Hart Street Wastewater Pump Station ~~Force Main~~ Replacement

DEPARTMENT OF WASTEWATER MANAGEMENT

CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET
HONOLULU, HAWAII 96813

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DEPUTY DIRECTOR

WPP 96-658

October 28, 1996

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

Subject: Hart Street Wastewater Pump Station (WWPS)
Force Main Replacement
Final Environmental Assessment
Honolulu, Oahu, Hawaii

Dear Mr. Gill:

The City and County of Honolulu Department of Wastewater Management has reviewed the comments received during the 30-day public comment period. The agency has determined that this project will not have significant environmental effect and has issued a Finding of No Significant Impact. Please publish this notice in the November 8, 1996 issue of The Environmental Notice.

We have enclosed a completed OEQC Bulletin Publication Form and four copies of the final EA. Should you have any questions, please call Kumar Bhagavan of the Division of Planning and Service Control at 527-5158.

Very truly yours,

Cheryl K. Okuma-Sepe

FELIX B. LIMTIACO
Director

Attachments

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1996-11-08-OA-FEA-Hart Street Wastewater Pump Station Force Main Replacement

Hart Street
Wastewater Pump Station
Force Main Replacement

Honolulu, Hawaii

Final
Environmental Assessment

Prepared for:
City and County of Honolulu
Department of Wastewater Management

Prepared by:
Wilson Okamoto and Associates, Inc.

October 1996

Hart Street Wastewater Pump Station
Force Main Replacement

Honolulu, Hawaii

Final Environmental Assessment

Prepared for:

City and County of Honolulu
Department of Wastewater Management
650 South King Street
Honolulu, Hawaii 96813

Prepared by:

Wilson Okamoto and Associates, Inc.
Engineers and Planners
1907 South Beretania Street, Suite 400
Honolulu, Hawaii 96826

October 1996

Hart Street
Wastewater Pump Station
Force Main Replacement

Final
Environmental Assessment

This environmental document is prepared
pursuant to Chapter 343, Hawaii Revised Statutes

Prepared for: City and County of Honolulu
Department of Wastewater Management

Responsible Official: Cheryl K. Okumura-Sue 10/20/96

Felix B. Limtiaco, Director
Department of Wastewater Management
City and County of Honolulu

Date

Prepared by: Wilson Okamoto and Associates, Inc.

NOTICE OF DETERMINATION

Applicant:	City and County of Honolulu, Department of Wastewater Management
Accepting Authority:	City and County of Honolulu, Planning Department
Description of Proposed Action:	The Department of Wastewater Management proposes to install a new 48-inch force main, approximately one-mile long, to convey wastewater flows from the Hart Street Wastewater Pump Station to the junction box of Sand Island Wastewater Treatment Plant. The new force main would replace the existing force main as the primary line which is approaching its design life of 50 years. A trenchless method of pipe installation known as directional drilling is proposed to bore beneath the channel bottom and minimize water quality impacts and conflicts with ship traffic.
Determination:	Finding of No Significant Impact
Reasons Supporting Determination:	This negative determination is based on alternative 2 as the preferred alignment alternative, and the use of either microtunnelling or directional drilling for the harbor channel crossing. Either construction method would minimize impacts on water quality and disturbance to harbor traffic.
Contact Person:	Mr. Kumar Bhagavan City and County of Honolulu Department of Wastewater Management 650 South King Street Honolulu, Hawaii 96813 (808) 527-5158

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1.1 Introduction

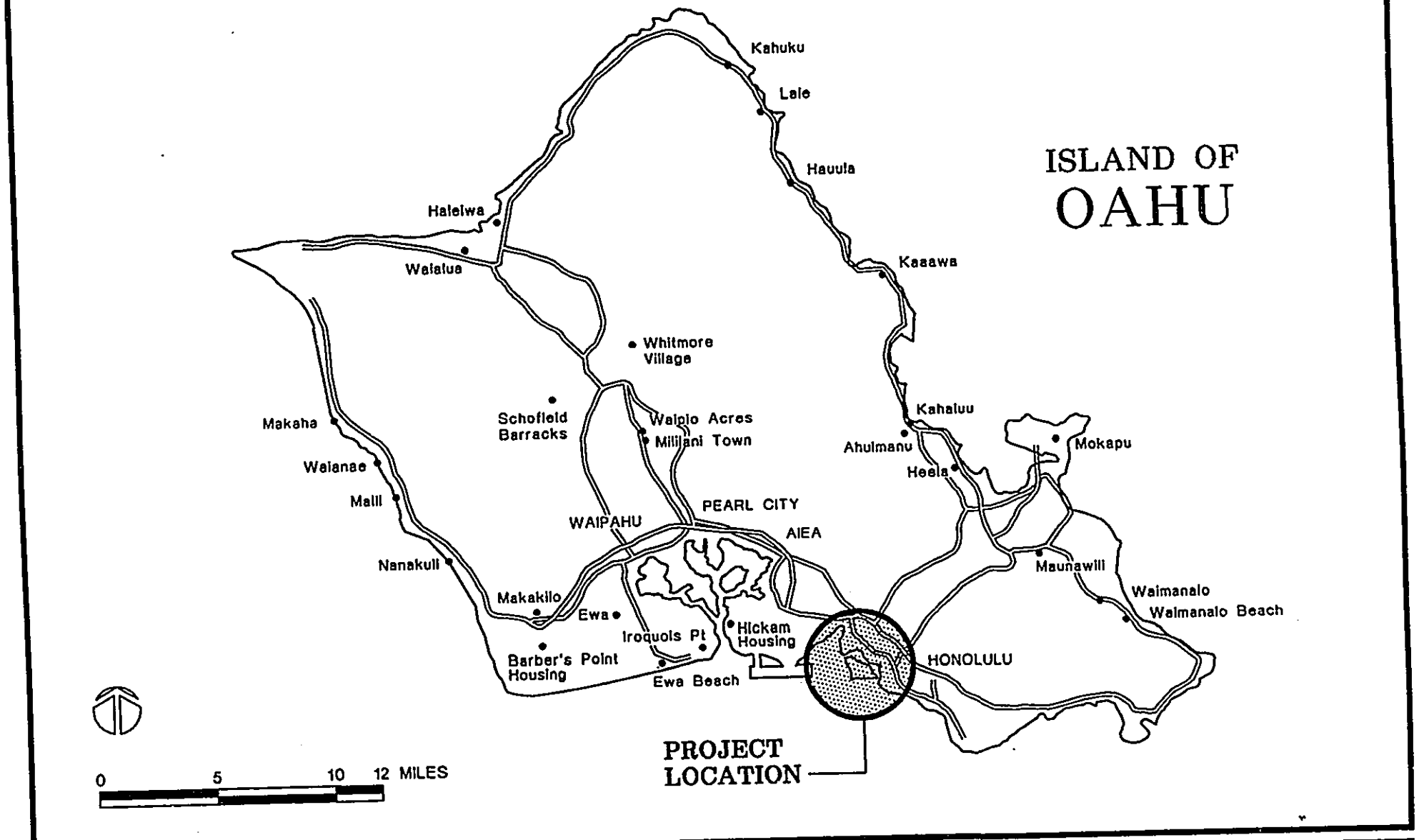
This final environmental assessment (EA) was prepared to identify and assess the impacts for a proposal to install a new 48-inch force main that will convey wastewater from the Hart Street Wastewater Pump Station (WWPS) to the Sand Island Wastewater Treatment Plant (WWTP). The proposed improvements are based on findings in the East Mamala Bay Wastewater Facilities Plan prepared for the City and County of Honolulu Department of Wastewater Management (DWWM) by Belt Collins and Associates (1993).

This EA is required pursuant to Chapter 343, Hawaii Revised Statutes and Chapter 200, Title 11, Administrative Rules, based on the use of State lands and County funds, and its location within the State Conservation District and Shoreline Setback Area. The project will be developed by the City DWWM on lands owned by the State of Hawaii which are mostly under the jurisdiction of the Department of Transportation Harbors Division (DOT Harbors). The line will also cross Sand Island Parkway under the jurisdiction of the State DOT Highways Division. The proposed force main will be within the Shoreline Setback Area and cross beneath Honolulu Harbor, the submerged lands of which are within the Conservation District.

1.2 Project Location

The project area consists of a corridor in the Honolulu Harbor area generally bounded by the Hart Street WWPS on Nimitz Highway to the north and the Sand Island WWTP to the south. On the Honolulu side of the Harbor, the corridor is laterally defined by Pier 33 on the east and Pier 38 on the west. On the Sand Island side of the Harbor, the project corridor traverses the container yard situated inland of Piers 51 and 52 and extends southward to the WWTP. See Figures 1-1 and 1-2.

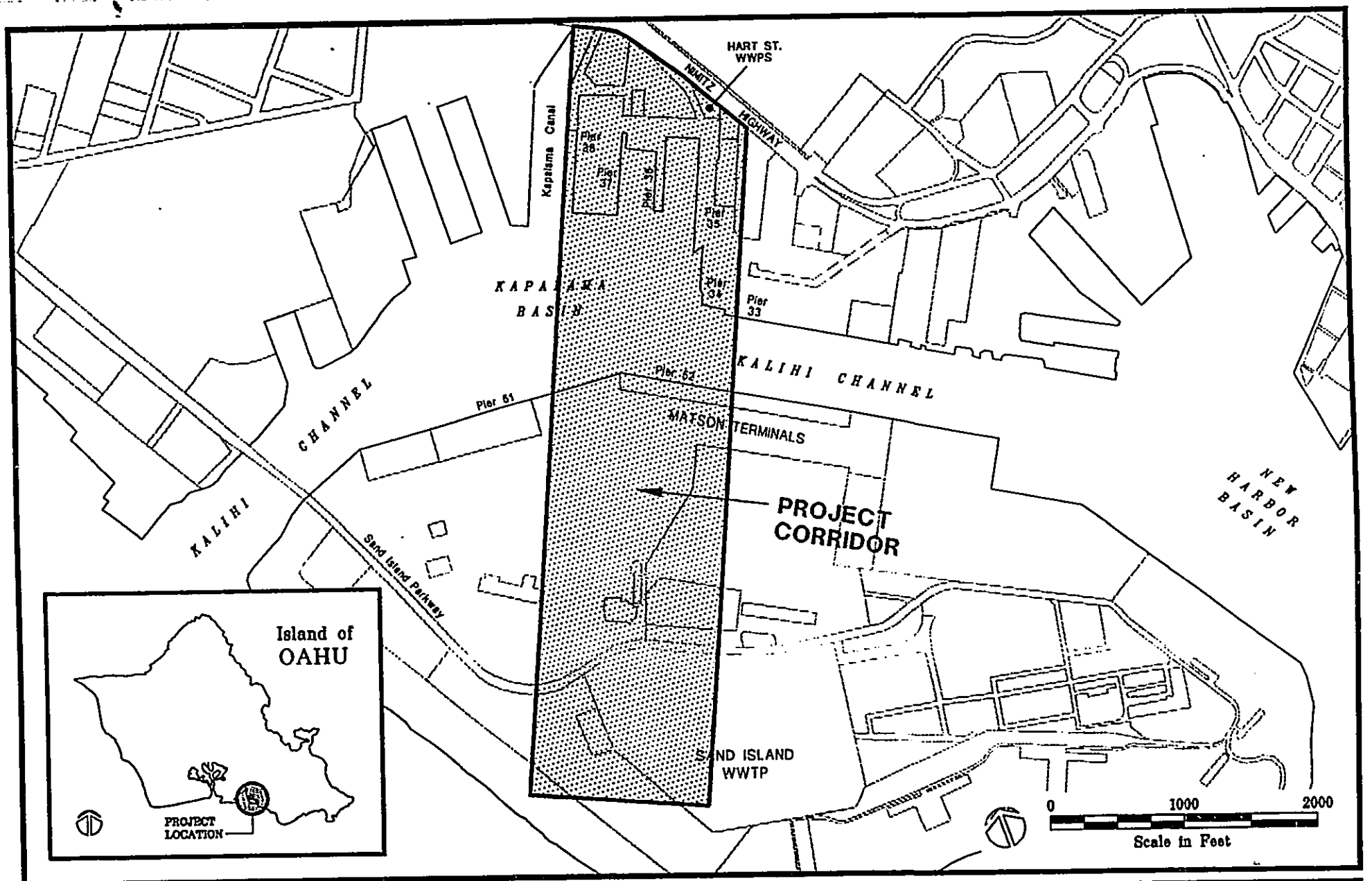
The project corridor encompasses the existing force main alignment, as well as four alternative alignments under consideration. The existing force main begins at the WWPS, extends along the Diamond Head end of the Hawaii Stevedores Building to Piers 33 and 34, crosses the Kapalama Channel at a depth of 10 to 15 feet below the Harbor bottom, and traverses the Matson Container Yard on Sand Island to the Sand Island WWTP. See Figure 1-3.



HART ST. WWPS FORCE MAIN REPLACEMENT

Fig. 1-1
VICINITY MAP

Prepared for :
City & County of Honolulu
Dept. of Wastewater Management
Prepared by :
Wilson Okamoto & Associates, Inc.

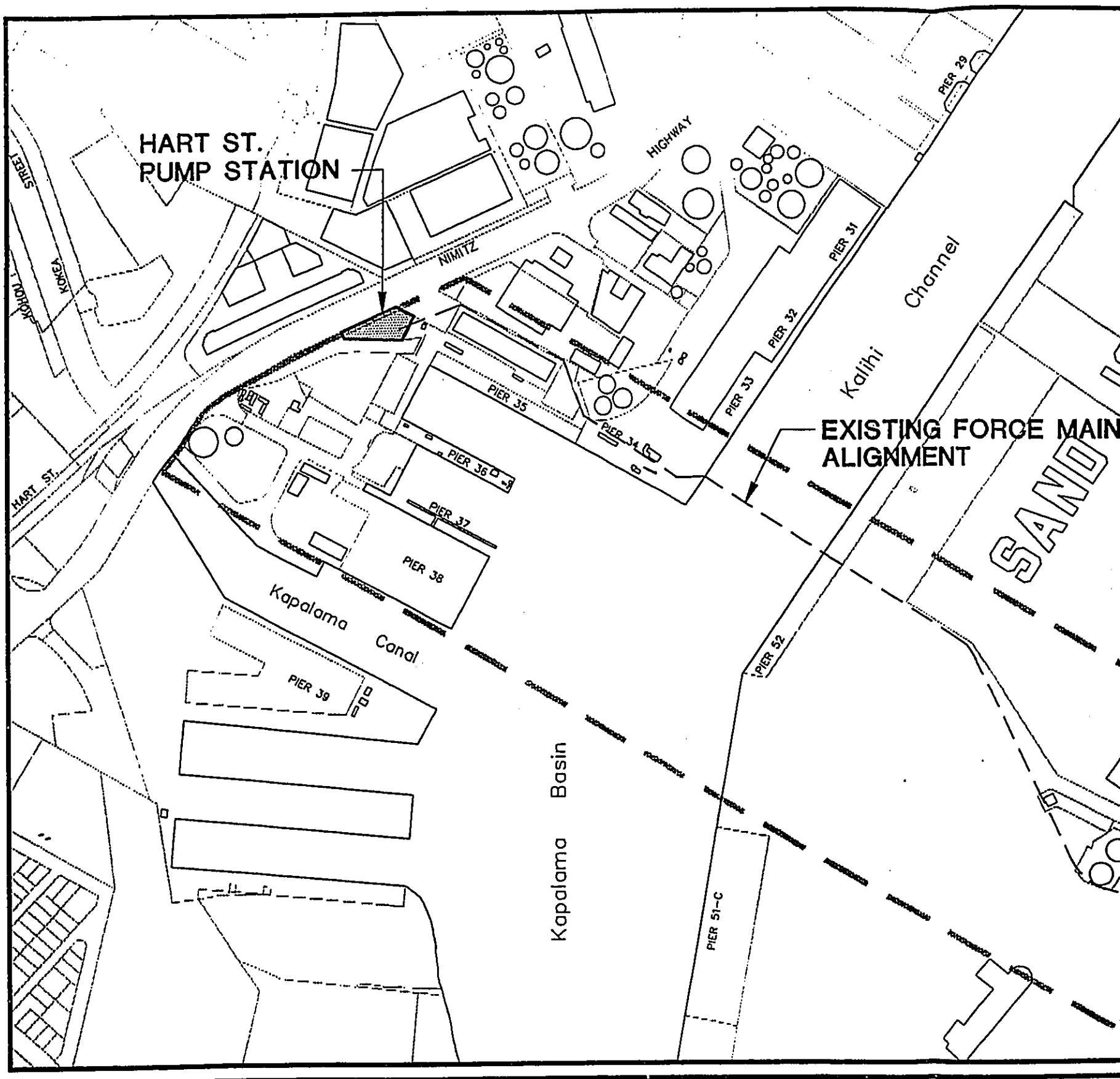


HART ST. WWPS FORCE MAIN REPLACEMENT

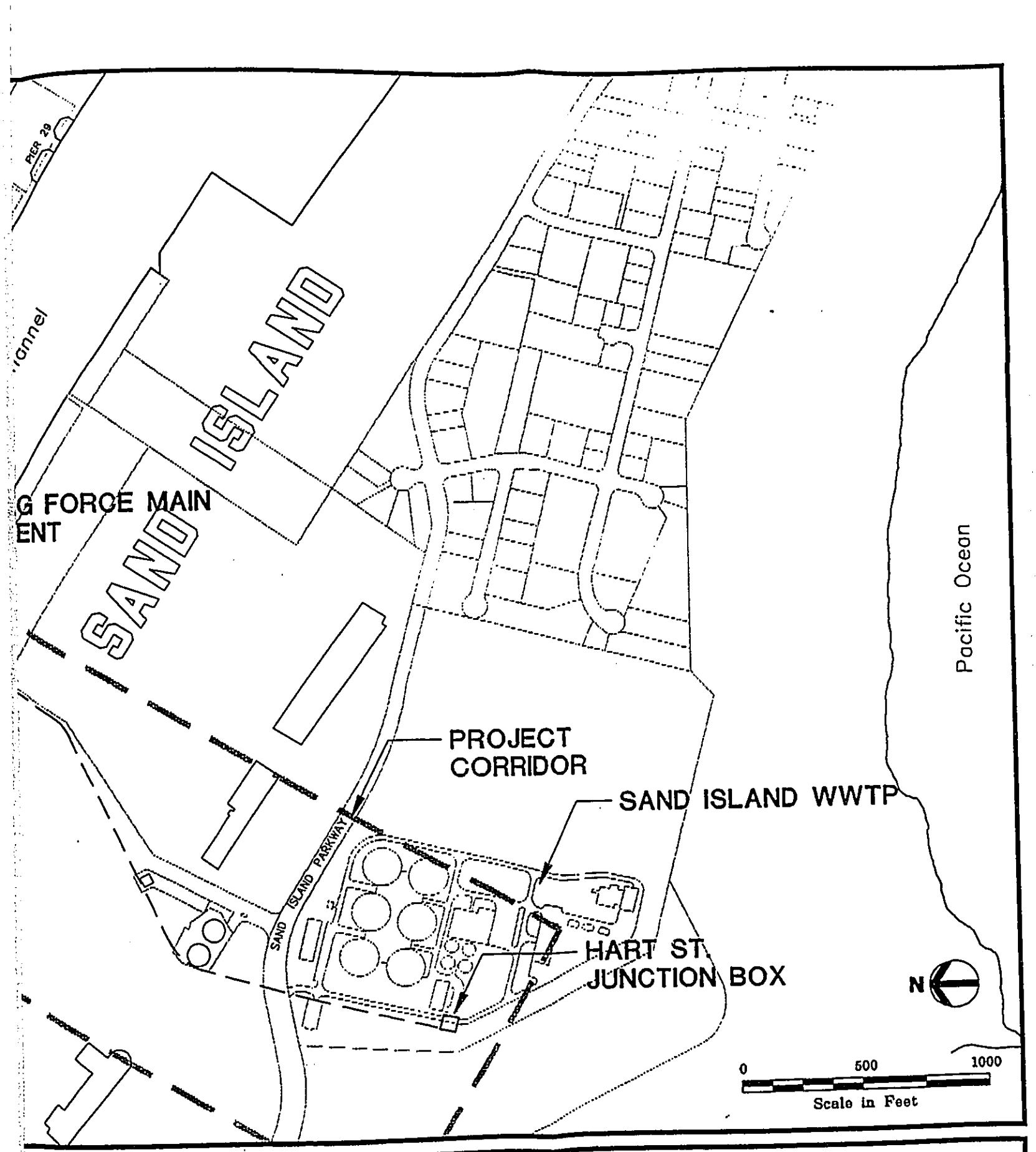
Fig. 1-2
LOCATION MAP

Prepared for :
City & County of Honolulu
Dept. of Wastewater Management

Prepared by :
Wilson Okamoto & Associates, Inc.



HART ST. WWPS FORCE MAIN REPLACEMENT	EXISTING FORCE MAIN	Prepared for : C D Prepared by: W



Prepared for : City & County of Honolulu
Dept. of Wastewater Management

Prepared by: Wilson Okamoto & Associates, Inc.

Fig. 1-3

EXISTING FORCE MAIN

1.3 Existing Conditions

Lands within the project area are developed with piers and harbor-related businesses. While some areas of the piers are vacant, there is no undisturbed terrain. The following is a list of current pier uses:

Pier 33 - Pier 33 and the wharf area east to Pier 31 are used for general cargo operations. A large transit shed of approximately 240,000 square feet extends along the pier from Pier 33 east to Pier 31.

Pier 34 - Pier 34 has some marine fueling stations with an open asphalt paved dock area. Four storage tanks used as cement silos are situated in the back pier area. According to the Honolulu Waterfront Master Plan, Pier 34 is primarily a liquid bulk pier with piping that connects to storage facilities at Pier 30. Cement barge loading also occurs at the Pier.

Improvements to Pier 34 have recently been made under a DOT Harbors Division project. The previous pier had several "fingers" along the pier. The recent improvements filled in the gaps between these fingers to make a continuous pier front. Improvements were also made to increase the pier's load-bearing capacity.

Pier 35 - A large steel building serves as headquarters for the Hawaii Stevedores, Inc. and support for harbor-related tenants, general cargo storage and marine electronic equipment, and the Hawaii Stevedores' Credit Union. The area was previously used as a metal recycling yard, with piles of scrap metal still occupying part of the pier.

Pier 36 - A temporary structure of corrugated aluminum houses offices and workshop for a water taxi service and the Polynesian Voyaging Society. The *Hokulea* canoe is moored at this Pier. To the west of Pier 36, the Hawaii Transfer Company has a building and operates a freight forwarding facility. The back pier area towards Nimitz Highway is mostly cleared and vacant land.

In the area mauka of Pier 36, the State Department of Business, Economic Development and Tourism and the DOT Harbors Division are in the process of soliciting proposals for

the private development of a Fresh Fish Wholesale and Distribution Center. This facility would replace the fresh fish facility at the Ewa end of Kewalo Basin. A 6.2-acre site encompassing the Hawaii Transfer Company site and cleared areas mauka to Nimitz Highway have been identified for this project. Anticipated facilities include a fish auction area, washdown facilities, cold storage and warehousing, wholesaling operations for dispensing marine products, ice dispensing facilities, eatery, and fishing supplies.

Piers 37 & 38 - Chevron headquarters are located at Pier 38. In addition to three structures, numerous fuel tanks and pipelines occupy the site. Most of Pier 37 has been cleared in preparation for the planned University of Hawaii Marine Research Facility. Encompassing approximately 6.35 acres, the proposed Marine Research Facility is primarily intended to accommodate the Marine Center operations now located at Snug Harbor (near the Sand Island bridge). In addition, the J.K.K. Look Laboratory, and Hawaii Undersea Research Laboratory would also be relocated to the site. Plans include the construction of three research buildings, a 300-foot pier along Pier 38A, a 700-foot pier along Pier 38B and associated shoreside improvements. The project is in its final design phase, with construction expected to commence in late 1997.

Piers 51 & 52 - On Sand Island, the corridor encompasses Pier 52 and a portion of Pier 51 used by Matson Navigation Company and Sea-Land Service for container yard and cargo handling operations. Piers 52 and 53 share four movable Gantry cranes that are used for loading and unloading of container cargo. The container yard consists of open asphalt pavement on which containers are stored and stacked up to four high. Matson structures along Sand Island Parkway include a tower and administrative offices, maintenance buildings and two molasses tanks.

Pier 51C is currently under construction to extend Pier 51 by 660 feet and add another berth and crane rails to the container yard. The adjacent 14-acre apron for the container yard will be reconstructed and new lighting and fire protection provided. The improvements will allow the Gantry cranes to move along the entire length of the piers.

Kapalama Channel - The Harbor waters are under the jurisdiction of the State of Hawaii DOT Harbors. Ships and barges cross Kapalama Channel, as well as maneuver within the Kapalama Basin, generating significant traffic in the area. Major companies that use the Channel and Basin include Sea-Land, Young Brothers, Ltd., Honolulu Shipyard, Matson Navigation Company, auto ships, commercial fishing boats, the "Hawaii Responder", Unocal, P&R Water Taxi and the U.H. Marine Center Vessels at Snug Harbor.

1.4 Land Ownership

The project site is situated on land owned by the State of Hawaii, under the jurisdiction of DOT Harbors which leases parcels to various harbor-related businesses. The Hart Street WWPS resides on land set aside to the City and County of Honolulu for a sewage pumping site by Executive Order No. 1345.

The Sand Island WWTP occupies land owned by the State of Hawaii. The current force main is within a mostly 25-foot wide easement from the Hart Street WWPS to the Sand Island WWTP. In addition, there is an easement from the Hart Street WWPS to Pier 35 for a bypass force main.

Major tenants located within the project corridor include:

Pier 34 -	Hawaiian Cement, Hawaii Independent Refinery, Shell Oil, Union Oil Co.
Pier 35 -	Hawaii Stevedores, KEMS Kewalo, Pacific Ocean Producers, NavTec Marine Electronics, Hawaii Metal Recycling
Pier 36 -	P&R Water Taxi, Ltd., Polynesian Voyaging Society
Pier 37 -	Marine Systems, Inc., Hawaiian Express Services, Fresh Fish Wholesale and Distribution Center (planned), University of Hawaii Marine Research Center (planned)
Pier 38 -	Chevron USA Inc.
Piers 51&52-	Matson Navigation Company, Sea-Land Service

2. PROJECT DESCRIPTION

2.1 Existing Operations

The Hart Street Wastewater Pump Station occupies an approximately one-half acre site on Nimitz Highway mauka of Pier 35. The Hart Street WWPS serves a 29-square mile area of Central Honolulu extending from the Salt Lake-Moanalua area to the Nuuanu-Iwilei area. Built in 1950, the pump station houses five variable speed pumps, two standby turbine generators, and a fuel storage tank. The monthly average daily flow rate in 1995 ranged from 16.34 to 19.05 million gallons per day (mgd). The WWPS has an influent and a discharge bypass which, during emergencies, can divert wastewater directly into the harbor. A 30-inch discharge force main bypass extends from the WWPS to the harbor between Piers 35 and 36.

Wastewater is conveyed from the Hart Street WWPS to the Sand Island Wastewater Treatment Plant through an existing 48-inch diameter force main. From the WWPS, the force main extends along the Diamond Head end of the Hawaii Stevedores Building to Pier 34, crosses beneath the Kapalama Channel at a depth of 10 to 15 feet below the Harbor bottom, and traverses the container yard and parkway on Sand Island to the Sand Island WWTP. The reinforced concrete force main extends a distance of approximately 4,700 feet from the pump station to an influent junction box at the west end of the Sand Island Treatment Plant. The Hart Street Junction Box also receives flows from the Fort Shafter WWPS through a 24-inch force main, and the Sand Island Parkway WWPS through a 12-inch force main.

The Sand Island WWTP occupies approximately 46 acres on Sand Island. The treatment plant has a design capacity of 82 mgd, with average daily flows of 78 mgd. Primary treated effluent is disposed via an 84-inch deep ocean outfall which extends two and one-half miles offshore.

2.2 Proposed Action

The proposed action consists of the installation of a new 48-inch force main from the Hart Street WWPS to the junction box at the Sand Island WWTP. The new force main would replace the existing force main as the primary line. Following construction of the

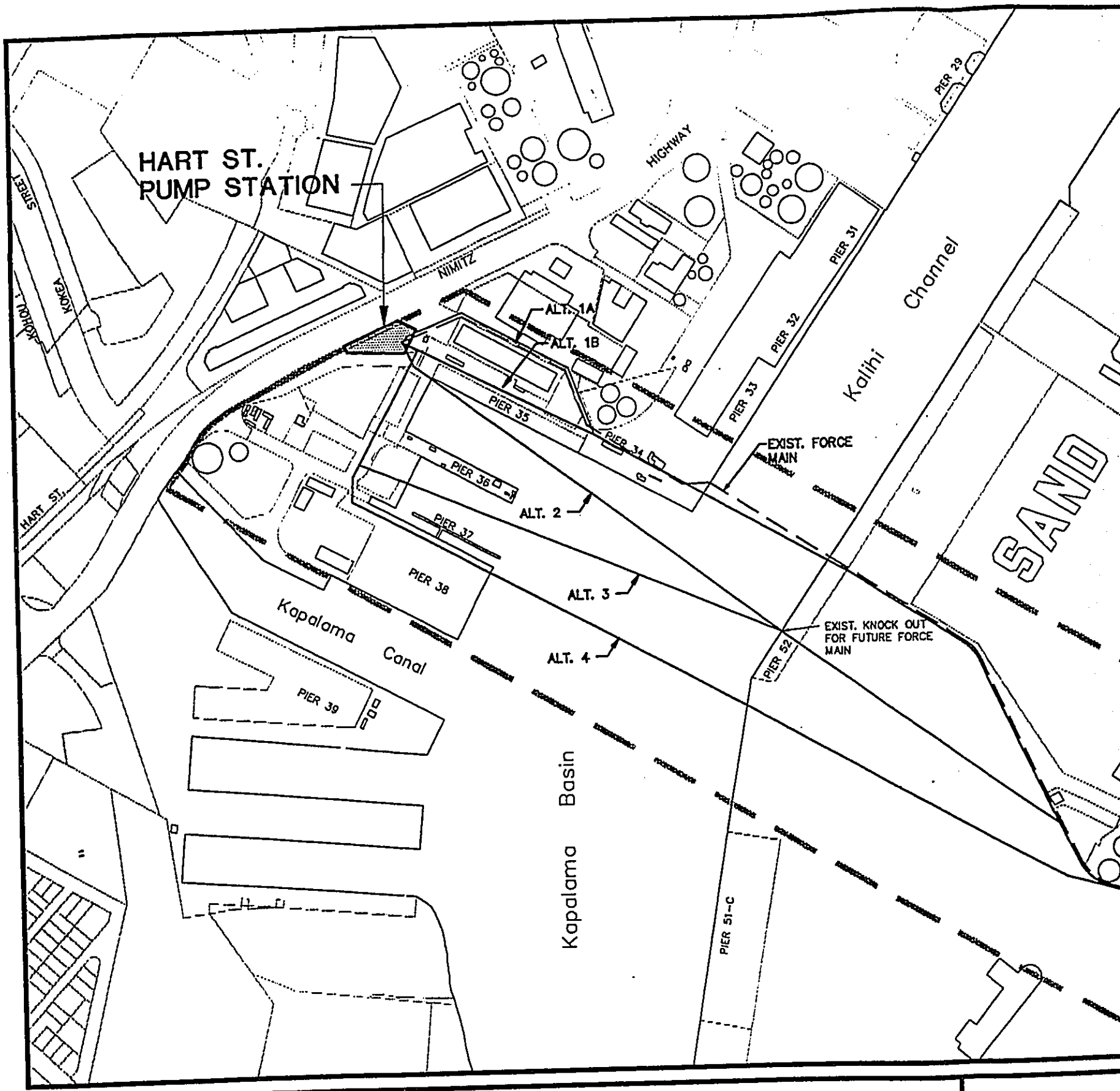
new force main, the existing force main could be taken out of service and abandoned, or evaluated for possible rehabilitation and use as an emergency back-up line.

The City and County of Honolulu Department of Wastewater Management is considering and may implement a duel force main system, for example, installing a new 48-inch force main and a 24-inch force main in the same general alignment to assure there will be a back-up to the primary force main.

A preliminary engineering analysis is currently being undertaken to determine the most appropriate alignment for the replacement force main which considers feasibility, impacts, and costs. The project corridor encompasses the four alternative alignments which are under investigation (see Figure 2-1). The alternatives were selected based on the need to provide a direct route to the treatment plant while considering land use, physical and environmental constraints.

The primary considerations in evaluating the alternative pipeline alignments include:

- Land uses - existing and proposed structures and improvements
- Construction requirements- harbor crossing and geotechnical considerations
- Environmental impacts - hazardous waste contaminated areas and water quality impacts
- Utility conflicts - potential conflicts with existing fuel lines, water lines, drainage and sewer lines
- Economic impacts - disruptions to businesses, roads, navigation, dock use
- Hydraulic requirements - impediments to wastewater flow --pipeline length, bends, frictional losses which increase operational costs
- Construction cost - estimated cost of construction



HART ST. WWPS FORCE MAIN REPLACEMENT

PROPOSED ALTERNATIVE ALIGNMENTS

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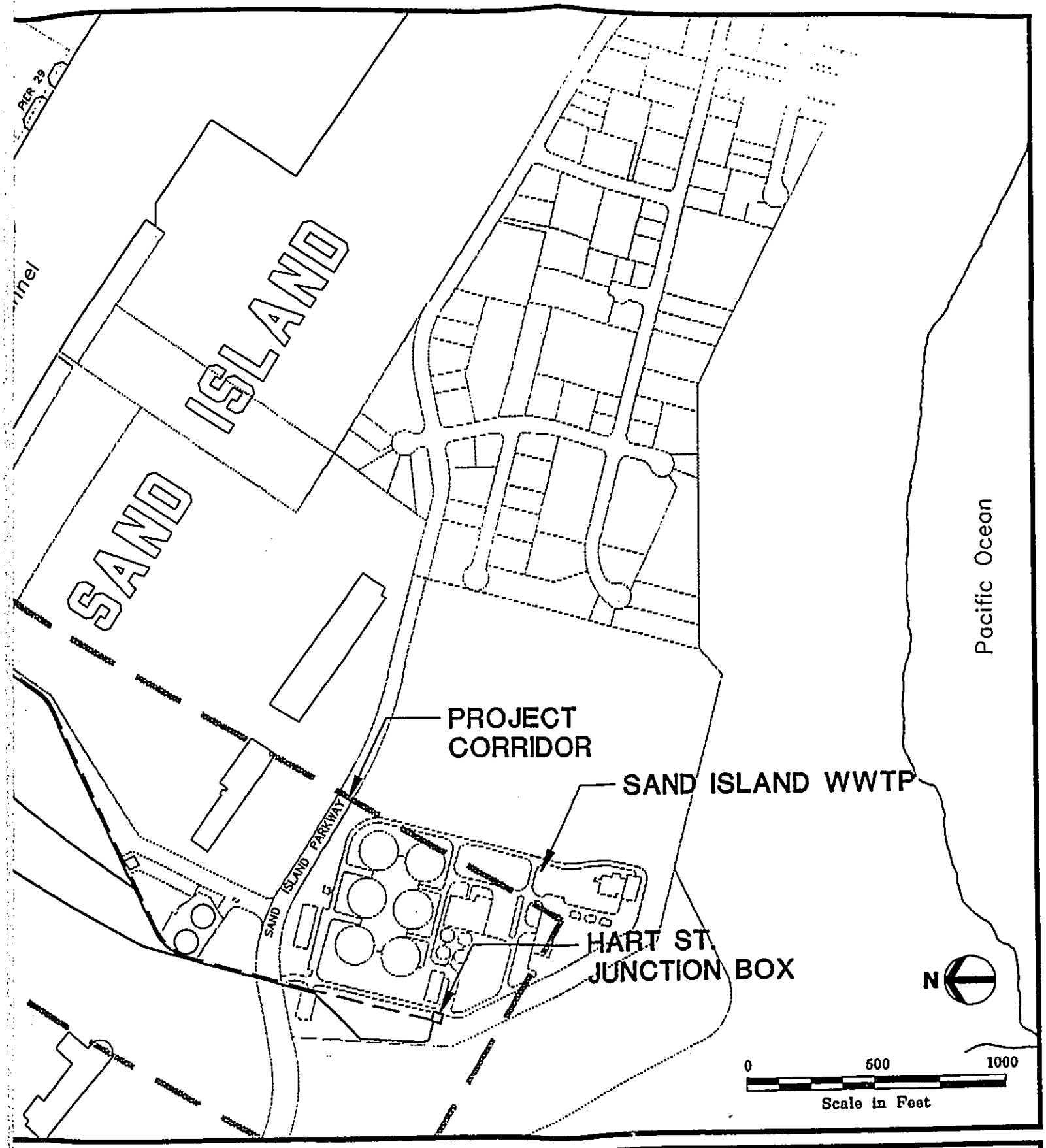


Prepared for : City & County of Honolulu
Dept. of Wastewater Management

Prepared by: Wilson Okamoto & Associates, Inc.

Fig. 2-1

PROPOSED ALTERNATIVE ALIGNMENTS

The following briefly reviews the four alternatives considered and their principal advantages and disadvantages.

2.2.1 Alternative Route 1 - Parallel to Existing Force Main

This alterative has two sub-alternatives. Sub-alternative 1A parallels the route of the existing force main. Sub-alternative 1B would run directly south of the Hart Street WWPS along Piers 34 and 35, then follow the same route as 1A. This alternative route has an underwater crossing of approximately 600 feet.

The major constraints of this alternative are the existing uses on Piers 34 and 35, the narrow corridor between and alongside structures, and the proximity of major fuel lines. The main advantage of this alignment is that it has the shortest water crossing.

2.2.2 Alternative Route 2 - Pier 35/36 Alignment

Alternative 2 follows the existing easement for the bypass line directly into the Harbor between Piers 35 and 36. The force main would run underwater for approximately 1,800 feet towards the west end of Pier 52 on Sand Island where there is an existing opening in the pier pilings and bulkhead to accommodate the 48-inch force main. The force main then would cross the Matson Container Yard and Sand Island Parkway into the Sand Island WWTP.

The main advantage of this alignment is it enters the water using the shortest route, thus minimizing land-based utility, structural and user conflicts. The longer water crossing, however, typically translates into higher construction costs and potentially greater disruption to harbor traffic, unless a "trenchless" pipe installation procedure is pursued.

2.2.3 Alternative Route 3 - Pier 36/37 Alignment

Alternative 3 runs west toward Pier 37 and turns 90 degrees, entering the Harbor between Piers 36 and 37. Crossing under approximately 1,800 feet of the Channel, the alignment heads towards Pier 52 on Sand Island, using the same path as Alternative 2.

The advantages of this alignment are similar to Alternative 2 in that the pipeline would enter the water following a short land crossing. The main disadvantage is the State's

proposed Fresh Fish Wholesale and Distribution Center which would built directly over the alignment in the Pier 36/37 area.

2.2.4 Alternative Route 4 - Pier 37/38 Alignment

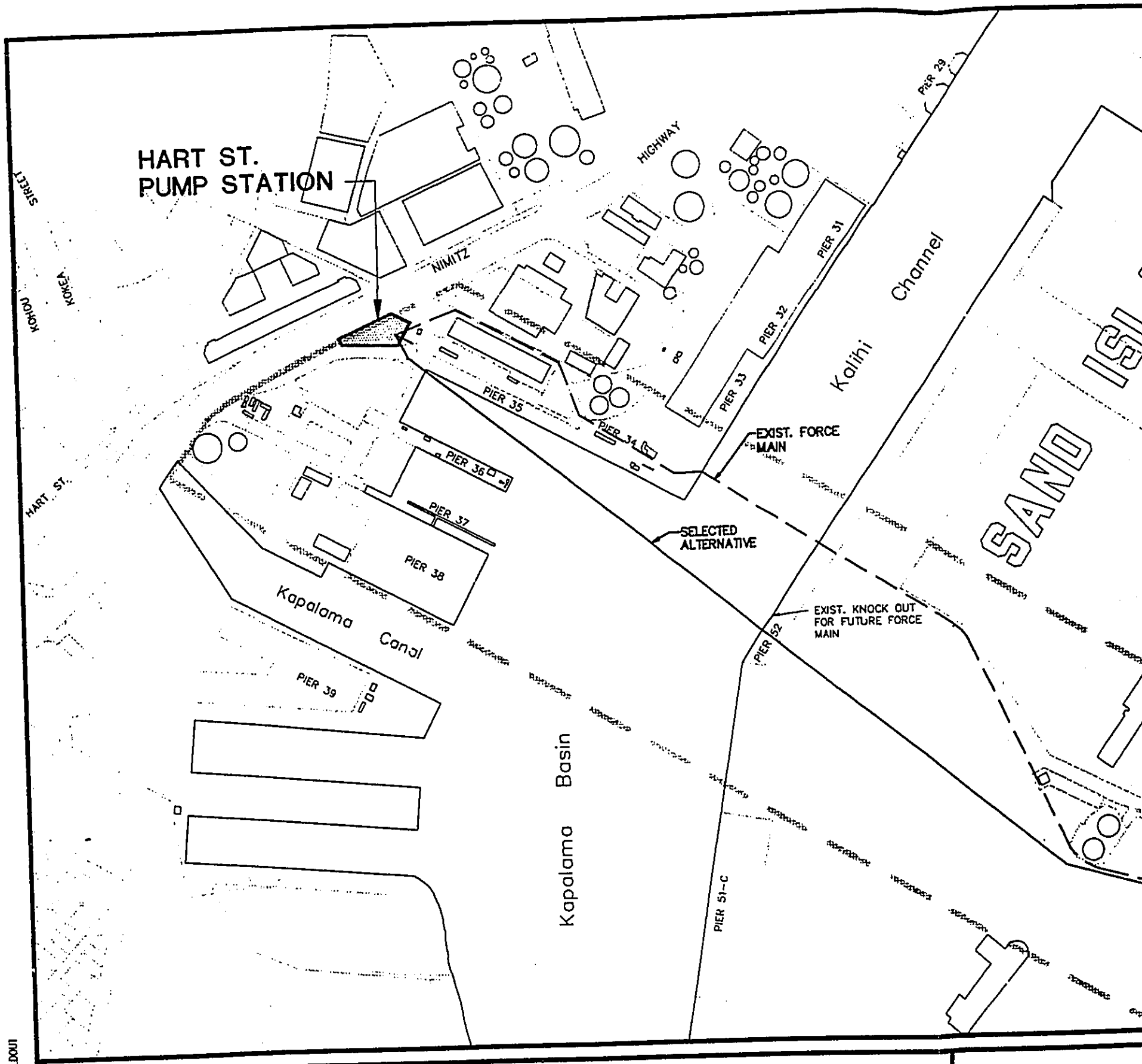
Alternative 4 runs west, then turns 90 degrees south through the Pier 37/38 peninsula. The force main extends through the Channel for approximately 1,200 feet and emerges at Pier 51C on Sand Island. The alignment continues south through the Matson Container Yard until entering the Sand Island WWTP.

