

BOARD OF WATER SUPPLY

CITY AND COUNTY OF HONOLULU

630 SOUTH BERETANIA STREET

HONOLULU, HAWAII 96843



March 23, 1990

FRANK F. FASI, Mayor

DONNA B. GOTH, Chairman  
JOHN K. TSUI, Vice Chairman  
SISTER M. DAVILYN AH CHICK, O.S.F.  
SAM CALLEJO  
EDWARD Y. HIRATA  
WALTER O. WATSON, JR.  
MAURICE H. YAMASATO

KAZU HAYASHIDA  
Manager and Chief Engineer

Dr. Marvin T. Miura, Director  
Office of Environmental Quality  
Control  
State of Hawaii  
Kekuanaoa Building, #104  
465 South King Street  
Honolulu, Hawaii 96813

Dear Dr. <sup>Miura</sup> Miura:

Subject: Environmental Impact Assessment for the 12-Inch  
Water Main and Appurtenances along Plantation  
Road (From Farrington Highway to Waianae Valley  
Road), Waianae, Oahu, Hawaii  
TMK: 8-5-01, 03, 19

We request that our proposed project be published in the  
OEQC Bulletin as a Negative Declaration.

Attached are four copies of the assessment for your use  
along with the publication form.

If you have any questions, please contact Lawrence Whang  
at 527-6138.

Very truly yours,

KAZU HAYASHIDA  
Manager and Chief Engineer

Attachment

1990-04-08-0A-FAA

FILE COPY

ENVIRONMENTAL ASSESSMENT

FOR THE

★ 12-INCH WATER MAIN AND APPURTENANCES  
ALONG PLANTATION ROAD  
(FROM FARRINGTON HIGHWAY TO WAIANAE VALLEY ROAD)★

WAIANAE, OAHU, HAWAII

TAX MAP KEY: 8-5-01; 8-5-03; 8-5-19

This document is prepared pursuant to Chapter 343, HRS

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

Prepared by:

Engineering Concepts, Inc.  
250 Ward Avenue, Suite 206  
Honolulu, Hawaii 96814

March 1990

**ENVIRONMENTAL ASSESSMENT**  
**FOR THE**  
**12-INCH WATER MAIN AND APPURTENANCES**  
**ALONG PLANTATION ROAD**  
**(FROM FARRINGTON HIGHWAY TO WAIANAE VALLEY ROAD)**  
**WAIANAE, OAHU, HAWAII**  
**TAX MAP KEY: 8-5-01; 8-5-03; 8-5-19**

This document is prepared pursuant to Chapter 343, HRS

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

Prepared by:

Engineering Concepts, Inc.  
250 Ward Avenue, Suite 206  
Honolulu, Hawaii 96814

March 1990

## CONTENTS

		<u>Page</u>
SECTION I	PERTINENT DATA .....	I-1
SECTION II	DESCRIPTION OF PROPOSED ACTION AND STATEMENT OF OBJECTIVES .....	II-1
	Proposed Action .....	II-1
	Project Schedule and Construction Cost .....	II-1
	Statement of Objectives .....	II-1
SECTION III	SUMMARY DESCRIPTION OF THE AFFECTED ENVIRONMENT .....	III-1
	Project Location .....	III-1
	Topography .....	III-1
	Geology/Soils .....	III-1
	Climate .....	III-4
	Vegetation .....	III-5
	Land Use .....	III-5
	Air Quality .....	III-7
	Aesthetics .....	III-7
	Archaeological Sites .....	III-7
SECTION IV	IDENTIFICATION AND SUMMARY OF MAJOR IMPACTS AND PROPOSED MITIGATION MEASURES ..	IV-1
	Short-Term Impacts .....	IV-1
	Long-Term Impacts .....	IV-1
	Mitigation Measures .....	IV-1
SECTION V	ALTERNATIVES CONSIDERED .....	V-1
	No Action .....	V-1
	Alternative Piping Networks .....	V-1
SECTION VI	DETERMINATION, FINDINGS, AND REASONS SUPPORTING DETERMINATION .....	VI-1
	Determination .....	VI-1
	Findings and Reasons Supporting Determination .....	VI-1
REFERENCES		

CONTENTS (CONT.)

Page

LIST OF TABLES

TABLE 1	Average and Extreme Recorded Temperature for the Waianae District .....	III-5
---------	---	-------

LIST OF FIGURES

FIGURE 1	12-Inch Water Main Site Plan .....	II-2
FIGURE 2	Typical Trench Section .....	II-3
FIGURE 3	Waianae Judicial District .....	III-2
FIGURE 4	Vicinity Map .....	III-3
FIGURE 5	Land Use Map .....	III-6
FIGURE 6	Archaeological Sites .....	III-8

**SECTION I**  
**PERTINENT DATA**

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

Contact: Lawrence Whang (527-6138)

**Project Title:** 12-Inch Water Main and Appurtenances along Plantation Road  
(from Farrington Highway to Waianae Valley Road)

**Proposed Action:** Installation of approximately 3,760 linear feet of a 12-inch water main

**Location:** Waianae, Oahu, Hawaii  
TMK: 8-5-01; 8-5-03; 8-5-19

**Agencies Consulted in the Assessment Process:**

State of Hawaii  
Department of Health  
Department of Land and Natural Resources  
Division of State Parks/Outdoor Recreation & Historic Sites  
Department of Transportation

City and County of Honolulu  
Department of Public Works  
Division of Engineering  
Department of Transportation Services

Others  
Hawaiian Electric Company  
Hawaiian Telephone Company  
Honolulu Gas Company  
American Lung Association

**SECTION II**  
**DESCRIPTION OF PROPOSED ACTION AND STATEMENT OF OBJECTIVES**

**PROPOSED ACTION**

The proposed project consists of the installation of approximately 3,760 linear feet of 12-inch water main along Plantation Road, extending from Farrington Highway to Waianae Valley Road. Within Farrington Highway, connection will be made to an existing 20-inch main. Within Waianae Valley Road, connection will be made to an existing 12-inch main (see Figure 1). Also proposed is the installation of air relief valves and gate valves.

