DEPARTMENT OF GENERAL PLANNING
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KK/DGP 2/90-593

April 18, 1990

Honorable Marvin T. Miura, Director
Office of Environmental Quality Control
State of Hawaii
465 South King Street, Room 104
Honolulu, Hawaii 96813

Dear Dr. Miura:

NEGATIVE DECLARATION

LOCATION

Kamaile Street between Keeaumoku Street and Sheridan Street, Ala Moana, Oahu

Tax Map Key: 2-3-16: Kamaile Street (portion)

CONTACT

Mr. Brian Minaai
Haseko (Hawaii), Inc.
820 Mililani Street, Suite 820
Honolulu, Hawaii 96813

Telephone: 532-1300

PROPOSED ACTION

To amend the Primary Urban Center Development Plan Land Use Map by redesignating the 0.8 acre portion of Kamaile Street between Keeaumoku Street and Sheridan Street from Roadway to Commercial. Haseko (Hawaii), Inc., proposes to close Kamaile Street and consolidate the two blocks mauka and makai for a Commercial/Residential Mixed Use development.

ACCEPTING AUTHORITY

Department of General Planning

1990-05-08-DA-FEA

FILE COPY

APPLICATION FOR

DEVELOPMENT PLAN LAND USE MAP AMENDMENT AND ENVIRONMENTAL ASSESSMENT

KAMAILE STREET ABANDONMENT

Prepared for :

HASEKO (HAWAII) INC.

Prepared by :

Wilson Okamoto & Associates, Inc.

February 1990

APPLICATION FOR

DEVELOPMENT PLAN LAND USE MAP AMENDMENT

AND

ENVIRONMENTAL ASSESSMENT

KAMAILE STREET ABANDONMENT

Prepared for: HASEKO (HAWAII) INC.

Prepared by: WILSON OKAMOTO & ASSOCIATES, INC.

February 1990

PREFACE

This environmental assessment was prepared in conjunction with the filing of a City and County of Honolulu Development Plan Land Use Map Amendment request to close Kamaile Street between Keeaumoku and Sheridan Streets.

In compliance with Chapter 343, Hawaii Revised Statutes and Title 11, Chapter 200, Administrative Rules, State Department of Health, this document assesses the environmental impacts of closing Kamaile Street as well as impacts arising from a mixed-use development on abutting city blocks which will be consolidated by the street closure. Notably, the proposed mixed-use development shall be consistent with existing zoning and would not be subject to environmental impact documentation if it were proposed on two separate blocks.

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V. IMPACTS

I. BACKGROUND

A. Essential Information

1. Applicant: Haseko (Hawaii) Inc. in behalf of Holbrook Wichman Goodale, Charles Rice Wichman, Frederick Bruce Wichman, Trustees under various Wichman family trusts, owners of abutting properties along Kamaile Street.

2. Contact: Mr. Brian Minaai, Haseko (Hawaii) Inc.
820 Mililani Street, Suite 820
Honolulu, Hawaii 96813
(808) 532-1300

3. Landowner: City and County of Honolulu.

4. Request: Redesignating Kamaile Street between Keeaumoku and Sheridan Streets from Roadway to Commercial.

5. Area: Approximately 600 feet of roadway length, approximately 56 feet wide.

6. Location: Kamaile Street is one block mauka of Makaloa Street and one block makai of Rycroft Street. The section of Kamaile Street proposed for abandonment runs east-west between Keeaumoku and Sheridan Streets. The street is two blocks from the Ala Moana Shopping Center Keeaumoku Street entrance (see figure 1).

7. Address: The 1300 - 1400 block of Kamaile Street.

8. TMK: The section of Kamaile Street proposed for abandonment is fronted by TMK plat 2-3-17 on the mauka side and plat 2-3-16 on the makai side (see figure 2).

9. Uses:

   a. Existing Use: Kamaile Street is a public road.

b. Existing Adjoining Uses:

Existing adjoining uses along Kamaile Street include bars, auto repair and parts shops, gas station, produce store, quonset hut used for church services, and various retail outlets (see table 1).

10. State Land
Use: Urban

11. Development Plan Designation:

a. Land Use Map: Roadway (see figure 3).

b. Public Facilities Map: No symbols shown (see figure 4).