This alignment has the longest shore-based leg which results in a somewhat shorter channel crossing. The main constraint is the pending development of the University of Hawaii Marine Research Facility which proposes to fully develop the peninsula commencing in 1996 with three buildings and associated pier and shoreside improvements.

2.2.5 Selected Alternative

Based on an assessment of the four alternatives and their associated constraints and opportunities, the alignment selected by DWWM is a modification of Alternative 2 which crosses the channel between Piers 35 and 36. Selection of Alternative 2 is predicated on the use of trenchless technology, either micro-tunnelling or directional drilling, for crossing the harbor channel. A discussion of these techniques is presented in Section 4.1. Alternative 2 has the advantage of minimizing land use impacts on the Honolulu side of the channel.

The selected alternative alignment is depicted in Figure 2-2. By using a technique such as directional drilling, there would be minimal disruption to harbor traffic and minimal water quality impacts. The bore will extend beneath the channel bottom at a depth of up to -180 feet. On the Honolulu side, the staging area would require a minimum of 5,000 square feet in the area on or just makai of the pump station site. On Sand Island, the bore would exit within the Matson container yard. A linear area for pipe assembly is required to lay out the fully or partially assembled force main for pull-back through



HART ST. WWPS FORCE MAIN REPLACEMENT

SELECTED ALTERNATIVE ALIGNMENT

Prepared for : City
Dept

Prepared by: Wils

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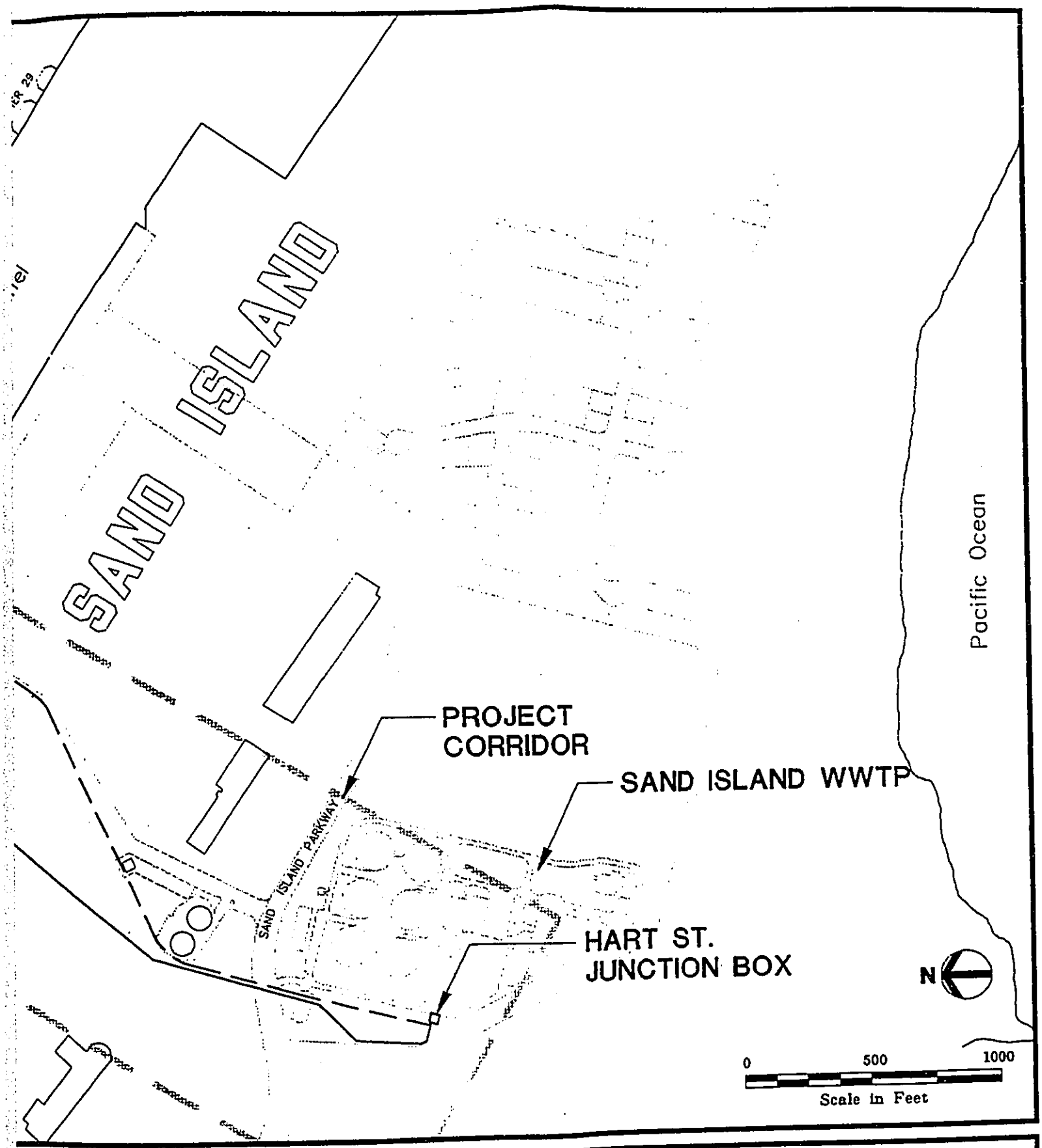


Prepared for : City & County of Honolulu
Dept. of Wastewater Management

Prepared by: Wilson Okamoto & Associates, Inc.

Fig. 2-2

SELECTED ALTERNATIVE ALIGNMENT

the completed bore. Based on preliminary discussions with directional drilling contractors, a temporary elevated crossing over Sand Island Parkway may be required for layout of the pipe string during installation.

On the Sand Island side of the force main alignment, the installation extending to the treatment plant may occur using the conventional method of excavating an open trench and laying the pipe. It is also feasible, however, to use one of the trenchless technologies such as micro-tunneling to cross beneath the Matson Container Yard and the Sand Island Parkway. This would minimize the disruption to the container handling operations and to traffic flow on the Sand Island Parkway.

2.3 Project Need

The Hart Street WWPS services a 29-square mile area between Moanalua and Downtown. The Hart Street WWPS is one of two major pump stations serving the entire Honolulu area. Since its construction in 1949, the Hart Street WWPS has been upgraded and modified several times, but the existing force main has been neither altered nor repaired. The force main is the only line connecting the Hart Street WWPS to Sand Island WWTP and has been in continuous use since 1950. Replacement is required because the force main's design life of 50 years is soon approaching and the force main cannot be serviced or rehabilitated due to its constant usage. With no back up line, a break in the force main would require bypass discharges directly into Honolulu Harbor. Furthermore, constructing a new force main would provide the needed redundancy that would enable the shut down of one line for maintenance without interrupting the WWPS operation.

2.4 Development Schedule

A preliminary engineering analysis is currently underway to determine the preferred alignment for the force main and estimated costs and requirements for its construction. Based on the City DWWM's Capital Improvements Program, the force main is expected to be constructed in 1998.

3. EXISTING ENVIRONMENT

3.1 Climate

The climate of the project area is typical of the leeward coastal lowlands of Oahu, characterized by persistent trade winds, abundant sunshine, relatively constant temperatures, and moderate humidities. The mean temperature in Honolulu ranges from 73 degrees Fahrenheit (°F) in the winter to 81°F in the summer. The mean annual rainfall is approximately 23 inches with most of the rainfall occurring between the months of November and April. Relative humidity ranges between 56 and 72 percent. Cooling tradewinds from the northeast prevail throughout most of the year, while occasional "Kona" winds from the south bring warm, humid air.

3.2 Geology

Honolulu Harbor and Sand Island are located within the narrow coastal plain of Oahu's south central coast, geologically referred to as the Honolulu Plain. The Honolulu Plain and much of the rest of the southern edge of Oahu are underlain by a broad elevated coral reef, covered by alluvium carried out from the mountains. The coral reef rocks were deposited during prehistoric times when the sea level was higher. The Honolulu Plain ranges in elevation from zero to ten feet. The area is underlain by a zone of low permeability known as caprock which extends along the coastline about 800 to 900 feet below sea level. The caprock layer prevents the seaward movement of potable water from the basaltic aquifers which underlie it.

Sand Island originally consisted of two separate islands surrounded by shallow coral reefs and mud flats. With the development of Honolulu Harbor and the dredging of Kapalama Basin, the shallow areas surrounding the original two islands were filled with dredged materials and a causeway was constructed to connect the newly-formed Sand Island with Kalihi. The Sand Island Access Road crossed this causeway until it was replaced with the existing bridge. Following the initial filling of the site, numerous other operations have gradually raised the area to its present levels.

3.3 Topography/Bathymetry

Except for intermittent small land forms and depressions in the undeveloped areas, the project corridor is relatively flat. The coastal plain, within which the Harbor is located,

ranges in elevation from 0 to 10 feet above sea level. The topography of the project corridor ranges from near sea level at the shoreline to approximately eight feet at the existing Sand Island Parkway Road. Within the harbor channel, depths range from -31 feet mean sea level (MSL) to -43 MSL (DOT Harbors, 1991).

3.4 Soils

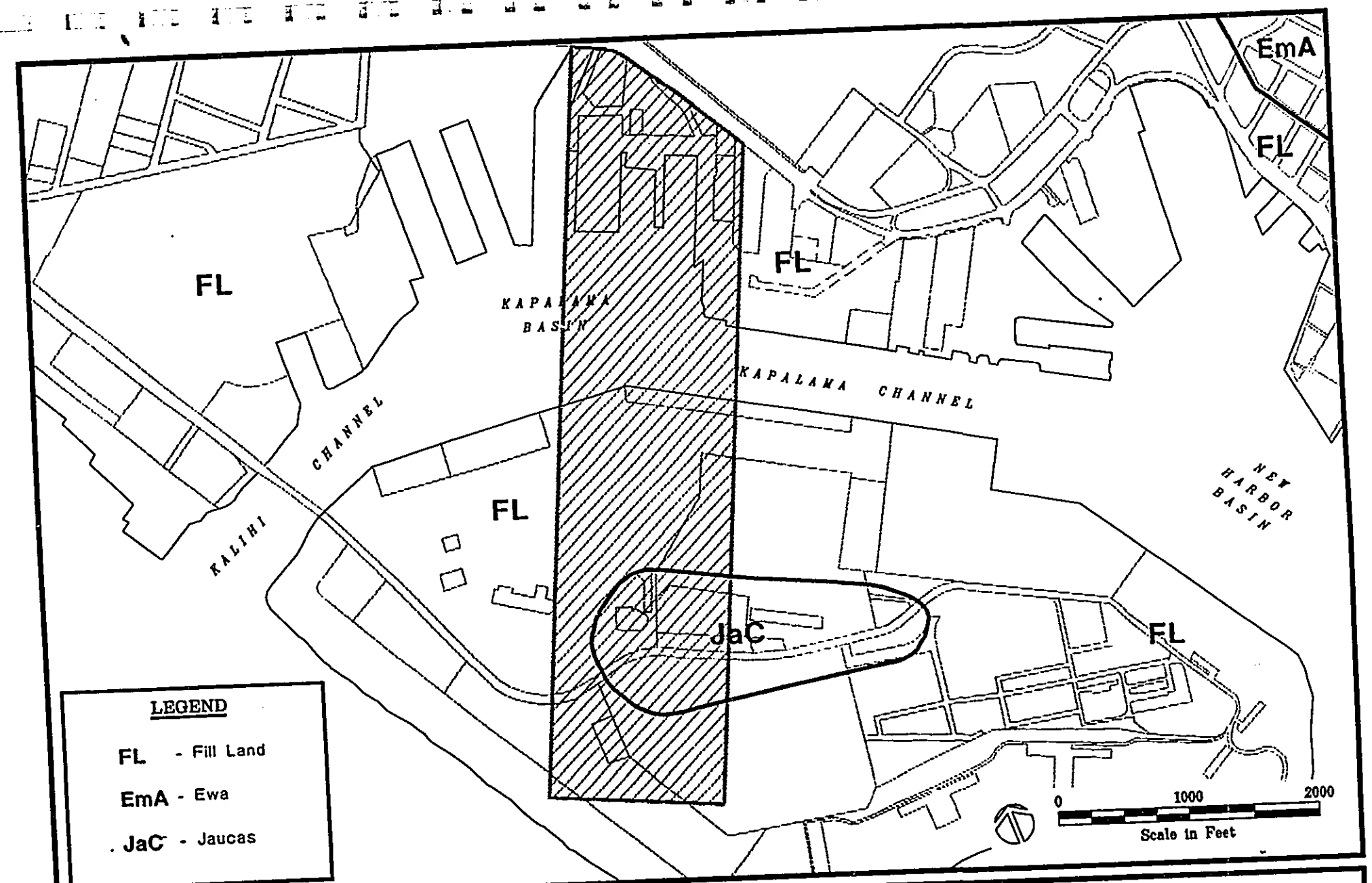
According to the U.S. Soil Conservation Service (1977), the land type from Piers 32 to 39 and Sand Island is classified as fill land, mixed (FL) and is used for urban development including airports, housing areas, and industrial facilities. This land type occurs mostly near Pearl Harbor and in Honolulu, adjacent to the ocean. See Figure 3-1. FL consists of two general soil conditions. The first is dredged fill resting upon one to two feet of mud upon a coral ledge. The second, located along the outer perimeter and near Kapalama Channel, is dredged fill placed upon soft lagoon deposits because of the absence of a coral ledge. Additionally, a portion of the project area located near the center of Sand Island includes part of the original landform not created by fill. This area is classified as Jaucus sand (JaC). The profile of the soil is described as single grain, pale brown, sandy and more than 60 inches deep.

According to preliminary research conducted by Fewell Geotechnical Engineering, Ltd. in February 1995, general subsurface conditions are similar along each of the alternative alignments. On both sides of the Channel, the alignments are likely underlain by various fills which extend to near or below the groundwater level which was encountered at depths of about Elevation 0 or Elevation 1. The surface fill is underlain by various coral deposits and/or alluvium. See Figure 3-1.

The general subsurface conditions are described below for the segments of the project corridor on the Honolulu side of Kapalama Channel, within Kapalama Channel, and on Sand Island.

<u>Honolulu Side of Kapalama Channel</u>

Surface fill generally consisting of medium dense silty coral sands and gravels extends to near the water table. Below the water table, the borings indicate loose to medium dense sands and gravels intersected with thin seams of cemented coral which extend to



HART ST. WWPS FORCE MAIN REPLACEMENT

Fig. 3-1
SOILS MAP

Prepared for :
City & County of Honolulu
Dept. of Wastewater Management

Prepared by :
Wilson Okamoto & Associates, Inc.

between Elevation -45 and Elevation -50 nearer to Kapalama Channel, and to Elevation -60 near Pier 34. A seam of very stiff alluvial silts and clay, ranging in thickness from about 5 feet to more than 15 feet, was encountered at these depths at the boring locations. The clays are underlain by medium dense to dense coral sands and gravel.

Within Kapalama Channel

According to boring information indicated on as-built drawings for the existing force main, the bottom of the Channel is underlain by soft marine sediments and loose sands which extend to about Elevation -40 to Elevation -45. The loose sands are underlain by dense sands with some cementation, and "rotten" coral which extends to about Elevation -55 to Elevation -60. The coral is underlain by compact clays and sands.

The borings within the Channel were drilled prior to 1950. The thickness of the "mud" layer at the bottom of the Channel has likely been altered due to the buildup of additional sediment and/or channel dredging operations completed after the original force main construction.

Sand Island

Available boring data indicates that the Sand Island side of the Channel is largely underlain by 6 to 12 feet of medium dense granular fill over loose coral sands which extend to between Elevation -5 and Elevation -20. Occasional seams of soft, organic clays, ranging from one to three feet thick, were encountered between the surface fills and the loose sands, in various borings throughout the area. The loose sands are underlain by cemented coral rock which extends to about Elevation -30 to Elevation -40. The cemented coral rock is underlain by medium dense to dense, occasionally cemented coral sands and gravels.

On Pier 52, the borings indicate that the northern edge of Sand Island is underlain by about six to eight feet of medium dense to dense fill over various coral fills ranging from loose silty coral sands to dense coral cobble and boulders. These deeper coral fills extended to between about Elevation -35 to Elevation -45, and are underlain by medium dense to dense coral sands and gravels with occasional hard, cemented seams.

3.4.1 Hazardous Materials

Masa Fujioka and Associates (MFA) performed a hazardous material assessment within the project corridor in February 1995 (See Appendix A). Several properties within the project corridor were found to contain underground storage tanks (UST) for fuel. Two locations within the corridor, Hawaii Transfer Company, Ltd. on Pier 36 and Matson Terminals on Pier 51, have been known to contain leaking USTs. According to Hawaii Transfer, two USTs used to store diesel fuel were removed from the site in September 1989. Contamination was found in the soil surrounding one UST when it was removed, but was limited to the area immediately surrounding the tank. In March 1981, Matson removed two waste oil USTs from their site after approximately 1,000 gallons of waste oil were recovered from the groundwater. The soil and groundwater have apparently been tested and have shown not to contain any chlorinated solvents. According to the Department of Health, removal of the remaining waste oil will soon commence.

Pier 37, used by Chevron Oil, has had numerous incidents with soil contamination. A parcel of land referred to as the Chevron Kapalama South facility, where the UH Marine Research Center is planned, had four USTs removed in July 1992. The South facility is no longer used. Prior to returning the land to DOT Harbors, Chevron cleaned up the contamination of the area, which included installing monitoring wells on Nimitz Highway to assess whether the contamination was migrating off site via pipe conduits. East of Pier 37 and adjacent to the Hart Street WWPS is a portion of land referred to as the Chevron Kapalama East facility, where the State is planning a fresh fish wholesale and distribution center. This area has also been decontaminated and returned to DOT Harbors. In this area, cleanup involved addressing a former leak of polychlorinated biphenyls (PCB) from a transformer. North of Pier 37, is the currently active Chevron Kapalama North facility. This parcel contains two above-ground jet fuel storage tanks, installed in 1953. One of the tanks leaked near the bottom, but has since been repaired and the contamination cleaned up.

3.5 Flora and Fauna

Generally, the project site and surrounding area are highly altered urban environments providing little habitat for any terrestrial flora and fauna.

Vegetation in the Sand Island area is influenced by generally low rainfall, saline soil, the man-made origin of the area, and the high degree of development and human activity. Consequently, only a small variety of plant life can be found, which is characterized as drought resistant, highly salt tolerant, and hardy in dry areas. No Federal or State listed or candidate threatened or endangered plant species are currently found on any areas of Sand Island.

Wildlife on Sand Island is essentially limited to mammals and birds which have adapted to the urban environment. Mongooses, rats, mice, and cats are common. Most of the existing wildlife can be found in the under-utilized and more heavily vegetated areas of the island. Avifaunal species presumed to inhabit the project site are common to urban areas and may include: Common Mynah, House finch, Barred dove, House sparrow, Brazilian cardinal, Red-vented Bulbul, Spotted dove and pigeon. It is highly unlikely that the site is a habitat for native Hawaiian or endangered avifauna. However, a few indigenous or migratory birds, such as the 'a'eo, or Hawaiian Stilt, may occasionally be seen flying in the immediate project area.

3.6 Marine Ecology

Alterations to the Harbor through dredge and fill operations have left little of the original biofauna intact. Generally, marine life is neither abundant nor diverse in most areas of Honolulu Harbor. The Harbor bottom is typically thick, unconsolidated sediments (mud) with occasional burrows, particularly in shallow water, and limited fish life. This substrate forms the habitat for burrowing polychaete worms, shrimp, and crabs. Most of the organisms common to the soft bottom areas are capable of rapid recolonization following disturbance. One major fish species inhabiting the mud bottom ecosystem is the juvenile hammerhead shark which feeds on mud-dwelling invertebrates.

In the past, both Kapalama and Nuuanu stream mouths have been important sites for nehu or Hawaiian anchovy bait fishing in support of Oahu's Aku-boat (skipjack tuna) fishery. Nehu are captured primarily in stream mouths where they presumably congregate to feed. Although bait-size (2-3 centimeters) nehu were seen in the Harbor near the Sand Island Park sea wall, none were seen in the Kapalama Channel, and only a few juveniles were seen near the mouth of the Nuuanu Stream. Discussions with

fishermen indicate that Honolulu Harbor has not been a productive baiting site for the past several years. During 1988 and 1989, Honolulu Harbor accounted for only about 11 percent of the Nehu captured (Oceanit Laboratories, Inc., 1990).

3.7 Noise

The two major sources of noise on Sand Island are from vehicular traffic and aircraft overflights. Of the two, aircraft noise levels have the greatest potential impact. Sand Island is in the path of tradewind aircraft departures, particularly from the Reef Runway (Runway 8R-26L) of Honolulu International Airport (HIA), which lies approximately 8,000 feet from the end of the runway.

Ambient noise levels, generated by aircraft and airport operations have been studied as part of the US Federal Aviation Administration's Federal Aviation Regulations Part 150 Noise Control and Compatibility Planning Program. The noise exposure analysis for the HIA indicated that, based on 1985 flight operations, aircraft mixes, and noise characteristics of aircraft, the project corridor is within the 70 Ldn noise contour. Ldn is the generally accepted day-night sound level measurement which averages noise levels over a 24-hour period, with a penalty for evening noise. Industrial-type activities are generally compatible within the 70 Ldn noise contour.

3.8 Air Quality

Air quality in the vicinity of the project is primarily affected by emissions from vehicular, industrial and/or natural sources. Nimitz Highway and Sand Island Parkway Road situated in proximity to the project corridor are major arterial roadways that carry heavy volumes of traffic.

Air quality in the project vicinity is considered acceptable due to the presence of the northeast tradewinds which predominate throughout the year and blow pollutants from inland areas out to sea. Problems of poor air quality are more likely to occur when tradewinds diminish or give way to southerly winds. Localized problems of poor air quality may occur under adverse kona wind conditions in areas of intense industrial development or along heavily used vehicle corridors.

The Department of Health (DOH) operates a network of air quality monitoring stations located at various sites around Oahu. Based on data from these stations, it appears that both State and Federal ambient air quality standards are currently being met in the project vicinity except for occasional exceedance of the more stringent State regulations pertaining to ambient ozone and carbon monoxide concentrations.

Air quality monitoring at selected sampling stations in Downtown Honolulu and Liliha showed measurements well within the State Ambient Air Quality Standards (AAQS). In 1992, the average particulate matter concentration was approximately 16 micrograms per cubic meter at the Liliha Station, significantly below the 100 ug/m^3 State AAQS for particulate matter. Sulfur dioxide (SO_2) concentrations of 1 ug/m^3, measured at the Honolulu Station, also averaged well below the State AAQS of 80 ug/m^3.

In 1992, the average carbon monoxide (CO) level was 16 milligrams per cubic meter (mg/m^3) based on a maximum average during any one-hour period. The CO level was within the allowable limit of 10 mg/m^3).

3.9 Water Quality

The waters of Honolulu Harbor are designated Class "A" by the State DOH (Chapter 11-54, Water Quality Standards; Hawaii Administrative Rules). Class "A" waters are to be protected "for recreational purposes and aesthetic enjoyment." According to the standards for this class, discharges are not permitted in Honolulu Harbor unless they have received the best degree of treatment or control compatible with the criteria established for this class of waters.

Honolulu Harbor is an "artificial basin" which is defined as a dredged or quarried channel harbor, or harbor-associated submerged structures (§ 11-54-07d, HAR).

The State of Hawaii DOH water quality standards were designed to account for natural variations in water quality. Thus, compliance is not determined based upon a single measurement at any particular place and time. During the winter season the Harbor experiences more discharge from Nuuanu and Kapalama Streams than in the summer

season. Additionally, large turbidity plumes are periodically generated by some of the large ships that use the Harbor.

Other fresh water and associated pollutant inputs to the Harbor occur from direct runoff and through numerous small storm drain, roof gutter, and parking lot drainage outlets.

3.9.1 Turbidity

Turbidity is a convenient measurement of water clarity. It typically indicates the presence of suspended sediments, although it is also influenced by biological activity. Turbidity measurements in Honolulu Harbor ranged from 0.1 to 28.1 nephelometric turbidity units (NTU) with higher values measured near the bottom of the Harbor at a depth of approximately 40 feet. These measurements are within DOH water quality standards for the Harbor.

General observations indicate that the Harbor experiences large turbidity plumes. Almost on a daily basis, these plumes are created where tugboats guide large container ships into and out of the Harbor. Within hours after the large plumes are created, the turbidity pattern disappears below the surface. Generally, these plumes do not last long enough to be transported out of the Harbor by currents.

During heavy winter rains the Harbor may develop a milky brown color from fresh water stream discharges. Most of the fine materials will resettle below the surface within hours, while most of the remaining material will settle to the bottom within days. This occurs because the Harbor acts like a large settling pond, collecting fine materials before they can exit into the nearshore area.

3.9.2 Water Temperature

Measured temperatures ranged from 77°F to 80.5°F. The coolest waters were found at the bottom of an offshore station and other deep locations. The warmest waters were measured near Pier 6 and are probably influenced by the warm water discharge from the Hawaiian Electric Company (HECO) power plant.

3.10 Tides and Currents

The mean tide in Honolulu Harbor is 0.8 feet above Mean Lower Low Water (MLLW). The mean tidal range between MLLW and Mean Higher High Water (MHHW) is 2.0 feet. The tidal range in 1990 is -0.5 to +2.7 feet MLLW. Historically, tides have ranged from a minimum of -1.3 feet to a maximum of 3.5 feet.

Circulation pattern within Honolulu Harbor is complex. Calculated flow rates are greater than rates that would be generated by tidal exchange alone. Circulation near the HECO power plant is driven by the intake and discharge of cooling water. Circulation through the plant is substantial amounting to approximately two-thirds of the average volumetric rate of the tide. Thus circulation, together with that contributed by Nuuanu Stream, storm drains, and possible flows from Keehi Lagoon can produce a relatively high rate of surface flow. The flow rates also indicate the possibility of stratified flow within the Basin and main Channel.

Currents are generally weak with no dominant direction. A general west current exists along the coast between Honolulu Harbor and Barbers Point. Circulation currents in Honolulu Harbor varies in speed from 4 to 22 feet per minute. Available information indicates that the double entry configuration of the Harbor results in the absence of serious circulation problems within the Harbor. Thermal studies conducted by the HECO estimated the Harbor flushing time at about six hours.

3.11 Archaeological Resources

An archaeological assessment study was conducted by Cultural Surveys Hawaii in February 1995 to review traditional Hawaiian and historic land use in the project corridor to determine the potential for any archaeologically sensitive areas (see Appendix B). Research was conducted to document the origins of the project corridor in the tidal flats of Honolulu on the southwest (Ewa) side of the mouth of Nuuanu Stream. The original shoreline at Iwilei was considerably inland of the present harborline. Off of the Iwilei shoreline was an extensive coral reef exposed at low tide upon which the only dry land was a small island called Ka-moku-akulikuli. Early maps indicate at least one Hawaiian structure on this island. In 1872, the island became the site of the government's quarantine station. Throughout the Harbor's development, the island was made more

stable with the addition of dredged fill. Eventually it was engulfed by the development of Sand Island which was completely a product of reclamation formed by dredged material from the Harbor.

Prior to the development of Honolulu Harbor, the project corridor was open water or tidal reef, except for the western half of what was then the quarantine island which lies in the southeast portion of the project corridor. Currently, the majority of the land is reclaimed from the construction and expansion of Honolulu Harbor and consists of dredged fill overlying coral reef. The open water portion of the project corridor, presently Kapalama Channel, was dredged during the 1920's and 30's. See Figure 3-2.

No archaeological sites or significant historical structures have been identified previously within the project corridor and none are recorded on the register of sites at the State Historic Preservation Division of the Department of Land and Natural Resources.

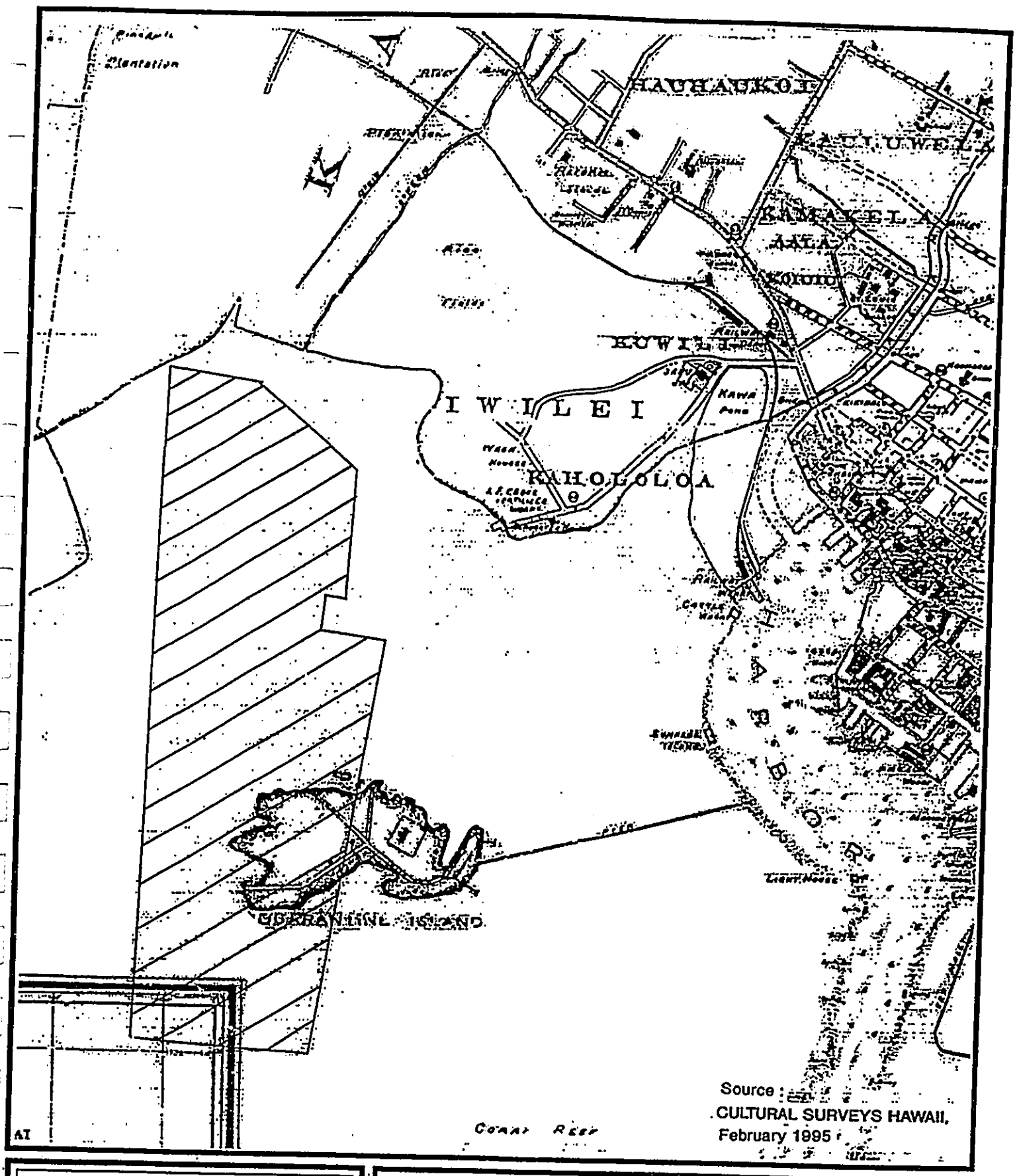
3.12 Infrastructure

3.12.1 Roads

Vehicular access to the Hart Street WWPS is off Nimitz Highway and a driveway leading to Piers 35. Vehicular access to Sand Island is on Sand Island Access Road, a four-lane paved road. Sand Island is connected to Oahu via two two-lane bridges across Kapalama Channel to Honolulu Harbor. Nimitz Highway/Ala Moana Boulevard is a major divided highway providing an important link between the airport area, Downtown Honolulu, and Waikiki. Four lanes in each direction accommodate traffic from the Keehi interchange to Sand Island Access Road. From Sand Island Access Road to Iwilei, there are three through lanes in each direction.

3.12.2 Wastewater System

In addition to the Hart Street WWPS force main, three other force mains transmit wastewater from the Honolulu area to the Sand Island WWTP. From the Ala Moana WWPS, a 78-inch force main conveys wastewater from Pier 1 under the Honolulu Harbor entrance channel to the Sand Island Park and subsequently to the WWTP. A 60-inch force main which originally conveyed wastewater to the WWTP, is located under the Harbor entrance channel and is maintained as a backup to the 78-inch force main.



HART ST. WWPS FORCE MAIN REPLACEMENT

OLD HONOLULU HARBOR
(portion of 1897 map)

Fig. 3-2

Prepared for :
City & County of Honolulu
Dept. of Wastewater Management

Prepared by :
Wilson Okamoto & Associates, Inc.

Two smaller systems include a 24-inch force main from the Fort Shafter WWPS and a 12-inch force main from the Sand Island Parkway WWPS.

3.12.3 Water System

A system of water lines ranging in diameter from 4 to 16 inches services the project corridor between Piers 31 and 36. See Figure 3-3. A 16-inch water main located along Nimitz Highway accommodates 8- and 12-inch lateral connections both mauka and makai of the Highway, while 4-, 6-, and 8-inch water lines located along the perimeter of Piers 31 to 36 service users within pier areas. Water service to Sand Island is provided by the City and County of Honolulu Board of Water Supply through 12- and 16-inch lines which cross Kalihi Channel via the Sand Island bridge.

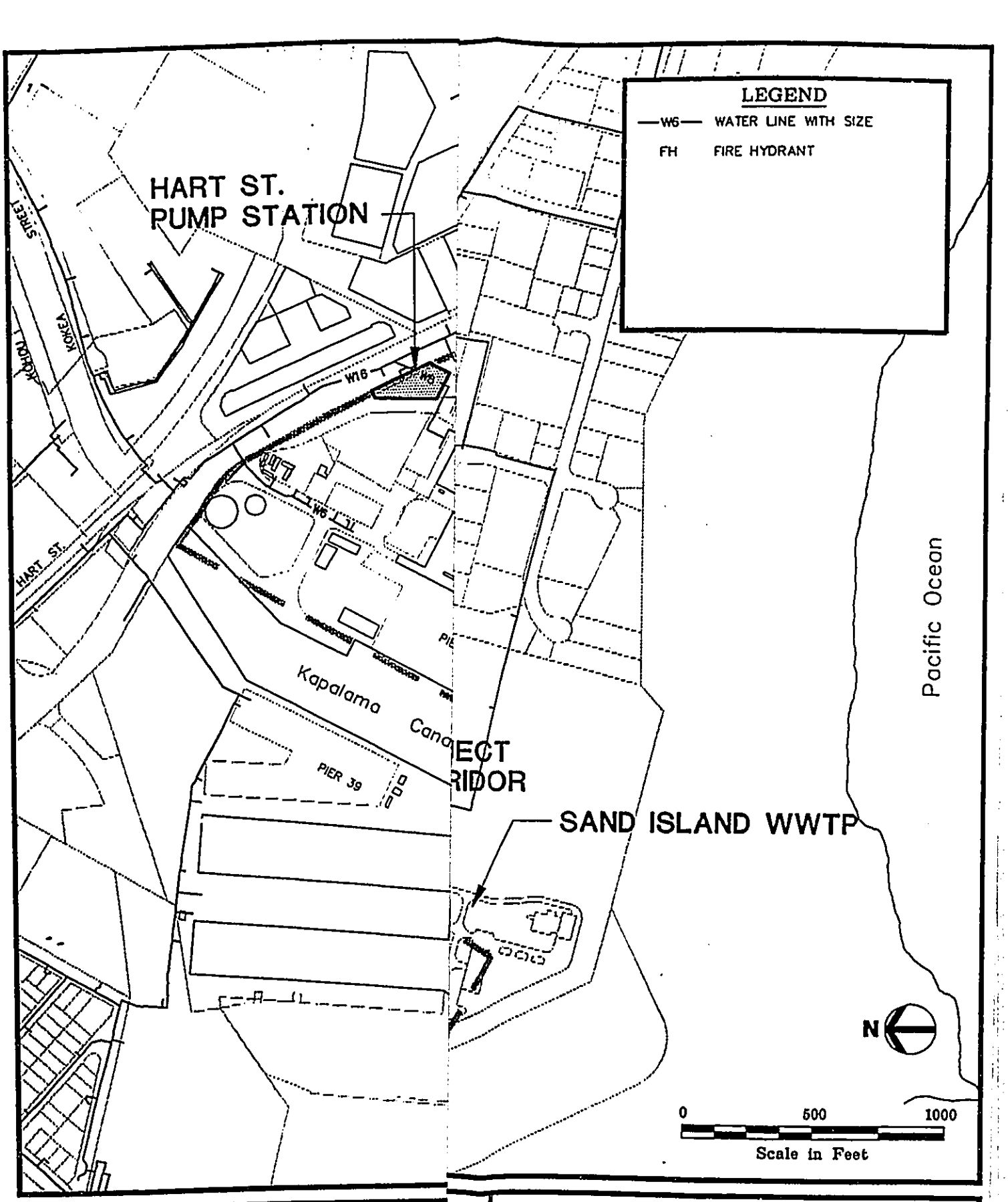
3.12.4 Drainage

The primary drainage feature of the project corridor is the Kapalama Canal located between Piers 38 and 39 which collects surface flows from a system of drainlines and culverts. On the Honolulu side of the Harbor, a 24-inch drain line extends from Nimitz Highway through the roadway entrance to the WWPS to Pier 35. See Figure 3-4. A second major drainway outlets in two 48-inch drain lines near the boundary of Pier 34 and 35. One segment of this 8-foot culvert runs parallel with the existing force main.

A 24-inch drain line collects runoff along Sand Island Parkway. This drainline eventually connects with a 60-inch line which subsequently conveys stormwater to an outlet near the bridge at Kalihi Channel. A 24-inch drainline also conveys stormwater flows to an open channel at the Diamond Head end of Pier 37.

3.12.5 Electrical Service

The existing electrical system serving the project corridor consists of a continuous grid that is fed by the Hawaiian Electric Company's Honolulu Power Plant. Major transmission lines include 25 kilovolt (kv) overhead lines, while primary distribution lines generally consist of 11.5 kv overhead lines. Sand Island is served by an 11.5 kv overhead line located along Sand Island Parkway Road.



HART ST. WWPS
FORCE MAIN
REPLACEMENT

Fig. 3-3

EXISTING WATER SYSTEM

CORRECTION

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

Two smaller systems include a 24-inch force main from the Fort Shafter WWPS and a 12-inch force main from the Sand Island Parkway WWPS.