The proposed water main will be constructed within the pavement and shoulder area of Plantation Road. Intrusion into the pavement areas of Farrington Highway and Waianae Valley Road are required to make necessary connections to existing water mains. The proposed water main shall be constructed of either polywrapped ductile iron or polyvinyl chloride pipe. A typical trench section is illustrated on Figure 2.

**PROJECT SCHEDULE AND CONSTRUCTION COST**

The estimated construction time for the proposed water main is 270 days. It is estimated that the construction will begin about August 1990, resulting in the project being completed about May 1991. The estimated construction cost is \$700,000, funded by the Board of Water Supply.

**STATEMENT OF OBJECTIVES**

The objective of the proposed project is twofold. First, the proposed water main will provide additional reliability and flexibility to the existing water distribution system in the community of Waianae. Specifically, residents would be provided additional assurances for adequate water pressure and water supply for fire protection.

Secondly, the proposed project would be a step toward achieving the goal of meeting water demands for the Waianae area by sources in the Makaha/Waianae area. Currently, the main source of water in the Waianae area is supplied from the Pearl Harbor Basin (south of the Waianae area). With the current plan to develop water sources in the Makaha/Waianae

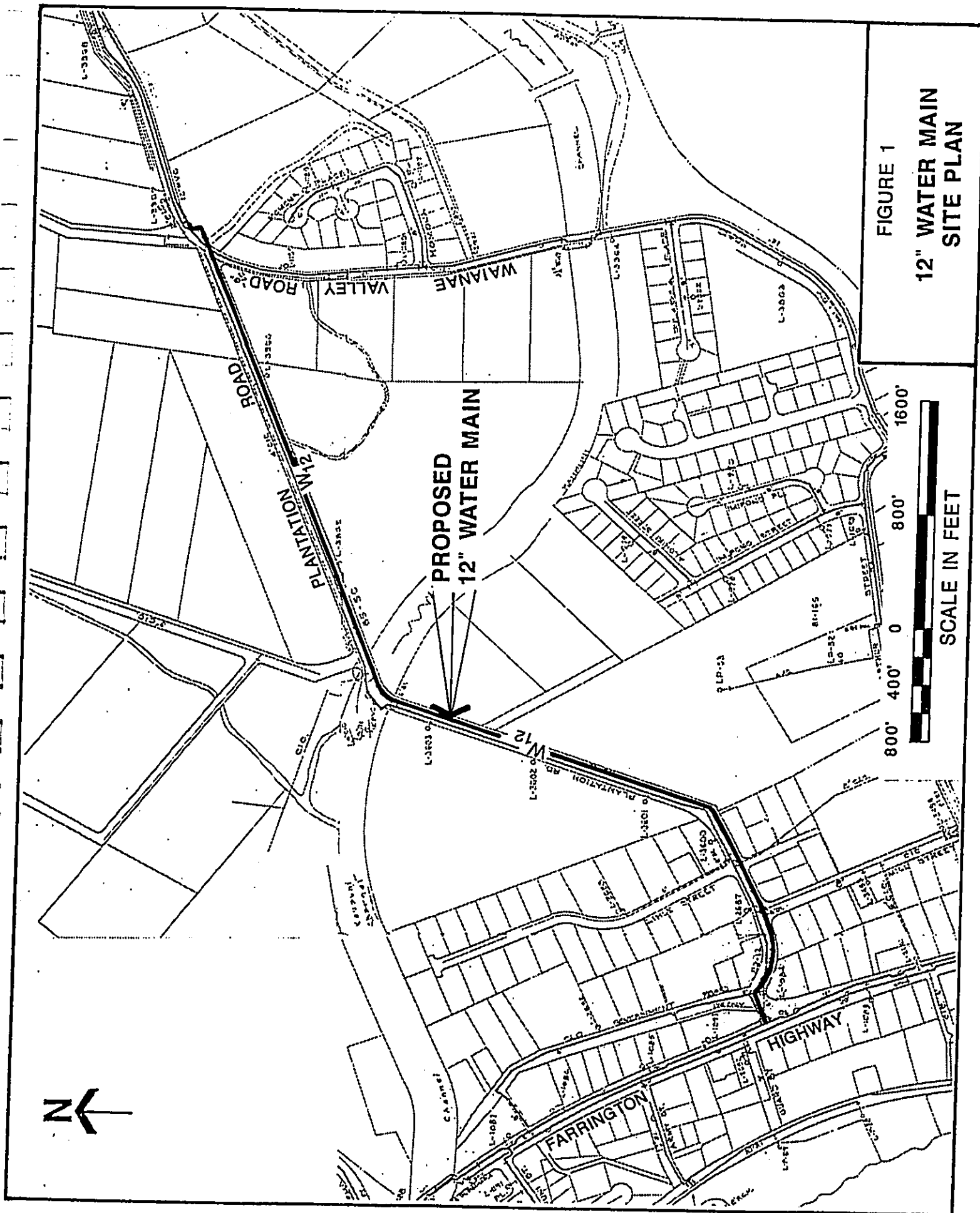
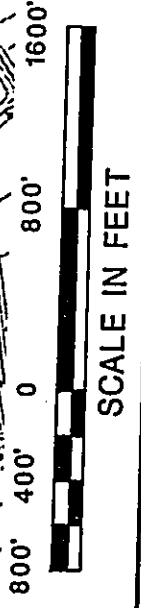