12. Zoning: BMX-3, Business Mixed Use with a 250 foot height limit (see figure 5).

B. Description of Property

The proposed street abandonment is requested by the applicant to consolidate the two blocks adjoining Kamaile Street on the mauka and makai side. This will allow development of the resulting 10-acre block as a single project in conformance with existing zoning:

1. Boundaries of Kamaile Street:

West - Sheridan Street
East - Keeaumoku Street

2. Topography: Virtually flat.

3. Existing Uses:

Kamaile Street is a public road. Occupants of parcels abutting Kamaile Street who rely on Kamaile Street for vehicular access include:

Hawaii Pacific Metals Corp., Pacific West Mercantile, Military Headquarters (military surplus outlet), Kamaile Magazine and Adult Book Store, Uniforms Hawaii, Hawaii

Golf Center, Bingo Cue, Ko's Gift Shop, 1331 Kamaile Center, Masu's Plate Lunch, Club Ginza, Club Laimu, Valori's Eggs and Produce, Club Fantasy, Chem Products, Typo, P & L Olympic Auto Repair, Club Touch 9, Club Angel, Elite Flowers of Hawaii, Ann Asakura Kimura, Ok Cho Korean Restaurant, Video Systems Hawaii, Second Skin, Corner Loft, 1-2-3 Night Club, Club Vichon, Hakuyosha Cleaners, Redline Automotive, Aluminum Fabricators of Hawaii, Oahu Towing and Service, Inc., Full Gospel First Church, Apple Motoring Accessories, Porter Muffler Clinic, Billy K's Upholstery, and a 76 Service Station.

Leases of all tenants will expire in June, 1991, prior to the proposed closure of Kamaile Street.

4. Slope: The slope is slightly downhill from Rycroft to Makaloa Streets averaging .14 percent. Elevation at Rycroft Street is 5.5 feet and averages 4.2 feet on Makaloa Street.

5. Soils: Soils underlying Kamaile Street are classified as EmA; Ewa silty clay loam, moderately shallow.

6. Location Map: See figure 1 (Scale is one inch = 1,000 feet. All other maps are at larger scales to show relevant details.).

7. Topo Map: N/A

8. Project Layout: N/A

II. DEVELOPMENT PROPOSAL FOR ABUTTING PROPERTY

A. Applicant's Proposed Use of Property

The blocks mauka and makai of Kamaile Street are designated under existing zoning for mixed-use development, including approximately 200,000 square feet of office space, 400,000 square feet of retail space, and 440 residential units. Although the abutting properties can be developed without the closure of the Street, closure will allow for a more unified project. The Development Plan Amendment for which the environmental assessment has been prepared pertains only to the closure of Kamaile Street.

B. Development Timetable

Assuming that all required approvals are obtained, June 1991 is the earliest date for closing Kamaile Street to traffic, following the expiration of tenants' leases on abutting properties.

C. Approximate Cost

Not applicable - closure and demolition of Kamaile Street shall be absorbed as a site preparation cost for a mixed-use development to follow.

III. NEED FOR PROPOSED DEVELOPMENT

A. Public Need

The Kamaile Street abandonment shall enhance traffic circulation by eliminating the inefficient non-signalized T-intersection at Keeaumoku and Kamaile Streets. The closure of Kamaile Street will allow for the consolidation of two abutting properties permitting a 10-acre mixed-use development that will enhance the overall quality and economic viability of the Ala Moana/Kakaako neighborhood. The commercial portion of the development will serve both visitor and residential demand for retail services, and will complement the Tosei Shoji office building (Commerce Tower) presently under construction immediately makai of Makaloa Street. The residential portion of the mixed-use development will provide demanded housing in the urban core of the City where employment opportunities are concentrated. The office development will create additional employment opportunities in close proximity to residences within the development and in neighboring areas.

B. Intended Market

The intended market for the development has yet to be determined through market studies. It is likely that the market will be similar to that of the recent office, retail and housing developments in the area.

C. Designated Use vs. Proposed Use

A mixed-use development, spanning Kamaile Street, will conform with existing zoning. The termination of Kamaile Street as a vehicular roadway is proposed in favor of uses allowed under existing zoning.

IV. FEDERAL, STATE AND CITY PLANS AND PROGRAMS INVOLVED

A. Federal

Not applicable.

B. State

1. A mixed-use development spanning Kamaile is consistent with the Hawaii State Plan policy to achieve full employment, increase income and job choice, and improve *living standards for Hawaii's people (section 226-6).* Although unemployment in Hawaii is presently low, the development of two commercial blocks mauka of Ala Moana Shopping Center will help sustain the level of construction activity in the State and benefit the area by creating additional employment opportunities for Honolulu residents.

   The State Plan also seeks to increase home ownership and rental opportunities, and choices in terms of quality, location, cost, densities, style, and size of housing (section 226-19). Residential units developed at the site would supplement these opportunities and choices, especially since these units will be in close proximity to the employment centers of the Central Business District and Waikiki.