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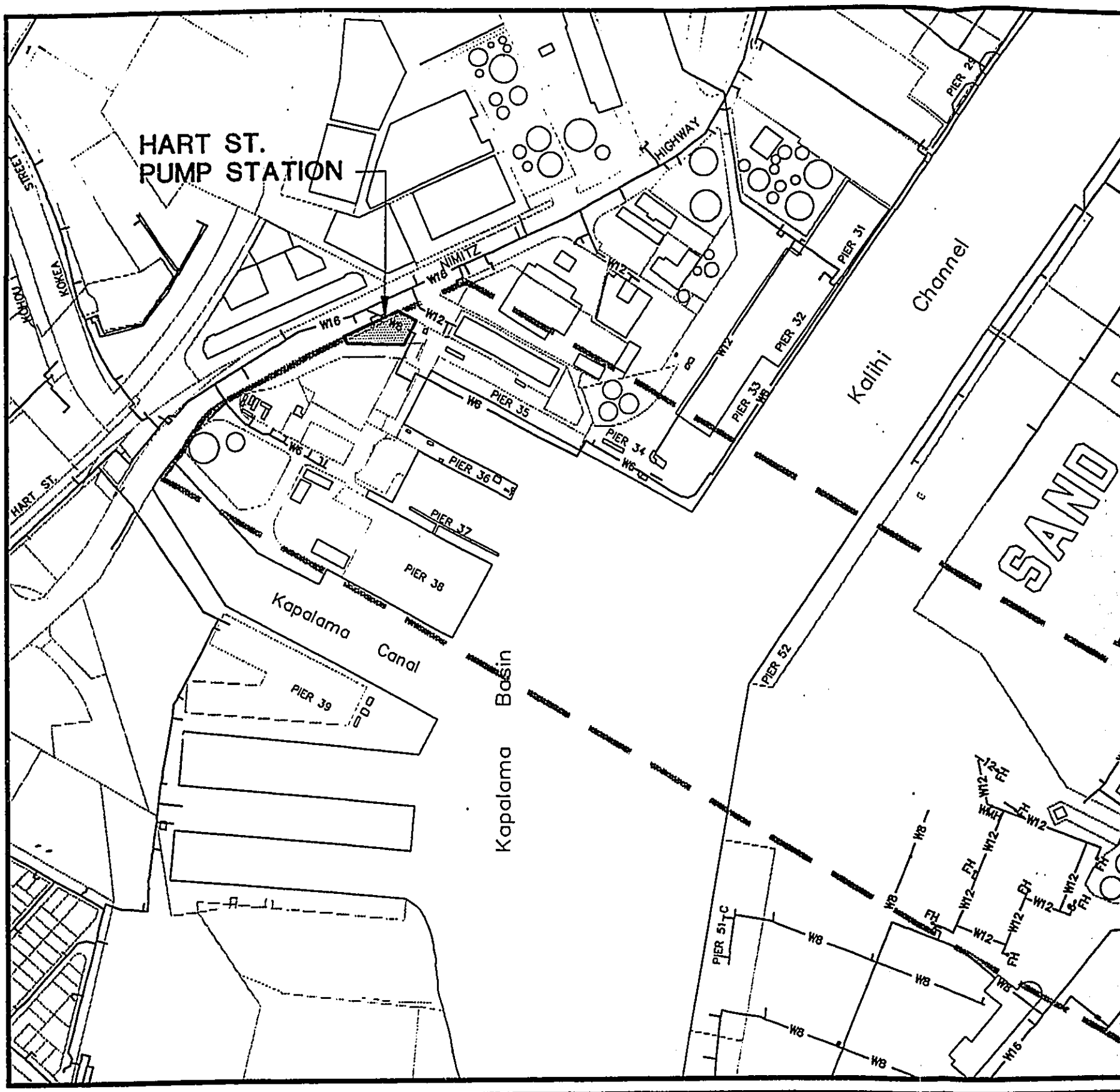
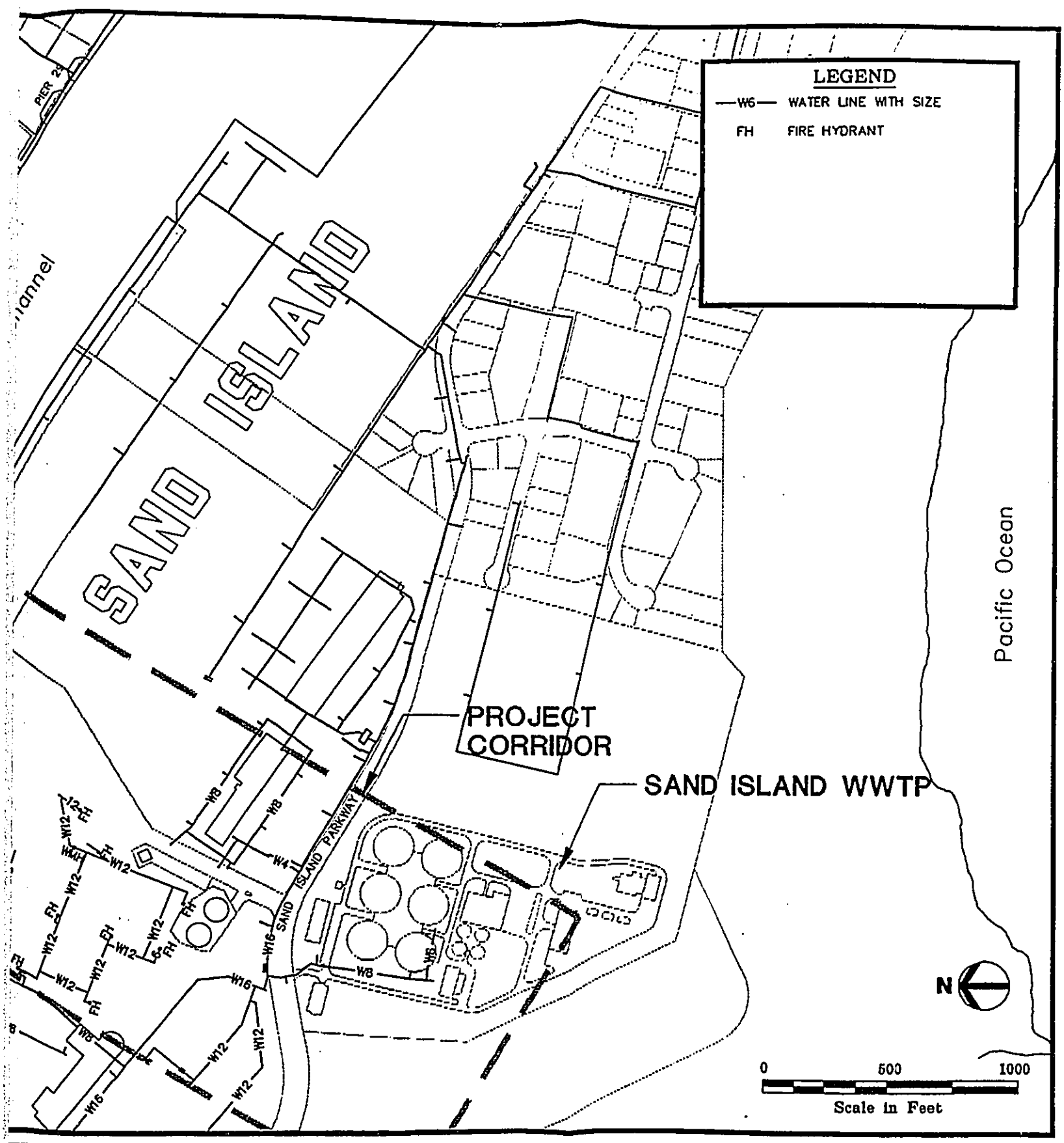
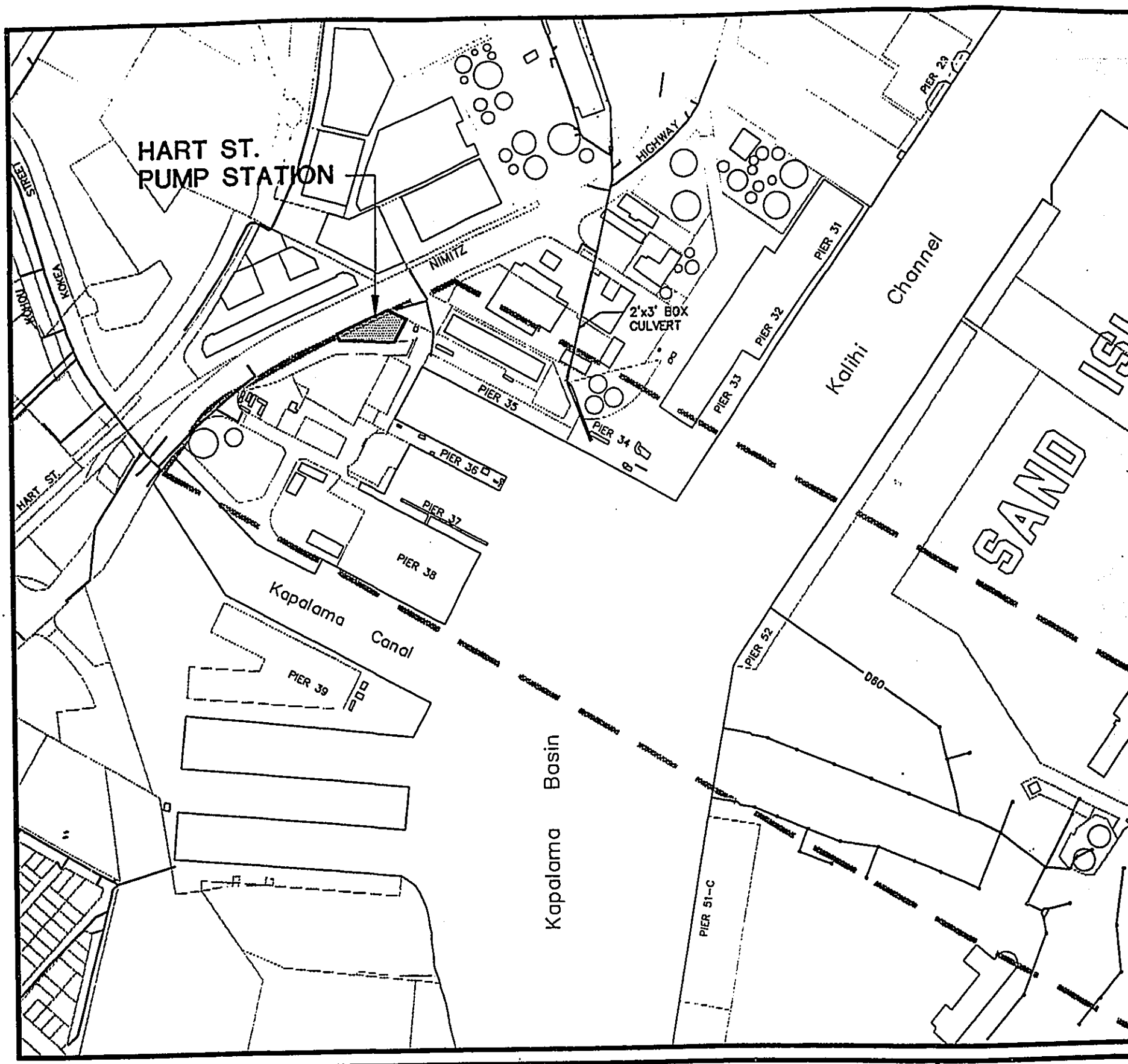


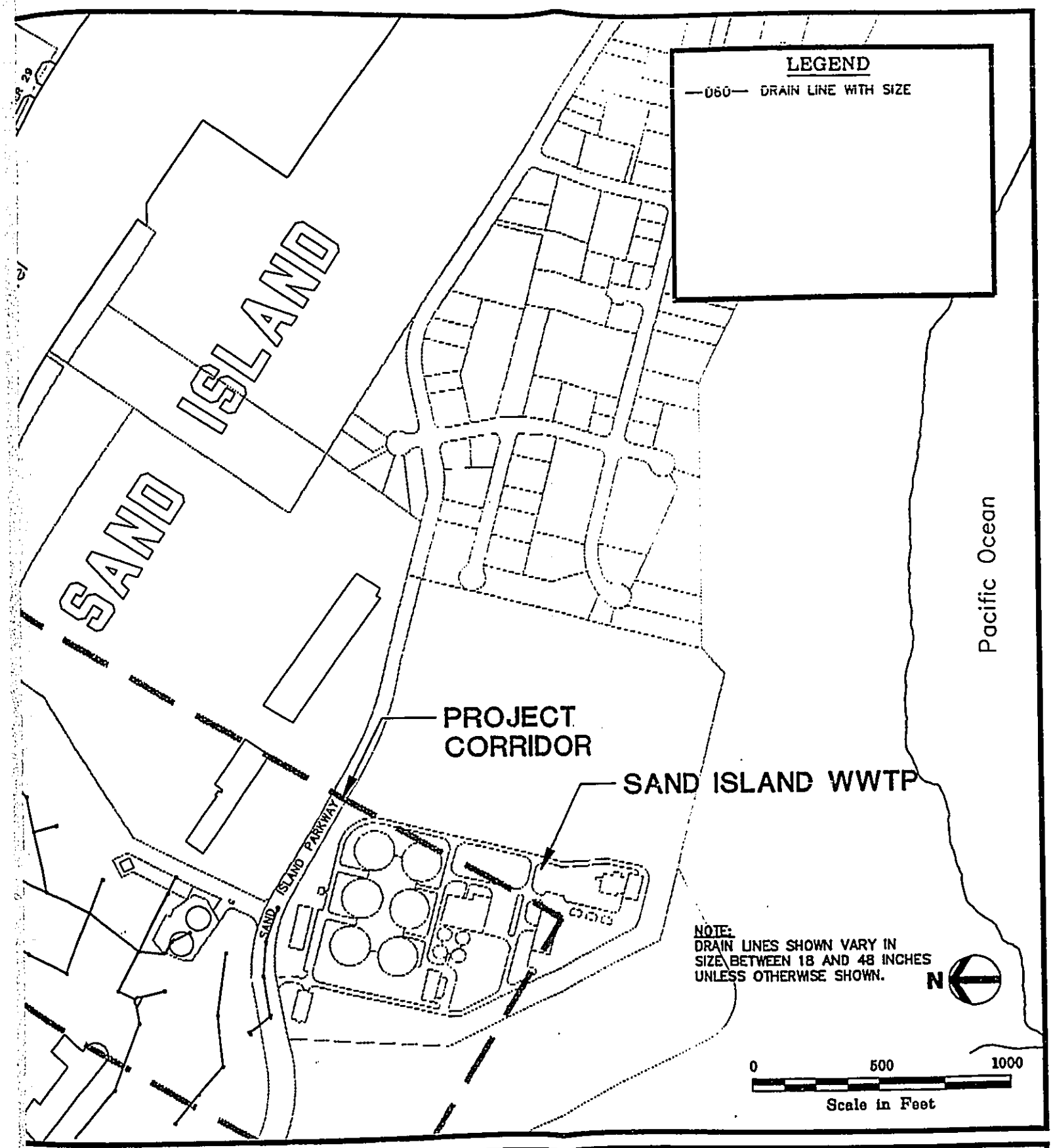
HART ST. WWPS FORCE MAIN REPLACEMENT	**EXISTING WATER SYSTEM**	Prepared for : Prepared by:



Prepared for : City & County of Honolulu Dept. of Wastewater Management	Fig. 3-3
Prepared by: Wilson Okamoto & Associates, Inc.	EXISTING WATER SYSTEM



HART ST. WWPS FORCE MAIN REPLACEMENT	**EXISTING DRAINAGE SYSTEM**	Prepared for : City Dept Prepared by: Wils



Prepared for : City & County of Honolulu
Dept. of Wastewater Management

Prepared by: Wilson Okamoto & Associates, Inc.

Fig. 3-4

EXISTING DRAINAGE SYSTEM

3.12.6 Gas and Fuel Lines

Ten and twelve-inch fuel lines are located within the project vicinity. See Figure 3-5. Various segments of the lines are operated by Union Oil, Chevron, and Hawaiian Independent Refinery, Inc. (HIRI). The fuel lines traverse Pier 33, Kapalama Channel and Sand Island, eventually ending at the HIRI Terminal via the Sand Island bridge. A 16-inch gas line maintained by GASCO, Inc. is located along Nimitz Highway.

3.12.7 Telephone Service

Communication service is currently provided by GTE Hawaiian Telephone Company. Service is provided via overhead lines to Piers on the Honolulu side of the corridor. Existing telephone lines which service Piers 51 and 52 and the Sand Island WWTP originate from Kapalama via the Sand Island bridge and main entrance channel near the southern corner of Sand Island Park.

3.13 Socio-Economic Considerations

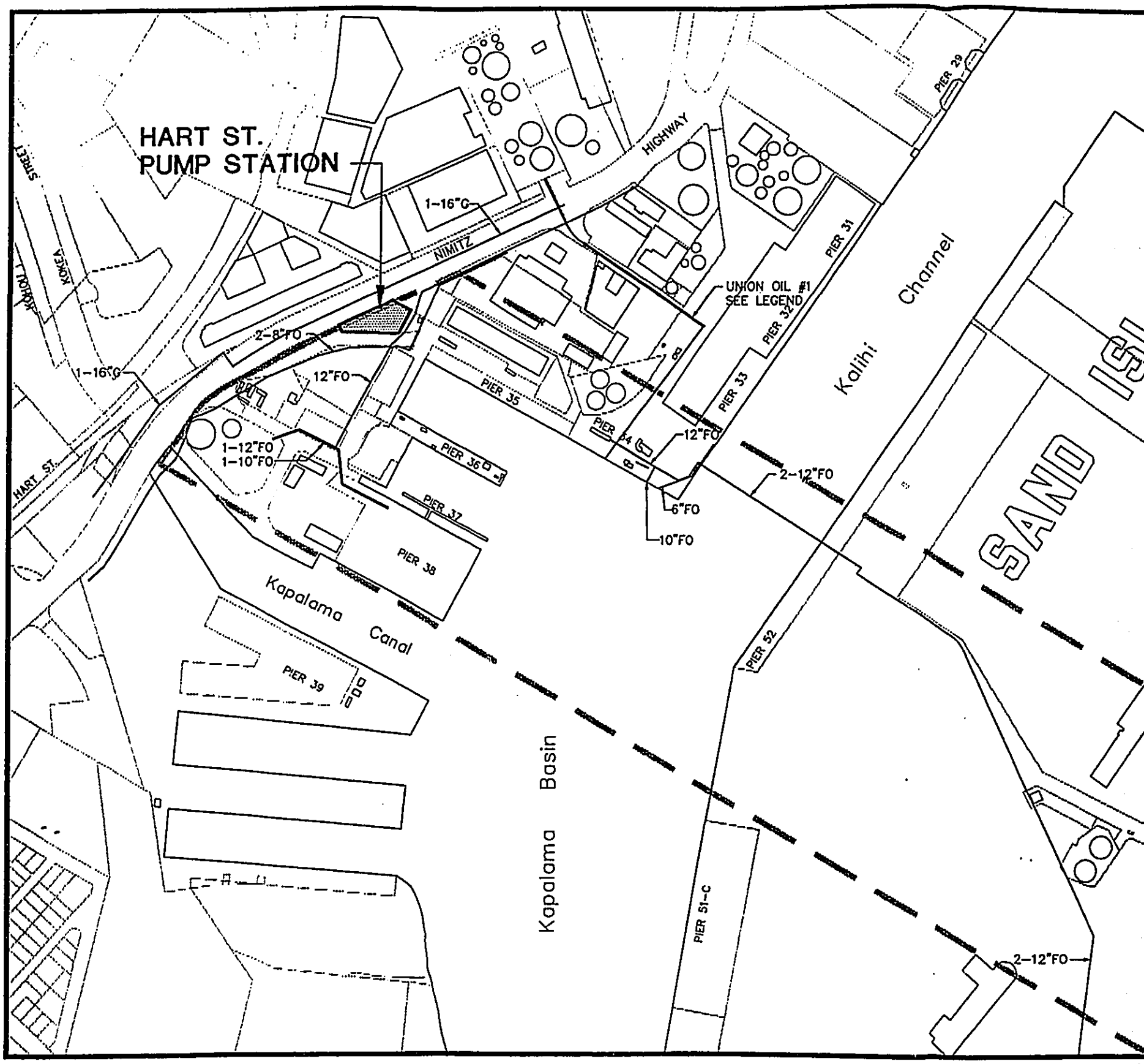
3.13.1 Businesses

Pier 35 - Two warehouses/buildings are currently located on this pier. Businesses which occupy the structures include the Hawaii Stevedores, HS C & C Federal Credit Union,, All Ship and Cargo Survey, NavTec Marine Electronics, KEMS Kewalo, Pacific Ocean Producers, Harbor Ice Service, Ameron, Honolulu Freight Service, and City Wide Transportation Company.

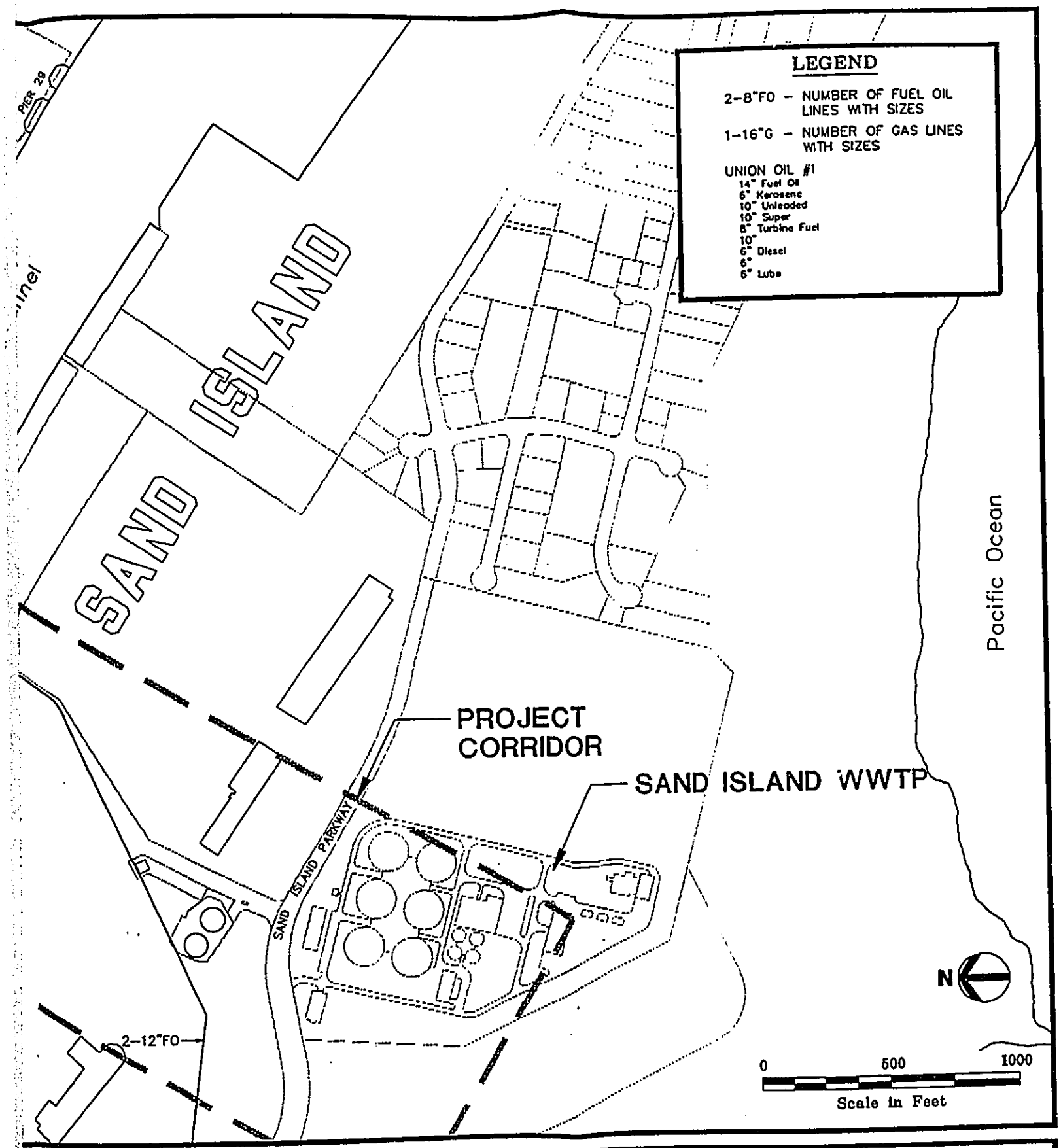
Pier 36 - A small, single-story structure is located at the mauka end of this pier, and is occupied by the Polynesian Voyaging Society, which maintains the Hokulea canoe. The P & R Water Taxi, and Clean Islands Council Boat used for marine emergency response operations is berthed at Pier 36.

Pier 37 - Located at this pier are Marine Systems, Inc., Hawaii Transfer Company, and Hawaiian Express Service.

Piers 51 and 52 - The piers are used by Matson Navigation Company and Sea-Land Service which operate container and cargo handling facilities. Interisland container



HART ST. WWPS FORCE MAIN REPLACEMENT	EXISTING FUEL OIL/GAS	Prepared for : City & Dept. o Prepared by: Wilson



Prepared for : City & County of Honolulu Dept. of Wastewater Management	Fig. 3-5
Prepared by: Wilson Okamoto & Associates, Inc.	EXISTING FUEL OIL/GAS

transshipment is also accommodated as barges are loaded at the terminal. In addition to container cargo, a portion of the terminal is used for liquid bulk cargo.

4. IMPACTS & MITIGATION MEASURES

4.1 Short Term Construction Impacts

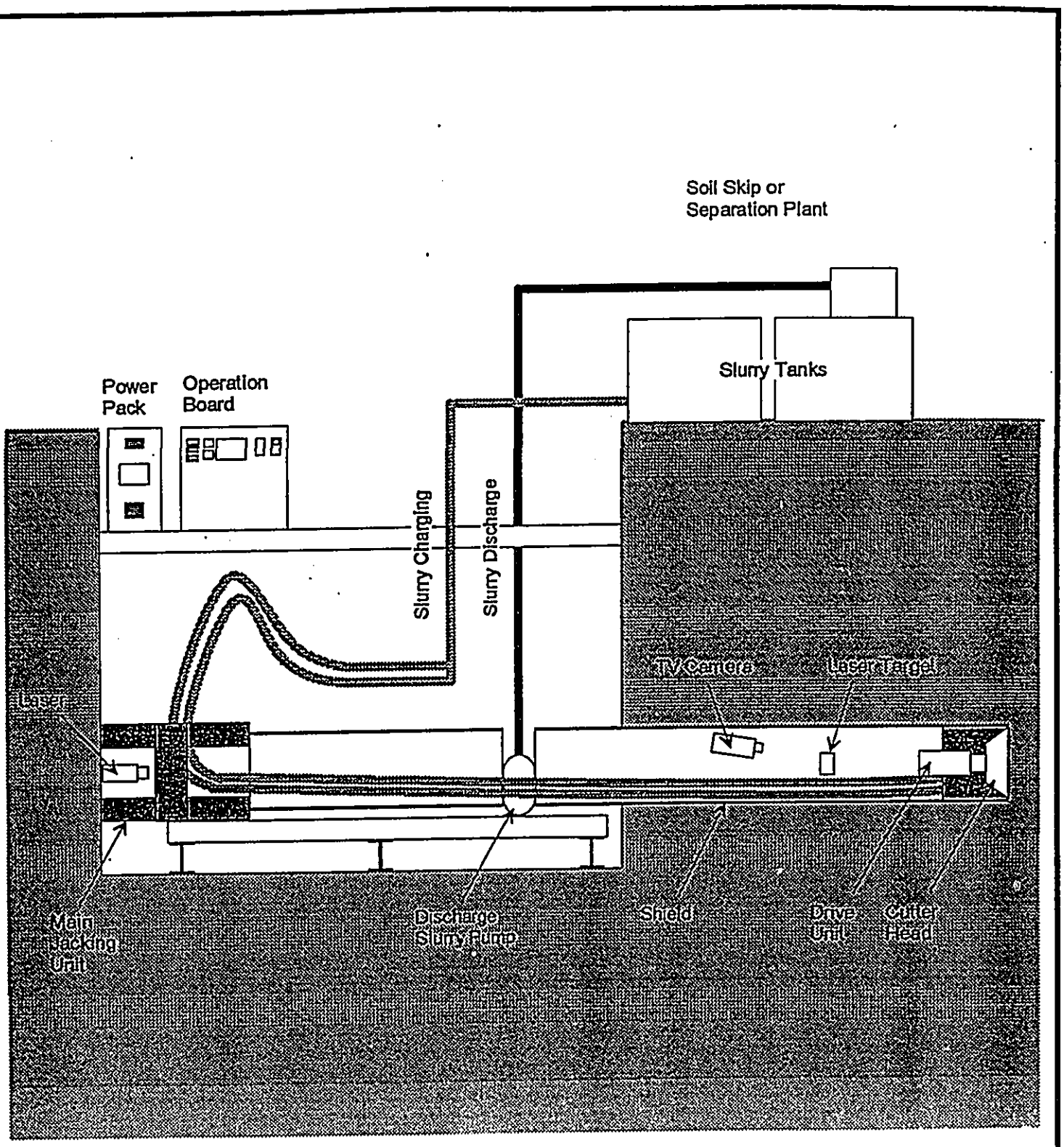
The primary impacts of the proposed action would occur during construction. The installation of a 48-inch diameter pipe over a distance of nearly one mile requires a significant amount of excavation work. Compounding the construction difficulties are the location of the proposed alignment in an area already congested with harbor-related industrial activities, a busy container yard which is the center of commercial shipping for Hawaii, and the need to cross a harbor channel with heavy marine vessel traffic.

4.1.1 Harbor-Crossing Considerations

Of particular concern, installing the force main across the harbor channel using conventional open trenching methods could seriously impact harbor operations and water quality. Accordingly, alternative construction methods were examined to minimize potential disruptions to the harbor channel and water-borne activities. Two forms of "trenchless" technologies were explored as part of the preliminary engineering analysis -- microtunnelling and directional drilling.

4.1.2 Microtunnelling

Microtunnelling is a method of excavation to allow pipe installation by pipe jacking techniques. Pits eight to eleven feet in diameter are excavated at the start and end points of the excavation for launching and retrieving a tunnel boring machine. Pipe jacking equipment is placed within the launching pit. The pipeline itself is jacked behind the microtunnelling machine, thereby providing the forward motion of the machine. See Figure 4-1. Additional lengths of pipe are added at the launch pit, the cycle continuing as the complete pipe string is pushed or jacked forward. Direction is controlled by the use of a remote-controlled, steerable tunnel boring machine. Steering is accomplished by activating several small hydraulic steering jacks near the front of the machine. Directional control is achieved using a laser beam emitter located in the launch pit, and a target located on the rear of the tunnelling machine. The tunnel boring machine generally cuts in a straight line from the launching pit to the retrieving pit. Newer methods also use remote-controlled pipe jacking which allows large pipes of up to 84 inches diameter to be installed.



HART ST. WWPS FORCE MAIN REPLACEMENT

MICROTUNNELLING (SLURRY SYSTEM)

Fig. 4-1

Prepared for :
City & County of Honolulu
Dept. of Wastewater Management

Prepared by :
Wilson Okamoto & Associates, Inc.

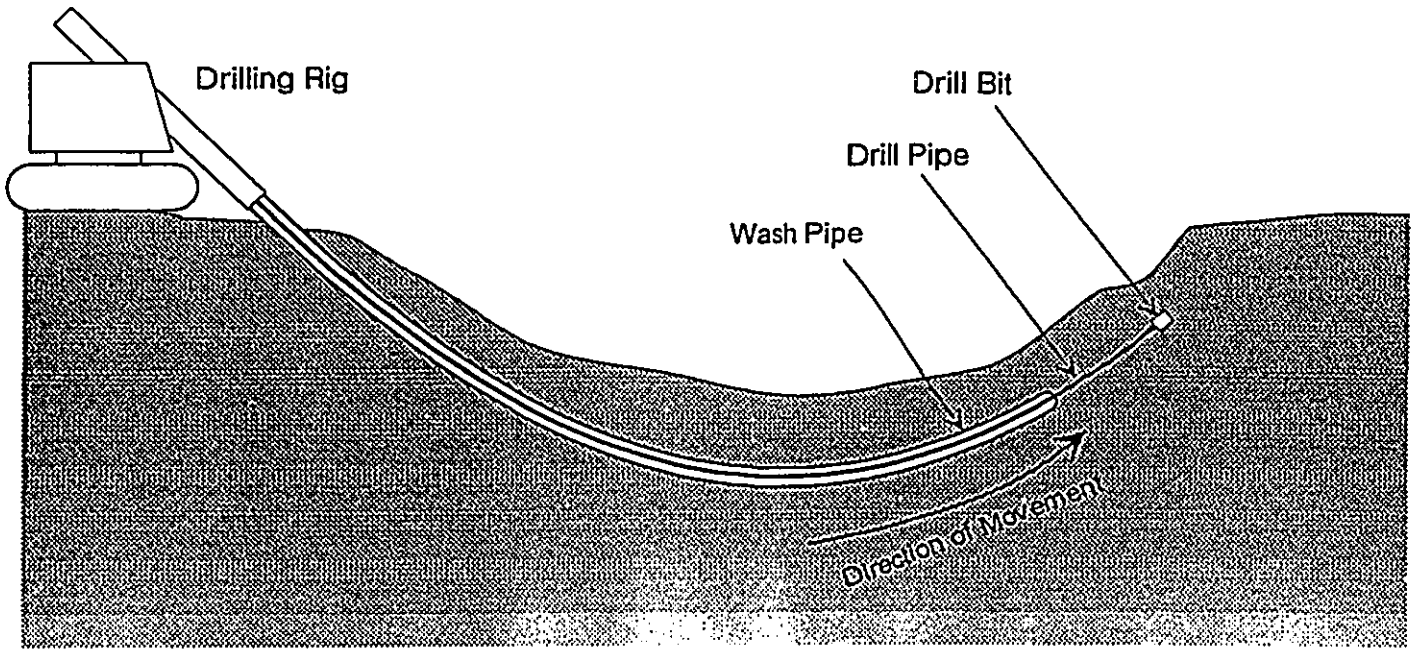
Removal of spoils from the tunnel face is either through auger or slurry systems. *Auger systems* incorporate a series of helical augers within the tunnel boring to transport soil from the cutting head to the launching pit where it is removed. The cutting head is connected directly to the auger flight and is driven from an electric motor in the jacking shaft. A choice of cutting heads is available for differing soil conditions.

With *slurry systems*, a small diameter discharge pipe installed within the lining of the tunnel carries the soil removed by the slurry shield machine directly to a treatment plant at ground level. The slurry liquid normally consists of a bentonite/water mixture, although water alone may be suitable in some soils or machines. In soils containing cobbles or stones, a crushing head is needed to grind the material down to a consistency suitable for passing through the small diameter discharge pipe.

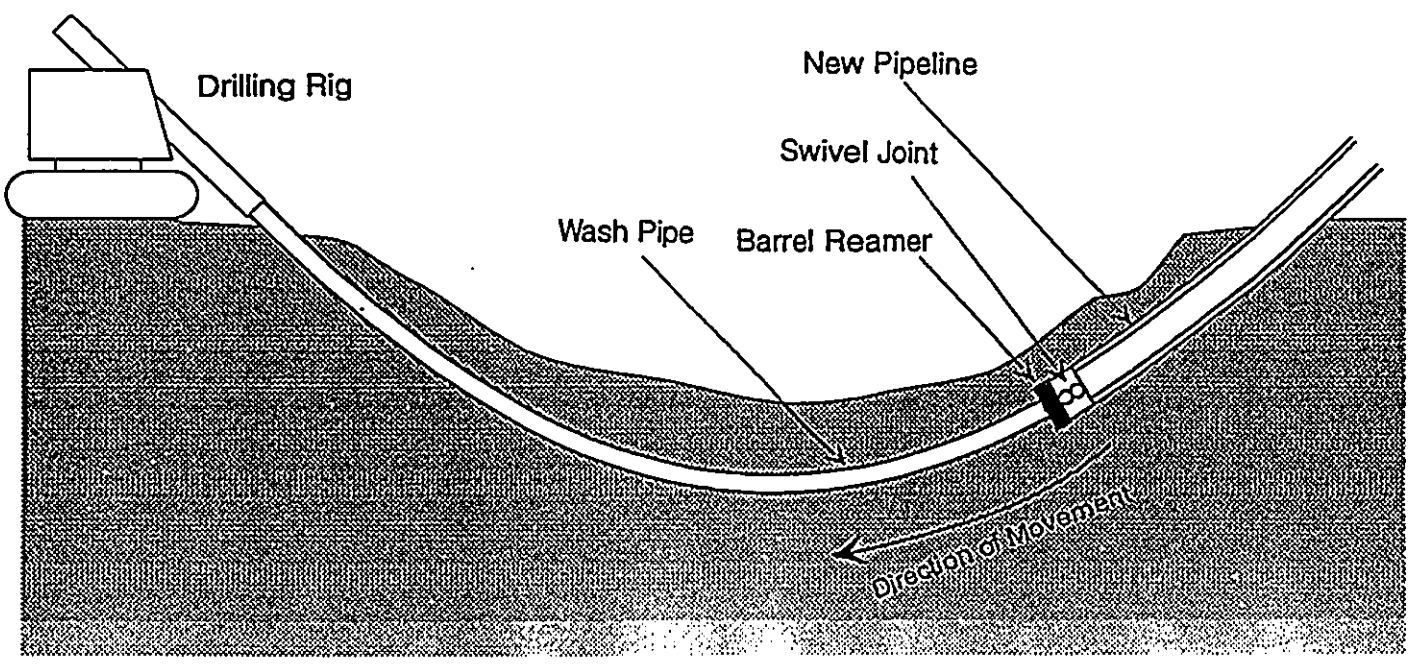
While effective, microtunnelling has some limitations mainly related to the length of pipeline which can be driven through the tunnel before another pit or shaft is required. The length of the tunnel for a single drive is generally limited to a maximum of 1,200 to 1,400 feet. Only Alternative Routes 1 and 4 would be candidates for microtunnelling since the Channel crossing for these alternatives is 1,200 feet or less. Microtunnelling would also be feasible for any portion of the on-shore work as an alternative to open trenching.

4.1.3 Directional Drilling

Directional drilling is used predominantly in the installation of long, vertically curved pipelines, usually under bodies of water such as rivers, estuaries and canals. Directional drilling is capable of drives in excess of 3,000 feet. A pilot hole is drilled into the ground up to a 15-degree angle and digs a shallow arc to the target area. A pipe slightly larger than the pilot tube follows the drill string, acting as a temporary support and as a method of reducing friction on the drill string. See Figure 4-2. The completed bore is increased using a back reaming technique until the hole is large enough to receive the final pipe, usually slightly larger than the actual diameter of the pipe. The pipe is then pulled backwards into the tunnel. Such a technique is especially useful for installations under water bodies of great length. The staging area normally requires an open area of



DRILLING PILOT HOLE



PULLING BACK PIPE

HART ST. WWPS FORCE MAIN REPLACEMENT

DIRECTIONAL DRILLING

Fig. 4-2

Prepared for :
City & County of Honolulu
Dept. of Wastewater Management

Prepared by :
Wilson Okamoto & Associates, Inc.

approximately 25,000 square feet. At the target area, a long linear area, 500 feet to 1,000 feet minimum, is required to lay out the partly assembled force main.

4.2 Noise

Installation of the force main may require machinery that generates a significant amount of noise. Rock drills, pavement busters, and earth-moving equipment such as backhoes, bulldozers, and diesel-powered trucks are anticipated to be used during construction. The use of micro-tunnelling or directional drilling will involve specialized equipment which would also be covered by the noise permits. The subsurface nature of the tunnelling work, however, would significantly reduce noise impacts in the surrounding area.

In general, noise impacts are not expected to be of significant concern given the heavy industrial nature of activities on the Honolulu side as well as Sand Island side of the harbor channel. There are no residences, schools or other noise-sensitive uses in the vicinity of the project corridor.

Mitigation Measures. Since noise levels generated by construction activity are anticipated to exceed allowable limits, a noise variance permit must be obtained from the DOH. As set forth under DOH Administrative Rules, Title 11, Chapter 43, DOH may grant permits to operate vehicles and construction equipment which emit noise levels in excess of the allowable limits.

4.3 Air Quality

Construction on the landward portions of the project corridor may temporarily degrade ambient air quality due to fugitive dust during trenching, tunnelling and/or drilling. In addition, emissions from construction equipment and vehicles may slightly impact air quality in the area. With the heavy vehicular traffic on Nimitz Highway and the industrial nature of the surrounding area, any degradation of air quality as a result of the project would not be significant. Under normal tradewind conditions, dust and fumes will be dispersed away from the project site toward the ocean.

Mitigative Measures. The short-term effects on air quality during construction will be mitigated by compliance with the DOH rules on air pollution control. Control measures anticipated to reduce fugitive dust include frequent wetting down of loose soil areas with water, and covering of dirt-hauling trucks.

4.4 Water Quality

If micro-tunnelling or directional drilling is used for the channel crossing, significant water quality impacts will be largely avoided since no active trenching or construction will occur in the water. The removal of excavated materials from the tunnel and shafts, however, would likely require a dewatering process which could affect water quality.

On-shore land area which are expected to be excavated by conventional open trenching methods would also likely require dewatering since the excavations will extend below sea level. So that construction can proceed in a dry trench, the excavated trench will be dewatered. Water that is conveyed from the trench must be treated prior to discharge into any drainage system or coastal waters.

Mitigation Measures. Prior to construction, full compliance with State water quality requirements will be sought. Construction dewatering permits will be required by the City and County of Honolulu Department of Public Works and the State DOH pursuant to City Ordinance and Section 11-5-34.08(b), Hawaii Administrative Rules, respectively.

As part of the anticipated National Pollutant Discharge Elimination System Permit, water quality sampling and analyses will be undertaken for potential contaminants which may be anticipated. An effluent discharge control plan will be prepared incorporating Best Management Practices (BMP) plans, appropriate structural or non-structural mitigative methods such as containment berms and filtration/detention ponds which would control the discharge of stormwater runoff and effluent resulting from construction and dewatering activities.

4.5 Hazardous Material

A study prepared by Masa Fujioka & Associates indicated the possible presence of petroleum hydrocarbon products from leaking USTs on both sides of the Kapalama

Channel. Potential contamination of the soil could complicate disposal of the excavated soil. Potentially contaminated soil will be stockpiled, sampled, tested and remediated, if necessary, prior to disposal. Furthermore, the potential contamination of groundwater may not meet DOH standards, thereby requiring treatment and/or alternative disposal. See Appendix A.

As the design proceeds, a more in-depth study of hazardous materials will be conducted and appropriate treatment and disposal measures will be identified.

4.6 Flora and Fauna

Construction activities may displace flora and fauna at the site. Because the area is highly developed, however, disturbance of any flora or fauna is unlikely. There are no Federal or State listed endangered species on the site which would be impacted.

4.7 Marine Habitats

Unless conventional trenching is required for the channel crossing, significant impacts on marine habitats are not anticipated. Either microtunnelling or directional drilling will not disturb the channel bottom or water column and any benthic communities therein. Existing harbor activities, including tugboats and ships within the turning basin, already generate significant turbidity plumes.

Mitigation Measures. Dewatering of on-land trenches and excavated soils and slurry from tunnelling activities will be collected, detained, and treated prior to disposal to the harbor, in compliance with State DOH rules and associated water quality permits.

4.8 Archaeological Resources

According to the historical and archaeological review conducted by Cultural Surveys Hawaii, there is fairly conclusive evidence that the project corridor almost completely comprises fill land and dredged open water, therefore precluding any possibility of historical or archaeological sites. Based on these findings, further archaeological investigations are not required and monitoring during construction is not justified.

Mitigation Measures. In the unlikely event that subsurface archaeological materials are encountered during construction, work shall cease in the immediate area and the State Historic Preservation Division of the Department of Land and Natural Resources will be notified.

4.9 Traffic

4.9.1 Vehicular Traffic

Construction activities will adversely affect vehicular traffic in the vicinity of the pipe installation work. This would include the access driveway to Piers 35 and 36, Sand Island container yard storage and movements, and the Sand Island Parkway. A traffic control plan will be prepared as part of the design process, and construction work will be coordinated with the State DOT Harbors and tenants in the area to minimize traffic impacts.

4.9.2 Harbor Traffic

Unless conventional trenching is used for the channel crossing, impacts to harbor traffic are expected to be very minimal. No barges or in-water work are expected if either microtunnelling or directional drilling is pursued for the preferred alternative.

4.10 Utilities

Numerous utilities traverse the project corridor. Prior to construction, all existing utility lines, particularly fuel lines, along and in proximity to the force main alignment will be identified and their depths located to avoid intersecting them.

Particular care and attention will ne given to fuel lines in the vicinity of the force main. Continuing consultation with those fuel companies potentially impacted by the alignment will be undertaken, and precautionary construction measures implemented as recommended by these companies.

4.11 Socio-Economic

Businesses along the proposed alignment may be disturbed during trenching because of noise, fugitive dust and vehicular access restrictions or detours. No businesses will be displaced as a result of the pipe installation work.

A portion of the presently undeveloped area planned for a Fresh Fish Distribution Center may be used temporarily for construction staging in conjunction with either microtunnelling or directional drilling.

Mitigative Measures. Depending on the construction technique, up to 25,000 square feet of land for staging area will be needed on the Honolulu side. On Sand Island, an open space up to 500 feet to 1,000 feet will be required. Following construction work, the area will be restored to its original condition. To avoid major disruptions of businesses, the contractor shall coordinate the construction schedule with tenants within the project corridor to minimize construction impacts and expedite the work schedule. Furthermore, the contractor shall give ample notification to tenants in the area when construction will occur.

4.12 Long-Term Water Quality Impacts

The installation of a new force main will provide a long term solution to the aging and possibly deteriorated existing force main. The new main will avoid the possibility of a major break in the existing force main, which would result in the discharge of untreated wastewater effluent into the Harbor. The long-term impacts of the force main will be beneficial to the water quality of the Harbor. In addition, the existing line may then be rehabilitated to serve as a backup line to the new force main.