FIGURE 1  
12" WATER MAIN  
SITE PLAN





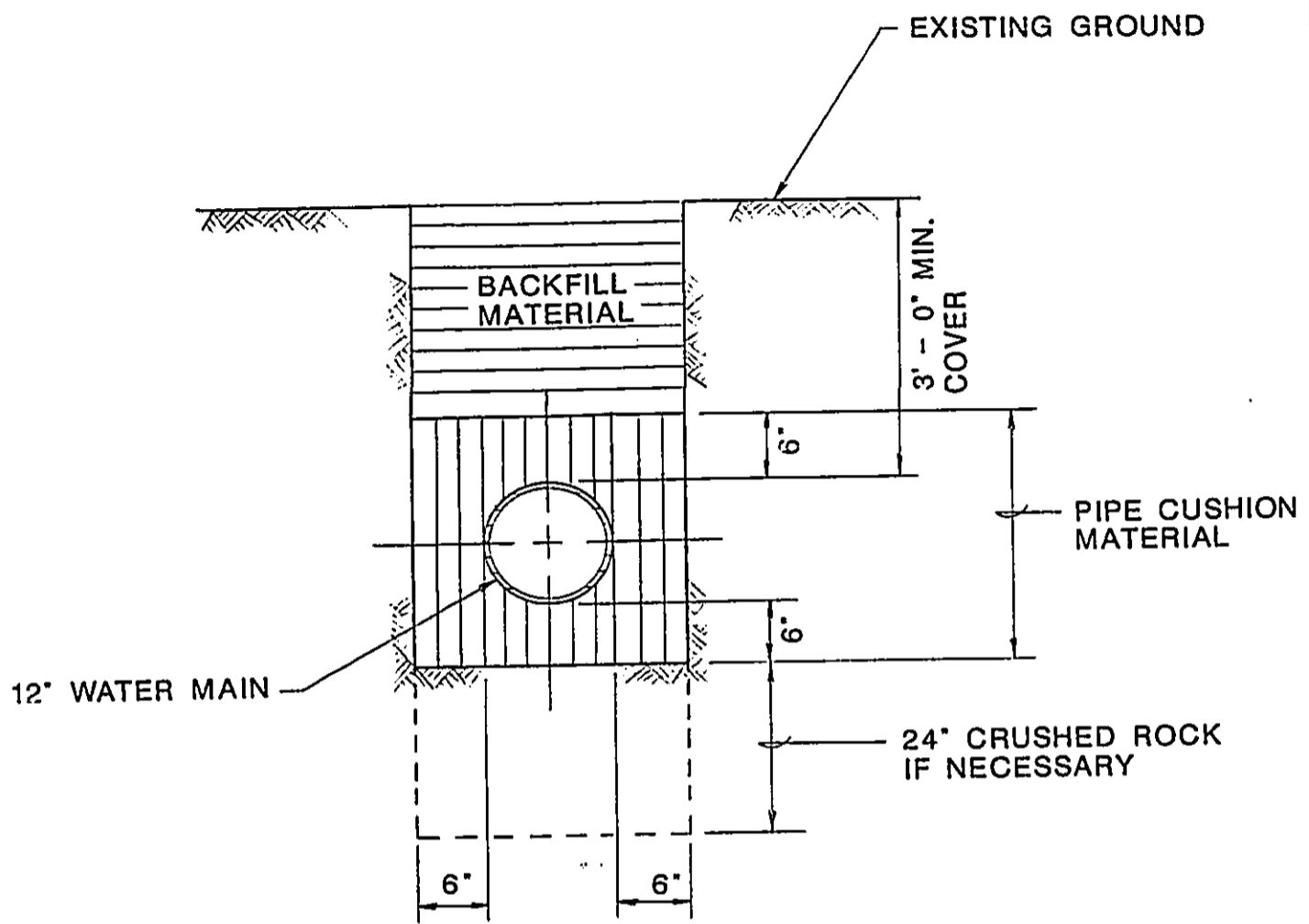


FIGURE 2  
TYP. TRENCH SECTION

area, the existing water transmission/distribution system would require modification to continue to provide sufficient pressure and quantity to the users in the Waianae region.

**SECTION III**  
**SUMMARY DESCRIPTION OF THE AFFECTED ENVIRONMENT**

**PROJECT LOCATION**

The proposed project is located in the Waianae judicial district of the City and County of Honolulu. The judicial district, located in Western Oahu, extends from the Ewa-Waianae boundary north of the Kahe Power Plant to Kaena Point and is bounded by the leeward slopes of the Waianae Mountain Range. Major urban centers include the communities of Nanakuli, Maili, Waianae, and Makaha (Figure 3). These communities are linked by the major coastal arterial, Farrington Highway.

The proposed project is located in the community of Waianae, extending inland from Farrington Highway for approximately three-fourths of a mile. The project site is situated in Waianae Valley, northwest of Paheehee Ridge and east (mauka) of Pokai Bay (see Figure 4).

**TOPOGRAPHY**

The Waianae district consists of a coastal plain (20-foot mean sea elevation) and intruding valleys and plains. The major part of the land area is comprised of the Waianae Mountain Range with its rugged topography of nearly vertical cliffs and amphitheater-headed valleys.

The project site is situated on the relatively flat valley floor of Waianae Valley, with elevations ranging from 4 to 40 feet and slopes averaging 1 percent.

**GEOLOGY/SOILS**

The Waianae Mountain Range, forming the western part of the island of Oahu, is the eroded remnant of the Waianae Volcano. The leeward (western) side of the Waianae Mountain Range geologically consists of three major groups of lava flows that erupted during the Tertiary Period and several subsequent secondary eruptions. The lava flows and cinders of this era have been deeply weathered. On top of this basalt layer are alluvial deposits and coral.