2. A mixed-use development spanning Kamaile Street would support the State Tourism Functional Plan Objective which promotes "*improving the quality of existing visitor destination areas,*" by providing retail shops for tourists. Furthermore, this development would support the Housing Functional Plan objective of providing "*opportunities for Hawaii's people to secure reasonably priced, safe, sanitary, livable homes located in suitable environments.*"

C. City

1. The General Plan of the City and County of Honolulu establishes long-range objectives and policies for guiding both the quantity and quality of future growth on Oahu. A

mixed-use development spanning Kamaile Street will facilitate implementation of the General Plan objective to "*bring about orderly economic growth on Oahu*" and "*to provide the people of Oahu with a choice of living environments which are reasonably close to the employment, recreation centers, and commercial centers, which are adequately served by public utilities.*" Employment centers close to the proposed development include the Central Business District, Waikiki, and Ala Moana Shopping Center which is Honolulu's largest commercial complex. Nearby Ala Moana Beach Park is a major recreation center.

2. Eight development plans were established to provide detailed schemes for "*implementing and accomplishing the objectives and policies of the General Plan.*" The development plans guide the desired sequence, patterns and characteristics for future development. The project site is located within the Primary Urban Center (PUC). As one of eight development plan areas for Oahu, the Primary Urban Center includes the communities from Waialae-Kahala to Pearl City. It is the most populated part of the State of Hawaii and is Oahu's largest employment center. A mixed-use development spanning Kamaile Street is subject to the common and special provisions of the PUC Development Plan. These provisions are:

a. Common Provisions

<u>Purpose</u> - Mixed use areas are intended to implement the General Plan objectives and policies in the following areas of concern:

1. Provide for mutually supportive combinations of residential and commercial and/or industrial uses that optimize the use of both land in urban centers and of already available support facilities and services.

2. Encourage walking and bicycling activities especially walking to and from jobs, thus reducing automobile dependency and demands upon the transportation system.

3. *Promote development designs and land use arrangements that save energy.*

4. *Provide greater opportunities for variety in urban experiences for pedestrians.*

5. *Encourage greater social interaction within communities.*

6. *Permit the adaptive reuse of existing structures and the preservation of older buildings.*

Type of Mixed Use - Commercial Emphasis:

1. *Commercial uses may be the predominant type of development. Housing may also be provided.*

2. *Where appropriate, the ground floor may be designed primarily for commercial uses which support establishing a new or maintaining an existing pedestrian-oriented environment.*

Performance Standards:

Where appropriate, performance standards shall be applied to address potentially adverse impacts related to air, noise, and other forms of environmental pollution, traffic congestion and hours of operation that may result from a mixed-use development.

b. *Special Provisions*

Commercial uses in the Primary Urban Center shall continue to be located along the major roadways, with the exception that small neighborhoods oriented to commercial uses may be located within low density residential and apartment areas. Apartments in commercial mixed-use areas shall be permitted, subject to appropriate zoning regulations where: a) public facilities and services are adequate to serve mixed uses, b) the area is accessible by major transportation corridors, and c) such uses are compatible with adjacent

uses, with the special areas designated in Section 32-2.2(b) of this development plan.

Within the Primary Urban Center is the Alapai-Sheridan Special Area which includes the project site. Alapai-Sheridan is the area generally bounded by Alapai Street, Lunalilo Freeway, Punahou Street, Makiki Drainage Ditch, Kapiolani Boulevard, Piikoi Street, and King Street. Growth for that area is intended to be characterized by medium-density and high-density apartments in combination with commercial and mixed-use developments:

1. *Commercial Emphasis Mixed Use development shall be permitted on all Commercial designated lands in the area.*

2. *General height limits are 250 feet for high-density apartment and commercial areas.*

3. *Special height, design and use controls may be applied where necessary to ensure the preservation of important views, landmarks and historic structures, and the compatibility of the permitted mixture of uses within the area.*

Kamaile Street is a "minor street" as defined by the Department of Transportation Services. A minor street is one which is primarily intended to provide access to abutting property and serve local traffic to and from these properties. The attached traffic study concludes that more than two-thirds of the traffic originates or terminates at abutting properties on Kamaile Street (see exhibit C).

A mixed-use development on the two city blocks consolidated by closing Kamaile Street is consistent with the development plans for the Primary Urban Center under the Common Provisions, Special Provisions, and the Alapai-Sheridan Area. The mixed-use development will create additional employment opportunities for residents; supplement housing in a central, urban area located in close

proximity to many job opportunities, thus promoting walking to and from jobs and reducing automobile dependency; and optimize the use of land in an urban center where support facilities and services are already available.

3. Other

a. Zoning

The City and County of Honolulu Land Use Ordinance (LUO) regulates land use in accordance with adopted land use policies, including the Oahu General Plan and Development Plans. Under the LUO, the subject property is zoned "Business Mixed use District BMX-3." The development of Kamaile Street as a part of a mixed-use development project on the abutting properties is consistent with the permitted use and development standards specified by this zoning designation.