4.13 Long-Term Marine Habitats Impacts

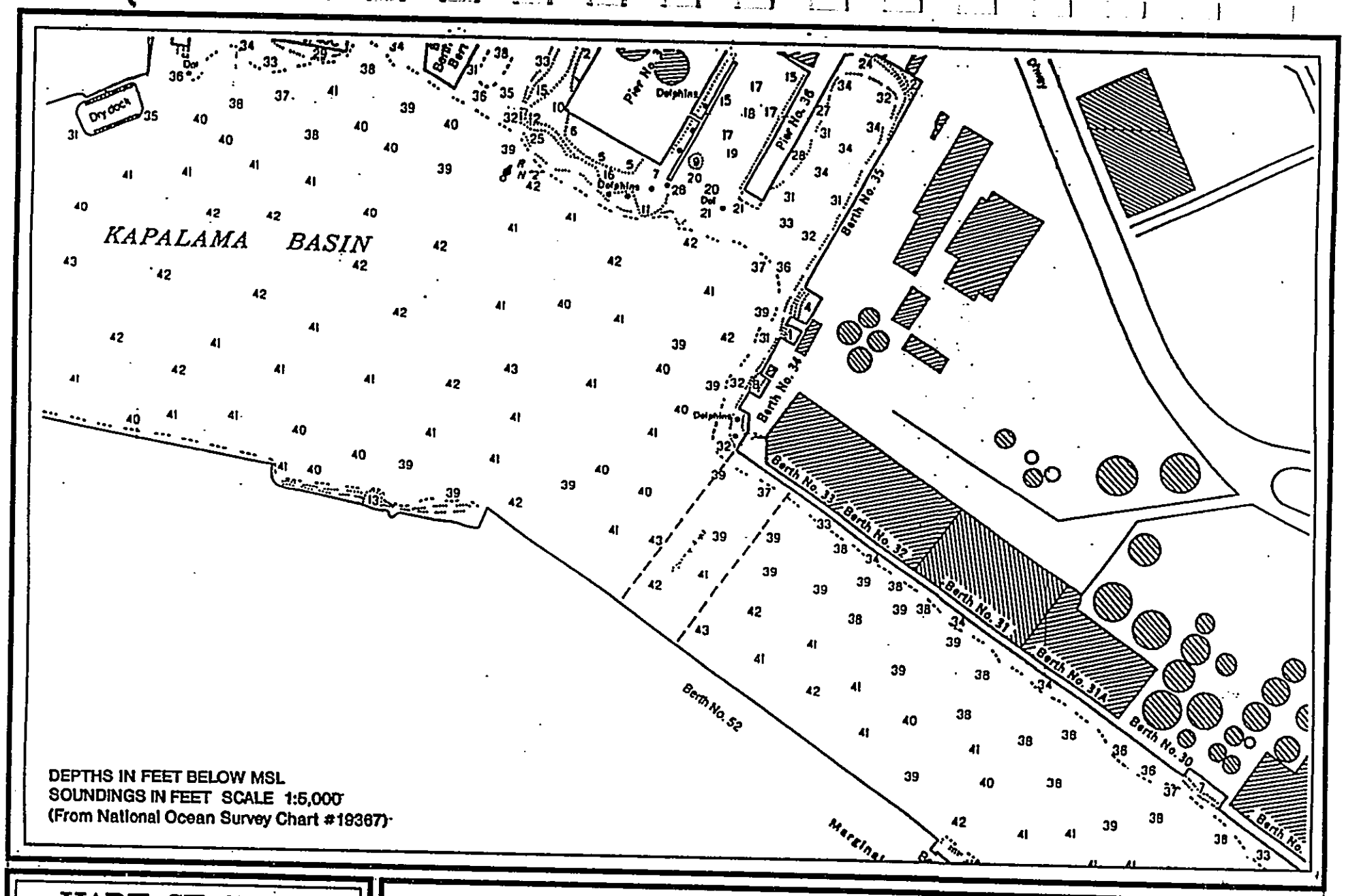
Since the replacement of the force main may prevent the leakage of the untreated wastewater from the existing main, the proposed project benefits marine habitats in the long run.

4.14 Long-Term Socio-Economic Impacts

The proposed force main will accommodate projected flows up to at least the year 2015. Such an installation will provide adequate infrastructure to support population and economic growth in the Central Honolulu area.

4.14.1 Business Impacts

Harbor-related businesses would be impacted if a "no-anchor zone" would need to be established in Kapalama Basin, since this basin is heavily used as turning basin for large ships in the harbor for which emergency anchoring is sometimes required. Based on the expected depth of the force main beneath the harbor, up to -180 feet Elevation, it does not appear that a no-anchor zone is required. A 200-foot wide "no-anchor zone" is already designated for the existing force main. See Figure 4-3.



HART ST. WWPS FORCE MAIN REPLACEMENT

Fig. 4-3
PIPELINE CROSSING "NO ANCHOR" ZONE

Prepared for :
City & County of Honolulu
Dept. of Wastewater Management

Prepared by :
Wilson Okamoto & Associates, Inc.

5. RELATIONSHIP TO PLANS, POLICIES & CONTROLS

5.1 State Land Use District

The Hawaii Land Use Law of Chapter 205 Hawaii Revised Statutes, classifies all land in the State into four land use districts: *Urban, Rural, Agricultural* and *Conservation*. The project area encompasses two state land use districts: *Urban* and *Conservation*. All land areas of the project corridor are designated *Urban, "lands characterized by 'city-like concentrations of people, structures, streets, urban level of services and other related land uses."* All water areas and submerged lands are classified *Conservation*.

In addition, the Department of Land and Natural Resource divides Conservation Districts into four specific categories: *Protective* (P), *Limited* (L), *Resource* (R) and *General* (G). The Kapalama Channel and Basin are Subzone *Resource* (R), *"Lands and state marine waters seaward of the upper reaches of the wash of waves, usually evidenced by the edge of vegetation or by the debris left by the wash of waves on shore to the extent of the State's jurisdiction, unless placed in the (P) or (L) subzone* (§ 13-5-13 DLNR Administrative Rules)."

Because of the proposed use within the Conservation District, a Conservation District Use Application (CDUA) will be filed with the State of Hawaii Department of Land and Natural Resources. See Figure 5-1.

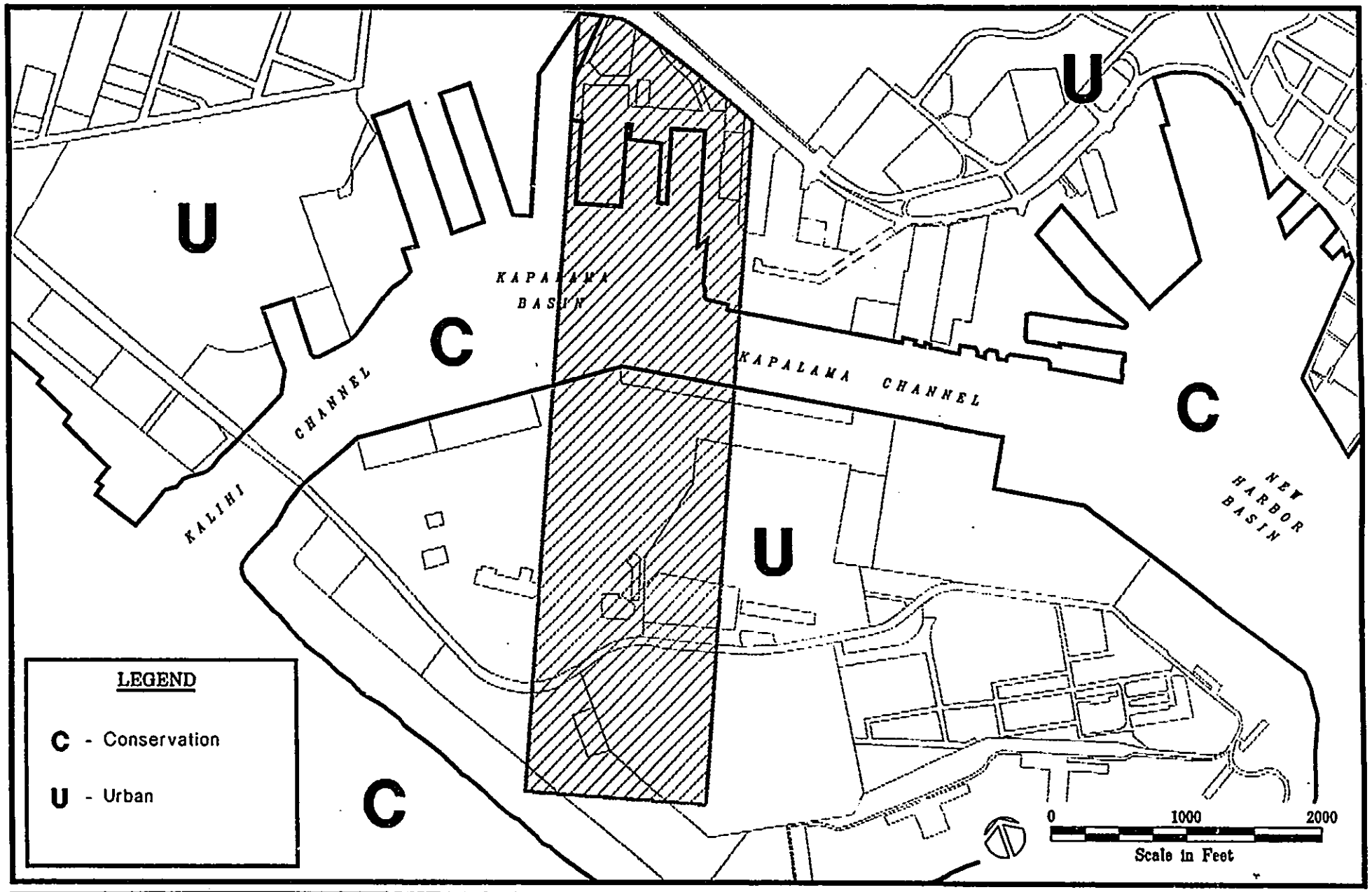
5.2 Hawaii State Plan

The Hawaii State Plan, Hawaii Revised Statutes (HRS) Chapter 226, outlines broad goals, policies and objectives to serve as guidelines for the future growth and development of the State. The proposed project is consistent with the following objectives, policies and priority guidelines:

§ 226-11, HRS Objectives and policies for the physical environment - land-based, shoreline, and marine resources.

(a)(2) Effective protection of Hawaii's unique and fragile environmental resources.

(b)(2) Ensure compatibility between land-based and water-based activities and natural resources and ecological systems.



HART ST. WWPS FORCE MAIN REPLACEMENT

Fig. 5-1
STATE LAND USE DISTRICTS

Prepared for :
City & County of Honolulu
Dept. of Wastewater Management
Prepared by :
Wilson Okamoto & Associates, Inc.

(b)(3) Take into account the physical attributes of areas when planning and designing activities and facilities.

(b)(8) Pursue compatible relationships among activities, facilities, and natural resources.

§ 226-13, HRS Objectives and policies for the physical environment - land, air, and water quality.

(a)(1) Maintenance and pursuit of improved quality in Hawaii's land, air, and water resources.

(a)(3) Promote effective measures to achieve desired quality in Hawaii's surface, ground, and coastal waters.

§ 226-14, HRS Objectives and policies for facility systems - in general.

(a)(1) Accommodate the needs of Hawaii's people through coordination of facility systems and capital improvement priorities in consonance with State and County plans.

(a)(2) Encourage flexibility in the design and development of facility systems to promote prudent use of resources and accommodate changing public demands and priorities.

(a)(3) Ensure that required facility systems can be supported within resource capacities and at reasonable cost to the user.

(a)(4) Pursue alternative methods of financing programs and projects and cost-saving techniques in the planning, construction, and maintenance of facility systems.

§ 226-15, HRS Objectives and policies for facility systems - solid and liquid wastes.

(a)(1) Maintenance of basic public health and sanitation standards relating to treatment and disposal of solid and liquid wastes.

(a)(2) Provision of adequate sewerage facilities for physical and economic activities that alleviate problems in housing, employment, mobility and other areas.

(b)(1) Encourage the adequate development of sewerage facilities that complement planned growth.

§ 226-20, HRS Objectives and policies for socio-cultural advancement - health.

(a)(2) Maintenance of sanitary and environmentally healthful conditions in Hawaii's communities.

§ 226-104, HRS Population growth and land resources priority guidelines.

(a)(3) Ensure that adequate support services and facilities are provided to accommodate the desire distribution of future growth throughout the State.

(b)(13) Protect and enhance Hawaii's shoreline, open spaces, and scenic resources.

5.3 State Functional Plans

State Functional Plans outline policies, programs and projects for specific fields of activities when such a project or program is administered, funded or proposed by any State agency. The development of these plans has been guided by the Hawaii State Plan, Chapter 226, HRS. The following are pertinent to the proposed project:

State Conservation Functional Plan (1991)

The overall theme of the State Conservation Functional Plan is to balance growth and to enhance and increase access to Hawaii's scenic natural resources and to effectively manage existing developed lands. The proposed project is subject to the following objective:

Objective IIB: Protection of fragile or rare natural resources.

Because the project corridor encompasses lands classified as *Conservation*, the project is subject to DLNR Administrative Rules. A Conservation District Use Application will be submitted for the proposed project.

State Health Functional Plan (1989)

The goals of the State Health Functional Plan include environmental protection issues. Objectives and policies that relate to the proposed activity include:

Objective: *To prevent degradation and enhance the quality of Hawaii's air, land and water.*

Policy (A1): *Prevent and control the pollution of air, water and land through long-range planning, environmental impact assessment, interagency coordination, programs, regulation, and financial assistance to local governments.*

Objective: *Minimize the threat to public health from unsanitary conditions by ensuring that facilities are built and maintained so that products and services are provided in a healthful manner.*

The installation of the force main is intended to prevent any health hazards which may occur should the existing force main break.

Prior to construction, the Department of Health (DOH) permits such as National Pollutant Discharge Elimination System (NPDES) and Section 401 Water Quality Certification Permits will be obtained, as needed.

State Historic Preservation Functional Plan (1991)

The goals of the Historic Preservation Functional Plan is to preserve and protect the sites, structures, cultural skills, arts and artifacts and records of historical significance for future generations. An historic literature review of the project corridor was conducted to avoid any adverse impacts to any historical resource.

State Recreation Functional Plan (1991)

The following objectives and policies are applicable to the proposed project:

Objective IV-B: *Prevent degradation of the marine environment*

Policy B-2: *Protect, preserve, restore and enhance recreational fishery resources.*

Replacing the existing force main with a new line avoids any leakage of the old line, thereby preventing degradation of the marine environment.

5.4 City & County of Honolulu General Plan

The General Plan sets forth long-term objectives, goals and strategies for the City and County of Honolulu. Objectives and policies relevant to the proposed project are as follows:

Objectives and Policies for Population

Objective B: To plan for future population growth.

Policy 1: Allocate efficiently the money and resources of the City and County in order to meet the needs of Oahu's anticipated future population.

Objective C: To establish a pattern of population distribution that will allow the people of Oahu to live and work in harmony.

Policy 1: Facilitate the full development of the primary urban center.

Objectives and Policies for the Natural Environment

Objective A: To protect and preserve the natural environment

Objective B: To preserve and enhance the natural monuments and scenic views of Oahu for the benefit of both residents and visitors.

Policy 1: Protect the Island's well known resources: its mountains and craters; forests and watershed areas; marshes, rivers, and streams; shoreline, fishponds, and bays; and reefs and offshore islands.

Objectives and Policies for Transportation and Utilities

Objective B: To meet the needs of the people of Oahu for an adequate supply of water and for environmentally sound systems of waste removal.

Policy 5: Provide safe, efficient, and environmentally sensitive waste collection and waste disposal services.

The installation of the pipeline is designed to accommodate projected wastewater flows to the year 2015 and preclude bypass flows. Such a project provides the adequate infrastructure to accommodate growth in the Central Honolulu area without harming the natural environment and coastal waters.

5.5 City & County of Honolulu Development Plan

The Development Plans (DP) guide the desired sequence, patterns and characteristics of future development. They were established by the City and County of Honolulu to provide detailed schemes for "implementing and accomplishing the objectives and policies of the General Plan." The DPs are composed of the Common Provisions and Special Provisions. There are no applicable policies in the Special Provisions which relate to the project.

5.5.1 Common Provisions

The DP Common Provisions establish general design principles and controls applicable to all DP amendments and proposed developments. In § 24-1.9(b) of the Common Provisions, priority is given to those projects that:

(1)(A) will improve or replace existing public facilities in unsound condition.

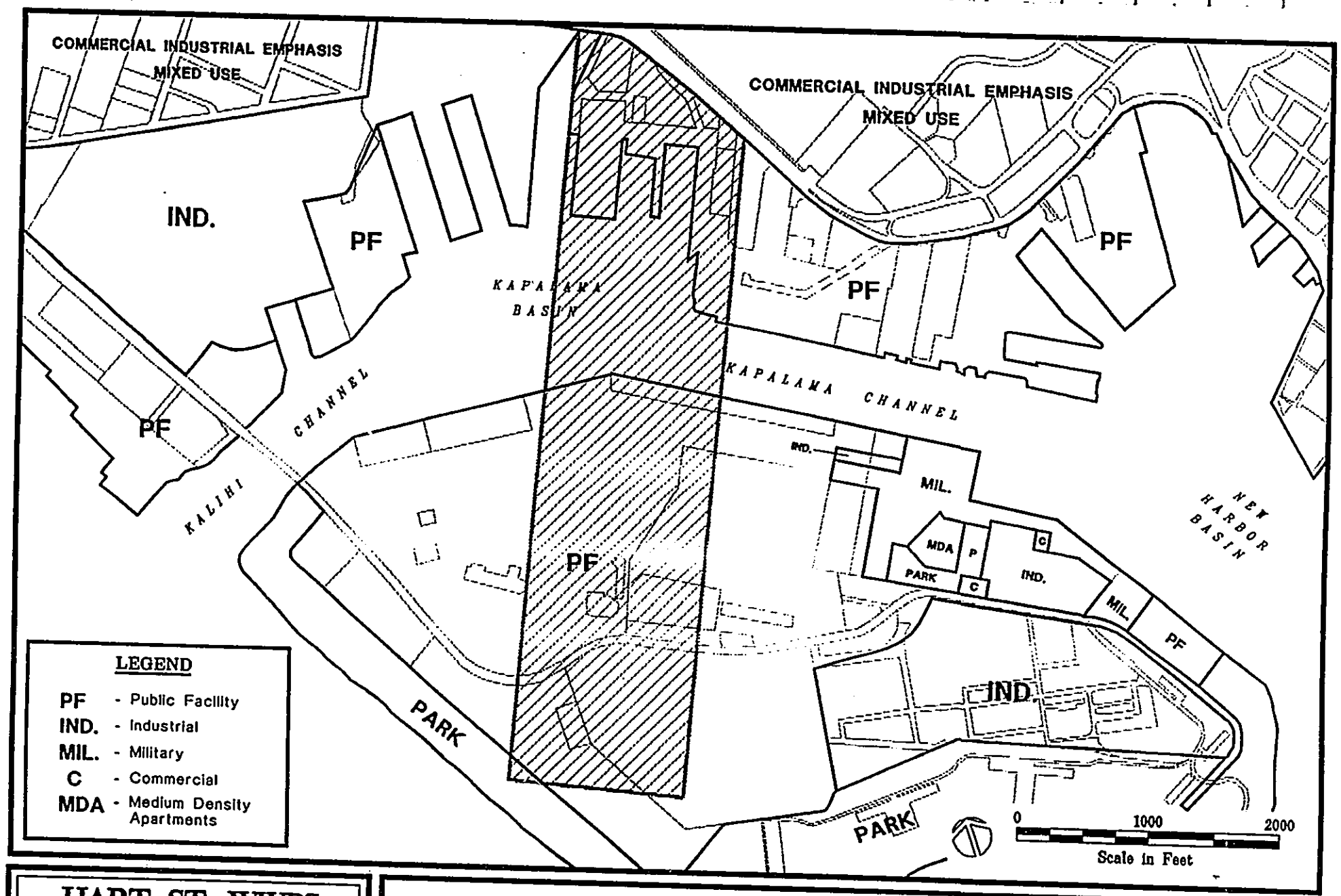
(2)(A) are consistent with the general plan pattern of population distribution for each development plan area

(2)(D) will not encourage growth in urban fringe or rural areas.

Because the force main is approaching the end of its design life of 50-years, it requires replacement. Furthermore, the proposed project is located in the core of the PUC, not the urban fringe or in a rural area.

5.6 DP Land Use Map Designation

The lands in the project corridor on both sides of the Harbor are designated *Public Facility*. See Figure 5-2.



HART ST. WWPS FORCE MAIN REPLACEMENT

Fig. 5-2
CITY AND COUNTY OF HONOLULU
DEVELOPMENT PLAN LAND USE MAP

Prepared for :
City & County of Honolulu
Dept. of Wastewater Management

Prepared by :
Wilson Okamoto & Associates, Inc.

5.7 DP Public Facilities Map Designation

The DP Public Facilities map depicts existing and proposed major public facilities and proposed major improvements to existing facilities. On the DP Public Facilities map, the proposed Hart Street WWPS force main is depicted as a project forecasted beyond six years. See Figure 5-3.

5.8 City & County of Honolulu Zoning

The Land Use Ordinance establishes zoning of all land areas on Oahu. The land areas of the project site are zoned *I-3, Waterfront Industrial*. See Figure 5-4.

5.9 Coastal Zone Management Program

Section 307 of the National Coastal Zone Management (CZM) Act of 1972 provides for state review of federal actions or permits affecting the coastal zone of states with approved CZM programs. Hawaii's CZM Program, established pursuant to Chapter 205A, HRS is administered by the Office of State Planning and provides for the beneficial use, protection and development of the State's coastal zone.

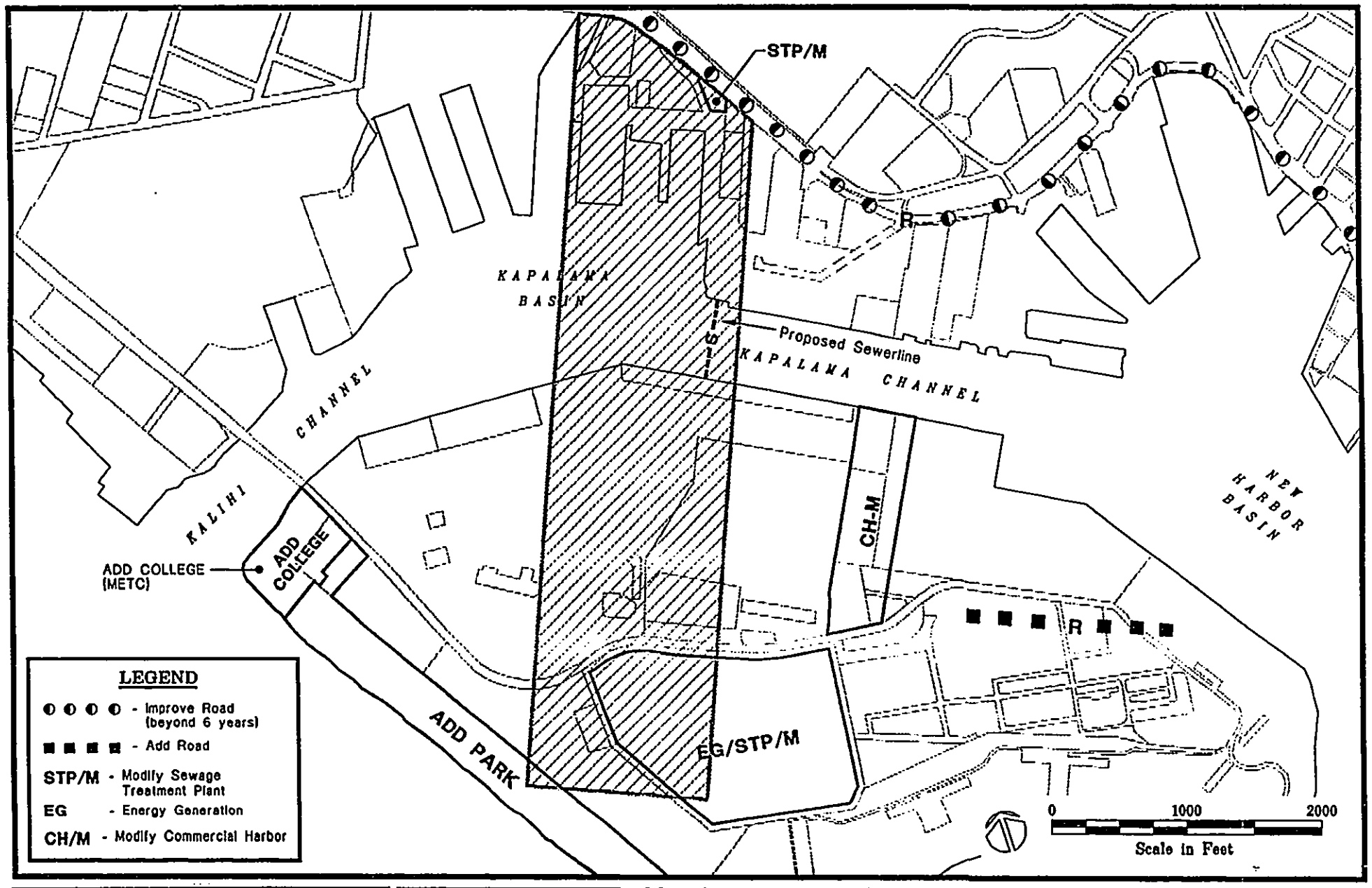
A CZM Federal Consistency Review Permit is required in conjunction with Department of the Army Permit requirements. The project will comply with the ten CZM objectives and policies.

5.10 Special Management Area

The Hawaii CZM Law (Chapter 205A, HRS) charged the Counties with designating and administering Special Management Areas (SMA) along the State's coasts. Any "development" within the SMA boundary requires an SMA Use Permit administered by the City and County of Honolulu Department of Land Utilization pursuant to Ordinance No. 84-4, 85-105. Approval of an SMA permit is granted by the Honolulu City Council. The project corridor encompasses land that is within the SMA. See Figure 5-5.

5.11 Flood Hazards

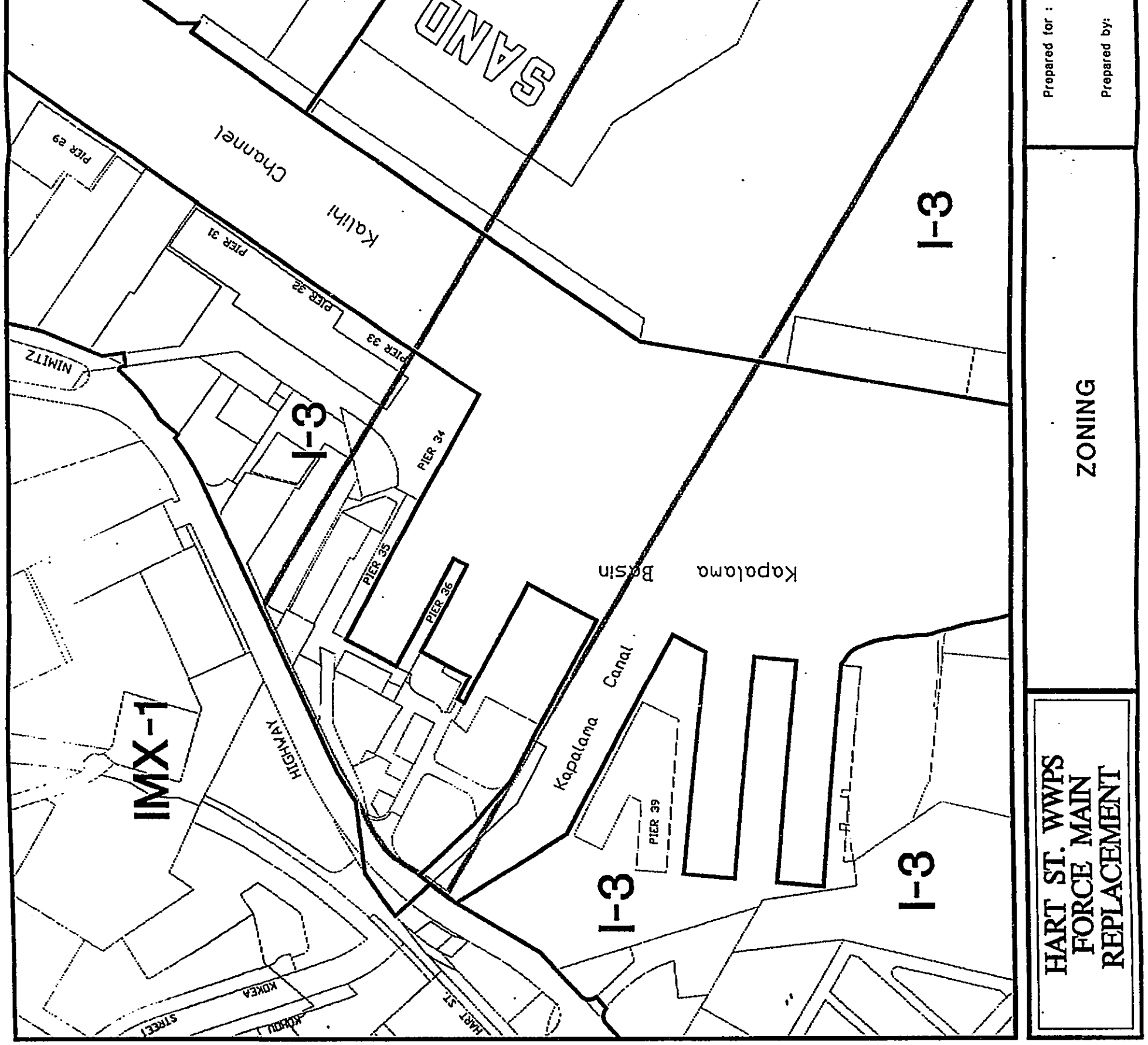
The project corridor, as illustrated on the Flood Insurance Rate Map (FIRM), lies within Zone X - areas determined to be outside the 500-year flood plain. See Figure 5-6.

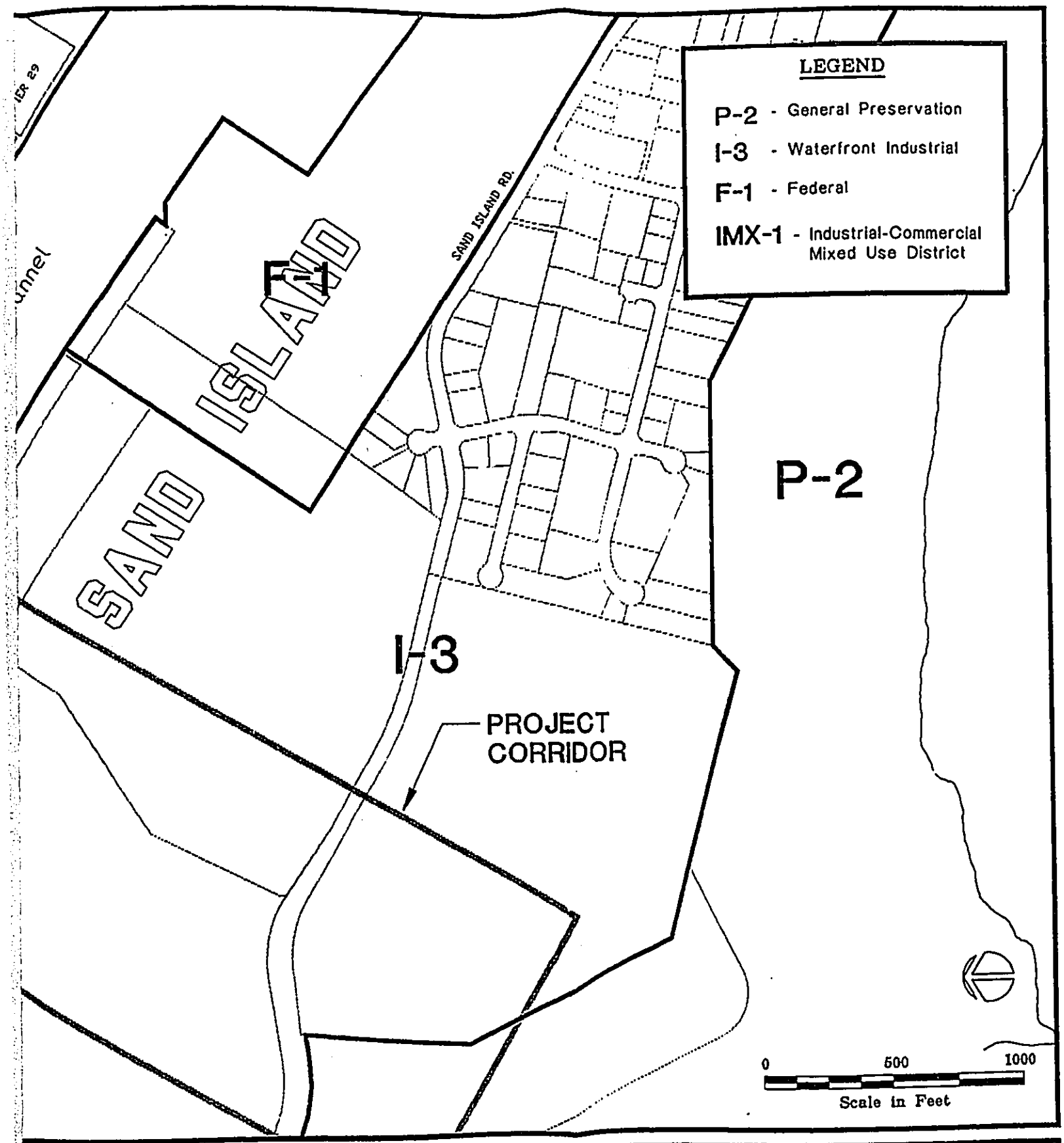


HART ST. WWPS FORCE MAIN REPLACEMENT

Fig. 5-3
CITY AND COUNTY OF HONOLULU
DEVELOPMENT PLAN PUBLIC FACILITIES

Prepared for :
City & County of Honolulu
Dept. of Wastewater Management
Prepared by :
Wilson Okamoto & Associates, Inc.


SAND
Kalihi Channel
PIER 29
PIER 31
PIER 32
PIER 33
NIMITZ
I-3
PIER 34
PIER 35
PIER 36
Kapalama Basin
I-3
IMX-1
HIGHWAY
Kapalama Canal
PIER 39
I-3
I-3
KOKEA STREET
KOHOU
HART ST.
ZONING
Prepared for :
Prepared by:
HART ST. WWPS
FORCE MAIN
REPLACEMENT

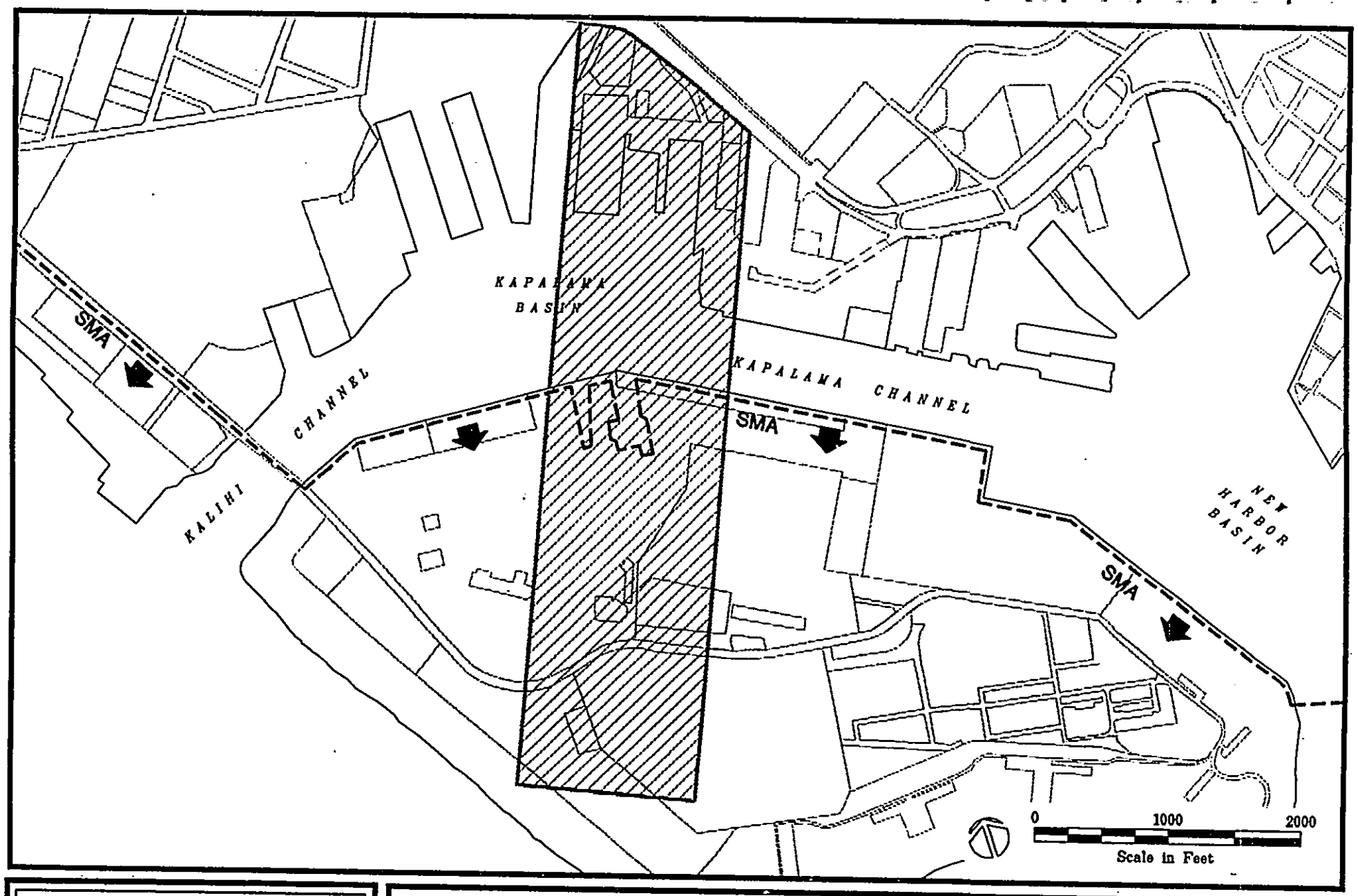


Prepared for : City & County of Honolulu
Dept. of Wastewater Management

Prepared by: Wilson Okamoto & Associates, Inc.

Fig. 5-4

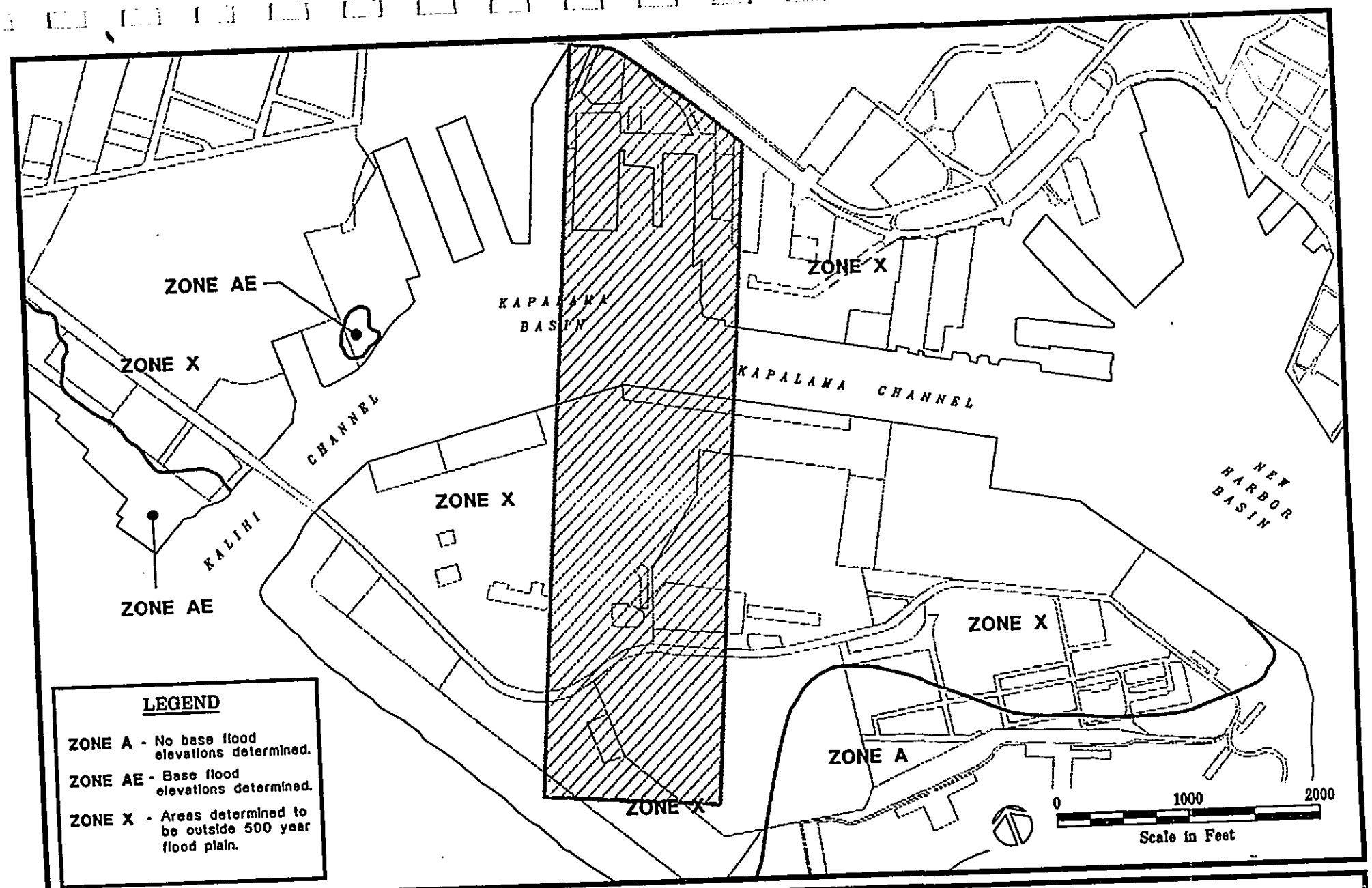
ZONING



HART ST. WWPS FORCE MAIN REPLACEMENT

Fig. 5-5
SPECIAL MANAGEMENT AREA BOUNDARY MAP

Prepared for :
City & County of Honolulu
Dept. of Wastewater Management
Prepared by :
Wilson Okamoto & Associates, Inc.



HART ST. WWPS FORCE MAIN REPLACEMENT

Fig. 5-6
FLOOD HAZARD MAP

Prepared for :
City & County of Honolulu
Dept. of Wastewater Management

Prepared by :
Wilson Okamoto & Associates, Inc.

5.12 Honolulu Waterfront Plan

The Honolulu Waterfront Plan was prepared by the State of Hawaii, Office of State Planning in 1989 to identify and articulate long-range vision for the Honolulu Waterfront, assure a logical and achievable phasing of improvements with minimal impacts to the environment and economy, and maximize public benefits associated with the State owned lands in the waterfront area. Relevant goals of the Waterfront Master Plan include:

Utilities: Provide adequate water, sewer, drainage, power and communication systems to meet the needs of existing and future waterfront activities in a timely fashion.

The capacity of the proposed force main will accommodate projected wastewater flows up to the year 2015. The project will provide a new force main and enable the existing line to serve as a back-up line.