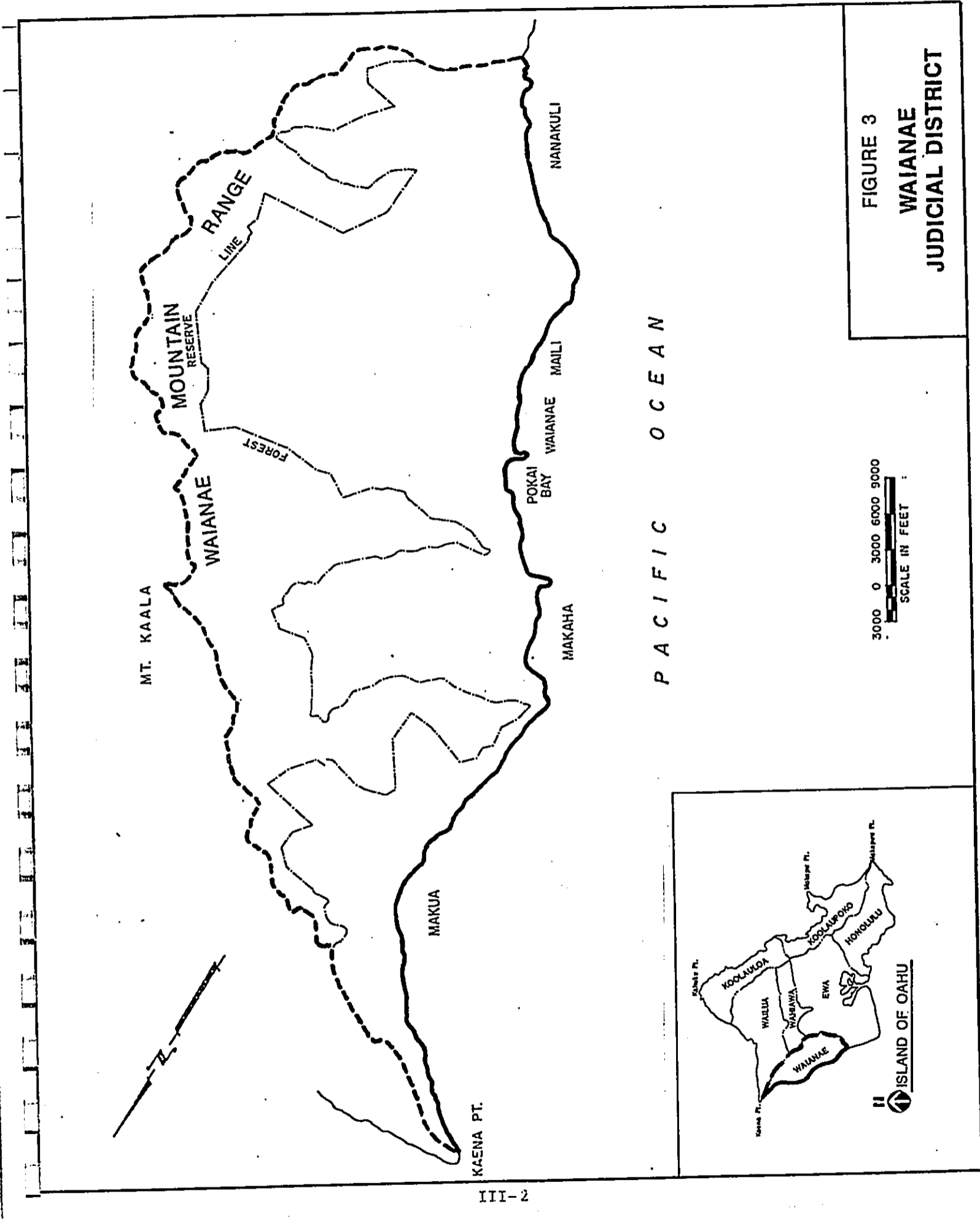


FIGURE 3  
**WAIANAЕ**  
**JUDICIAL DISTRICT**

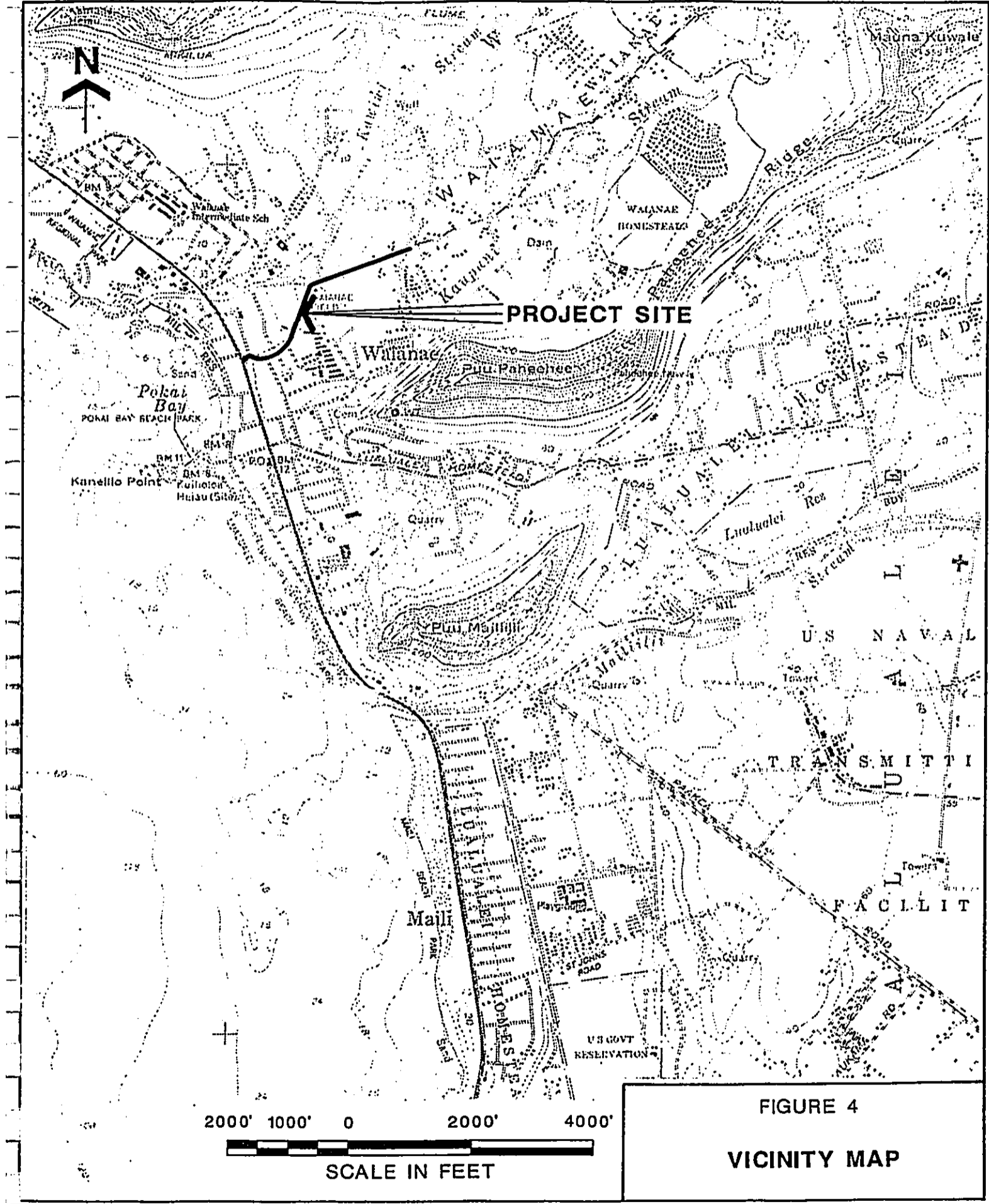


FIGURE 4  
VICINITY MAP

According to the U.S. Department of Agriculture Soil Conservation Service's Soil Survey, the project site is underlain with four soil types. These soil types are listed below in the order of occurrence from Farrington Highway, inland to Waianae Valley Road.

PsA Pulehu clay loam, 0 to 3% slopes

EmB Ewa silty clay loam, moderately shallow, 2 to 6% slopes

KmaB Keaau stony clay, 2 to 6% slopes

LvB Lualualei stony clay, 2 to 6% slopes

A review of construction documents of previous infrastructure projects indicates the subsurface is composed of sand and dirt. The sandy substrate is present at Farrington Highway and extends inland for approximately 1,000 feet.

#### CLIMATE

The Waianae region is generally characterized as semiarid. Mean annual rainfall along the coast averages 20 inches per year but increases to as much as 80 to 100 inches at the higher elevations (elevations greater than 400 feet) of the Waianae Mountain Range. Much of the annual rainfall can be accounted for by the few severe storms such as the "kona" storms that approach Oahu from the south or west, usually between the months of December and March. Approximately two-thirds of the Waianae region, including the project site, receive an annual average rainfall of between 20 and 30 inches.

Usually, tradewinds prevail from the northeast, with wind speeds exceeding 15 knots 50 percent of the time. However, on many occasions, sea breezes are dominant along the Waianae coast.

Temperatures average between 72 and 80 degrees F along the low-lying areas. The temperature for two stations is shown below.