V. IMPACTS

A. Demographic Impacts

1. Residential Population

The City and County of Honolulu is the center of business and government for the State of Hawaii and has approximately three-fourths of the State's population. Provisional estimates for 1987 indicate a State of Hawaii resident population of 1,082,500 of which 830,600 or approximately 77 percent are in the City and County of Honolulu. This estimate includes residents temporarily absent, and members of the armed forces stationed in or homeported in Hawaii, but excludes visitors.

The location of the proposed street closure and subsequent mixed-use development is in the Ala Moana/Kakaako neighborhood. Its population grew 10.3 percent between 1980 and 1985, from 10,032 to 11,063. Kamaile street is used mostly for vehicular and pedestrian access. There is no existing residential population. However, a mixed-use development spanning Kamaile Street would be consistent with the growth in residential population characterizing the neighborhood.

2. Visitor Population

Oahu's visitor industry continues to grow and had another positive year in 1988. Two million eastbound visitors, mostly Japanese, came to Hawaii that year, a 17 percent increase over 1987. Of these Japanese visitors, over 90 percent or approximately 1.4 million spent their vacations on Oahu. In the first quarter of 1989, the total eastbound visitor count was up 14 percent over last year.

In contrast, the Oahu westbound market experienced a two percent decrease in 1988, marking the second consecutive year of decline in Oahu's major visitor market. However, in the first quarter of 1989, due to a colder than normal winter in California, westbound visitors increased by eight percent to 773,400 visitors, leading to the strongest first quarter in

two years, and a healthy turnaround in the westbound market.

Oahu's hotel occupancy rate during 1988 was 85 percent, the highest in the State. Because of the increased influx of both east and westbound visitors, the cumulative first-quarter 1989 average came to 93 percent, the highest occupancy rate since the first quarter of 1979. It appears that Waikiki, with its shopping opportunities and night life, is still the primary destination for most of Hawaii's visitors.

Again, since Kamaile street is used only for vehicular and pedestrian access, there is no existing retail use on the site. However, the retail portion of a mixed-use development spanning Kamaile Street would draw visitors into the area to shop and dine. The site is also in close proximity to the Ala Moana Shopping Center which is a major shopping destination for tourists and residents.

3. Character of the Neighborhood

Population ewa of the project site, in the area bordered by Pensacola, Kapiolani, Keeaumoku, and King Streets, was 2,791 as of July 1, 1985. The majority of this area is taken up by single-family residences and low-density apartments. Commercial businesses front these main streets with the exception of Pensacola, which is primarily residential. The average age of commercial buildings on the project site is approximately 50 years.

Diamond head of the project site, in the area bounded by Keeaumoku, Kapiolani, Kalakaua, and King Streets, the population as of July 1, 1985 was 5,346. Housing in this area is made up largely of medium and high-density apartments within a commercial mixed-use environment.

Demographic characteristics (1980 Census) of residents in both of these areas indicate that the neighborhood is older, somewhat less educated, and with more foreign-born residents than Oahu's average. There are slightly more residents of Asian or Pacific Islander descent than of Caucasian or other racial groups.

The closure of Kamaile Street and its subsequent incorporation in a mixed-use development on abutting properties will not displace residential units and will have a marginal impact on the character of the surrounding neighborhood since it will be consistent with trends established by existing zoning. These trends include redevelopment of older, often non-conforming uses, with those allowed under the commercial mixed-use zoning designation.

4. Displacement

Kamaile Street includes no residential units that would be affected by relocation since the street is used exclusively for vehicular and pedestrian traffic. The blocks mauka and makai of Kamaile Street also contain no residential units that would be displaced by redevelopment.

5. Other Social Impacts

There will be no significant social impacts, since Kamaile Street is used only as a public street. As for the redevelopment of the blocks mauka and makai of Kamaile Street, the development is part of a trend in the Kapiolani corridor that is consistent with the commercial mixed-use zoning designation. Low-rise structures shall be replaced by taller and denser developments allowed under existing zoning.

B. Economic Impacts

1. Economic Growth

After an economic slowdown due to recessions in the early 1980's, economic recovery began in 1986 as a result of surges in tourism and construction. Economic growth, particularly in construction, is still on-going. A total of 593 million dollars in construction occurred through March 1989, a 17 percent increase over 1988's record-breaking $2.2 billion year. Reflecting this growth next to the project site is the construction of the Tosei Shoji office building at the corner of Keeaumoku Street and Kapiolani Boulevard.

Retail sales, which are a predominant economic activity in the proposed project area, were expected to exceed $10 billion statewide for the first time in 1988. Retailers have a built-in market of 1.1 million residents plus an additional 5.6 million a year visitor market which continues to expand. Development of Kamaile Street as a part of a mixed-use project a with retail component would complement these overall trends.