5.13 Major Permits and Approvals Required

The following is a summary of the major permits and approvals which may be required prior to construction:

Federal Permits

U.S. Army Corp of Engineers

- Department of the Army Permit
- Section 103 Marine Disposal Permit

State of Hawaii

Department of Land and Natural Resources

- Conservation District Use Application (CDUA)

Office of Environmental Quality Control

- Environmental Assessment

Office of State Planning

- Coastal Zone Management (CZM) Program Federal Consistency Review

Department of Health

- Section 401 Water Quality Certification
- National Pollutant Discharge Elimination System (NPDES) Permit
- Noise Permits
- Soil Remediation Permit

Department of Transportation - Harbors Division

City and County of Honolulu

Department of Land Utilization

- Special Management Area (SMA) Permit
- Shoreline Setback Variance
- Waiver of Requirements for Public Uses and Utility Installations

6. ALTERNATIVES

6.1 No Action

The status quo or no action alternative will leave the existing force main as the sole force main connecting the Hart Street WWPS and Sand Island WWTP. Because of the age of the existing force main which is approaching its design life of 50 years, there is an increasing risk of a major break in the main.

6.2 Rehabilitation of the Existing Force Main

Rehabilitating the existing line would require shutting down the Hart Street WWPS during maintenance. This would not be feasible, since there is no alternative way for the wastewater generated from Moanalua to Downtown to be conveyed to the Sand Island WWTP. Should the WWPS remain in operation, flows would need to bypass the force main and discharge directly into the Harbor at Pier 35, creating a health hazard.

6.3 Avoiding Water Crossings

Avoiding the harbor channel crossing would involve a circuitous land route for the pipeline along Nimitz Highway, through the Kalihi-Kapalama industrial area to Sand Island Access Road. This would involve an alignment at least twice as long, and would not be feasible due to the length, hydraulics and pumping requirements of such an alignment. Furthermore, the force main would still need to cross waterways at the Kapalama Canal and the Sand Island bridge.

7. DETERMINATION

Based on the assessment of anticipated environmental impacts, a negative determination is hereby made. This negative determination is based on Alternative 2 as the preferred alignment alternative, and the use of either microtunnelling or directional drilling for the harbor channel crossing.

Should the project require conventional open trenching for the harbor channel crossing, an Environmental Impact Statement may be required to further assess all impacts that such in-water construction would generate.

A negative determination would be justified since the use of either microtunnelling or directional drilling to cross the Channel would avoid disturbance of the waters and transhipment activities in the harbor. Either construction method would minimize impacts on water quality and disturbance to harbor traffic.

The proposed action will also require compliance with any required development permits from Federal, State and City and County of Honolulu agencies. Such permits will ensure proper agency review and further mitigation of any adverse impacts. Such permits will include at a minimum:

- Conservation District Use Application from the State Board of Land and Natural Resources

- Special Management Area Use Permit from the Honolulu City Council

- NPDES Permit and Hazardous Waste Approval from the State Department of Health, which will include:
  - Hazardous Waste Cleanup Plan
  - Water Quality Sampling and Analysis
  - Dewatering Effluent Discharge Control Plan
  - Best Management Practices Plan, Treatment and Disposal

8. CONSULTED PARTIES

A. Pre-Environmental Assessment

Pre-environmental assessment comments were solicited from government agencies and other organizations listed below. As of March 17, 1995, eight comment letters were received. Of those who formally replied, two had no comments while the others provided substantial comments, as indicated by ✓ and ✓✓, respectively. Written comments, and their responses are provided herein.

State Agencies

✓✓ State of Hawaii, Department of Business, Economic Development & Tourism
State of Hawaii, Department of Health
State of Hawaii Department of Transportation
✓✓ University of Hawaii, Marine Center

County Agencies

✓✓ Board of Water Supply
Department of Public Works
Department of Wastewater Management

Other Organizations

✓✓ BHP Petroleum Americas
Brown and Caldwell Consultants
✓✓ Chevron USA Inc.
Clean Island Council
Cultural Surveys Hawaii
GASCO, Inc.
Hawaii Cement
Hawaii Maritime Center
Hawaii Metal Recycling
✓✓ Hawaii Stevedores, Inc.
Hawaii Transfer Co., Ltd.
Island Movers, Inc.
Honolulu Shipyard, Inc.
Marimed Foundation
✓ Marine Systems, Inc.
Masa Fujioka and Associates
Matson Terminals, Inc.
P & R Water taxi, Ltd.

Sand Island Businesses
Sea Engineering
Sea-Land Services
Shell Oil Company
Union Oil Co. of California
✓ Young Brothers, Limited

B. Draft Environmental Assessment

Draft Environmental Assessment comments were also solicited from government agencies and other organizations. Of those who formally replied, no comments and substantial comments are indicated by ✓ and ✓✓, respectively. Written comments and their responses are provided herein.

Federal Agencies

✓ Department of Agriculture, Natural Resources Conservation Service
✓✓ Department of the Army, Pacific Ocean Division
✓✓ Department of the Interior, Fish and Wildlife Service

State Agencies

✓✓ State of Hawaii, Department of Business, Economic Development & Tourism
✓✓ State of Hawaii, Department of Health
✓ State of Hawaii, Department of Land and Natural Resources
✓✓ State of Hawaii Department of Transportation
✓ University of Hawaii, Marine Center

County Agencies

✓ Board of Water Supply
✓✓ Department of Public Works
✓✓ Planning Department

Other Organizations

✓✓ Matson Terminals, Inc.

9. REFERENCES

Belt Collins & Associates. East Mamala Bay Wastewater Facilities Plan. Prepared for City and County of Honolulu Department of Wastewater Management. 1994.

Belt Collins & Associates. East Mamala Bay Wastewater Facilities Plan FEIS. Prepared for City and County of Honolulu Department of Wastewater Management. 1994.

City & County of Honolulu. General Plan. 1992.

City & County of Honolulu. Development Plans. 1992.

City & County of Honolulu, Department of Land Utilization. Land Use Ordinance. 1993.

Helber, Hastert & Kimura, Planners and R.M. Towill Corporation. Honolulu Waterfront Master Plan. 1989

Lacayo Planning, Inc. Pier 38 Master Plan. Prepared for State of Hawaii Department of Business Economic Development and Tourism. September 1993.

State of Hawaii. The State Conservation Functional Plan. 1991.

State of Hawaii. The State Health Functional Plan. 1989.

State of Hawaii. The State Historic Preservation Functional Plan. 1991.

State of Hawaii. The State Recreation Functional Plan. 1991.

Oceanit Laboratories, Inc., July 1990.

Wilson Okamoto & Associates. FEIS for the Marine Education and Training Center and Public Boat Launch Facility. 1992.

Wilson Okamoto & Associates. The Waterfront at Aloha Tower FEIS. 1990

PRE-ENVIRONMENTAL ASSESSMENT

Written Comments and Responses

BENJAMIN J. CAYETANO
GOVERNOR
SEIJI F. NAYA
DIRECTOR
RICK EGGED
DEPUTY DIRECTOR

DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT & TOURISM

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Central Pacific Plaza, 220 South King Street, 11th floor, Honolulu, Hawaii 96813
Mailing Address: P.O. Box 2359, Honolulu, Hawaii 96804

Telephone: (808) 586-2355
Fax: (808) 586-2377

Ref. No. W-1933

February 15, 1995

Mr. Barry Toyota, P.E.
Wilson Okamoto & Associates, Inc.
P.O. Box 3530
Honolulu, Hawaii 96811

RECEIVED
FEB 16 1995
WILSON OKAMOTO & ASSOC., INC.

Dear Mr. Toyota:

Subject: Environmental Assessment Consultation
Hart Street WWPS Force Main Replacement, Honolulu, Hawaii

The Department of Business, Economic Development and Tourism - Honolulu Waterfront Project (DBEDT) has reviewed the project description for the subject project along with the identified alternatives. We are in support of the project, however we have concerns with respect to the alignment of some of the alternatives (see Figure 1).

Alternative No. 4

This alternative travels from the Hart Street Pump Station through the site for the proposed Fresh Fish Wholesale Distribution Center and the Pier 38 Marine Research Facility.

Currently, DBEDT and the Department of Transportation Harbors Division, are in the process of preparing a request for proposals (RFP) for the private development of a Fresh Fish Wholesale and Distribution Center (FFWDC) on backlands adjacent to Piers 35 and 36. The FFWDC parcel already has a number of sewer and petroleum pipeline easements running through the property which restrict the buildable area on the project site. Alternative No. 4 would further restrict the usable area of this parcel and potentially decrease the economic viability of the project.

DBEDT in cooperation with the Department of Transportation Harbors Division, is also proceeding with detailed design work for the construction of the Pier 38 Marine Research Facility. The project involves the construction of three research buildings, a 300 linear foot pier along Pier 38A, a 700 linear foot pier along Pier 38B and associated shoreside improvements to accommodate the relocation of the University of Hawaii Marine Expeditionary Center (Snug Harbor) from Kapalama along with other associated marine research facilities (see Figure 2). Relocation of this facility to Pier 38 is necessary to proceed with the development of a container handling facility at Kapalama. A copy of the Master Plan for this project was provided to Mr. Rodney Funakoshi of your office.

The alignment of Alternative No. 4, as proposed, would significantly impact the viability of the FFWDC and Pier 38 projects. Setback requirements alone could adversely impact the use of significant portions of both project sites. As such, we are strongly opposed to this alternative unless assurances are provided to insure the usability of the sites and the associated pier areas.

In the event that this alternative is selected, the City and County of Honolulu will be responsible for the reimbursement of all State costs for the re-design of project components to accommodate this alignment.

You should also be aware that Alternative No. 4 runs through the secondary turning basin (TB No. 2) for ship traffic in Honolulu Harbor (see Figure 3). Although, specific construction methods and timetables are not identified in the pre-assessment, construction activities within this area would likely have a negative impact on the safe movement of vessel traffic.

Alternative No. 3

This alternative is shown running from the Hart Street Pump Station across the site for the proposed Fresh Fish Wholesale Distribution Center and entering the harbor between Piers 36 and 37.

This alternative does not have any impact on the site for the proposed Pier 38 Marine Research Facility but does impact the FFWDC site in a manner similar to Alternative No. 4. Because of this, we are also opposed to this alternative unless assurances as to the usability of the FFWDC site and the associated pier areas are provided.

Alternatives No. 2 and No. 1A/B

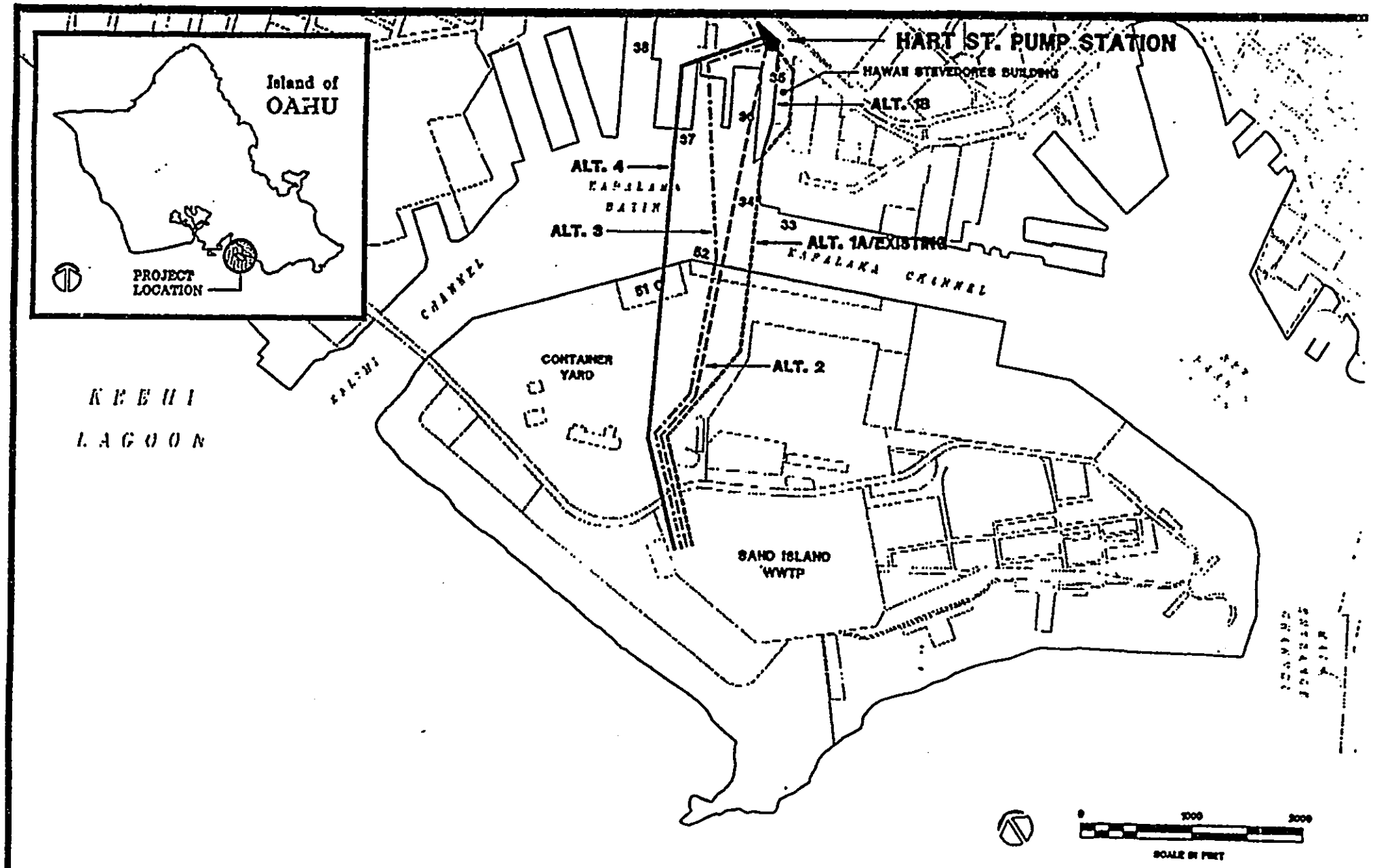
We have no comments to offer on these alternatives. However, we recommend that you consult with the Department of Transportation, Harbors Division regarding the potential impacts of these alternatives.

Thank you for the opportunity to comment on the subject project. Please keep us apprised of the project as work continues. If you should have any questions, please contact me at 586-2530.

Sincerely,

Chris Chung
Waterfront Project Manager

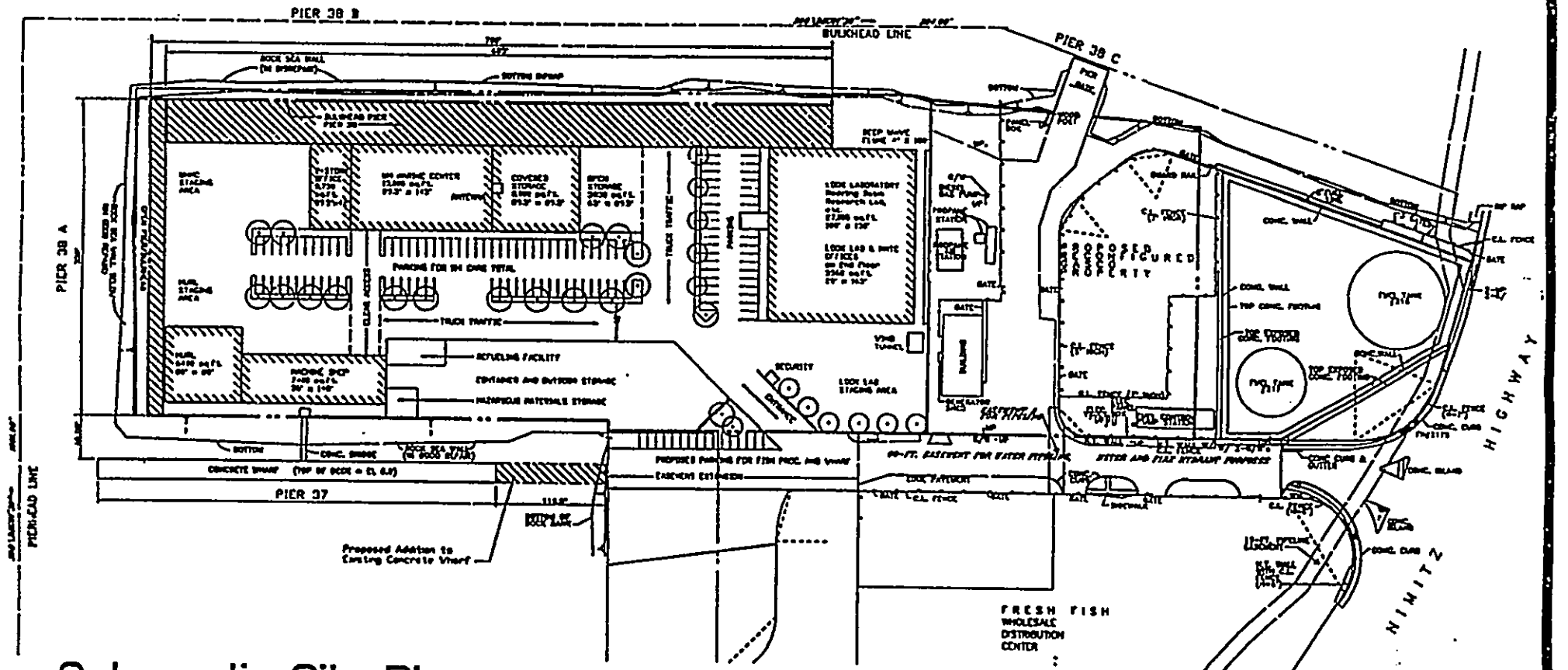
Enclosures



HART ST. WWPS FORCE MAIN

FORCE MAIN ALTERNATIVE ROUTES

Prepared by :
Wilson Okamoto & Associates, Inc.



Schematic Site Plan

University of Hawaii Marine Research Center
Honolulu Harbor – Pier 38

Prepared for:
Honolulu Waterfront Project
Dept. of Business, Economic Development and Tourism

LACAYO PLANNING

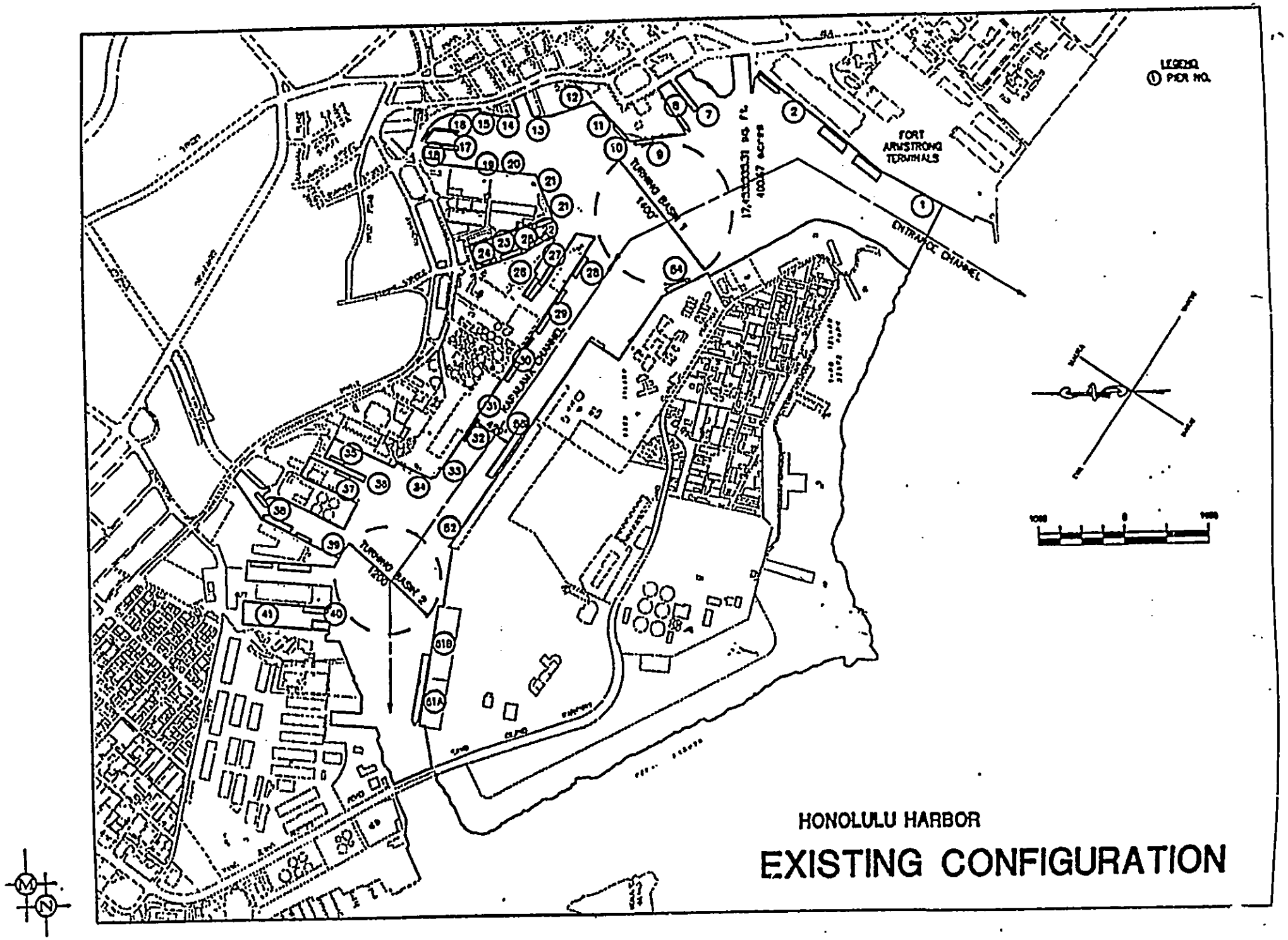

LEGEND
① PIER NO.
FORT ARMSTRONG TERMINALS
ENTRANCE CHANNEL
TURNING BASIN 1
TURNING BASIN 2
KAPALAMA CHANNEL
HONOLULU HARBOR
EXISTING CONFIGURATION

FIGURE 3

DEPARTMENT OF WASTEWATER MANAGEMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

JEREMY HARRIS
~~FRANK F. FASI~~
MAYOR

FELIX B. LIMTIACO
~~KENNETH H. FARROW~~
DIRECTOR
CHERYL K. OKUMA-SEPE
~~FELIX B. LIMTIACO~~
DEPUTY DIRECTOR

WPP 95-145

April 27, 1995

RECEIVED
MAY 01 1995
WILSON OKAMOTO & ASSOC., INC.

Mr. Chris Chung
Waterfront Project Manager
Department of Business, Economic
Development and Tourism
P.O. Box 2359
Honolulu, Hawaii 96804

Dear Mr. Chung:

Subject: Hart Street Wastewater Pump Station Force Main Replacement, Environmental Assessment (EA) Consultation Honolulu, Hawaii

Thank you for your letter of February 15, 1995, (Ref. No. W-1933) regarding concerns for Alternative Alignments 3 and 4. Your comments will be addressed in the forthcoming Draft Environmental Assessment. We appreciate your interest and participation in the consultation phase of the environmental review process.

If you should have any questions, please contact Keith Sugihara of the Division of Planning and Service Control at 527-5398.

Very truly yours,

CHERYL K. OKUMA-SEPE
for FELIX B. LIMTIACO
Director

cc: ✓Barry Toyota, Wilson Okamoto & Associates, Inc.

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

LAWRENCE MIKE
DIRECTOR OF HEALTH

STATE OF HAWAII
DEPARTMENT OF HEALTH
P. O. BOX 3378
HONOLULU, HAWAII 96801

In reply, please refer to:

December 14, 1991

TO: Those Persons Requesting Comments on Land Use Documents

FROM: June Harrigan-Lum, Manager
Environmental Planning Office

SUBJECT: Temporary Discontinuance of Land Use Reviews

Because of the lack of funds and resources this year, we are not able to hire someone to coordinate our 1995 legislative activities. As a result, we are using one of our existing staff members to do this work on a full time basis during the legislative session.

The legislative coordinator selected, Mr. Art Bauckham, is also the person who was coordinating the land use reviews and responses. Therefore, starting on January 1, and continuing until May 1, 1995, the Environmental Planning Office (EPO) will not be accepting any land use documents for coordinated replies.

If you would like staff in a specific branch or office (for instance, the Wastewater Branch) to comment on your proposal, you are welcome to contact the staff directly. A list of the Branch/Office names are attached for your reference. If you have already sent a copy of the document to the EPO, and you wish to have us send it to a specific branch, you may call 586-4337 and ask the clerical staff to send it to the appropriate branch. Please describe the document and the date of your cover letter.

Remember, on May 1, 1995 we will again start preparing coordinated responses throughout the Environmental Health Administration.

Thank you for your cooperation and patience in this matter.

Ref: Environmental Assessment Consultation
Hart Street WWPS Force Main Replacement
Honolulu, Hawaii

Branches and Offices in the Environmental Health Administration

Hazard Evaluation and Emergency Response----------586-4249

Environmental Planning Office--586-4337

Clean Air Branch----------586-4200

Clean Water Branch----------586-4309

Safe Drinking Water Branch-----586-4258

Office of Solid Waste Mgt.-----586-4240

Hazardous Waste Branch---------586-4226

Wastewater Branch----------586-4294

Noise and Radiation Branch-----586-4701

Sanitation Branch----------586-8000

Litter Control Office----------586-8400

Food and Drug Branch----------586-4725

Vector Control Branch----------831-6767

DEPARTMENT OF WASTEWATER MANAGEMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

JEREMY HARRIS
~~FRANK F. FASI~~
MAYOR

FELIX B. LIMTIACO
~~KENNETH M. RAPPOLT~~
DIRECTOR
CHERYL K. OKUMA-SEPE
~~FELIX B. LIMTIACO~~
DEPUTY DIRECTOR

WPP 95-154

April 27, 1995

Ms. June Harrigan-Lum, Manager
Environmental Planning Office
Department of Health
P.O. Box 3378
Honolulu, Hawaii 96801

Dear Ms. Harrigan-Lum:

Subject: Hart Street Wastewater Pump Station Force Main Replacement, Environmental Assessment (EA) Consultation Honolulu, Hawaii

Thank you for your letter of December 14, 1995, informing us of your situation. We will be sending a copy of our Draft EA to your Wastewater Branch for review.

If you should have any questions, please contact Keith Sugihara of the Division of Planning and Service Control at 527-5398.

Very truly yours,

CHERYL K. OKUMA-SEPE

For FELIX B. LIMTIACO
Director

cc: ✓Barry Toyota, Wilson Okamoto & Associates, Inc.

BENJAMIN CAYETANO
GOVERNOR

KAZU HAYASHIDA
DIRECTOR

DEPUTY DIRECTORS
SAM CALLEJO
GLENN M. OKIMOTO

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HARBORS DIVISION
79 SO. NIMITZ HWY. • HONOLULU, HAWAII 96813-4898

IN REPLY REFER TO:

March 9, 1995

HAR-EP 5136.95

Mr. Barry Toyota, P.E.
Project Manager
Wilson Okamoto and Associates, Inc.
1907 South Beretania Street, Suite 400
Honolulu, Hawaii 96826

Dear Mr. Toyota:

Subject: Environmental Assessment Consultation
Hart Street WWPS Force Main Replacement
Honolulu, Hawaii - Job H.P. 301.0002

We have the following comments concerning the environmental assessment for the Hart Street WWPS Force Main Replacement project:

1. We recommend implementation of alternative plan 2 as it minimizes impacts on Honolulu Harbor operations.

2. We recommend utilizing micro-tunneling to minimize impact on Harbor operations, in lieu of traditional open trenching.

3. If open trenching is utilized for the submerged portion of the line, the excavated material must be removed from the channel. The draft requirements of ships utilizing Honolulu Harbor prevents placement of excavated material alongside any open trench.

4. DOT Highways Planning should also review this EA as the redundant line will cross Sand Island Access Road which is under their jurisdiction.

5. A new pier is being constructed in the area between the existing Piers 51 and 52 on Sand Island. If alternative 3 or 4 is chosen, the Department of Wastewater Management will be responsible for all change orders necessary to accommodate the new force main. In addition, a decision must be made as quickly as possible since construction of the new pier has already begun.

6. All construction activities should be coordinated with the Honolulu Harbor Master to minimize impact on Harbor operations.

7. Shipping traffic occurs frequently and this traffic will take precedence over equipment utilized for this project. Consequently, barges and other gear utilized for this project will need to be relocated when required by shipping traffic.

8. Affected Harbor tenants should be consulted. Provide us with a list of parties consulted. The Corps of Engineers must be consulted because of its interest in the Kapalama Basin and Kapalama Channel.

9. An easement must be obtained from us.

10. Careful consideration must be given to utility easements in the area. The location of utilities can be obtained from the parties granted easements.

11. The Hawaii Pilots Association and the The Port Pilots of Hawaii should be consulted to provide input on the minimum clearance depth required for an emergency anchor drop.

If you have any questions, please contact Fred Pascua at 587-1886.

Very truly yours,

Clarence Okamura
Acting Chief

DEPARTMENT OF WASTEWATER MANAGEMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

JEREMY HARRIS
~~FRANK F. FASI~~
MAYOR

FELIX B. LIMTIACO
~~KENNETH H. RAPPOLT~~
DIRECTOR
CHERYL K. OKUMA-SEPE
~~FELIX B. LIMTIACO~~
DEPUTY DIRECTOR

April 27, 1995

WPP 95-153

Mr. Clarence Okamura, Acting Chief
Harbors Division
Department of Transportation
79 South Nimitz Highway
Honolulu, Hawaii 96813

Dear Mr. Okamura:

Subject: Hart Street Wastewater Pump Station Force Main Replacement, Environmental Assessment (EA) Consultation Honolulu, Hawaii

Thank you for your letter of March 9, 1995, (HAR-EP 5136.95) expressing your support for Alternative Alignment 2. We acknowledge your attention to minimizing disturbances to Harbor operations and thank you for pointing out specific areas of concern pertaining to the proposed project. Your concerns will be addressed in the forthcoming Draft Environmental Assessment. We appreciate your interest and participation in the consultation phase of the environmental review process.

If you should have any questions, please contact Keith Sugihara of the Division of Planning and Service Control at 527-5398.

Very truly yours,

CHERYL K. OKUMA-SEPE
for FELIX B. LIMTIACO
Director

cc: ✓Barry Toyota, Wilson Okamoto & Associates, Inc.

PHONE: (808) 847-2661
TELEX: (723) 8747

UNIVERSITY OF HAWAII
MARINE CENTER
PIER 45—SNUG HARBOR
#1 SAND ISLAND ROAD
HONOLULU, HAWAII 96819

February 8, 1995

Wilson Okamoto and Associates, Inc.
1907 South Beretania Street, Suite 400
Honolulu, Hawaii 96826

Attn: Barry Toyota

Subject: Environmental Assessment Consultation
Hart Street WWPS Force Main Replacement
Honolulu, Hawaii

Dear Mr. Toyota:

I have two concerns with this project. The first one relates to any restrictions on vessel movement in the harbor during the construction phase. All of our ships would have to cross the project site going to and from sea and there would be a negative impact on our operations if their movements were unduly restricted. My second concern is relevant only if the route selected is Alternative 4. This route goes through the Pier 37/38 complex which is the proposed future home for the University of Hawaii Marine Center. There are extensive plans already developed for construction of buildings and piers on this site and I would hope that, if in fact, the subject of project is approved and Alternative 4 is selected, any construction that would disrupt the Pier 37/38 complex would be completed prior to commencing construction of the new University of Hawaii Marine Center.

I appreciate the opportunity to comment on this proposed project.

Sincerely,

James W. Coste
Marine Superintendent

DEPARTMENT OF WASTEWATER MANAGEMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

JEREMY HARRIS
~~FRANK F. FASI~~
MAYOR

FELIX B. LIMTIACO
~~KENNETH K. FARROLT~~
DIRECTOR
CHERYL K. OKUMA-SEPE
~~FELIX B. LIMTIACO~~
DEPUTY DIRECTOR

WPP 95-146

April 27, 1995

Mr. James W. Coste
Marine Superintendent
University of Hawaii Marine Center
#1 Sand Island Road
Honolulu, Hawaii 96819

Dear Mr. Coste:

Subject: Hart Street Wastewater Pump Station Force Main Replacement, Environmental Assessment (EA) Consultation Honolulu, Hawaii

Thank you for your letter of February 8, 1995, regarding restrictions to vessel movements in the Harbor during the construction phase of the force main and concerns for Alternative Alignment 4. Your comments will be addressed in the forthcoming Draft Environmental Assessment. We appreciate your interest and participation in the consultation phase of the environmental review process.

If you should have any questions, please contact Keith Sugihara of the Division of Planning and Service Control at 527-5398.

Very truly yours,

CHERYL K. OKUMA-SEPE
For FELIX B. LIMTIACO
Director

cc: ✓Barry Toyota, Wilson Okamoto & Associates, Inc.

BOARD OF WATER SUPPLY
CITY AND COUNTY OF HONOLULU
630 SOUTH BERETANIA STREET
HONOLULU, HAWAII 96843

February 24, 1995

Mr. Barry Toyota, P.E.
Project Manager
Wilson Okamoto and Associates, Inc.
1907 South Beretania Street
Honolulu, Hawaii 96826

Dear Mr. Toyota:

Subject: Your Letter of February 1, 1995 Requesting Comments on the Hart Street Wastewater Pump Station Force Main Replacement, Honolulu, Hawaii

Thank you for the opportunity to review and comment on the subject project.

We provide the following comments:

1. The location of existing and proposed Board of Water Supply (BWS) waterlines should be indicated on the construction plans and addressed in the preliminary draft environmental assessment (DEA) to ensure the protection and integrity of our water system. The construction drawings for the subject project should be submitted for our review and approval.

2. If water is required during construction, all connections to the BWS system will require BWS approved reduced pressure principle backflow prevention assemblies.

If there are any questions, please contact Barry Usagawa at 527-5235.

Very truly yours,

Raymond H. Sato

RAYMOND H. SATO
Manager and Chief Engineer

DEPARTMENT OF WASTEWATER MANAGEMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

JEREMY HARRIS
MAYOR

FELIX B. LIMTIACO
DIRECTOR

CHERYL K. OKUMA-SEFE
DEPUTY DIRECTOR

WPP 95-147

April 27, 1995

MEMORANDUM

TO MR. RAYMOND H. SATO, MANAGER AND CHIEF ENGINEER
BOARD OF WATER SUPPLY

FROM: FELIX B. LIMTIACO, DIRECTOR
DEPARTMENT OF WASTEWATER MANAGEMENT

SUBJECT: HART STREET WASTEWATER PUMP STATION FORCE MAIN REPLACEMENT, ENVIRONMENTAL ASSESSMENT (EA) CONSULTATION HONOLULU, HAWAII

Thank you for your letter of February 24, 1995, regarding existing and proposed waterlines in the area and BWS requirements for construction. Your comments will be addressed in the forthcoming Draft Environmental Assessment. We appreciate your interest and participation in the consultation phase of the environmental review process.

If you should have any questions, please contact Keith Sugihara of the Division of Planning and Service Control at 527-5398.

FELIX B. LIMTIACO
Director

cc: /Barry Toyota, Wilson Okamoto & Associates, Inc.

BHP

March 7, 1995

BHP Hawaii

Mr. Barry Toyota, P.E.
Wilson Okamoto & Associates
1907 S. Beretania Street
Honolulu, HI 96826

Dear Mr. Toyota:

Hart Street WWPS Force Main Replacement Project

BHP has several petroleum pipelines in the Pier 32, 33, and 34 areas that distribute gasoline, jet fuel, and diesel to customers in Honolulu. Fuel is transferred 24 hours per day, several times per week based upon the customer's demands. Ships and barges are also loaded with fuel at those piers.

The installation of the 48-inch force main from Hart Street to the Sand Island Waste Water facility could cause a safety and environmental hazard should alternatives 1A or 1B be selected. An accidental puncture in the petroleum pipelines in the area from excavation work could endanger contractors from fuel being released at 1,700 gpms during pumping operations. The released fuel could ignite and spread onto navigable waters. Vibration from heavy equipment work could also damage buried petroleum pipelines.

A petroleum release in the area would cause unwanted delays and increase construction costs. Lost of pier usage would increase the cost for doing business from excessive delays and increased demurrage.

To avoid any risks described above, BHP recommends alternatives 2, 3, or 4 be strongly considered.

Should you have any questions, please contact Mr. Mike Canite at 547-3963.

Sincerely,

Frank D. Clouse
Refinery Manager

MPC:dak

cc: Mr. Mark Keen, BHP Hawaii

BHP Hawaii Inc
733 Bishop Street Honolulu Hawaii 96813 USA
PO Box 3379 Honolulu Hawaii 96842 USA

DEPARTMENT OF WASTEWATER MANAGEMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

JEREMY HARRIS
~~FRANK F. FASI~~
MAYOR

FELIX B. LIMTIACO
~~KENNETH M. RAPPOLT~~
DIRECTOR
CHERYL K. OKUMA-SEPE
~~FELIX B. LIMTIACO~~
DEPUTY DIRECTOR

WPP 95-152

April 27, 1995

Mr. Frank D. Clouse
Refinery Manager
BHP Hawaii Inc.
P.O. Box 3379
Honolulu, Hawaii 96842

Dear Mr. Clouse:

Subject: Hart Street Wastewater Pump Station Force Main Replacement, Environmental Assessment (EA) Consultation Honolulu, Hawaii

Thank you for your letter of March 7, 1995, regarding your concerns for Alternative Alignments 1A and 1B. Your concerns will be addressed in the forthcoming Draft Environmental Assessment. We appreciate your interest and participation in the consultation phase of the environmental review process.

If you should have any questions, please contact Keith Sugihara of the Division of Planning and Service Control at 527-5398.

Very truly yours,

CHERYL K. OKUMA-SEPE

FELIX B. LIMTIACO
Director

cc: ✓Barry Toyota, Wilson Okamoto & Associates, Inc.

Chevron

Chevron U.S.A. Products Company
1001 Bishop Street
Pauahi Tower, Suite 1000
Honolulu, HI 96813
Phone 808 527 2700

February 21, 1995

Wilson Okamoto and Associates, Inc.
1907 So. Beretania Street, Suite 400
Honolulu, Hawaii 96826
ATTN: Barry Toyota

HART STREET WWPS FORCE MAIN REPLACEMENT

Dear Barry:

Chevron reviewed the project summary and description of considered alternative routes for the subject project. It is our opinion contact with a Chevron fuel line is eminent. Therefore please continue to advise Chevron of your progress and construction schedule because we may wish to view the excavation and construction of the line.

Please give me a call at 527-2714 or write if you require further assistance.

Very Truly Yours,

R. A. BERTERO

cc: C. K. Chong

DEPARTMENT OF WASTEWATER MANAGEMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

JEREMY HARRIS
~~FRANK F. FASI~~
MAYOR

FELIX B. LIMTIACO
~~KENNETH H. CARROLL~~
DIRECTOR
CHERYL K. OKUMA-SEPE
~~FELIX B. LIMTIACO~~
DEPUTY DIRECTOR

WPP 95-148

April 27, 1995

Mr. R.A. Bertero
Chevron U.S.A. Products Company
1001 Bishop Street
Pauahi Tower, Suite 1000
Honolulu, Hawaii 96813

Dear Mr. Bertero:

Subject: Hart Street Wastewater Pump Station Force Main Replacement, Environmental Assessment (EA) Consultation Honolulu, Hawaii

Thank you for your letter of February 21, 1995, regarding possible contacts with Chevron fuel lines. Your comments will be addressed in the forthcoming Draft Environmental Assessment. We appreciate your interest and participation in the consultation phase of the environmental review process.

If you should have any questions, please contact Keith Sugihara of the Division of Planning and Service Control at 527-5398.

Very truly yours,

CHERYL K. OKUMA-SEPE
for FELIX B. LIMTIACO
Director

cc: ✓Barry Toyota, Wilson Okamoto & Associates, Inc.

HAWAII STEVEDORES, INC.
P.O. Box 2160 • Honolulu, Hawaii 96805-2160 • Phone (808) 527-3400

February 16, 1995

RECEIVED
FEB 21 1995
WILSON OKAMOTO & ASSOCIATES, INC.

Mr. Barry Toyota
Project Manager
WILSON OKAMOTO & ASSOCIATES, INC.
P.O. Box 3530
Honolulu, Hawaii 96811

SUBJECT: Hart Street WWPS Force Main Replacement
Comments Regarding Alternative Routes

Dear Barry:

Reference your February 1st letter regarding the subject matter.

Hawaii Stevedores, Inc. is opposed to Alternative 1. We base our opposition on the fact that Alternative 1A and/or 1B will;

1) severely impact the ingress & egress to our premises for our 230 employees plus visitors as well as the employees and visitors of our four (4) tenants (Hawaii Stevedores/Castle & Cooke Federal Credit Union, Pacific Ocean Producers, KEMS Kewalo, All Ship & Cargo Surveys and each of their subtenants),

2) negatively impact parking facilities at our premises which are used by and serving those mentioned above,

3) potentially decrease soil stability around the footings and foundations of our building (especially with Alternative 1A),

4) cross numerous sewer lines, drain lines and a water line servicing our premises and,

5) potentially draw/pull contaminants existing beyond our premises toward our premises, due to the dewatering/trenching that would be required during the construction process.

In addition to the significant impacts upon our premises that are mentioned above, Alternative 1's route presents some negative impacts to the general public/others as well;

A) it crosses numerous underground fuel lines,

B) right in the middle of the stacking/deceleration lanes of the busy intersection at Nimitz Highway [a lot of traffic from City Wide Trucking and Chevron (our neighbors on the town-side) and Pier 32-37 users, as well as that generated by our own premises, moves through this feeder roadway area that connects to Nimitz Highway],

C) parking at City Wide Trucking, the full length of their premises, would be severely impacted by construction ingress & egress requirements for Alternative 1A.

Although not an engineer by trade, I believe Alternative 1 would present procedural difficulties for the contractor working alongside the existing line within the narrow easement and could increase the potential for failure of the old line as a result of construction impacts.

In our lay opinion, we believe Alternative 2 to be the most desirable route for the new line because it the most direct route which leaves the pier and roadway surfaces quickly and gets into the harbor to avoid the surface impacts/concerns mentioned above.

Thank you for providing this opportunity to express our opinion regarding the various alignment alternatives for the new force main.

Please call me at 527-3425 if you have any questions or require further information.

Sincerely,

HAWAII STEVEDORES, INC.

Randy Grune
Vice President - Administration

copy: George Y. Serikaku (HSI)

DEPARTMENT OF WASTEWATER MANAGEMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

JEREMY HARRIS
~~FRANK F. FASI~~
MAYOR

FELIX B. UMTIACO
~~SIGNETTI M. RADOLI~~
DIRECTOR
CHERYL K. OKUMA-SEPE
~~FELIX B. LIMTIACO~~
DEPUTY DIRECTOR

WPP 95-149

April 27, 1995

Mr. Randy Grune
Vice President - Administration
Hawaii Stevedores, Inc.
P.O. Box 2160
Honolulu, Hawaii 96805

Dear Mr. Grune

Subject: Hart Street Wastewater Pump Station Force Main Replacement, Environmental Assessment (EA) Consultation Honolulu, Hawaii

Thank you for your letter of February 16, 1995, regarding Alternative Alignments 1A and 1B. Your comments will be addressed in the forthcoming Draft Environmental Assessment. We appreciate your interest and participation in the consultation phase of the environmental review process.