**TABLE 1  
AVERAGE AND EXTREME RECORDED TEMPERATURE  
FOR THE WAIANAE DISTRICT**

Station	Ground Elev (ft)	Ave Temperature (°F)		Extreme Temperature of Record (°F)	
		Lowest Month	Highest Month	Lowest	Highest
Waianae*	20	72.1	79.7	45	96
Lualualei 804**	113	69.9	81.3	--	--

\* Based on 79 years of record.

\*\* Based on 1 year of record (1972).

#### VEGETATION

The variation in the pattern of vegetation in the Waianae region depends upon the interrelationship between soil type, elevation, and rainfall pattern. In the low-lying, semiarid areas of the proposed project (annual mean rainfall of approximately 20 inches per year), the predominant types of vegetation are the kiawe, koa haole, pili grass, and finger grass.

Vegetation in the makai area of the project site (closest to Farrington Highway) is limited to landscaped yards typical of a business/residential neighborhood. Further inland, vegetation along the proposed project is typical of parks and school fields. The mauka portion of the project site is limited to farm lands, with open fields and more "natural" vegetation as listed above.

#### LAND USE

Urban development in the Waianae region mainly occurs on the coastal plain, with agriculture (including ranching) extending into inland areas. The eastern (mauka) half of the proposed project is situated in areas zoned Agriculture (A-2), while the remainder is situated in a mix of areas zoned Preservation (P-2), Residential (R-5), and Business (B-2) (see Figure 5).

In the areas zoned Residential, the proposed water main will traverse residential areas occupied by single family units and Waianae Elementary School. In the areas zoned Agriculture, the proposed water main will traverse predominantly open areas, including farm