2. Employment

The civilian labor force for the City and County of Honolulu in 1988 was estimated at 389,359, and civilian employment was 378,550. An estimated 2.8 percent of the labor force was unemployed, the lowest county unemployment rate in the state. Retail trade provides about one out of every four jobs in the state.

The existing Kamaile Street does not generate any direct employment opportunities. However, the proposed closure of Kamaile Street and the subsequent mixed-use development spanning Kamaile Street shall increase job opportunities during construction as well as in the long-term.

More specifically, based on the proposed floor area of the entire mixed-use project, including the Kamaile Street area, it is estimated that the mixed-use development has the potential for creating 536 long-term jobs in the retail portion. The proposed floor area for the office portion of the entire mixed-use project, including Kamaile Street area, can accommodate approximately 2,000 employees. Also, based on the number of housing units, it is estimated that 22 jobs would be created for maintenance and operation.

3. Government Revenues (taxes)

The existing Kamaile Street does not generate any property tax revenue. However, the development of Kamaile Street as a part of a mixed-use project on the abutting properties will generate substantial property tax revenues.

4. Location vis-a-vis Intended Market

The State's major retail concentrations are on Oahu and, more significantly, within a few square miles of the project area. A detailed survey by the U.S. Bureau of the Census in 1982 noted 1,082 retail establishments in Waikiki, 523 in Downtown Honolulu, and 196 stores at the Ala Moana Shopping Center. Buoyed by rapidly rising visitor arrivals and expenditures, Hawaii's retail trade industry has experienced growth in sales and establishments in recent years. According to the Bank of Hawaii 1989 Annual Report, on an excise tax basis, retail sales in Hawaii rose 13 percent in 1988 to $10.9 billion and should exceed $12.0 billion in 1989, an increase of over 10 percent.

The commercial portion of a mixed-use development that would include Kamaile Street is in close proximity to the Ala Moana Shopping Center and other surrounding commercial areas on Keeaumoku Street and Kapiolani Boulevard, which have well developed markets. The residential portion of the development would be in the midst of existing apartments and condominiums which are in demand due to their central location in relationship to major employment centers.

The office portion of the development is consistent with the market demand reflected by recent similar developments, such as the Ala Moana Pacific Center and the neighboring Tosei Shoji office building.

C. Housing Impacts

Condominium sales were up 63.3 percent on Oahu through the first three quarters of 1987 according to Locations, Inc. However, the inventory of existing houses for sale has decreased significantly.

The mixed-use development on the abutting properties and Kamaile Street would include 400 to 500 housing units as permitted under existing zoning. The construction of these residential units will contribute to the currently tight housing inventory. Since no displacement of housing units is involved, on either Kamaile Street or the abutting properties, all of the new units would contribute to the housing inventory in the urban core. If Kamaile Street is not closed, residential development on the two blocks would decrease

by approximately 70 units. The developer is examining the financial and design feasibility of providing affordable housing units within the mixed-use development.

D. Public Services

1. Access and Transportation

The primary roadway access to the project site is Keeaumoku Street, which runs from the Ala Moana Shopping Center parking structure to Interstate Route H-1 before ending at Keeaumoku Place. Keeaumoku Street is currently congested during the afternoon and evening rush hours. Recent observations, made in conjunction with the traffic study conducted for the environmental assessment, indicate that much of the existing traffic congestion near the project site is created by left turning vehicles to and from side streets and driveways (see exhibit C). Drivers often wait through more than one traffic signal cycle during the PM peak period to clear each intersection.

Sheridan Street runs in an offset north-south direction, beginning at Kapiolani Boulevard and ending at King Street. Sheridan Street is generally not congested in the vicinity of the project site.

East and west bound access to and from the project area is from either Makaloa, Rycroft or Kamaile Streets. The traffic analysis rush hour observations made for the traffic impact analysis indicate no significant congestion on either Makaloa, Rycroft or Kamaile Streets, except for delays introduced by parking and truck loading activity in the area. The mixed-use development is expected to alleviate these delays by eliminating on-street parking along its property and provide on-site service areas for truck loading activity.

The following observations were made regarding the use of Kamaile Street:

- About three-fourths of the traffic on Kamaile Street between Keeaumoku and Sheridan Streets either originate or end on this segment.

- o Most vehicles using Kamaile Street are not through traffic. Both Makaloa and Rycroft Streets are signalized at Keeaumoku Street; whereas Kamaile Street has a stop sign at Keeaumoku Street. Drivers familiar with this situation are likely to select the signalized intersection to negotiate movements during peak traffic periods.

- o Traffic flows on Rycroft and Makaloa Streets are almost double the flow on Kamaile Street, which indicates that Kamaile Street is not used as a through street.

TheBus routes 17 and 18 run along Keeaumoku Street while routes 3 and 9 run along Kapiolani Boulevard.

