____
- Remarks: _____
- Application:
Approved: Imamura Date 3/2/90
(Valid for One Year After Date of Approval)
Not Approved: _____ Date _____

APPENDIX C

BENJAMIN J. CAYETANO
GOVERNOR
STATE OF HAWAII



STATE OF HAWAII
DEPARTMENT OF HAWAIIAN HOME LANDS

P.O. BOX 1879
HONOLULU, HAWAII 96805

RECEIVED

KALI WATSON
CHAIRMAN
HAWAIIAN HOMES COMMISSION

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

96 JAN -9 A8:36

OFFICE OF ENVIRONMENTAL
QUALITY CONTROL

January 5, 1995

Mr. Gary Gill, Director
Office of Environmental Quality Control
Department of Health
220 South King Street, 4th Floor
Honolulu, Hawaii 96813

Dear Mr. Gill:

SUBJECT: Nanakuli Residence Lots, Series 7
Farrington Highway - Piliokahi Avenue Intersection Improvements

In 1990 the Department of Hawaiian Home Lands filed a final Environmental Assessment (negative declaration). The Environmental Assessment was published in the OEQC May 9, 1990 bulletin. It covered the 127 residential lots subdivision, Nanakuli Residence Lots, Series 7, and the Farrington Highway - Piliokahi Avenue Intersection Improvements.

Due to budgetary constraints this project was phased. Phase 1, Nanakuli Residence Lots, Series 7 was completed in 1994. Phase 2 Farrington Highway - Piliokahi Avenue Intersection Improvements was completed in 1995. The intersection improvements consists of constructing offsite improvements, e.g., highway widening, relocation of the water, drainage, and electrical systems, and the installation of electrical conduits for the future traffic control system.

The Department of Hawaiian Home Lands is presently in the process of bidding out the traffic control system. Because all of the physical structures for this system have been completed, the work will be limited to the pulling of electrical wires through the conduits and the hanging of a traffic control system. In view of the scope of work, the Department of Hawaiian Home Lands has determined that the volume of work is minor in nature and will not be filing a separate Environmental Assessment.

If you have any questions please contact Mr. Mike Crozier, Administrator of the Land Development Division at 586-3815.

Warmest aloha,

Handwritten signature of Kali Watson in cursive script.

Kali Watson, Chairman
Hawaiian Homes Commission

Exemption is okay!