Very truly yours,

CHERYL K. OKUMA-SEPE
For FELIX B. LIMTIACO
Director

cc: ✓Barry Toyota, Wilson Okamoto & Associates, Inc.

MARINE SYSTEMS HAWAII
PIER 37
HONOLULU, HAWAII 96817
TEL: (808) 531-4144
FAX: (808) 533-3500

WILSON OKAMOTO AND ASSOCIATES, INC.
1907 SOUTH BERETANIA STREET, SUITE 400
HONOLULU, HAWAII 96826
ATTN: BARRY TOYOTA

SIR;

We have no comment on this matter. Marine Systems Hawaii is presently on a month to month lease and would like to be kept informed with regards to WWPS replacement.

B. REGARDS '

TOESE C. FISHER

DEPARTMENT OF WASTEWATER MANAGEMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

JEREMY HARRIS
~~FRANK F. FASI~~
MAYOR

FELIX B. LIMTIACO
~~KENNETH M. RAPPOLT~~
DIRECTOR
CHERYL K. OKUMA-SEPE
~~CLIN D. LIMTIACO~~
DEPUTY DIRECTOR

WPP 95-150

April 27, 1995

Mr. Toese C. Fisher
Marine Systems Hawaii
Pier 37
Honolulu, Hawaii 96817

Dear Mr. Fisher:

Subject: Hart Street Wastewater Pump Station Force Main Replacement, Environmental Assessment (EA) Consultation Honolulu, Hawaii

Thank you for your letter indicating that you have no comments. Your letter will be included in the forthcoming Draft Environmental Assessment. We appreciate your interest and participation in the consultation phase of the environmental review process.

If you should you have any questions, please contact Keith Sugihara of the Division of Planning and Service Control at 527-5398.

Very truly yours,

CHERYL K. OKUMA-SEPE
for FELIX B. LIMTIACO
Director

cc: ✓Barry Toyota, Wilson Okamoto & Associates, Inc.

Young Brothers, Limited • PO Box 3288 • Honolulu, HI 96801 • Phone (808) 543-9311

February 10, 1995

Mr. Barry Toyota, P.E.
Project Manager
WILSON OKAMOTO & ASSOCIATES, INC.
1907 South Beretania Street, Suite 400
Honolulu, HI 96826

RE: Environmental Assessment Consultation
Hart Street WWPS Force Main Replacement
Honolulu, Hawaii

Dear Mr. Toyota:

Young Brothers received your letter of February 1 requesting comments on the subject project. After reviewing the location and scope of the proposed alternatives, we have no comments to offer. As far as we can tell from the literature you sent, there is no impact to Young Brothers or Hawaiian Tug & Barge Corp.

Thank you for the opportunity to review the project and comment upon it.

Sincerely,

YOUNG BROTHERS, LIMITED

Jeffrey A. Low
Manager, Planning & Facilities

DEPARTMENT OF WASTEWATER MANAGEMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

JEREMY HARRIS
~~FRANK F. FASI~~
MAYOR

FELIX B. LIMTIACO
~~KENNETH M. FARROW~~
DIRECTOR
CHERYL K. OKUMA-SEPE
~~FELIX B. LIMTIACO~~
DEPUTY DIRECTOR

WPP 95-151

April 27, 1995

Mr. Jeffery A. Low
Manager, Planning and Facilities
Young Brothers, Limited
P.O. Box 3288
Honolulu, Hawaii 96801

Dear Mr. Low:

Subject: Hart Street Wastewater Pump Station Force Main Replacement, Environmental Assessment (EA) Consultation Honolulu, Hawaii

Thank you for your letter of February 10, 1995, indicating that you have no comments. Your letter will be included in the forthcoming Draft Environmental Assessment. We appreciate your interest and participation in the consultation phase of the environmental review process.

If you should have any questions, please contact Keith Sugihara of the Division of Planning and Service Control at 527-5398.

Very truly yours,

CHERYL K. OKUMA-SEPE
for FELIX B. LIMTIACO
Director

cc: Barry Toyota, Wilson Okamoto & Associates, Inc.

DRAFT ENVIRONMENTAL ASSESSMENT

Written Comments and Responses

R4/F

DEPARTMENT OF THE ARMY
PACIFIC OCEAN DIVISION, CORPS OF ENGINEERS
FORT SHAFTER, HAWAII 96858-5440

REPLY TO
ATTENTION OF

June 20, 1996

Planning and Operations Division

Mr. Kumar Bhagavan
City and County of Honolulu
Department of Wastewater Management
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Bhagavan:

Thank you for the opportunity to review and comment on the Draft Environmental Assessment (DEA) for the Hart Street Wastewater Pump Station Force Main Replacement Project, Honolulu, Oahu (TMK 1-5-34, 36, 41 and 42: var.). The following comments are provided pursuant to Corps of Engineers authorities to disseminate flood hazard information under the Flood Control Act of 1960 and to issue Department of the Army (DA) permits under the Clean Water Act; the Rivers and Harbors Act of 1899; and the Marine Protection, Research and Sanctuaries Act.

a. Any activity that results in the placement of structures in navigable waters of the U.S. (Section 10) or results in a discharge of dredged or fill material to waters of the U.S. (Section 404) will require a DA permit. Please contact our Regulatory Section at 438-9258 for further information and refer to file number 960000236.

b. The flood hazard information provided on page 3-13 of the DEA is correct.

Sincerely,

Dr. Linda Hiharа-Endo, P.E.
Acting Chief, Planning
and Operations Division

DEPARTMENT OF WASTEWATER MANAGEMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

JEREMY HARRIS
MAYOR

FELIX B. LIMTIACO
DIRECTOR

CHERYL K. OKUMA-SEPE
DEPUTY DIRECTOR

WPP 96-588

October 8, 1996

Dr. Linda Hihara-Endo, P.E.
Acting Chief, Planning and Operations Division
Pacific Ocean Division, Corps of Engineers
Department of the Army
Fort Shafter, Hawaii 96858-5440

Dear Dr. Hihara-Endo:

Subject: Hart Street Wastewater Pump Station Force Main Replacement, Draft Environmental Assessment Honolulu, Hawaii

Thank you for your letter of June 20, 1996 regarding flood hazard information and permits required under the Clean Water Act. The force main is proposed to be directional drilled beneath the ocean floor of Honolulu Harbor. Consequently, no structures will be placed in navigable waters. Dredged material also will not be discharged into open waters.

We appreciate your review of the Draft Environmental Assessment. If you should have any questions, please contact Mr. Kumar Bhagavan of the Division of Planning and Service Control at 527-5158.

Very truly yours,

FELIX B. LIMTIACO
Director

cc: Rodney Funakoshi,
Wilson Okamoto & Associates, Inc.
Office of Environmental Quality Control

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Pacific Islands Ecoregion
300 Ala Moana Boulevard, Room 3108
Box 50088
Honolulu, Hawaii 96850

In Reply Refer To: MEM

JUL - 8 1996

Mr. Kumar Bhagavan
Department of Wastewater Management
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

RECEIVED
JUL 0 9 1996
WILSON OKAMOTO & ASSOC., INC.

Re: Draft Environmental Assessment for Replacement of the Hart Street Wastewater Pump Station Force Main, Honolulu, Hawaii (Tax Map Key: 1-5-34, 36, 41 & 42: various).

Dear Mr. Bhagavan:

The U.S. Fish and Wildlife Service (Service) has reviewed the Draft Environmental Assessment (EA) for Replacement of the Hart Street Wastewater Pump Station Force Main, Honolulu, Hawaii. The applicant is the City and County of Honolulu, Department of Wastewater Management (DWWM). The purpose of the proposed project is to replace the existing force main with a new primary line. The existing line, which has a design life of 50 years, has been neither altered nor repaired since its construction in 1949. The Service offers the following comments for your consideration.

The proposed project involves the installation of a new 122-centimeter (48-inch) force main, which would connect the Hart Street Pump Station on Nimitz Highway to the Sand Island Wastewater Treatment Plant. The Draft EA presents four alternative routes for the new line, all of which would require construction in highly disturbed urban areas and underwater crossings of Kapalama Basin within Honolulu Harbor. Alternative 2 is considered the potentially least environmentally damaging alternative since it will minimize on-shore trenching and the subsequent exposure of contaminated soil and groundwater. The alternative selected by the DWWM is a slight modification of Alternative 2 and is predicated on the use of trenchless technology, either microtunnelling or directional drilling, for the underwater crossing. Dewatering of excavated sediments will be required and accomplished according to an effluent discharge control plan that will incorporate Best Management Practices, including the use of upland containment berms and filtration/detention ponds.

Draft EA
Replacement of Hart St. Wastewater Pump Station Force Main
Honolulu, Hawaii

The Service believes that the Draft EA adequately describes the existing resources and habitats at the proposed project site. We support the selected alternative (*i.e.*, modified Alternative 2) and recommend that directional drilling for the underwater crossing be incorporated into the final plan. Implementation of this alternative will minimize the project-related exposure of contaminated soil and groundwater from on-shore trenching and avoid disturbance to the water column, seafloor habitat, and benthic organisms present in Kapalama Basin. Therefore, no significant adverse impacts to marine fish and wildlife and their habitats are expected to result from construction of the proposed project. Long-term impacts of the new force main on marine water quality, biota, and habitats are expected to be beneficial since the new line will avoid the possibility of a major break in the existing line, which would result in the discharge of untreated wastewater effluent into Kapalama Basin.

The Service appreciates the opportunity to comment on the Draft EA, and we look forward to receiving a copy of the Final EA when it becomes available. If you have questions regarding these comments, please contact Fish and Wildlife Biologist Michael Molina by telephone at 808/541-3441 or by facsimile transmission at 808/541-3470.

Sincerely,

Brooks Harper

Brooks Harper
Field Supervisor
Ecological Services

cc: NMFS, Honolulu
USEPA, San Francisco
DAR, Hawaii
CZMP, Hawaii
CWB, Hawaii
OEQC, Hawaii
Wilson Okamoto, Hawaii

DEPARTMENT OF WASTEWATER MANAGEMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

JEREMY HARRIS
MAYOR

FELIX B. LIMTIACO
DIRECTOR

CHERYL K. OKUMA-SEPE
DEPUTY DIRECTOR

WPP 96-587

October 8, 1996

Mr. Brooks Harper
Field Supervisor, Ecological Services
Fish and Wildlife Service
United States Department of the Interior
300 Ala Moana Boulevard, Room 3108
Honolulu, Hawaii 96813

Dear Mr. Harper:

Subject: Hart Street Wastewater Pump Station Force Main Replacement, Draft Environmental Assessment Honolulu, Hawaii

Thank you for your letter of July 8, 1996 supporting modified Alternative 2 and directional drilling for the underwater crossing. We appreciate your review of the Draft Environmental Assessment.

Very truly yours,

FELIX B. LIMTIACO
Director

cc: ✓Rodney Funakoshi,
Wilson Okamoto & Associates, Inc.
Office of Environmental Quality Control

United States Department of Agriculture

Natural Resources Conservation Service

P. O. Box 50004
Honolulu, HI
96850-0001

RYF

August 9, 1996

Mr. Kumar Bhagavan
Department of Wastewater Management
City & County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Bhagavan:

Subject: Draft Environmental Assessment (DEA) - Hart Street Wastewater Pump Station Force Main Replacement, Honolulu, Hawaii

We have reviewed the above-mentioned document and have no comments to offer at this time. We apologize for the late response.

We thank you for the opportunity to review this document.

Sincerely,

KENNETH M. KANESHIRO
State Conservationist

cc:
Mr. Gary Gill, Director, Office of Environmental Quality Control, 220 South King Street, 4th Floor, Honolulu, Hawaii 96813
Mr. Rodney Funakoshi, Project Planner, Wilson Okamoto & Associates, Inc., 1907 South Beretania Street, Suite 400, Honolulu, Hawaii 96826

DEPARTMENT OF WASTEWATER MANAGEMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

JEREMY HARRIS
MAYOR

FELIX B. LIMTIACO
DIRECTOR

CHERYL K. OKUMA-SEPE
DEPUTY DIRECTOR

WPP 96-594

October 8, 1996

Mr. Kenneth M. Kaneshiro
State Conservationist
United States Department of Agriculture
P.O. Box 50004
Honolulu, Hawaii 96850-0001

Dear Mr. Kaneshiro:

Subject: Hart Street Wastewater Pump Station Force Main Replacement, Draft Environmental Assessment Honolulu, Hawaii

Thank you for your letter of August 9, 1996 indicating that you have no comments. We appreciate your review of the Draft Environmental Assessment.

Very truly yours,

CHERYL K. OKUMA-SEPE

For FELIX B. LIMTIACO
Director

cc: Rodney Funakoshi,
Wilson Okamoto & Associates, Inc.
Office of Environmental Quality Control

BENJAMIN J. CAYETANO
GOVERNOR

KAZU HAYASHIDA
DIRECTOR

DEPUTY DIRECTORS
JERRY M. MATSUDA
GLENN M. OKIMOTO

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

IN REPLY REFER TO:
STP 8.7451

July 18, 1996

RECEIVED
JUL 23 1996
WILSON OKAMOTO & ASSOC., INC.

Mr. Felix B. Limtiaco
Director
Department of Wastewater Management
City & County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Attention: Mr. Kumar Bhagavan

Dear Mr. Limtiaco:

Subject: Hart Street Wastewater Pump Station Force Main
Replacement - Draft Environmental Assessment
TMK: 1-5-34, 36, 41, & 42: Various

Thank you for your transmittal of May 31, 1996.

Our comments are as follows:

1. Our comments of May 10, 1996, HAR-EP 6734.96, are still applicable (copy attached).

2. The proposed wastewater force main, once completed, is not anticipated to impact our Sand Island Parkway.

3. Plans for construction work within the State highway right-of-way must be submitted for our review and approval.

Thank you for the opportunity to provide comments.

Very truly yours,

KAZU HAYASHIDA
Director of Transportation

Enc.

c: Mr. Rodney Funakoshi, Wilson Okamoto & Associates, Inc.
Mr. Gary Gill, Office of Environmental Quality Control

HAR-EP 6734.96

May 10, 1996

Mr. Richard Harada, P. E.
Wilson Okamoto & Associates, Inc.
P.O. Box 3530
Honolulu, Hawaii 96811

Dear Mr. Harada:

Subject: Hart Street Wastewater Pump Station, Force Main Replacement, Preliminary Engineering Report, H. P. 301.0002

In response to your letter dated April 17, 1996, we offer the following comments on the proposed alignment of the new force main:

1. Recommend that the invert of the force main be lowered to clear the existing utilities in the container yard at Pier 52. The base tip elevations of the light poles are of special concern.

2. We are extremely concerned about the new force main going under the pile tips of our Pier 52. Before agreeing to this concept, we will require an opinion from a qualified professional engineer relating to the impact such an installation would have on the structural integrity of our pier. Also we must have an agreement with the City and County that it shall reconstruct and/or repair the pier to our satisfaction in the event the installation causes our pier to fail or be damaged.

3. Specify micro-tunneling in the container yard to reduce impact to daily operations and that pipe jacking pits not be placed in any of the yard roadways.

4. Submit 4 copies of the final Preliminary Engineering Report to the Harbors Division for review.

5. Maintain close coordination with the Harbors Division throughout this entire project.

MAY 13 1996

6. Easements will be required for the new force main on both submerged and fast State-owned lands. Metes and bounds with descriptions are required.

Please call Maurice Fujimoto at 587-1885 if there are any questions.

Very truly yours,

Thomas T. Fujikawa
Chief

DEPARTMENT OF WASTEWATER MANAGEMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

JEREMY HARRIS
MAYOR

FELIX B. LIMTIACO
DIRECTOR

CHERYL K. OKUMA-SEPE
DEPUTY DIRECTOR

WPP 96-595

October 8, 1996

Mr. Kazu Hayashida, Director
Department of Transportation
869 Punchbowl Street
Honolulu, Hawaii 96813-5097

Dear Mr. Hayashida:

Subject: Hart Street Wastewater Pump Station Force Main Replacement, Draft Environmental Assessment Honolulu, Hawaii

Thank you for your letter of July 18, 1996 (STP 8.7451) recommending clearance of the invert on existing facilities, maintaining structural integrity of Pier 52, the inclusion of micro-tunneling as an alternative, and the submission of plans for construction work within the State highway right-of-way.

Care will be taken to ensure that the force main alignment and profile will clear all existing utilities in the container yard at Pier 52. Regarding your concern about the impact of the force main on the structural integrity of Pier 52, additional geotechnical investigation will be undertaken during the design phase of the project and the force main profile will be adjusted as needed. Micro-tunneling is an alternative being considered for landside installation of the force main.

Plans for construction within the State highway right-of-way will be submitted. Four copies of the Final Preliminary Engineering Report will also be provided as requested, and ongoing coordination with the Harbors Division will be maintained throughout the project.

We appreciate your review of the Draft Environmental Assessment. If you should have any questions, please contact Mr. Kumar Bhagavan of the Division of Planning and Service Control at 527-5158.

Very truly yours,

CHERYL K. OKUMA-SEPE

for FELIX B. LIMTIACO
Director

cc: Rodney Funakoshi,
Wilson Okamoto & Associates, Inc.
Office of Environmental Quality Control

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

LAWRENCE MIIKE
DIRECTOR OF HEALTH

STATE OF HAWAII
DEPARTMENT OF HEALTH
P.O. BOX 3378
HONOLULU, HAWAII 96801

In reply, please refer to:

July 23, 1996

93-332A/epo

Department of Wastewater Management
City and County of Honolulu
650 South King Street
Honolulu, HI 96813

Attention: Kumar Bhagavan

Dear Sir/Madam:

Subject: Draft Environmental Assessment (DEA)
Hart Street Wastewater Pump Station Force Main
Replacement
Honolulu, Hawaii
TMK: 1-5-34, 36, 41 & 42: various

Thank you for allowing us to review and comment on the subject document. We have the following comments to offer:

Wastewater

At this time, we have no objections to the proposed pump station force main replacement.

During construction, adequate measures must be taken to insure that no wastewater is spilled or causes any environmental damage.

Should you have any questions on this matter, please contact Ms. Lori Kajiwara of the Wastewater Branch at 586-4294.

Water Pollution

A National Pollutant Discharge Elimination System (NPDES) permit is required for any discharge to waters of the State including the following:

1. Storm water discharges relating to construction activities for projects equal to or greater than five acres;

2. Storm water discharges from industrial activities;

3. Construction dewatering activities;

4. Cooling water discharges less than one million gallons;

5. Ground water remediation activities; and

6. Hydrotesting water.

Any person wishing to be covered by the NPDES general permit for any of the above activities should file a Notice of Intent with the Department's Clean Water Branch at least 90 days prior to commencement of any discharge to waters of the State.

Any questions regarding this matter should be directed to Mr. Denis Lau of the Clean Water Branch at 586-4309.

Sincerely,

BRUCE S. ANDERSON, Ph.D.
Deputy Director for
Environmental Health

c: WWB
CWB
OEQC
Wilson Okamoto & Assoc., Inc. ✓

DEPARTMENT OF WASTEWATER MANAGEMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

JEREMY HARRIS
MAYOR

FELIX B. LIMTIACO
DIRECTOR

CHERYL K. OKUMA-SEPE
DEPUTY DIRECTOR

WPP 96-593

October 8, 1996

Bruce S. Anderson, Ph.D.
Deputy Director for Environmental Health
Department of Health
P.O. Box 3378
Honolulu, Hawaii 96801

Dear Dr. Anderson:

Subject: Hart Street Wastewater Pump Station Force Main Replacement, Draft Environmental Assessment Honolulu, Hawaii

Thank you for your letter of July 23, 1996 (Ref. 93-332A/epo) regarding wastewater spillage and water pollution. Your concerns have been acknowledged and appropriate measures will be taken to prevent wastewater spillage during construction.

We appreciate your review of the Draft Environmental Assessment. If you should have any questions, please contact Mr. Kumar Bhagavan of the Division of Planning and Service Control at 527-5158.

Very truly yours,

CHERYL K. OKUMA-SEPE
for FELIX B. LIMTIACO
Director

cc: Rodney Funakoshi,
Wilson Okamoto & Associates, Inc.
Office of Environmental Quality Control

BENJAMIN J. CAYETANO
GOVERNOR

ESTHER UEDA
EXECUTIVE OFFICER

STATE OF HAWAII
DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT & TOURISM
LAND USE COMMISSION
P.O. Box 2359
Honolulu, HI 96804-2359
Telephone: 808-587-3822
Fax: 808-587-3827

June 5, 1996

Mr. Kumar Bhagavan
Department of Wastewater Management
City & County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Bhagavan:

Subject: Draft Environmental Assessment (DEA) for the Hart Street Wastewater Pump Station Force Main Replacement, Honolulu, Hawaii, TMK 1-5-34, 36, 41 & 42: various

The Department of Business, Economic Development, and Tourism has forwarded the subject document to our office for review and comment.

We have reviewed the DEA for the subject project and have the following comments:

1) We confirm that the project corridor, as represented in Figure 5-1, traverses the State Land Use Urban and Conservation Districts.

2) We note that on page 5-1, section 5.1, reference to the "Agriculture" District should be amended to "Agricultural." Additionally, we would like to point out that Urban and Conservation are not land use subzones but State land use districts.

3) Figure 5-1 does not appear to reflect the correct boundaries of the Urban/Conservation District in the vicinity of Aloha Tower (east of project corridor). We have enclosed a copy of a portion of the Commission's official map O-13 (Honolulu) with said area highlighted.

We have no further comments to offer at this time. We appreciate the opportunity to comment on this matter.

Should you have any questions, please feel free to call me or Bert Saruwatari of our office at 587-3822.

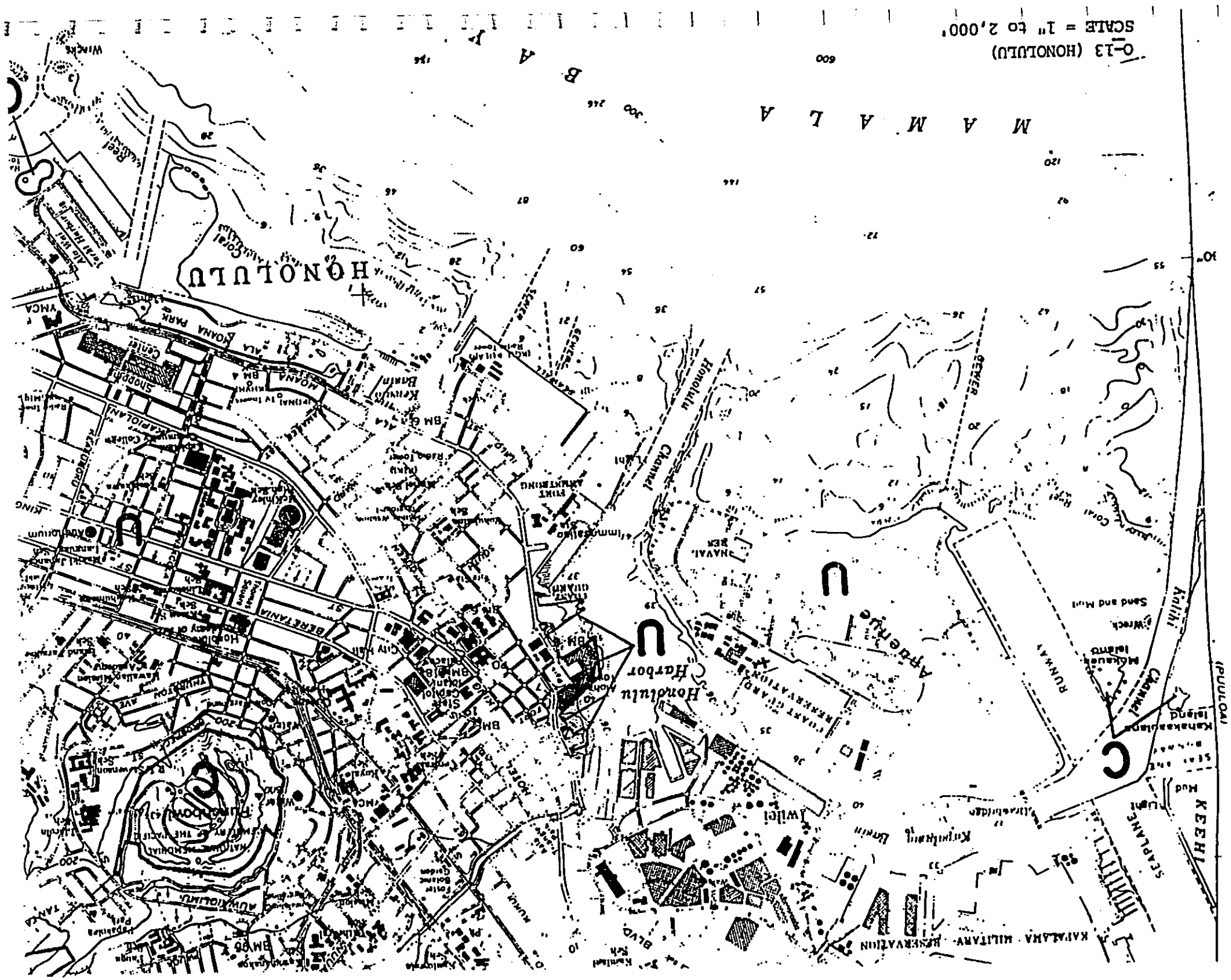
Sincerely,

ESTHER UEDA
Executive Officer

enclosure

EU:th

cc: DBEDT (Referral No. 96-240-A) (w/encl.)
Gary Gill (w/encl.)
Rodney Funakoshi (w/encl.)


O-13 (HONOLULU)
SCALE = 1" to 2,000'
M A M A L A B A Y
HONOLULU
Honolulu Harbor
Aiea Bay
KEEHI
KAPALAMA MILITARY RESERVATION
Sand and Mud
Wreck
Kahakaloa Island
McKaua Island
Kalihi
Channel
Coral
Reef
Sand
Mud
Rock
Piers
Wharf
Wharves
Quay
Pile
Dolphin
Fish Trap
Fish Stakes
Buoy
Lighted Buoy
Whistling Buoy
Bell Buoy
Gas Buoy
Spar Buoy
Can Buoy
Nun Buoy
Anchorage
Anchorage Prohibited
Seaplane Landing Area
Seaplane Take-off Area
Seaplane Alighting Area
Seaplane Anchorage
Seaplane Mooring Buoy
Seaplane Ramp
Seaplane Runway
Seaplane Channel
Seaplane Turning Basin
Seaplane Operating Area
Seaplane Restricted Area
Seaplane Prohibited Area
Seaplane Danger Area
Seaplane Caution Area
Seaplane Warning Area
Seaplane Information Area
Seaplane Emergency Area
Seaplane Maintenance Area
Seaplane Fuel Area
Seaplane Oil Area
Seaplane Water Area
Seaplane Ramp Area
Seaplane Runway Area
Seaplane Channel Area
Seaplane Turning Basin Area
Seaplane Operating Area
Seaplane Restricted Area
Seaplane Prohibited Area
Seaplane Danger Area
Seaplane Caution Area
Seaplane Warning Area
Seaplane Information Area
Seaplane Emergency Area
Seaplane Maintenance Area
Seaplane Fuel Area
Seaplane Oil Area
Seaplane Water Area

DEPARTMENT OF WASTEWATER MANAGEMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

JEREMY HARRIS
MAYOR

FELIX B. LIMTIACO
DIRECTOR

CHERYL K. OKUMA-SEPE
DEPUTY DIRECTOR

WPP 96-589

October 8, 1996

Ms. Esther Ueda
Executive Office, Land Use Commission
Department of Business Economic
Development & Tourism
P.O. Box 2359
Honolulu, Hawaii 96804

Dear Ms. Ueda:

Subject: Hart Street Wastewater Pump Station Force Main Replacement, Draft Environmental Assessment Honolulu, Hawaii

Thank you for your letter of June 5, 1996. Your comments have been acknowledged and are incorporated in the Final Environmental Assessment.

We appreciate your review of the Draft Environmental Assessment. If you should have any questions, please contact Mr. Kumar Bhagavan of the Division of Planning and Service Control at 527-5158.

Very truly yours,

FELIX B. LIMTIACO
Director

cc: Rodney Funakoshi,
Wilson Okamoto & Associates, Inc.
Office of Environmental Quality Control

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

MICHAEL D. WILSON, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DEPUTY
GILBERT COLOMA-AGARAN

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

STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

STATE HISTORIC PRESERVATION DIVISION
33 SOUTH KING STREET, 6TH FLOOR
HONOLULU, HAWAII 96813

July 5, 1996

Kumar Bhagavan
Department of Wastewater Management
City & County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

LOG NO: 17268
DOC NO: 9607TD05

Dear Mr. Bhagavan:

SUBJECT: Chapter 6E-8 Review--Draft Environmental Assessment (DEA) for the Hart Street Wastewater Pump Station Force Main Replacement
Kapalama, Kona, O`ahu
TMK: 1-5-34, 36, 41 & 42: various

Thank you for the opportunity to review this DEA which proposes replacement of a force main in fill land. This area was part of Keehi lagoon during traditional Hawaiian times, so there are no historic sites here. Therefore, we believe replacement of the Hart Street Wastewater Pump Station force main will have "no effect" on historic sites.

Aloha,

DON HIBBARD, Administrator
State Historic Preservation Division

TD:jk

DEPARTMENT OF WASTEWATER MANAGEMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

JEREMY HARRIS
MAYOR

FELIX B. LIMTIACO
DIRECTOR

CHERYL K. OKUMA-SEPE
DEPUTY DIRECTOR

WPP 96-596

October 8, 1996

Mr. Don Hibbard, Administrator
State Historic Preservation Division
Department of Land and Natural Resources
33 South King Street, 6th Floor
Honolulu, Hawaii 96813

Dear Mr. Hibbard:

Subject: Hart Street Wastewater Pump Station Force Main Replacement, Draft Environmental Assessment Honolulu, Hawaii

Thank you for your letter of July 5, 1996 (Log No. 17268) indicating that the replacement of the Hart Street Wastewater Pump Station will have no effect on historic sites.

We appreciate your review of the Draft Environmental Assessment. If you should have any questions, please contact Mr. Kumar Bhagavan of the Division of Planning and Service Control at 527-5158.

Very truly yours,

CHERYL K. OKUMA-SEPE
For FELIX B. LIMTIACO
Director

cc: Rodney Funakoshi,
Wilson Okamoto & Associates, Inc.
Office of Environmental Quality Control

PHONE: (808) 847-2661
TELEX: (723) 8747

UNIVERSITY OF HAWAII
MARINE CENTER
PIER 45—SNUG HARBOR
#1 SAND ISLAND ROAD
HONOLULU, HAWAII 96819

June 10, 1996

Department of Wastewater Management
City & County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Attn: Kumar Bhagavan

Subj: Hart Street Wastewater Pump Station Force Main Replacement
Draft Environmental Assessment; Comments Concerning

Dear Mr. Bhagavan:

We have reviewed subject Draft Environmental Assessment and have no comments to make. This determination is made based on the selection of Alternative 2 with either micro tunneling or directional drilling for the harbor channel crossing, in which case, there would be no impact on our facility or operation. If another alternative or harbor channel crossing method is selected, we would like the opportunity to review the new assessment for possible impact on us.

Sincerely,

James W. Coste
Marine Superintendent

cc: The State of Hawaii, Office of Environmental Quality Control
220 South King Street, 4th Floor
Honolulu, Hawaii 96813
Attn: Gary Gill

Wilson Okamoto & Associates, Inc.
1907 South Beretania Street, Suite 400
Honolulu, Hawaii 96826
Attn: Rodney Funakoshi

DEPARTMENT OF WASTEWATER MANAGEMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

JEREMY HARRIS
MAYOR

FELIX B. LIMTIACO
DIRECTOR

CHERYL K. OKUMA-SEPE
DEPUTY DIRECTOR

WPP 96-590

October 8, 1996

Mr. James W. Coste
Marine Superintendent
University of Hawaii Marine Center
Pier 45-Snug Harbor
1 Sand Island Road
Honolulu, Hawaii 96819

Dear Mr. Coste:

Subject: Hart Street Wastewater Pump Station Force Main Replacement, Draft Environmental Assessment Honolulu, Hawaii

Thank you for your letter of June 10, 1996 indicating that you have no comments provided we proceed with Alternative 2 and directional drilling for the harbor channel crossing.

We appreciate your review of the Draft Environmental Assessment. If you should have any questions, please contact Mr. Kumar Bhagavan of the Division of Planning and Service Control at 527-5158.

Very truly yours,

FELIX B. LIMTIACO
Director

cc: Rodney Funakoshi,
Wilson Okamoto & Associates, Inc.
Office of Environmental Quality Control

PLANNING DEPARTMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

JEREMY HARRIS
MAYOR

CHERYL D. SOON
CHIEF PLANNING OFFICER

CAROLL TAKAHASHI
DEPUTY CHIEF PLANNING OFFICER

ET 6/96-1285

July 5, 1996

WILSON OKAMOTO & ASSOC., INC.

MEMORANDUM

TO: FELIX B. LIMTIACO, DIRECTOR
DEPARTMENT OF WASTEWATER MANAGEMENT

FROM: CHERYL D. SOON, CHIEF PLANNING OFFICER
PLANNING DEPARTMENT

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT FOR HART STREET WASTEWATER PUMP STATION FORCE MAIN REPLACEMENT, TAX MAP KEY: 1-5-34, 36, 41, & 42, HONOLULU, HAWAII

We have reviewed the Draft Environmental Assessment (DEA) for the subject project and offer the following comments:

- Figure 5.3 of the DEA correctly depicts the proposed "Hart Street Sewer Pump Station (New Harbor Crossing)" sewer system, beyond six year symbol on the Primary Urban Center (PUC) Development Plan Public Facilities Map (DPPFM). This alignment is consistent with your alternatives 1A and 1B.

  An amendment to change the timing and/or alignment of the sewer system symbol may not be necessary. Our department could administratively modify the map to change the symbol timing and/or alignment when City Council appropriates the funds to implement the project.

- Section 5.7 of the DEA should be revised to state that the DPPFM depicts proposed major public facilities and proposed major improvements to existing public facilities. The DPPFM does not always depict existing or minor public facilities.

- We concur with your determination of an anticipated negative declaration.

Thank you for the opportunity to comment. Should you have any questions, please contact Eugene Takahashi of our staff at 527-6022.

Cheryl D. Soon

CHERYL D. SOON
Chief Planning Officer

CDS:lh

cc: OEQC
✓Wilson Okamoto & Associates, Inc.

DEPARTMENT OF WASTEWATER MANAGEMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

JEREMY HARRIS
MAYOR

FELIX B. LIMTIACO
DIRECTOR
CHERYL K. OKUMA-SEPE
DEPUTY DIRECTOR

WPP 96-586

October 8, 1996

MEMORANDUM

TO: MS. CHERYL D. SOON, CHIEF PLANNING OFFICER
PLANNING DEPARTMENT

FROM: FELIX B. LIMTIACO, DIRECTOR
DEPARTMENT OF WASTEWATER MANAGEMENT

SUBJECT: HART STREET WASTEWATER PUMP STATION FORCE MAIN REPLACEMENT, DRAFT ENVIRONMENTAL ASSESSMENT HONOLULU, HAWAII

Thank you for your letter of July 5, 1996 (ET 6/96-1285). Your comments clarifying Development Plan Public Facilities Map requirements and references have been incorporated in the Final Environmental Assessment. We appreciate your review of the Draft Environmental Assessment.

FELIX B. LIMTIACO
Director

cc: ✓Rodney Funakoshi,
Wilson Okamoto & Associates, Inc.
Office of Environmental Quality Control

DEPARTMENT OF PUBLIC WORKS
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 11TH FLOOR • HONOLULU, HAWAII 96813
PHONE: (808) 523-4341 • FAX: (808) 527-5857

JEREMY HARRIS
MAYOR

KENNETH E. SPRAGUE
DIRECTOR AND CHIEF ENGINEER

DARWIN J. HAMAMOTO
DEPUTY DIRECTOR

ENV 96-145

June 18, 1996

RECEIVED
JUN 19 1996.
WILSON OKAMOTO & ASSOC., INC.

MEMORANDUM:

TO: FELIX LIMTIACO, DIRECTOR
DEPARTMENT OF WASTEWATER MANAGEMENT

FROM: for KENNETH E. SPRAGUE
DIRECTOR AND CHIEF ENGINEER

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT (DEA)
HART STREET WASTEWATER PUMP STATION
FORCE MAIN REPLACEMENT
TMK: 1-5-34: 36, 41 & 42

We have reviewed the subject DEA and have the following comments:

1. On Figure 2-2: Please show location of crossings with Chevron and other petroleum lines, if any, for selected alternative.

2. Describe disposal of any effluent in the abandoned line. Will it be removed?

If you have any questions, please contact Mr. Alex Ho, Environmental Engineer, at Local 4150.

cc: OEQC
Wilson Okamoto & Associates (Rodney Funakoshi)

DEPARTMENT OF WASTEWATER MANAGEMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

JEREMY HARRIS
MAYOR

FELIX B. LIMTIACO
DIRECTOR
CHERYL K. OKUMA-SEPE
DEPUTY DIRECTOR

WPP 96-591

October 8, 1996

MEMORANDUM

TO: MR. KENNETH E. SPRAGUE, DIRECTOR & CHIEF ENGINEER
DEPARTMENT OF PUBLIC WORKS

FROM: FELIX B. LIMTIACO, DIRECTOR
DEPARTMENT OF WASTEWATER MANAGEMENT

SUBJECT: HART STREET WASTEWATER PUMP STATION FORCE MAIN REPLACEMENT, DRAFT ENVIRONMENTAL ASSESSMENT HONOLULU, HAWAII

Thank you for your letter of June 18, 1996 (ENV 96-145) regarding the location of Chevron and other petroleum lines and the disposal of effluent in the abandoned line. The location of Chevron petroleum lines has been included in the Final Environmental Assessment. Once the replacement line is operational, effluent from the existing force main will be flushed and an investigation to determine the structural condition of the line will be conducted.

We appreciate your review of the Draft Environmental Assessment. If you should have any questions, please contact Mr. Kumar Bhagavan of the Division of Planning and Service Control at 527-5158.

FELIX B. LIMTIACO
Director

cc: Rodney Funakoshi,
Wilson Okamoto & Associates, Inc.
Office of Environmental Quality Control

BOARD OF WATER SUPPLY

CITY AND COUNTY OF HONOLULU

COPY

RECEIVED

JUN 21 1996

WILSON OKAMOTO & ASSOC., INC.

June 19, 1996

TO: FELIX B. LIMTIACO, DIRECTOR
DEPARTMENT OF WASTEWATER MANAGEMENT

ATTN: KUMAR BHAGAVAN

FROM: For RAYMOND H. SATO, MANAGER AND CHIEF ENGINEER
BOARD OF WATER SUPPLY

SUBJECT: WILSON OKAMOTO AND ASSOCIATES, INC.'S TRANSMITTAL OF MAY 31, 1996 REGARDING THE DRAFT ENVIRONMENTAL ASSESSMENT (EA) FOR THE PROPOSED HART STREET WASTEWATER PUMP STATION FORCE MAIN REPLACEMENT PROJECT, TMK: 1-5-34, 36, 41, AND 42: VARIOUS

Thank you for the opportunity to review and comment on the Draft EA for the subject project.

We have no objections to the proposed project. Our pre-assessment comments of February 24, 1995 are still applicable and are included in Section 8 of the Draft EA.

If you have any questions, please contact Barry Usagawa at 527-5235.

cc: Office of Environmental Quality Control
Wilson Okamoto and Associates, Inc.

DEPARTMENT OF WASTEWATER MANAGEMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

JEREMY HARRIS
MAYOR

FELIX B. LIMTIACO
DIRECTOR
CHERYL K. OKUMA-SEPE
DEPUTY DIRECTOR

WPP 96-592

October 8, 1996

MEMORANDUM

TO: MR. RAYMOND H. SATO, MANAGER AND CHIEF ENGINEER
BOARD OF WATER SUPPLY

FROM: FELIX B. LIMTIACO, DIRECTOR
DEPARTMENT OF WASTEWATER MANAGEMENT

SUBJECT: HART STREET WASTEWATER PUMP STATION FORCE MAIN REPLACEMENT, DRAFT ENVIRONMENTAL ASSESSMENT
HONOLULU, HAWAII

Thank you for your letter of June 19, 1996 indicating that you have no objections to the proposed project. Your comments during the pre-assessment phase have also been acknowledged and addressed.

We appreciate your review of the Draft Environmental Assessment. If you should have any questions, please contact Mr. Kumar Bhagavan of the Division of Planning and Service Control at 527-5158.

CHERYL K. OKUMA-SEPE
For FELIX B. LIMTIACO
Director

cc: Rodney Funakoshi,
Wilson Okamoto & Associates, Inc.
Office of Environmental Quality Control

RyF
BT
RH

Matson Terminals, Inc.
Sand Island Access Road
P.O. Box 2630
Honolulu, Hawaii 96803
(808) 848-1211

RECEIVED
JUL 09 1996
WILSON OKAMOTO & ASSOC., INC.

July 8, 1996

Department of Wastewater Management
City & County of Honolulu
650 South King Street
Honolulu, HI 96813

Attention: Kumar Bhagavan

Hart Street Wastewater Pump Station Force Main Replacement
Draft Environmental Assessment
(Negative Declaration Anticipated)
Tax Map Key: 1-5-34, 36, 41 & 42: various
Honolulu, Hawaii

A review of subject matter discloses that the Selected Alternative Alignment (fig. 2-2) crosses through an operationally critical path within the Matson Terminal Container Yard.

Regardless of path alignment selected, the method selected to execute it must not hinder terminal operations. Gantry cranes must have full travel of piers and straddle carriers, with a GVW of 210,000 pounds, must have unlimited path within the terminal.

Sincerely,

Gary Moniz
Manager
Facilities & Maintenance

cc: The State of Hawaii
Office of Environmental Quality Control

✓ Wilson Okamoto & Associates, Inc.

DEPARTMENT OF WASTEWATER MANAGEMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

JEREMY HARRIS
MAYOR

FELIX B. LIMTIACO
DIRECTOR

CHERYL K. OKUMA-SEPE
DEPUTY DIRECTOR

WPP 96-585

October 8, 1996

Mr. Gary Moniz
Manager, Facilities & Maintenance
Matson Terminals, Inc.
P.O. Box 2630
Honolulu, Hawaii 96803

Dear Mr. Moniz:

Subject: Hart Street Wastewater Pump Station Force Main Replacement, Draft Environmental Assessment Honolulu, Hawaii

Thank you for your letter of July 8, 1996 regarding possible impact of the selected alternative alignment on terminal operations. We are sensitive to your concerns regarding the force main's alignment through operationally critical paths within the Matson Terminal Container Yard and intend to closely coordinate the design and construction phase of the project with your company to minimize any disruptions.

We appreciate your review of the Draft Environmental Assessment. If you should have any questions, please contact Mr. Kumar Bhagavan of the Division of Planning and Service Control at 527-5158.