The City and County Development Plan Public Facility Map designates a Honolulu Area Rapid Transit (HART) line along almost the entire length of Kona Street, located on the mauka side of Ala Moana Shopping Center, about two blocks from the project site.

2. Water

Currently, there is an 8-inch water line that runs under Kamaile Street and connects onto a 12-inch line on Keeaumoku Street and a 12-inch line on Sheridan Street. There is no foreseeable need for line relocation or improvements to the City's water system if Kamaile Street is closed. Because all users will eventually vacate the premises, there will be no need for any water service along Kamaile Street at the time of the road closure. The existing 8-inch line can either be cut off at its connections on Keeaumoku Street and Sheridan Street, or used for the future development (see figure 6).

Water for a mixed-use development at the project area will be supplied by the Board of Water Supply. The developer shall coordinate with that agency to determine if any off-site improvements are required.

3. Wastewater

Currently, an 8-inch sewer line runs beneath Kamaile Street, from Keeaumoku Streets to Sheridan Street, where it connects with an existing 10-inch sewer line. Closure of Kamaile Street is not likely to require relocation or improvements to the City's sewer system. The existing 8-inch line services only those properties located on Kamaile Street. Because all of these users will vacate, there will be no need for any sewer service along Kamaile Street at the time of road closure. The existing 8-inch line within Kamaile Street can either be cut off at its connection on Sheridan Street or retained for future use (see figure 7).

Sewer service for a future mixed-use development at the project site shall be provided by the City and County Department of Public Works, Wastewater Division. The developer shall coordinate with that agency to determine if any off-site improvements are necessary.

4. Drainage

Currently, there is only one drainage structure located on Kamaile Street, which is an inlet at the intersection of Kamaile Street and Sheridan Street. The inlet flows into an 18-inch drain line which then connects to a 7' X 3' box drain on Sheridan Street. Upon closure of Kamaile Street, the drain inlet would probably be retained to accommodate existing drainage volumes. However, a new inlet may be required to accommodate runoff from Sheridan Street (see figure 8).

Drainage service for the proposed mixed-use development including Kamaile Street shall be provided by the City and County Department of Public Works, Drainage Division. The developer shall coordinate with that agency to determine if any off-site improvements are necessary.

5. Utilities

Electric: Closing Kamaile Street would necessitate the relocation of some existing overhead electrical lines. Hawaiian Electric Company has indicated that distribution

power lines could be moved to Rycroft Street (see figure 9).

Telephone: Overhead lines used by Hawaiian Telephone Company exclusively serve users on Kamaile Street. Following relocation of tenants, removal of these lines would leave the surrounding area unaffected (see figure 9).

Cable: Because all existing commercial users along Kamaile Street will relocate, overhead service lines used by Oceanic Cable will no longer be necessary (see figure 9).

Gas: Currently, there are two separate 2-inch gas lines located beneath Kamaile Street. One line is fed by a 2-inch line on Keeaumoku Street and the other is fed by a 2-inch line on Sheridan Street. Closing Kamaile Street would probably not require improvements or rerouting of gas lines. After commercial tenants vacate the property site, it is likely that both gas lines will be cut at their connections to feeder lines and will either be abandoned or removed as there will be no need for gas service (see figure 10).

Provision of utilities to the proposed mixed-use development including Kamaile Street shall be coordinated with the appropriate utility companies.

6. Solid Waste

Non-residential uses and multi-family residential buildings of more than 20 units are serviced by private refuse collection companies. These companies generally provide collection bins for their customers. Solid wastes are currently disposed of at the Kailua Landfill or the new Waimanalo Gulch Sanitary Landfill. Also, solid waste is now being disposed of at the new waste-to-energy recovery facility (H-POWER) at the Campbell Industrial Park. When fully operational, this facility is expected to accommodate all of Oahu's combustible refuse. Ash and residue from the H-POWER plant is disposed of at the Waimanalo Gulch Sanitary Landfill.

A future mixed-use development at the project area including Kamaile Street shall be served by a private refuse company.

7. Schools

There are five schools within a half-mile of the project area. Kapiolani Community College (KCC), while in the process of being relocated, is situated less than a quarter mile ewa of the proposed development. McKinley High School occupies the mauka portion of this same city block on the corner of King and Pensacola Streets. Kaahumanu Elementary School is further mauka on Beretania Street.

Diamond Head of the proposed development is Washington Intermediate School at the corner of Punahou and South King Streets. Mauka of Washington Intermediate is the Hawaiian Mission School, adjacent to Lunalilo (H-1) Freeway.

It is anticipated that the residences in a future mixed-use development in the project area can be served by existing public schools without overburdening their facilities.