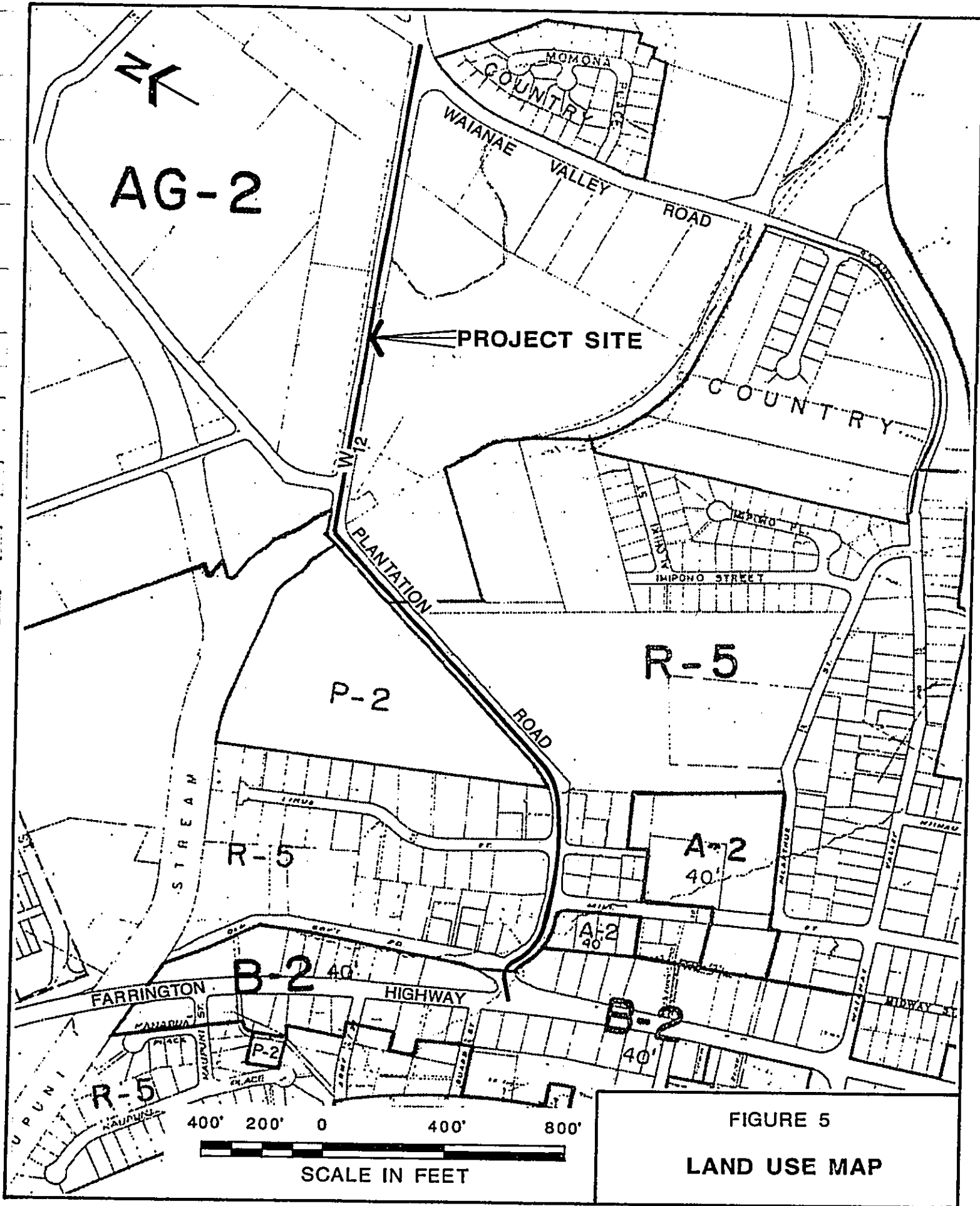


FIGURE 5  
LAND USE MAP



lands and scattered residences. Waianae Pililaau Field is located in the area zoned Preservation. A mixture of business, including service stations, convenience stores, health care offices, and snack shops, is located at the intersection of Plantation Road and Farrington Highway in the areas zoned Business.

#### **AIR QUALITY**

There are no air quality data in the Waianae region, where air quality impacts are generally attributable to agriculture-related activities and to exhaust emission from automobiles and trucks, especially in the vicinity of major intersections along Farrington Highway.

#### **AESTHETICS**

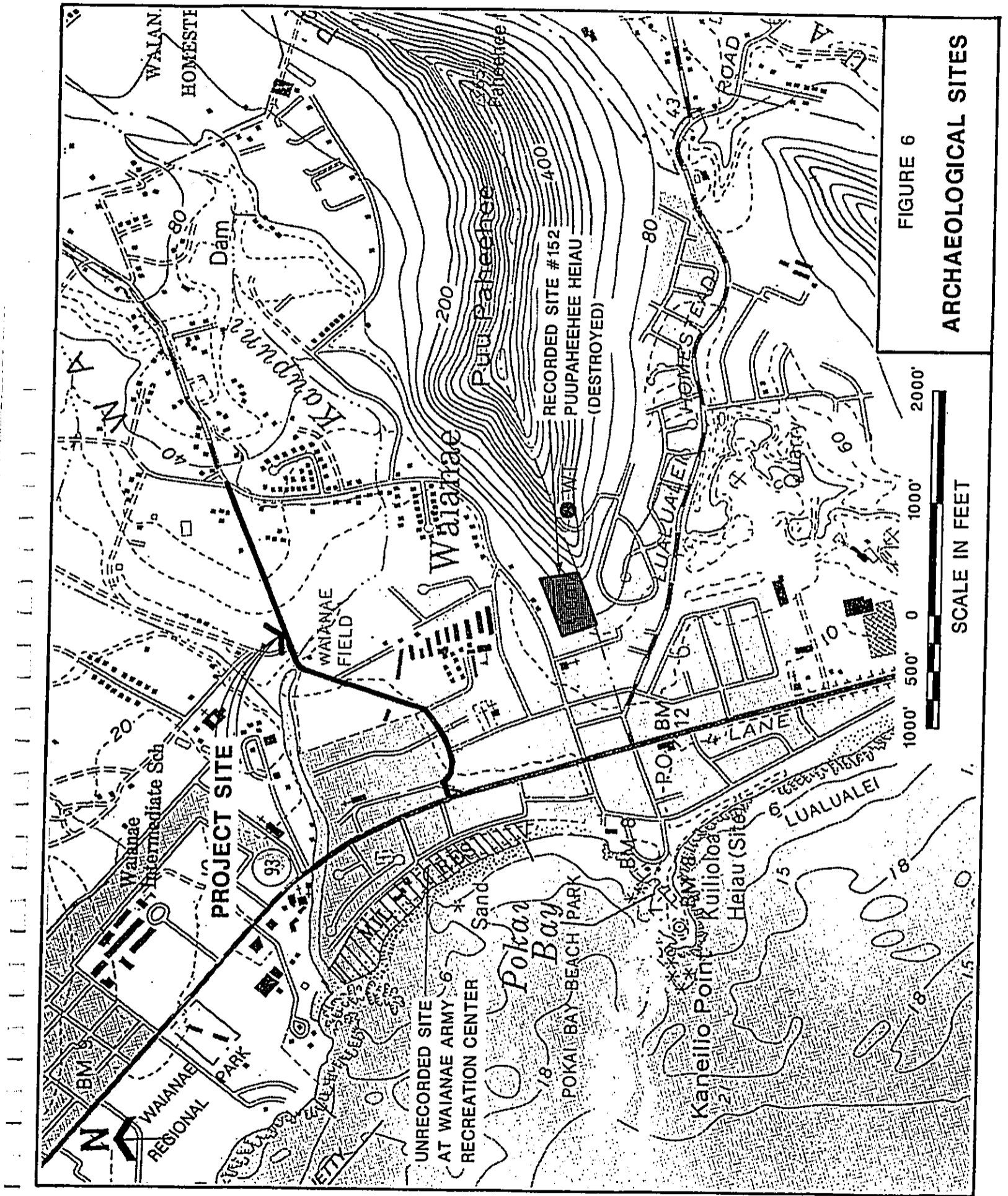
Most of the proposed water main will be constructed underground and will not result in any visual impact. A portion of the proposed water main will be above grade as it crosses Kaupuni Drainage Channel. The proposed water main will be strapped under the upstream side of the bridge across the channel and should not be visible from Plantation Road.