Very truly yours,

FELIX B. LIMTIACO
Director

cc: Rodney Funakoshi,
Wilson Okamoto & Associates, Inc.
Office of Environmental Quality Control

9. REFERENCES

Belt Collins & Associates. East Mamala Bay Wastewater Facilities Plan. Prepared for City and County of Honolulu Department of Wastewater Management. 1994.

Belt Collins & Associates. East Mamala Bay Wastewater Facilities Plan FEIS. Prepared for City and County of Honolulu Department of Wastewater Management. 1994.

City & County of Honolulu. General Plan. 1992.

City & County of Honolulu. Development Plans. 1992.

City & County of Honolulu, Department of Land Utilization. Land Use Ordinance. 1993.

Helber, Hastert & Kimura, Planners and R.M. Towill Corporation. Honolulu Waterfront Master Plan. 1989

Lacayo Planning, Inc. Pier 38 Master Plan. Prepared for State of Hawaii Department of Business Economic Development and Tourism. September 1993.

State of Hawaii. The State Conservation Functional Plan. 1991.

State of Hawaii. The State Health Functional Plan. 1989.

State of Hawaii. The State Historic Preservation Functional Plan. 1991.

State of Hawaii. The State Recreation Functional Plan. 1991.

Oceanit Laboratories, Inc., July 1990.

Wilson Okamoto & Associates. FEIS for the Marine Education and Training Center and Public Boat Launch Facility. 1992.

Wilson Okamoto & Associates. The Waterfront at Aloha Tower FEIS. 1990

APPENDIX A

Hazardous Materials Assessment
Masa Fujioka & Associates

MFA MASA FUJIOKA & ASSOCIATES
A PROFESSIONAL PARTNERSHIP
ENVIRONMENTAL • GEOTECHNICAL • HYDROGEOLOGICAL CONSULTANTS
99-1205 HALAWA VALLEY STREET, SUITE 302 • AIEA, HAWAII 96701-3281
PHONE 808 484-5366 • FAX 808 484-0007

February 28, 1995
MFA Project No.: 95096-006

Fax No. 946-2253

Wilson Okamoto & Associates, Inc.
P. O. Box 3530
Honolulu, Hawaii 96811

Attn: Mr. Richard Harada

Subject: Preliminary Letter Report
Environmental Findings
Proposed Hart Street Force Main Replacement
Honolulu, Oahu, Hawaii

Dear Mr. Harada:

Following initial research, we have prepared this letter to apprise you of our preliminary environmental findings for the area of four proposed alternate routes for the proposed Hart Street Force Main Replacement. This work was performed in general accordance with our July 22, 1993 proposal and your Subconsultant Agreement for Services, executed on January 5, 1995.

Scope of Work

The scope of work completed to date consists of extensive literature and regulatory investigation of the area of the four proposed alternate routes. We also conducted interviews of tenants or former tenants if our information indicated a potential environmental concern related to their operations. The scope of this initial evaluation did not include any site visits, sampling, or testing for environmental contaminants. A site visit and additional interviews with site tenants will be performed when the actual alignment of the force main has been determined. We have performed the following tasks in our preliminary environmental site assessment to date:

- We reviewed historical information contained in past editions of U. S. Geological Survey and other agency topographic maps, Sanborn Fire Insurance maps, aerial photographs, and local newspapers (dating back to the early 1970s). We also reviewed building permit documentation regarding possible past land use at the site and at adjacent properties.

- We reviewed regulatory information regarding environmental conditions, citations, complaints, and permits at the site and neighboring properties. We reviewed current U. S. EPA CERCLIS, RCRA, and ERNS databases, current State Department of Health (DOH) Underground Storage Tank (UST) database list and "Leak Log", and current DOH Hazard Evaluation and Emergency Response (HEER) database on spills and other incidents.

  We have requested additional regulatory agency information regarding recent incidents or releases (which may have occurred after the most recently available printouts of the above-named databases) at the site or in the surrounding areas. This information has not yet been made available to us, so we have not completed our agency contacts.

- We conducted telephone interviews with several State DOT Harbors Division personnel. We have also conducted telephone interviews with representatives of several site tenants. We have not yet interviewed all site tenants.

Project Considerations

The new Hart Street Force Main is proposed to replace the existing force main that runs between the Hart Street pump station and the Sand Island Wastewater Treatment Plant (WWTP). The existing force main begins at the Hart Street pump station and extends along Nimitz Highway and Pier 34, then beneath Kalihi Channel to the eastern end of pier 52 on Sand Island. The force main continues through the Matson container yard, across the Sand Island Parkway, and ends at the Sand Island WWTP.

We understand that four alignments are being considered for the force main replacement, with all of the alignments located within an approximately 400-foot wide corridor between the pump station and the treatment plant (reference attached figure). The first alternative is immediately adjacent to the existing force main. The second alternative enters the channel between Piers 35 and 36 and proceeds across the channel, through an existing sewer blockout within Pier 52, continuing in a straight line until it joins the existing alignment approximately midway in the Matson container yard, then following the existing alignment to the treatment plant.

The third alternative route extends west from the Hart Street pump station and enters the Channel between Piers 36 and 37, proceeding across the channel to the existing sewer blockout on Pier 52, then continuing along the sample alignment as Alternative 3. The fourth alternative extends west to Pier 37, proceeds south along Pier 37 to the Channel, enters Sand Island beneath Pier 51C, and then follows a relatively straight path to the WWTP.

Preliminary Environmental Site Assessment

Area of Study

In the following text, we have referred to the areas of Piers 34 through 38 (on the Honolulu side of Kapalama Channel), Piers 51 and 52 (on the Sand Island side of Kapalama Channel), and the area around the proposed routes extending to the Sand Island Wastewater Treatment Plant (WWTP) as the "site". These are the areas proposed for the force main alternative routes, as per the attached figure.

Our historical research and review of regulatory records have turned up several past environmental incidents that may have impacted the site. The fairly high frequency of these incidents is related to the industrial history of the site area.

The site properties are owned by the State of Hawaii and managed by Department of Transportation (DOT) Harbors Division. Several tenants occupy portions of the site under revocable permits. DOT personnel informed us that they have no DOT operations in the site areas, with the exception of some general maintenance. Individual site tenants are responsible for maintaining their areas and for conforming to all environmental regulations applicable to their operations.

RCRA Facilities

DOT piers at both the Honolulu site and the Sand Island site were listed on the EPA RCRA database (dated December 1994) as small quantity generators of hazardous waste. DOT personnel informed us that they applied for this designation so that they could dispose of used oil which

occasionally gets dumped by boats. DOT has placed used-oil containers on the piers to encourage responsible disposal by boat owners; DOT contracts a private company to dispose of the used oil.

Underground Storage Tanks

Several properties in the vicinity of the subject site contain underground storage tanks (USTs). We found sixteen (16) facilities within one-half mile of the site listed as having leaking USTs. Two of these facilities listed to have leaking USTs are located on the site; these are Hawaii Transfer Co., Ltd. at Pier 36 and Matson Terminals, Inc. at Pier 51. We interviewed Dave Kanda, General Manager of Hawaii Transfer, who told us that two tanks were removed from the site approximately five (5) years ago. The DOH UST database reports that there was one 1,000-gallon tank and one 2,000-gallon tank, both formerly used to store diesel fuel, removed from the site in September 1989. Mr. Kanda reported that contamination was encountered in the soil around one tank when the tanks were removed, and that the contamination was limited to the area immediately surrounding the tank. He did state, however, that they had not received site closure from DOH. We have requested permission to look at the DOH UST Branch file on this site, but this information has not yet been made available to us.

Matson Terminals, Inc. apparently installed four USTs at their Sand Island site in March 1981. Two gasoline tanks were removed from the site, while a 10,000-gallon diesel tank and a 1,000-gallon waste oil tank remain in use at the site, according to the most recent (April 22, 1993) DOH UST database listing. We understand from DOH sources that the release at the Matson facility was a waste oil release resulting from overfills of the waste oil tank. We understand that approximately 1,000 gallons of product were recovered from the groundwater soon after the release was discovered. The soil and groundwater at the site have apparently been tested and shown to not contain any chlorinated solvents. According to DOH, removal of the remaining product from groundwater will soon begin. We have requested permission to look at the DOH UST Branch file on this site, but this information has not yet been made available to us. We have also contacted Matson Terminals, Inc. for an interview regarding their operations. They requested that we send our questions and they would respond in writing. We sent our questions to Matson by facsimile on February 22, but we have not yet received this information.

Information on Site Tenants from Building Department Files and Interviews

We searched the City and County Building Department Files, dating back to the 1950s, for information of an environmentally significant nature in the site area. We found several items which may impact the subject site. We also conducted interviews with several of the site tenants to obtain information on their operations and potential environmental concerns.

For Tax Map Parcel 1-5-36:12 (on Pier 34), we found a building permit (11/2/88) for a Hawaii Independent Refinery, Inc. leak detection transmitter for underground fuel lines. We spoke with Mr. Mike Latham of BHP Terminal group, who told us that he wasn't sure he was familiar with the leak detection system, but that it was likely part of the fuel line systems they had in the area. He said he was not aware of any leaks from the underground fuel lines.

Tax Map Parcels 1-5-36:4,7, and 9 (on Piers 31-33) are or were occupied by a Shell Oil facility. A 1959 building permit was for the construction of a retaining wall for storage tanks. A July 1991

building permit was for the installation of recovery wells and piping for parcel 9. We have not yet interviewed personnel from Shell Oil regarding this area.

For Tax Map Parcel 1-5-34:1 (at 1130 North Nimitz Highway, Pier 35), we found various building permits dating back to the 1970s for an auto body and paint shop. Another permit for an unknown parcel of TMK 1-5-34 , supposedly on Pier 34, was for the installation of eight 15-foot diameter steel fuel tanks by Armour Oil Co. We do not know if these tanks are still at that location.

Tax Map Parcel 1-5-34:7 (Pier 35) is occupied by Hawaii Stevedores, Inc., and an October 1993 building permit covered the construction of a new fuel area and truck wash area. We interviewed Mr. Randy Grune, Vice President - Administration of Hawaii Stevedores, who told us that Hawaii Stevedores had been at the site since approximately the mid-1960s. The major lessor of this parcel up until 1991 was National Metal Recycling, who, according to Mr. Grune, operated a scrap metal business at the site. When Hawaii Stevedores became the master lessor in 1991, they conducted major renovations of the facilities, including switching from a cesspool system to the City and County sewer system and improving the building to be used as their maintenance facilities.

Mr. Grune stated that in order to obtain financing for their improvements, Hawaii Stevedores performed an preliminary environmental site assessment, and, due to the known contamination in the general pier area, were required by the bank to install five borings/monitoring wells. The groundwater samples obtained from these wells when they were installed in 1991 contained some levels of hydrocarbon product, but none of the concentrations were above action levels, according to Mr. Grune. He also stated that they recently sampled the five wells again and that the groundwater was tested to be clean. Hawaii Stevedores has one underground storage tank on the site, installed approximately one year ago, which is equipped with a leak detection system and alarms. Mr. Grune stated that when they excavated for the storage tank, they found a lot of buried metal debris, remaining from the former operations of Hawaii Metal Recycling.

Mr. Grune stated that it is well-known that other areas adjacent to their site are contaminated. He discussed the former Chevron Kapalama Tank Farm at Pier 37, and said Chevron performed some remediation of groundwater in the area. He said that Hawaii Stevedores had become aware of a problem with contamination from the Chevron facility migrating towards Nimitz Highway along pipe conduits when Hawaii Stevedores connected to a sewer lateral approximately 3 years ago. Mr. Grune also said that he recently observed Chevron exposing pipelines for maintenance in the area adjacent to Nimitz Highway just east of the Hart St. Pump Station. Mr. Grune said that petroleum contamination was visible in the form of a sheen on the groundwater surface in the excavation. Mr. Grune also reported that the property immediately makai (seaward) of Hawaii Stevedores is occupied by Hawaii Metal Recycling, and has been used during many periods for scrap metal storage and recycling. He said that he has heard from others potentially interested in obtaining the lease for that property that they decided against leasing the property because it is contaminated with heavy metals.

Pier 36 is also part of TMK 1-5-34, but we did not find any building permits for this pier area. Pier 36 apparently is used (according to information on the tax map) for a water taxi service, and may not have any permanent structures.

TMK 1-5-42 covers the areas of Piers 37 and 38. We found several building permits issued to Chevron (also listed under Standard Oil), for parcels 1-5-42: 3 and 6, related to installation of steel tanks for storage of jet fuel. A building permit dated July 1992 was for the removal of four 80,000-gallon tanks from parcel 1-5-42: 6. We interviewed Mr. Clarence Chong, Terminal Manager for Chevron, who informed us that Chevron formerly operated facilities on parcel 1-5-42: 3, out on Pier 37 and referred to as Chevron Kapalama South, and a triangular parcel consisting of 1-5-42: 4, 5, and 14 , east of Pier 37 along Nimitz and adjacent to the Hart Street Pump Station, and referred to as Chevron Kapalama East.

The Chevron Kapalama South facility, which contained four 80,000 tanks, is no longer in service. Mr. Chong said that Chevron cleaned up the contamination in this area to levels acceptable to the State prior to returning the property to DOT. The investigation of contamination included installation of monitoring wells along Nimitz Highway, to assess whether contamination was migrating off site via pipe conduits. The Chevron Kapalama East facility has also been turned back over to the State. For that area, the cleanup involved addressing a former leak of polychlorinated biphenyls (PCBs) from a transformer. Again, the cleanup was performed to levels acceptable to the State, according to Mr. Chong.

Mr. Chong informed us that a third area, referred to as Chevron Kapalama North and consisting of parcel 1-5-42: 6 (north of Pier 37 along Nimitz), is currently active. Chevron Kapalama North contains 2 above-ground storage tanks, one with a capacity of 40,000 gallons and the other with a capacity of 80,000 gallons, that are used to store jet fuel. The tanks were installed in 1953. Mr. Chong reported that one of the tanks leaked near the bottom, and the tank was repaired and the leak cleaned up.

Additional Information from Maps and Archives

USGS maps show other above-ground storage tanks at the site which we have not identified, including four tanks apparently on Pier 34 directly makai of the Hawaii Stevedores' building. We do not know if these tanks are still in place, or if any leaks have been associated with these tanks.

We found several newspaper articles regarding releases of petroleum product in the Pier areas. For example, articles in both the Honolulu Star-Bulletin and Honolulu Advertiser, dated September 1, 1992, describe the intentional release of 200 gallons of waste oil into the harbor at Pier 32 by a disgruntled former employee of a business located at the pier.

Conclusions and Recommendations

The information gathered during our environmental assessment to date indicates that the pier areas on both the Honolulu and Sand Island sides have been contaminated with releases of petroleum hydrocarbon product. Potential petroleum contamination of soil could impact the construction of the proposed force main by making disposal of excavated soil difficult. Potentially contaminated excavated soil would have to be stockpiled, sampled, tested, and potentially remediated prior to disposal. The costs for this procedure would depend on the quantity of contaminated soil, which would depend on the route selected, the construction method selected, and the amount and concentrations of contamination encountered.

Potential petroleum contamination of groundwater could impact dewatering operations for conventional trench construction. Contaminated groundwater may not meet NPDES criteria, and treatment and alternative disposal of dewatering effluent may be required. The cost for this procedure again is unknown, and would depend on the route selected, the construction method selected (i.e., the amount of dewatering required), and the amount and concentrations of contamination encountered.

For route selection from an environmental standpoint, avoiding as much of the pier area as possible on the Honolulu side would be favored. Routes 1A and 1B, in the area of the Hawaii Stevedores facility, may encounter heavy metal contamination, as well as migrating petroleum contamination. Routes 3 and 4 travel through the former Chevron Kapalama East and Kapalama South facilities. Although Chevron informed us that these areas were cleaned up to levels satisfactory to the State prior to turnover of the facilities to DOT, it is highly likely that petroleum contamination, and potentially PCB contamination, would be a concern in these areas during trenching and dewatering operations. Although any route is likely to encounter contamination, Route 2 appears to be the most favored with respect to avoiding contamination on the Honolulu side, as it provides the shortest route for entering the Harbor (between Piers 35 and 36).

We have not yet received information regarding Matson's facilities on the Sand Island side. We know that they have had a leaking underground storage tank, but do not know its location, nor do we yet know of any other environmental concerns that may be present at that site. If this information indicates a preferential route, we will contact you as soon as we receive the information.

We stress that these conclusions and recommendations are based on preliminary research and investigation of historical and regulatory information and a limited number of telephone interviews. We have not visited the site, and have not completed our investigation of DOH records or our interviews with site tenants. We will contact you if any additional information from our ongoing investigation indicates a preferential route. Our site visit will be performed once a route is selected, and our preliminary environmental site assessment will be completed following our site visit.

It has been a pleasure preparing this preliminary consultation letter for you. Please contact us at (808) 484-5366, if you have any questions.

Sincerely,

MASA FUJIOKA & ASSOCIATES
A Professional Partnership

Janice C. Marsters

Janice C. Marsters
Project Engineer & Geologist

Attachment: Figure showing Force Main Alternate Routes
(prepared by Wilson Okamoto & Associates, Inc.)

APPENDIX B

Historic Literature Review
Cultural Surveys Hawaii

AN ARCHAEOLOGICAL ASSESSMENT OF THE HART STREET WASTEWATER PUMP STATION FORCE MAIN REPLACEMENT PROJECT AT HONOLULU HARBOR AND SAND ISLAND, ISLAND OF O'AHU

by

Rodney Chiogioji, B.A.
and
Hallett H. Hammatt, Ph.D.

Prepared for

WILSON OKAMOTO AND ASSOCIATES, INC.

CULTURAL SURVEYS HAWAII
February 1995

TABLE OF CONTENTS

LIST OF FIGURES

INTRODUCTION

At the request of Wilson Okamoto and Associates, Inc., Cultural Surveys Hawaii has conducted an archaeological assessment for the Hart Street Wastewater Pump Station Force Main Replacement Project at Honolulu Harbor in the Iwilei district of Honolulu. The study area comprises a corridor extending from the Hart Street pump station on the *makai* side of Nimitz Highway between piers 33 and 38, across the Kapalama Channel to piers 51 and 52 on Sand Island, and ending at the Sand Island waste water treatment plant (Figure 1). Within this overall study area, four alternative alignments for a new force main are under consideration (Figure 2).

The scope of this archaeological assessment study includes:

1) A review of traditional Hawaiian and historic land use in the specific environs of the study area. This summary would be based upon early accounts by European visitors and native Hawaiian historians, historic maps, Land Commission Award records, photographs and other pertinent documents.

2) An attempt to accurately locate the study area on maps predating the extensive twentieth century modifications to the Honolulu Harbor area.

3) Search of historical and archaeological sources to document previously recorded sites within the study area.

4) Based on the above research, an assessment of archaeologically sensitive areas along the routes of the alternative alignments for the new force main, along with recommendations addressing mitigation of potential archaeological resources.

Research procedures undertaken included studies of documents at the Hamilton Library, University of Hawaii, the Hawaii State Archives, the Mission Houses Museum Library, the Hawaii Public Library, and the Archives of the Bernice P. Bishop Museum; study of maps at the Survey Office of the Department of Land and Natural Resources; and inspection of the study area by the staff of Cultural Surveys Hawaii.

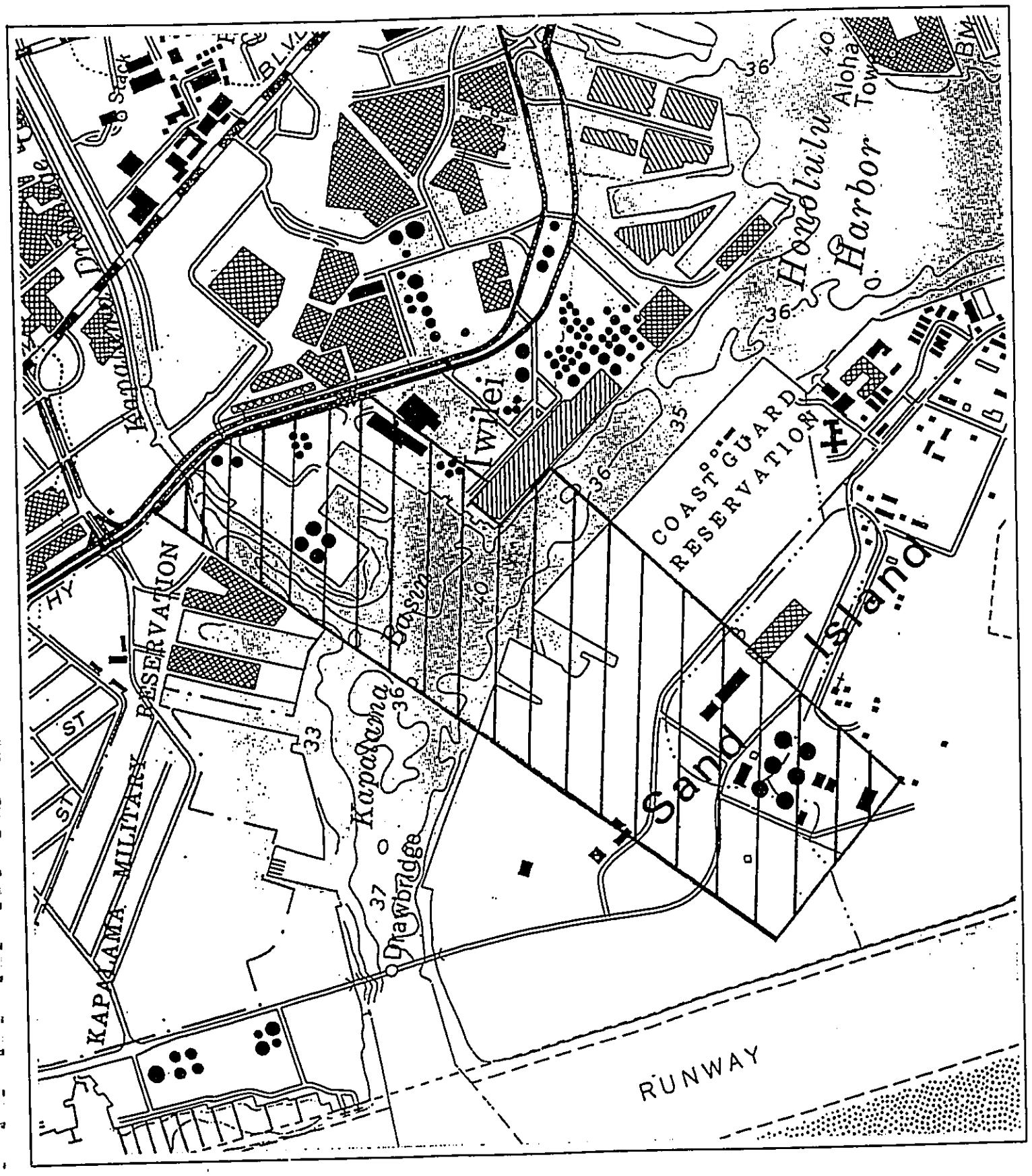


Figure 1 Portion of USGS 7.5 Minute Series Topographical Map, Honolulu Quadrangle, showing study area

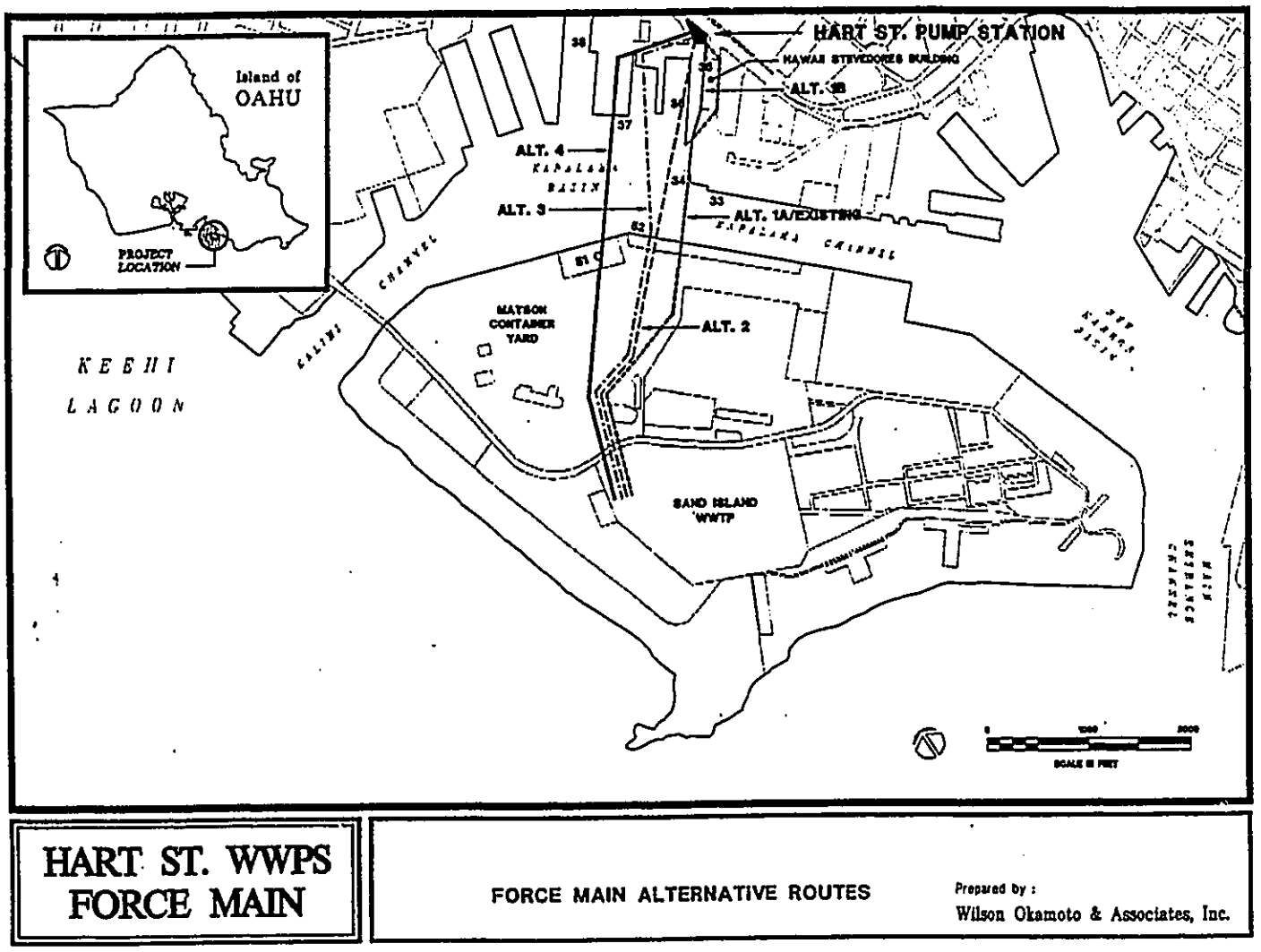


Figure 2 Study Area showing four alternative force main alignments

HONOLULU HARBOR AND THE PRESENT STUDY AREA

The specific character of the study area, in pre- and post-contact periods, becomes clear through the historical narratives, maps and photographs that document the origins and development of the Iwilei district, Honolulu Harbor and Sand Island from the early 1800s to the present.

Pre-Contact to 1850

By the time of first contact with Europeans during the late eighteenth century, the area today encompassed by downtown Honolulu - known to the Hawaiians as Kou - had long been an area of settlement and activity on the south shore of O'ahu. Kou comprised shoreward fishponds and taro *lo'i* fed by streams descending from Nu'uanu and Pauoa valleys. However, it was Waikiki to the southeast that had the distinction of being the residence of the *ali'i* and the center of political power on the island. Kamehameha himself resided in Waikiki at Pua'ali'ili'i, an area that included the site of the present Royal Hawaiian Hotel, after he had consolidated control of the islands (except Kaua'i). However, with the arrival of - and start of trade with - foreigners in the Hawaiian islands during the reign of Kamehameha, a shift in the traditional settlement pattern occurred. An illustration of this shift during the years of Kamehameha's rule is the change of his residence in 1809 from Waikiki to the environs of Honolulu in response to the latter's focus - based on the safe anchorage provided by its deep water harbor - as the center of foreign trade on O'ahu.

> The advantages of Honolulu, once a ship was towed safely into the anchorage, were obvious. The good shelter from the frequent, strong on-shore wind, and the facilities for hoving down and repairing ships quickly attracted the foreign vessels. The importance of Honolulu Harbor grew after Kamehameha moved from Waikiki in 1809 to Pakaka Point, close by the Nuuanu Stream...(Beechert 1991:30)

It is against this background of traditionally evolved Hawaiian land usage meeting the

impulses of western social and economic forces that the picture of Honolulu and its harbor district - including the present study area - develops.

Early documents provide glimpses into the Honolulu area as it evolved during the first decades of western contact. A map of 1817 by the Russian navigator Otto von Kotzebue, who visited the Hawaiian Islands in 1816, presents the Honolulu landscape as it had been shaped by the Hawaiians (Figure 3). Networks of taro *loʻi* stretch up Nuʻuanu Valley above the plain of Honolulu, where habitation appears concentrated on the southeast side (toward Diamond Head) of the mouth of Nuʻuanu Stream. Shown at the shoreline is the fort that had just been built in 1816 (at the *makai* end of today's Fort Street). On the opposite side of Nuʻuanu Stream is a fishpond - identified on other maps as "Kawa" and the "Kings fish Pond" - and a peninsula which comprises the original configuration of Iwilei. The map suggests that the Iwilei area was less populated than the area across the bay of Honolulu. Off-shore from Iwilei is a small island on the coral reef on the west side of the bay. The island, upon which the Kotzebue map shows a hut, is named "Ka-moku-ʻākulikuli" or "Kaha-ka-ʻau-lana" (Pukui *et al.*1974:210). The map indicates clearly that the original configurations of Iwilei and the island to its south are vastly different from the present Sand Island and the land area and harbor line at Iwilei.

A visitor in 1819 described the early introduction of western structures within the Hawaiian landscape at Honolulu:

> The port of Onorourou, generally frequented today by all the European vessels that come to the Islands, is without doubt the most favorable location with respect to shelter, commerce, and resources necessary for the supply of ships...
>
> The town of Onorourou is located on a large, flat plain. It is on the shores of a bay of the same name. The houses, similar for the most part to those of Owhyhi and of Mowi, are however interspersed with a certain number of houses built of stone that belong for the most part to Europeans or to Anglo-Americans. (de Freycinet 1978:40-42)

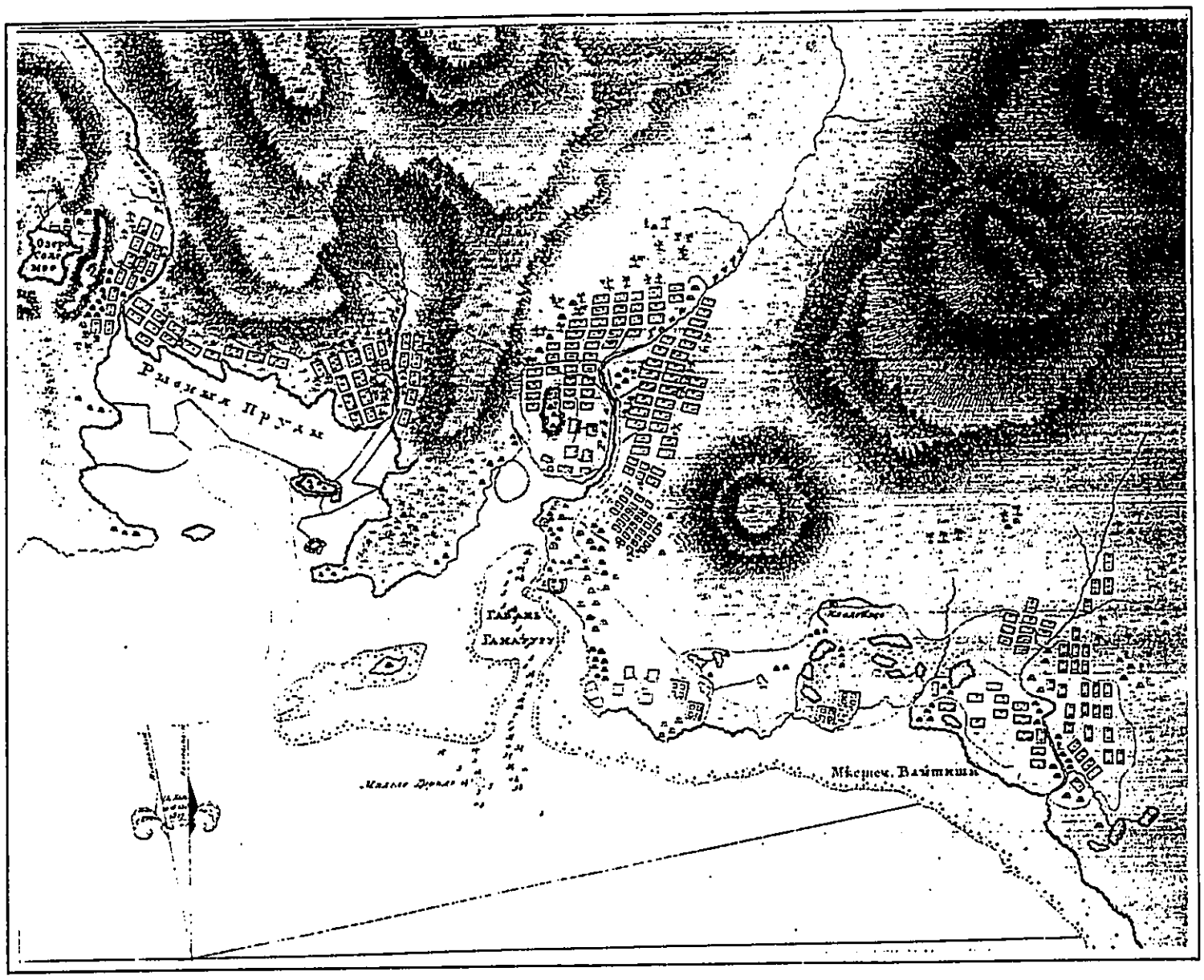


Figure 3 Portion of 1817 map by Otto von Kotzebue showing Honolulu and its environs

Rev. Hiram Bingham, arriving in Honolulu in 1820, described a still predominantly native Hawaiian environment - still a "village" - on the brink of rapid, foreign-induced transformations:

> We can anchor in the roadstead abreast of Honolulu village, on the south side of the island, about 17 miles from the eastern extremity...Passing through the irregular village of some thousands of inhabitants, whose grass thatched habitations were mostly small and mean, while some were more spacious, we walked about a mile northwardly to the opening of the valley of Pauoa, then turning south-easterly, ascending to the top of Punchbowl Hill, an extinguished crater, whose base bounds the north-east part of the village or town...Below us, on the south and west, spread the plain of Honolulu, having its fish-ponds and salt making pools along the sea-shore, the village and fort between us and the harbor, and the valley stretching a few miles north into the interior, which presented its scattered habitations and numerous beds of *kalo* (*arum esculentum*) in its various stages of growth, with its large green leaves, beautifully embossed on the silvery water, in which it flourishes. (Bingham 1981: 92-93)

At the start of the 1820s, Honolulu remained more notable for its native culture than for any urban structure imposed upon that culture.

By 1825, however, as a portion of a map (Figure 4) of that year shows, a circumscribed area to the southeast of Nu'uanu Stream is identified as the "Town of Honoruru". On the opposite side of the stream, is the fishpond shown on the earlier map and Iwilei peninsula. Beyond the Iwilei shoreline is a "Passage for Canoes at High water" and an extensive reef or shoal identified as "Dry at Half Tide". On the reef is a "Hut" likely corresponding to that shown on the earlier map.

It was at the shore of "Honoruru" town that the first harbor facilities were developed:

> The first wharf constructed at Honolulu is said to have been a little north of the foot of Nuuanu street, and to have been at first an old hulk, sunk at that spot about 1825. In 1837, with the consent of the King and Kinau, the hulk was removed and a wharf built under the superintendence of Capt. John Meek, and at the joint expense of Ladd & Co. and E. Grimes and Co. (Alexander 1908:14)

While Honolulu town and its harbor had first developed because of the sandalwood trade and as a strategic point along the fur trade route to China, as Edward Beechert notes, "it was the whaling industry's arrival in 1820 that permanently altered the port town and

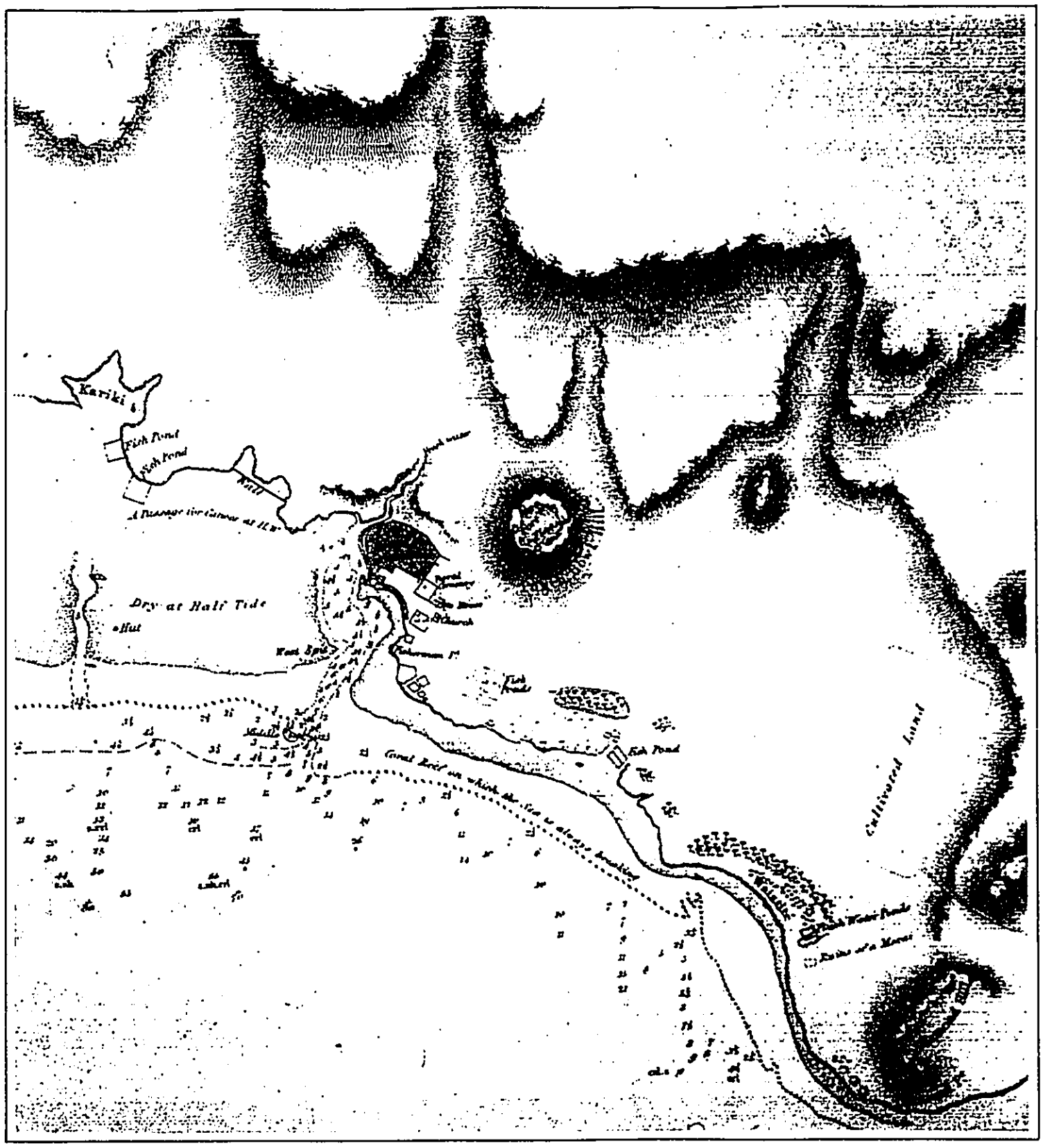


Figure 4 Portion of 1825 map - "A Survey of the South Coast of Oahu" - by C.R. Malden and J. Frembly [B.P. Bishop Museum Archives]

touched off its commercial development" (Beechert 1991:43). Through the 1850s, that commercial development of the town and its harbor facilities appears to have been concentrated above the southeast side of Nu'uanu Stream. Gorman D. Gilman, who arrived in Honolulu in 1841, recalled in his memoir "Streets of Honolulu in the Early Forties":

> The boundaries of the old town may be said to have been, on the makai side, the waters of the harbor; on the mauka side, Beretania street; on the Waikiki side [past Punchbowl Street], the barren and dusty plain, and on the Ewa side, the Nuuanu Stream. There were few, if any, residences other than the straw houses of the natives mauka of Beretania Street. (Gilman 1903:97)

Nu'uanu Stream similarly marked the *'ewa* boundary of the developing harbor facilities:

> The initial 1825 wharf built on hulk sunk at the foot of Nuuanu, was gradually joined by other wharves built by private parties. The hulk was followed by the wharf of the Robinson & Company in 1827 at nearby Pakaka Point to serve the Robinson's ship repair business...According to a map of the city in 1843, there was another wharf built to the east of those two. A landing was built into the fort in 1817 that provided a shallow landing site, suitable largely for ships' boats and small vessels.
>
> A further development was the sale of a site for a wharf by the Minister of Finance. This was likely at the foot of Mauna Kea Street. A harbor description in 1844 lists the Charlton-French wharf and wharf of Ladd and Company. (Beechert 1991:58)

1850 to 1900

A map by J.M.H. de La Passe (Figure 5), drawn in 1855 and published in 1858, shows the grid of Honolulu streets and the harbor facilities created by the mid-19th century. The fishpond at Iwilei remains in place and Iwilei itself appears to remain outside the reach of "urban" Honolulu. Offshore from Iwilei, the shoal - identified as "Banc qui découvre à la basse mer" or sandbar exposed at low tide - shows no apparent modification since its depiction on the earlier maps.