8. Parks

Within a half mile of the project area are three City and County recreation areas. Makalapa Neighborhood Park has a small playing field and outdoor playing courts on the corner of Piikoi and Rycroft Streets. Cartwright Field is located where Keeaumoku crosses Lunalilo Freeway and consists of a large baseball field. Also, Ala Moana Park makai of the Ala Moana Shopping Center is within walking distance of the proposed development.

A future mixed-use development in the project area shall be subject to the City and County of Honolulu Park Dedication Ordinance, Chapter 22, Article 7 of the Revised Ordinances of Honolulu. The developer intends to satisfy this park dedication ordinance.

9. Police

The current Honolulu Police Station headquarters fronts Young Street between Keeaumoku and Kalakaua Streets. When the new headquarters are completed, the Honolulu

Police Station will be situated on Beretania Street between the Fronk Clinic and the MTL City Bus Terminal. Both stations are within close proximity to the proposed mixed-use project.

10. Fire

The nearest fire station is less than a quarter mile from the project area at the corner of Makaloa and Mahukona Streets.

E. Environmental Impacts

1. Traffic

A traffic analysis was conducted for the proposed Kamaile Street closure and proposed mixed-use development, in consideration of the Department of Transportation Services Keeaumoku Street Improvement Program, by Wilbur Smith Associates (see exhibit C). The analysis concluded that the closure of Kamaile Street would not significantly impact traffic conditions in the project area. It is estimated that the rerouting of vehicles to Rycroft or Makaloa Streets, would result in an average increase in volume capacity ratios of less than one percent of capacity.

The proposed mixed-use development is projected to generate increased traffic in the area. However, it is important to note that even if Kamaile Street is not closed, traffic flow is likely to increase on the same order of magnitude due to changes in land uses on abutting subject blocks, as permitted by existing zoning.

To assess changes in traffic flow over time, the standard traffic engineering practice is to describe traffic operations using the "Level of Service" concept. The six categories, Level of Service A to F, represent varying degrees of traffic congestion, with Level of Service A representing non-congested conditions and Level of Service F representing severely congested conditions. Table 2 describes the magnitude of traffic congestion associated with each level of service category.

Existing levels of service are shown in table 3 for the key study area intersections. They indicate that Keeaumoku Street is not congested for the most part. Some congestion occurs on Keeaumoku Street during the PM peak period at the Rycroft and Makaloa Street intersections due to conditions at intersections further away from the project site. The traffic analysis also shows that there is no significant congestion on other streets in the study area, except for delays introduced by parking and truck loading activity along Makaloa, Rycroft, and Kamaile Streets. No congestion was observed on Sheridan Street near the project site.

To assess future traffic conditions, the study accounts for additional development in the vicinity of the site and general growth of Honolulu by assuming a ten percent increase in traffic flows by 1995. With completion of the new Tosei-Shoji office building project, 200 morning hour trips and afternoon peak hour trips are estimated to be added to Makaloa Street. Future intersection levels of service with the proposed mixed-use development are shown in table 4. These levels of service were calculated assuming that no roadway improvements would be made other than the prohibition of left turns on the mauka bound approach to the intersection of Keeaumoku and Makaloa Streets. This prohibition has been proposed by the Department of Transportation Services as part of the Keeaumoku Street Improvement Program.

Appropriate access/egress configurations for the proposed mixed-use development as well as other traffic improvements in the immediate vicinity to enhance traffic flow shall be discussed with the Department of Transportation Services. Such improvements may include the following:

- Provide left-turn only lanes from Rycroft street at Sheridan Street and at Keeaumoku Street. Widen Rycroft Street to accommodate a four-lane cross-section.

- Remove parking on the project (mauka) side of Makaloa Street. Realign Makaloa Street at Sheridan to eliminate the existing off-set (see figure 11). Re-

stripe to allow a right-turn lane at Sheridan and a left-turn lane at Keeaumoku.

- o Remove on-street parking on Sheridan Street on the project (diamond head) side.

- o Remove on-street parking on the project (ewa) side of Keeaumoku between Rycroft and Makaloa Streets. Widening Keeaumoku Street to add a left-turn lane at the Kanunu Street intersection.

With the proposed mixed-use development and the above traffic improvements, traffic flows of Level of Service D or better can be achieved at key intersections, as shown in table 5.

2. Noise

Short-term construction noise impacts of the mixed-use project are subject to State Department of Health Noise Regulations. The proposed closure and subsequent development of Kamaile Street is located within the urban community of Honolulu and is therefore subject to ambient noise regulations. It shall be the contractor's responsibility to minimize noise by complying with Title II, State Department of Health Administrative Rules, Chapter 42-Vehicular Noise Control for Oahu and Chapter 43-Community Noise Control for Oahu. Accordingly, the contractor shall be responsible for properly maintaining mufflers and other noise attenuating equipment.