#### **ARCHAEOLOGICAL SITES**

There are no recorded archaeological sites within the project site. The project site was once cultivated in sugar cane. The State Historic Sites Office has indicated that archaeological sites on the surface or near surface were most likely destroyed.

Puu Paheehee Heiau (see Figure 6) is the closest recorded site to the proposed water main. The heiau, identified as recorded site no. 152 by the Historic Sites Office of the State Department of Land and Natural Resources, was destroyed during expansion of an Oriental cemetery presently located at the site.

Waianae Army Relocation Center (WARC), located on the makai side of Farrington Highway opposite Plantation Road, is currently under construction/renovation. A number of skeletons have been unearthed at the WARC site during construction and will be recorded with the Historic Sites Office.



**SECTION IV**  
**IDENTIFICATION AND SUMMARY OF MAJOR IMPACTS**  
**AND PROPOSED MITIGATION MEASURES**

This section identifies the major impacts attributable to the proposed project. Major impacts are categorized into short-term impacts, normally of short duration and confined to the length of construction period, and long-term impacts resulting from operational activities.

**SHORT-TERM IMPACTS**

Major short-term impacts will be attributable to construction of the proposed facilities. Dust, exhaust emissions, noise, and traffic disruptions will be most pronounced during this period of construction.

The proposed project will be constructed within the paved road and hung under the Kaupuni Drainage Channel bridge. Therefore, impacts to wildlife and flora will be virtually nonexistent.

**LONG-TERM IMPACTS**

Long-term impacts of the proposed project are generally beneficial. Specifically, the proposed action will be a step toward achieving the goals of the Board of Water Supply's water master plan established for the Waianae region

Another long-term impact is the upgrading of the existing water distribution system, resulting in greater public welfare and safety.

**MITIGATION MEASURES**

Adverse impacts of the proposed project are related to construction activities, which will be governed by all federal, state, and county laws and the contract specifications. The contractor's work activity will be limited to the hours between 8:00 am and 3:30 pm along Plantation Road and Waianae Valley Road, unless otherwise permitted by the Department of Transportation Services. All lanes of Farrington Highway shall be open to traffic during the morning peak hours from 6:30 to 8:30 am and during the afternoon peak hours from 3:30 to

5:30 pm, and during off-work hours. Only one lane of Farrington Highway shall be closed at any other time.

#### **Noise**

During the construction period, high noise levels will be experienced by the residents along Plantation Road and students attending Waianae Elementary School. Noise from backhoes and trucks has been measured at levels ranging from 70 to 90 dBA (at 50 feet).

The contractor will be required to obtain a Community Noise Permit and comply with provisions of Chapter 43, "Community Noise Control for Oahu," and Chapter 42, "Vehicular Noise Control for Oahu," of Title 11, Administrative Rules, State of Hawaii Department of Health. The provisions of these Administrative Rules include the following limitations:

1. No construction activities shall create excessive noise when measured at or beyond the property line for the hours before 7:00 am and after 6:00 pm of the same day.
2. No construction activities shall emit noise in excess of 95 dBA at or beyond the property line of the construction site, except between 9:00 am and 5:30 pm of the same day.
3. No construction activities shall exceed the 95 dBA noise level on Saturdays, Sundays, and on holidays.

Other mitigating factors include:

1. The classrooms at Waianae Elementary School are located approximately 250 feet from the construction site.
2. Residential units abut the proposed water main for only about 800 feet (out of 3,760 feet).

#### **Air Pollution**

Air quality degradation can be expected in the immediate vicinity of construction activity and is primarily attributable to fugitive dust and exhaust emissions from construction equipment.

The contractor will be required to comply with the provisions of Chapter 60, "Air Pollution Control," of Title 11, Administrative Rules of the State of Hawaii Department of Health. The contractor will be required to implement measures to minimize air quality degradation. These measures may include the application of water to retard airborne dust and the inspection of construction vehicles for exhaust emissions. Further dispersion of airborne emissions is expected from the prevailing winds.

#### **Traffic Disruptions**

Construction of the proposed facilities will result in traffic disruptions. The traffic on Plantation Road will periodically be limited to one lane.