Soon, and throughout the second half of the 19th century, Iwilei and the shoal off its shore would become the sites of major developments in response to the growth of Honolulu. In 1856, construction commenced on a new prison on Iwilei (at the junction of today's Iwilei

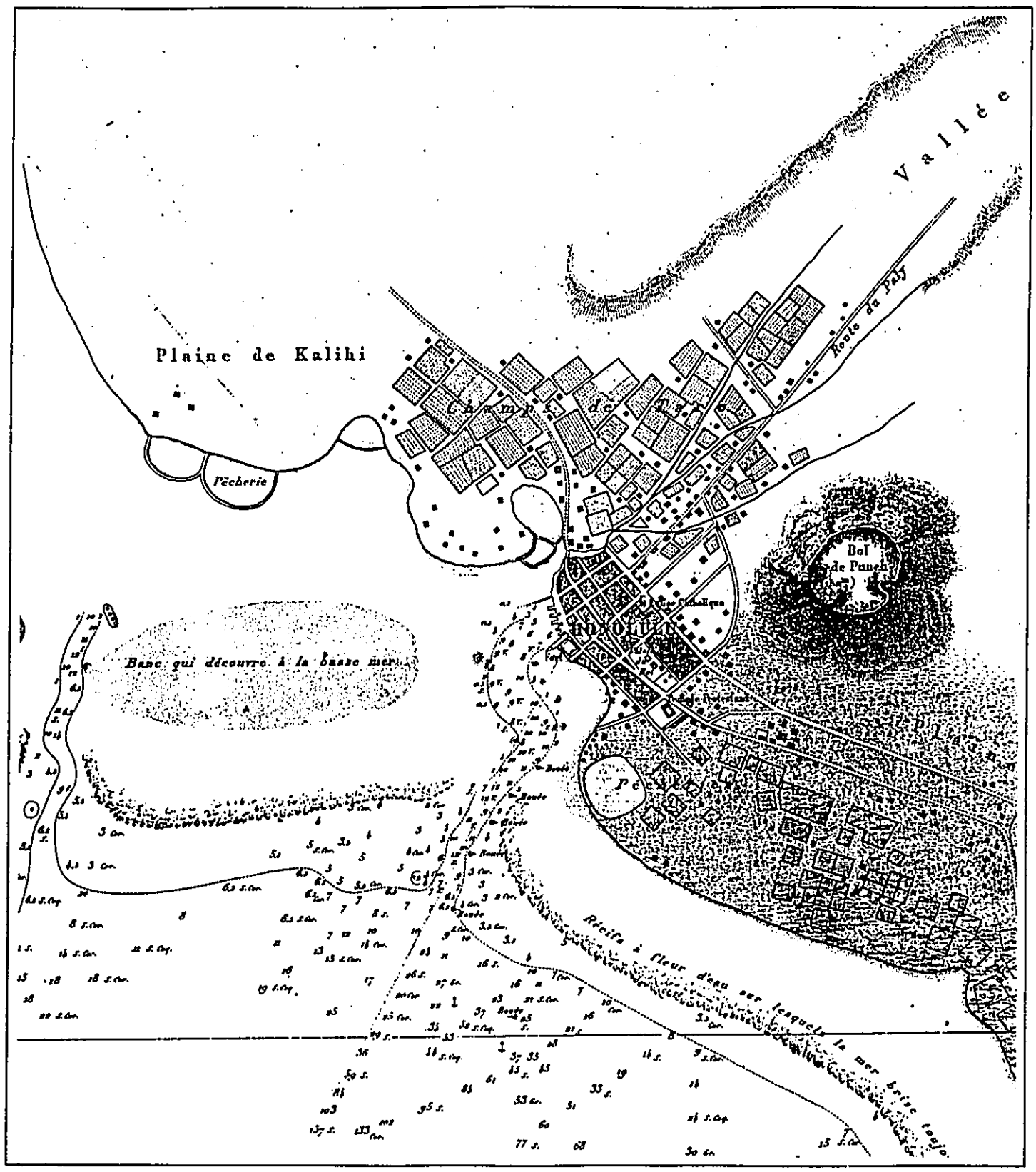


Figure 5 Portion of 1855 map by J.M.H. de La Passe (published in 1858) [B.P. Bishop Museum Archives]

Road and Nimitz Highway). The prison (which was completed in 1857) - along with a new road connecting it to the road which would become King Street - are shown on an a tracing of an 1885 map (Figure 6). (The tracing, accomplished in 1948, includes additional data postdating 1885.) The new road is first identified on other contemporary maps as simply "Prison Road." However, by the end of the nineteenth century, maps identify it as "Iwilei St." Three photographs (Figure 7) were taken in 1865 from the ramparts of the prison with Iwilei Road extending between Kawa and Kuwili fishponds. (The flooded area just beyond Iwilei Road is the site of the present ʻAʻala Park.) The panoramic view shows the remaining elements of the traditional Hawaiian culture within the Iwilei area: the fishponds and associated thatched houses. On the right are the wharves of Honolulu Harbor - still confined to the southeast side of Nuʻuanu Stream - but the buildings of Honolulu town now extend well *ʻewa* of the stream.

In 1872 the small island off Iwilei - "Ka-moku-ʻākulikuli" - became the site of a quarantine station to handle the influx of immigrant laborers drawn to the islands' plantations. The site is described as "little more than a raised platform of sand and pilings to house the station, with walkways leading to the harbor edge wharf, where a concrete sea wall had been constructed" (*Ibid.*:105) and as "a low, swampy area on a reef in the harbor" (van Hoften 1970:3).

A photograph (Figure 8), *ca.* 1875, shows Honolulu and the Iwilei area from Punchbowl crater. Offshore are the exposed shoal and, beyond, the quarantine island. Visible at Iwilei are the prison and the fishponds. The shoreline of Iwilei appears to remain undeveloped; the Honolulu harbor facilities continue concentrated to the southeast of Nuʻuanu Stream. From the end of the 1880s, however, dated an event that would finally transform Iwilei and its shoreline. A consortium of businessmen, led by Benjamin Dillingham, created the Oahu Railway and Land Company (O.R.&L.) in February of 1889 and

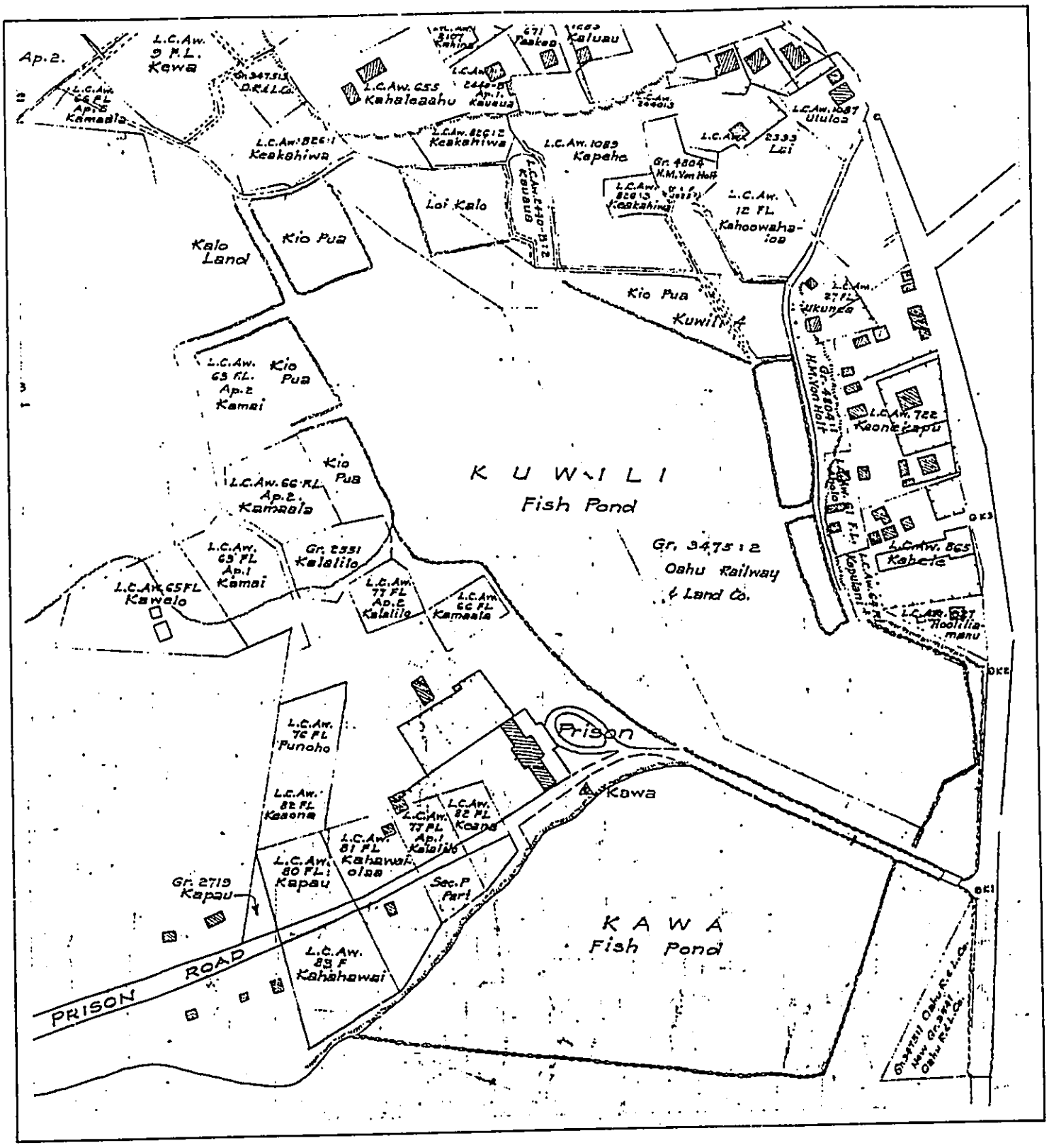


Figure 6 Portion of a 1948 tracing (with additional data) of an 1885 map by J. F. Brown [Survey Office-Department of Land and Natural Resources]

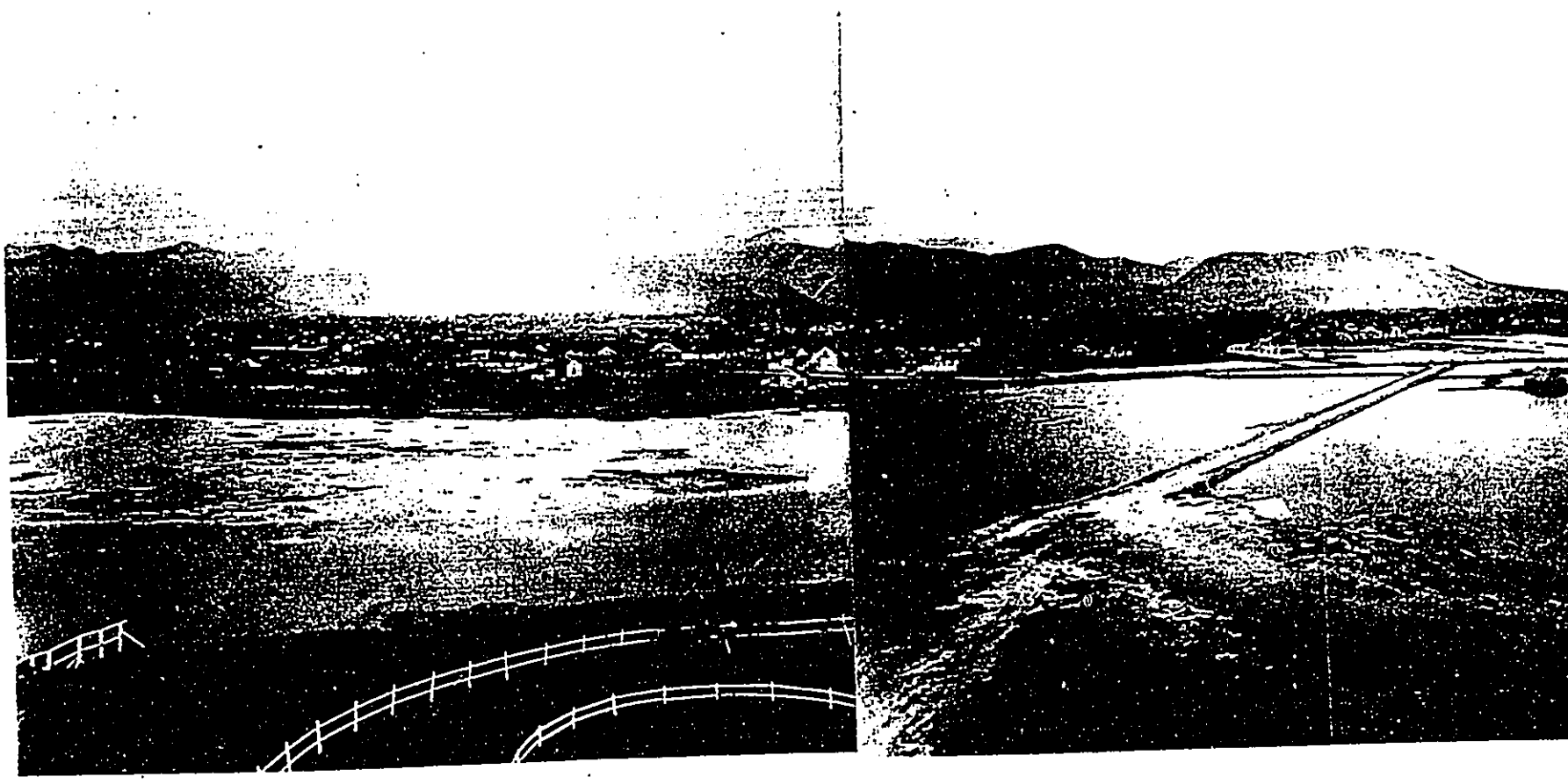


Figure 7 Three photographs (1865) comprising panorama of Honolulu from Iwilei prison site [B. P. Bishop Museum Archives]

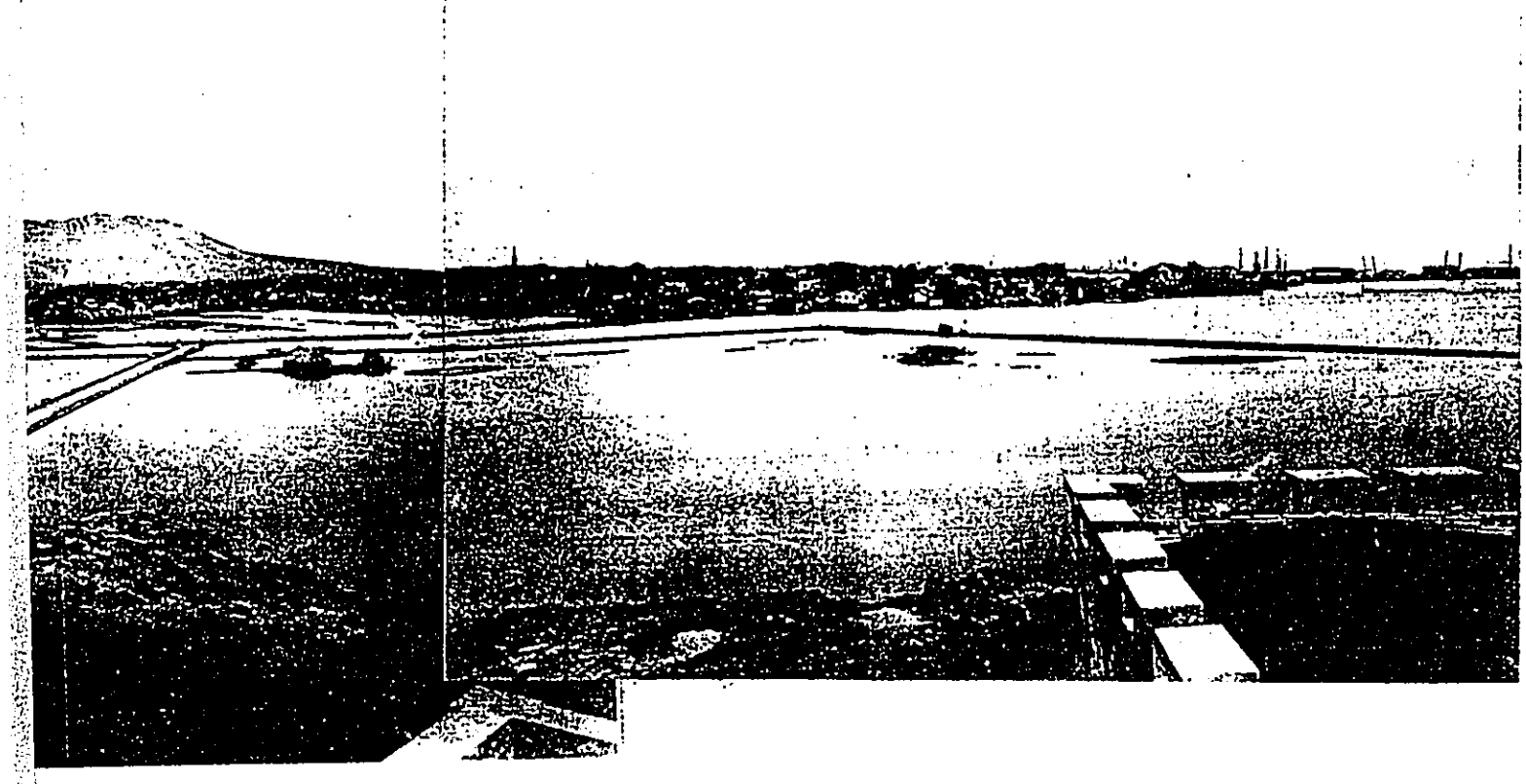


Figure 8 Photograph (*ca.* 1875) showing Honolulu and Iwilei area from Punchbowl crater [B.P. Bishop Museum Archives]

constructed the company's Honolulu depot on land between Kuwili fishpond and King Street, just *'ewa* of Iwilei Road. The railroad would transport sugarcane from the plantations of O'ahu to Iwilei where marsh lands and the fishponds were to be filled in and new wharfs and slips were to be built, expanding the harbor facilities to the southwest side of Nu'uanu Stream. The railroad officially opened on November 16, 1889 when the line extended only between Aiea and Honolulu. John Hungerford describes the railroad's Honolulu facilities at the company's inception:

> The first right-of-way from Honolulu station was only two feet above high tide. It, with the six acres of yards and station site, was mud fill taken from the salt marsh of Kuwili Pond or brought in from Moanalua. Discarded ship's ballast was also used as footing for the emerging ground. (Hungerford 1963: 13)

Hungerford then summarizes the company's rapidly expanding activities at Iwilei:

> Honolulu in the years to follow was outgrowing its small harbor where, according to an entry on company records, on a single day in 1901 were 24 deepwater sailing vessels, six of them unloading coal and four loading sugar at railroad wharves. The company had led the way, in conjunction with other private interests, in creating some 500 acres of waterfront land. (*Ibid.*: 14)

An 1897 map, surveyed by M.D. Monsarrat, shows the O.R.&L. railway line extending to the first wharf facilities at Iwilei on the *'ewa* side of the harbor channel (Figure 9). Also shown is the configuration of the "Quarantine Island". Plotted on the map is the outline of the present study area. The study area, prior to the further development of the harbor at Iwilei and the creation of Sand Island, is located offshore in shoal water and includes a portion of the quarantine island.

1900 to the Present

Following annexation of the Hawaiian islands in 1898 and the establishment of the Honolulu Engineer District in 1905, federally-funded dredging of the harbor was initiated and

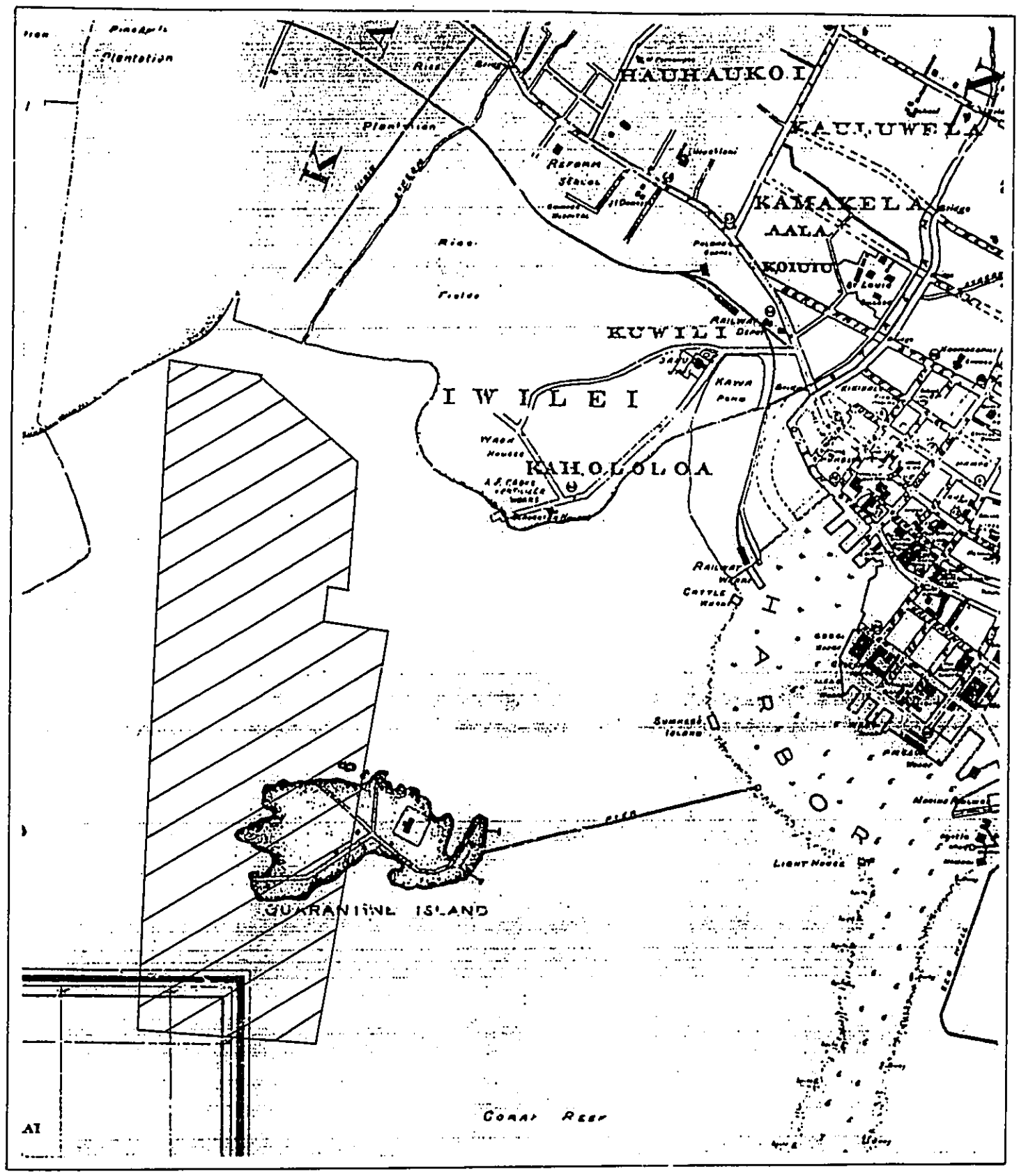


Figure 9 Portion of 1897 map by M. D. Monsarrat with location of present study area indicated (hatched) [Survey Office - Department of Land and Natural Resources]

completed in December 1908. It was at this same time that reclamation projects would create Sand Island; as a history of the Honolulu Engineer District notes:

> As anticipated, enlarging the small island just seaward of the lighthouse calmed the entire harbor; indeed, continued reclamation of this land, today known as Sand Island, has eliminated the need for a breakwater in Honolulu Harbor...A separate project to reclaim Quarantine Island, a low, swampy area on a reef in the harbor, was adopted in February 1906 and was carried out by contract until funds were exhausted in March 1908. Continued reclamation over the next four decades would result in the absorption of Quarantine Island into an enlarged Sand Island. (van Hoften 1970:3)

An aerial photograph of 1921 shows Quarantine Island in the left foreground and the ongoing reclamation project creating Sand Island (Figure 10). The photograph also shows that, by the early 1920s, wharf facilities on Iwilei side of Honolulu Harbor had reached the area comprising the present pier 27. During the previous decade, proposals had been made to expand the harbor facilities into the Kapalama Basin. The opening of the Panama Canal in 1914 augured well for Hawaii's growth at the center of trans-Pacific shipping:

> ...the completion of the Canal signaled even greater commerce in the future and seemed to call for the further enlargement of Honolulu harbor. . .the River and Harbor Act of 4 March 1913 called for a report on Kalihi Harbor and Channel in response to local requests for more wharfage space. At hearings held in April and May, many Honolulu merchants favored dredging this channel to create a second, or western entrance to Honolulu Harbor. Kapalama Basin, within Kalihi Harbor, would presumably be dredged at the same time, to provide the needed additional wharfage facilities. (*Ibid.*:8)

However, in 1914, citing the difficulty of defending an additional harbor entrance, Major W.P. Wooten, the Honolulu District Engineer, recommended:

> ...opening the "Reserved Channel" which lay between the Honolulu waterfront and Sand Island, in order to provide access to Kapalama Basin from Honolulu Harbor itself. Deepening the Reserved Channel to 35 feet over a width of 400 feet and dredging a 1,000-foot square turning basin at Kapalama would thus make additional wharfage space possible without creating a second harbor entrance. (*Ibid.*:8)

It was Wooten's recommendation, with modifications, that was followed when the River and Harbor Act of 8 August 1917 authorized the dredging of the Reserved Channel to 35 feet deep, 800 feet wide, and 1,000 feet long (*Ibid.*:8). Work commenced in 1919.

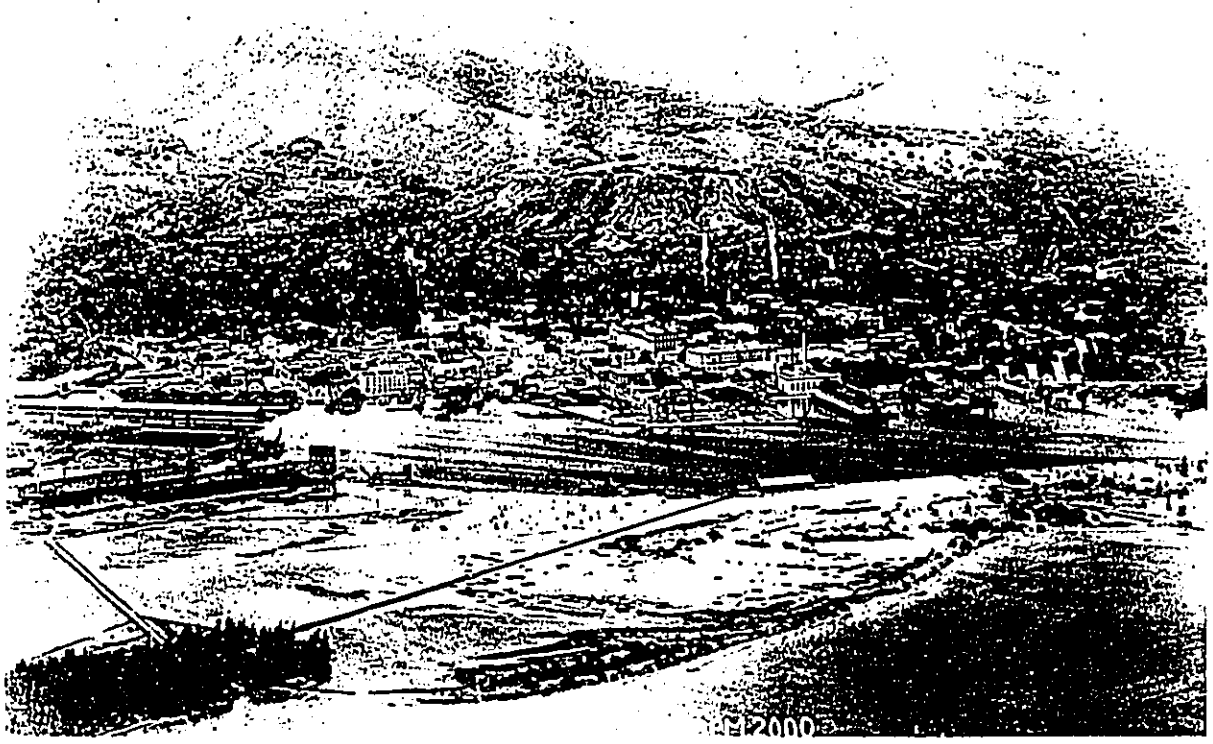


Figure 10 Aerial view of Honolulu Harbor, July 4, 1921 [B.P. Bishop Museum Archives]

A 1922 U.S. Army Corps of Engineers fire control map indicates the location of the Reserved Channel "to be dredged" (Figure 11). An aerial photograph from 1924 shows still undredged Reserved Channel project area between Honolulu Harbor and the Kapalama Basin (Figure 12). A subsequent aerial photograph, *ca.* 1930s, shows Reserved Channel - *i.e.* the present Kapalama Channel - completed on its Diamond Head end, with ships docked up to the present pier 33 (Figure 13). The Sand Island side of the channel remains undeveloped.

The dredging of the Kapalama Channel and World War II spurred the enlargement of Sand Island to its present configuration, engulfing the former Quarantine Island. By the 1940s:

> Sand Island became the headquarters of the Army Port and Service Command and the center of greatly enlarged military activities. Dredged material from Kapalama Basin and the Reserved Channel and a turning basin doubled the acreage of Sand Island. A ship repair basin was constructed. Adjacent to pier 40, a small harbor was constructed to handle small vessels. Eleven wharves were built on Sand Island for military use. (Beechert 1991:138)

Since the 1940s, Sand Island has been

> ...largely converted to state ownership, sharing a portion of the bulkhead pier with the U.S. Coast Guard cutters and buoy tenders...Container facilities were developed at piers 50 and 51, and a Foreign Trade Zone was set up temporarily at pier 39. The interisland cargo terminals were equipped to handle container barges. (*Ibid.*:174)

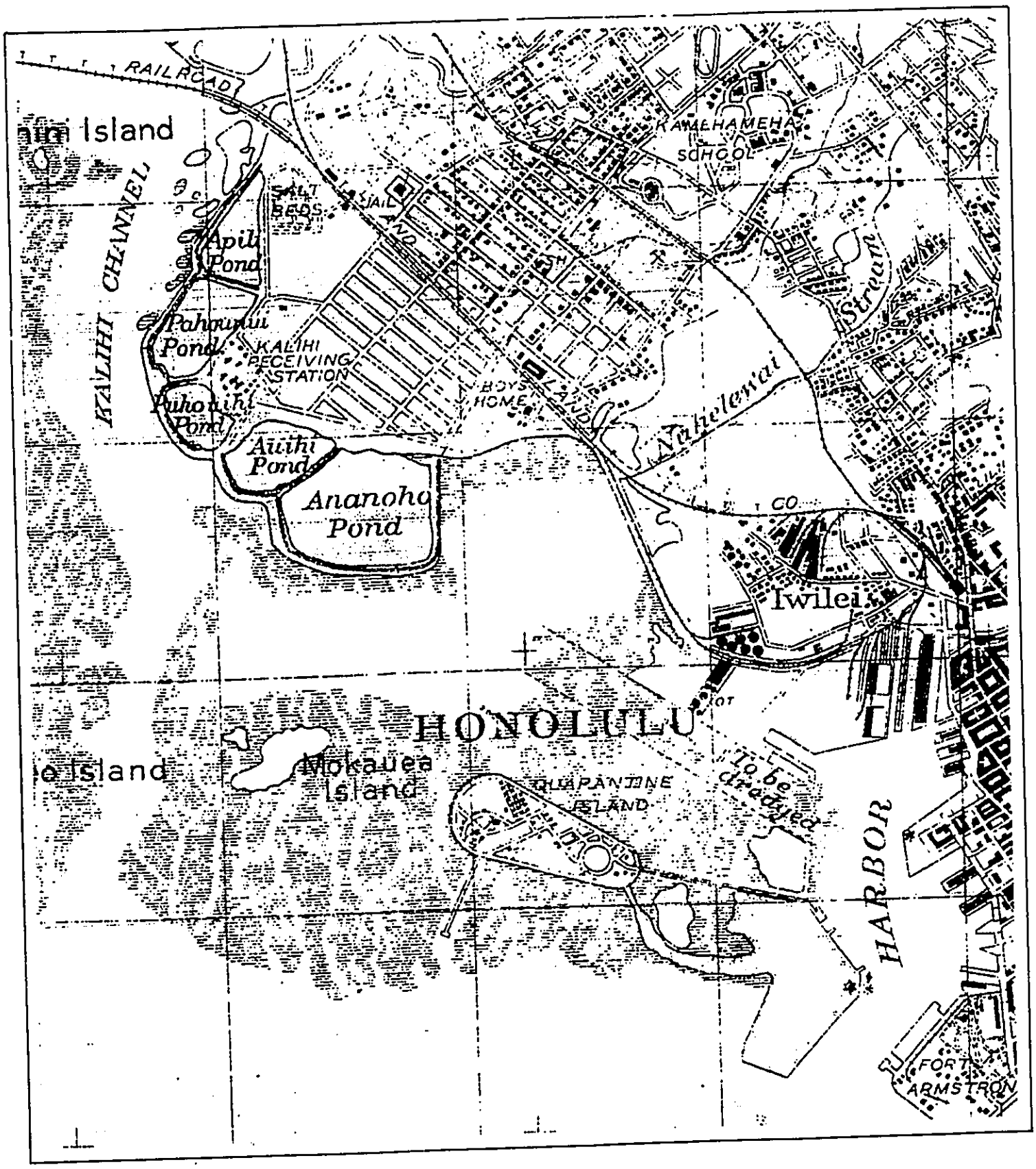


Figure 11 Portion of 1922 U.S. Army Corps of Engineers fire control map

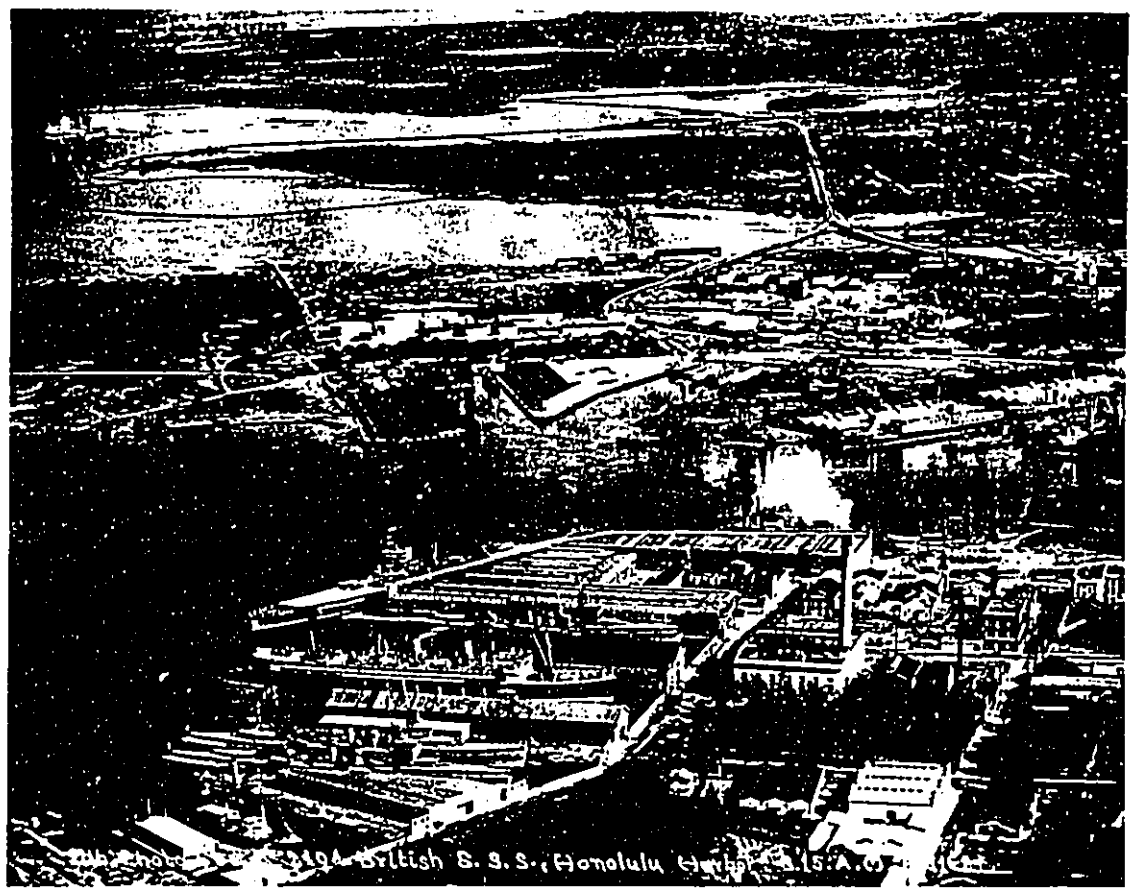


Figure 12 Honolulu Harbor, June 11, 1924 [B.P. Bishop Museum Archives]

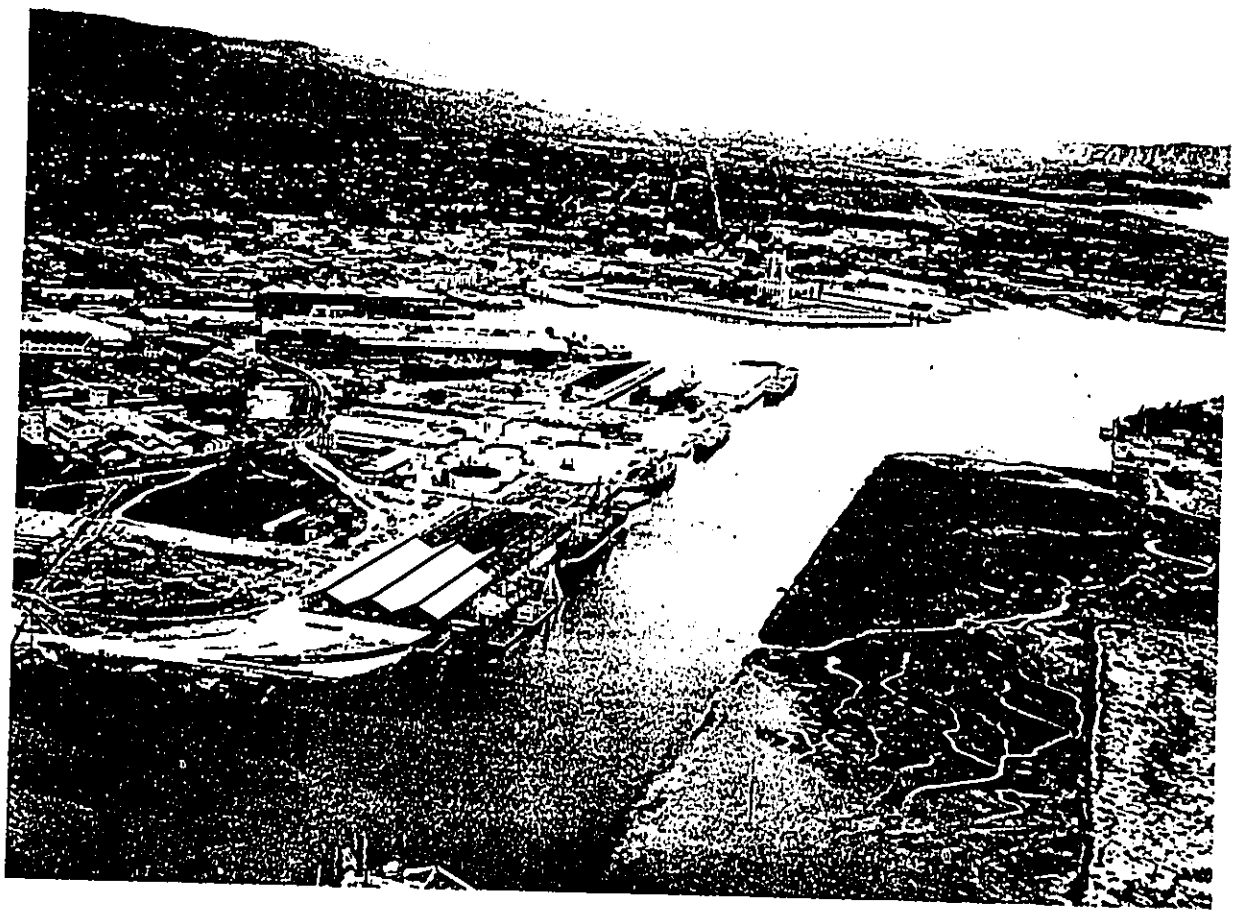


Figure 13 Honolulu Harbor, Oahu, *ca.* 1930s [18th Air Base Photo Lab - B.P. Bishop Museum Archives]

SUMMARY AND RECOMMENDATION

Research conducted by Cultural Surveys Hawaii has documented the origins of the study area in the tidal flats of Honolulu on the southwest (*'ewa*) side of the mouth of Nu'uanu Stream. The original shoreline at Iwilei was considerably inland of the present harborline. Off of the Iwilei shoreline was an extensive coral reef exposed at low tide upon which the only dry land was a small island called Ka-moku-'ākulikuli. Early maps indicate at least one Hawaiian structure on this island. In 1872, the island became the site of the goverment's quarantine station. Through the many years of harbor development, the island was made more stable with addition of dredged fill. Eventually it was engulfed by the development of Sand Island which was completely a product of reclamation formed by dredged material from the harbor.

As indicated in the 1897 map (see Figure 9), before the development of Honolulu Harbor, the entire study area - including all four alternative routes for the force main - was open water or tidal reef, except for the western half of what was then the quarantine island which lies in the southeast portion of the study area. The majority of the land comprising the present study area is reclaimed from the construction and expansion of Honolulu Harbor and consists of dredged fill overlying coral reef. The open water portion of the study area - the present Kapalama Channel - was dredged during the 1920s and 30s.

No archaeological sites or significant historic structures have been identified previously within any portions of the study area and none are recorded on the register of sites at the State Historic Preservation Division of the Department of Land and Natural Resources.

Because of the fairly conclusive evidence that the study area almost completely comprises landfill and dredged open water, there is no archaeological justification for recommending one alternative force main alignment over any of the others. The background

research indicates that none of the alternatives will impact archaeological resources.

Considering the present findings, further archaeological investigation is not recommended and monitoring during construction of the new force main is not justified. In the unlikely event that subsurface archaeological materials are encountered during construction excavation, work should cease in that immediate area and the State Historic Sites Division of the Department of Land and Natural Resources should be notified.

REFERENCES

Alexander, W.D.
1908 "Early Improvements in Honolulu Harbor," in *Hawaiian Historical Society Report for the Year 1907*. Hawaiian Gazette Company: Honolulu.

Beechert, Edward D.
1991 *Honolulu: Crossroads of the Pacific*. Columbia: University of South Carolina Press.

Bingham, Hiram
1981 *A Residence of Twenty-One Years in the Sandwich Islands*. Charles E. Tuttle Company: Rutland, Vermont.

de Freycinet, Louis C. de S.
1978 *Hawaii In 1819: A Narrative Account*. Pacific Anthropological Records, No. 26, B.P. Bishop Museum: Honolulu.

Gilman, Gorman D.
1903 "Streets of Honolulu in the Early Forties," in Thomas G. Thrum (ed.), *Hawaiian Almanac and Annual for 1904*, Honolulu.

Hodge, Clarence and Peggy Ferris
1950 *Building Honolulu: A Century of Community Service*. Honolulu: Chamber of Commerce of Honolulu.

Hungerford, John B.
1963 *Hawaiian Railroads*. Hungerford Press: Resida, Ca.

Indices...
1929 *Indices of Awards Made by the Board of Commissioners to Quiet Land Titles in the Hawaiian Islands*. Honolulu: Commission on Public Lands, Territory of Hawai'i.

Pukui, Mary Kawena, Samuel H. Elbert, and Esther T. Mookini
1974 *Place Names of Hawaii*. Honolulu: University Press of Hawaii.

van Hoften, Ellen
1970 *History of the Honolulu Engineer District, 1905-1965*. Fort Armstrong, Honolulu: U.S. Army Engineer District, Honolulu.