The contractor shall conform to the safety precautions and requirements of the "Rules and Regulations Governing the use of Traffic Control Devices at Work Sites On or Adjacent to Public Streets and Highways," adopted by the Highway Safety Coordinator, and the U.S. Federal Highway Administration's "Manual on Uniform Traffic Control Devices for Streets and Highways, Part VI, Traffic Controls for Highway Construction and Maintenance Operations."

Further, the contractor shall obtain a Street Usage Permit from the City and County Department of Transportation Services and a construction permit from the State Highways District Engineer and shall comply with all conditions. Other conditions imposed on the contractor to minimize traffic disruptions include:

1. Access to and from driveways and public streets shall be provided at all times.
2. During nonworking hours, trenches shall be covered with steel plates and all lanes shall be open to traffic.
3. The temporary relocation of bus stops shall be coordinated with MTL.
4. As required by the Department of Transportation Services, special duty police officers shall be hired to direct the flow of traffic.
5. All walkways and intersections shall be maintained in passable condition for pedestrian traffic.

**Archaeological and Historic Sites**

The project site will be situated within an existing paved roadway. Other utility lines are presently installed within the road. In the event any previously unidentified historical or archaeological sites or remains are encountered, the contractor shall contact the Historic Sites Office of the Department of Land and Natural Resources. Work in the immediate area shall be delayed until the Historic Sites Office is able to assess the impact and make recommendations for mitigative activity.

**SECTION V**  
**ALTERNATIVES CONSIDERED**

**NO ACTION**

This alternative would not permit the implementation of the water master plan for the Waianae region. This course of action would result in the continued dependency of the Pearl Harbor basin as the major source of water for the Waianae area and would not fully utilize the water sources currently being developed in the Waianae/Makaha area.

**ALTERNATIVE PIPING NETWORKS**

Two other alternative piping networks involving modifying the existing booster pump stations and upgrading the transmission and distribution system were evaluated. This analysis is discussed in detail in the report, "Preliminary Engineering Study for Makaha Wells Water System Development," dated January 1986.

The selected system, of which the proposed project is a part, was chosen for the following reasons:

1. Operational factors
2. Economic feasibility
3. Minimum impact on residents

**SECTION VI**  
**DETERMINATION, FINDINGS, AND REASONS SUPPORTING DETERMINATION**

**DETERMINATION**

Results of this environmental assessment have concluded that the proposed project will not have any significant potential impacts on the environment, and an environmental impact statement is not required. Therefore, in accordance with Chapter 343, Hawaii Revised Statutes, this notice is being submitted as a Negative Declaration.

**FINDINGS AND REASONS SUPPORTING DETERMINATION**

The proposed action was determined to have no significant impact according to the significant criteria stated in Section 11-200-12 of the Environmental Impact Statement Rules. The criteria and findings are stated below.

1. Criteria: Involves an irrevocable commitment to loss or destruction of any natural or cultural resources.  
Finding: Installation of the water main will be within the pavement of the existing Plantation Road, with a portion attached to the Kaupuni Drainage Channel bridge. No known archaeological, historical, or cultural sites will be affected. The project site does not contain any wildlife or flora.
2. Criteria: Curtails the range of beneficial uses of the environment.  
Finding: There will be no known beneficial use of the environment that will be curtailed. There will be no long-term degradation of existing ambient air or noise levels.
3. Criteria: Conflicts with the State's long-term environmental policies or goals and guidelines as expressed in Chapters 343 and 344, Hawaii Revised Statutes, and any revisions thereof and amendments thereto, court decisions, or executive orders.  
Finding: There will be no known conflict.
4. Criteria: Substantially affects the economic or social welfare of the community or state.



Finding: The proposed action will improve the flexibility and reliability of the water distribution system, resulting in an improvement to the social and economic welfare of the community. Further, no residences or businesses will be displaced.

5. Criteria: Substantially affects economic or sociological activities.

Finding: No adverse effect.

6. Criteria: Involves substantial secondary impacts, such as population changes or effects on public facilities.

Finding: There will be no conflict; existing facilities will be upgraded to provide a more reliable water distribution system.

7. Criteria: Involves a substantial degradation of environmental quality.

Finding: Construction will take place within an existing road and along an existing bridge. No endangered wildlife or flora are found in the affected area.

8. Criteria: Is individually limited but cumulatively has considerable effect upon the environment or involves a commitment for larger actions.

Finding: No, this is not the case.

9. Criteria: Substantially affects a rare, threatened, or endangered species of animal or plant or habitat.

Finding: Construction will primarily take place within an existing road. No endangered wildlife or flora are found in the affected area.

10. Criteria: Detrimently affects air or water quality or ambient noise levels.

Finding: The impacts to air and ambient noise levels are associated with construction activities. These impacts are short-term and temporary. The Contractor will be required to conform to all applicable laws and regulations to mitigate construction-associated impacts.

11. Criteria: Affects an environmental sensitive area such as a flood plain, tsunami zone, erosion-prone area, geologically hazardous land, estuary, fresh water, or coastal waters.

Finding: The project site is not located in a sensitive area.

## REFERENCES

1. Hawaii State, Department of Health, Title 11, Department of Health Administrative Rules, "Chapter 42 - Vehicular Noise Control for Oahu."
2. Hawaii State, Department of Health, Title 11, Department of Health Administrative Rules, "Chapter 43 - Community Noise Control for Oahu."
3. Mink, John F., Waianae Water Development Study, prepared for Board of Water Supply, City and County of Honolulu, February 21, 1978.
4. R.M. Towill Corp., Final Preliminary Engineering Report for Makaha Well Water System Development, prepared for Board of Water Supply, City and County of Honolulu, January 1986.
5. Sunn, Low, Tom & Hara, Inc., Final Report on the Waianae Sewage Treatment Plant Facilities Plan, prepared for Division of Sewers, City and County of Honolulu, June 1975.