Long-term noise from the proposed mixed-use development which includes Kamaile Street would be similar to that of developments in the surrounding areas. Furthermore, consolidation of the two blocks abutting Kamaile Street will reduce traffic noise in the interior of the development.

3. Air Quality

Short-term impacts on air quality, according to the study by Neal and Associates, may occur due to project construction (see exhibit D). The State of Hawaii Air Pollution Control Regulations prohibit visible emissions of fugitive dust from

construction activities. An effective dust control plan for the construction phase shall be implemented.

During construction phases of the mixed-use development which includes Kamaile Street, emissions from engine exhausts (primarily consisting of carbon monoxide and nitrogen oxides) will also occur both from on-site construction equipment and from vehicles used by construction workers traveling to and from the project. Impacts can be mitigated by moving heavy construction equipment during periods of low traffic volume. Likewise, the schedules of commuting construction workers can be adjusted to avoid peak hours in the project vicinity.

The primary long-term air pollution impact will indirectly arise from the increased motor vehicle traffic. The closure of Kamaile Street will redirect negligible volumes of traffic onto Makaloa and Rycroft Streets. Therefore, the impacts on air quality as a result of closing Kamaile Street will also be negligible.

The mixed-use development on blocks mauka and makai of Kamaile Street will generate increased traffic and, in turn, increased levels of carbon monoxide along roadways leading to and from the proposed development. However, this would occur regardless of project development and/or the closure of Kamaile Street. Based on a mathematical modeling of projected vehicular traffic and atmospheric dispersion conditions, it is predicted that carbon monoxide concentrations in the vicinity of the project will unavoidably increase at some locations by 1995. Nevertheless, the predicted highest concentrations should remain within the national ambient air quality standards (AAQS) set by the U.S. Environmental Protection Agency, with some exceptions for the 8-hour period. However, the more stringent State of Hawaii ambient air quality standards for carbon monoxide may be exceeded at times with or without the proposed development in the study area. It should be noted that the current standard is so low that it is probably exceeded at nearly any intersection in the state even with moderate traffic volumes. Moreover, the national standard, which allows higher levels of carbon monoxide, was developed after

extensive research with the objective of protecting public health with an adequate margin of safety.

Aside from improving roadways, long-term air pollution impacts can be mitigated through the use of rapid transit, which is proposed along Kapiolani corridor, and car pooling, and/or by adjusting local school and business hours to begin and end during off-peak times.

Other more indirect sources of air pollution at locations away from the project site include the marginal increase in fuel oil burning by Hawaiian Electric Company to supply electricity to the project and a marginal increase in trash incineration at the City's H-Power Plant when it becomes fully operational.

4. Compatibility with Surrounding Environment

The proposed development, which includes Kamaile Street, is consistent with current zoning and surrounding uses.

5. Historic and Archaeological Resources

Since Kamaile Street has been improved and used as a public street for over 25 years, there is little likelihood of encountering any archaeological remains. None of the structures on the abutting properties are listed in the Hawaii Register of Historic Places. The average age of structures within the two abutting properties is approximately 50 years.

6. Natural Features

a. Water Resources

There are no water resources in the area.

b. Flood Plain Management

According to the Flood Insurance Rate Map, a portion of the makai end of the proposed development is within Zone A, an area inundated by 100 year floods (base flood elevation has not been

determined). The rest of the site is Zone-X which is outside the 500 year flood plane (see figure 11).

The site is not within a tsunami inundation zone.

c. Flora and Fauna

The property is located in a fully developed urban environment with no naturally occurring flora or fauna. Plants in the area which are a result of landscaping include shrubbery, grass and trees. Mammals which may be encountered in the area include mice, rats, and feral and domesticated cats and dogs.

7. Hazards

a. Nuisances and Site Safety

During the construction of the mixed-use project which includes Kamaile Street, trucks, heavy equipment and other vehicles will use existing roads to transport materials and access construction areas. The increase in traffic from construction-related vehicles is not anticipated to be significant, but will cause some minor inconveniences in the immediate vicinity for the duration of construction. If required, flagmen shall be employed to ensure traffic safety.

Necessary measures to assure public safety will be implemented throughout all phases of construction. When construction is suspended (nights, weekends, and holidays), construction areas will be secured by adequate safety signs, signals, and/or other safety devices as required by State and County regulations.

F. Alternatives Considered

If Kamaile Street is not closed, the abutting city blocks mauka and makai of the street will be developed separately. In compliance with existing zoning, a mixed-use development built on the 4.6 acre mauka block and the 5.6 acre makai block will together be slightly smaller in scale than the proposed mixed-use development

on the 10.9 acre consolidated area (including Kamaile Street). However, a much more feasible and integrated mixed-use project would result from the closure of Kamaile Street with the consolidation of the two abutting properties. Some inefficiencies in vehicular and pedestrian flow within and around the development are anticipated if Kamaile Street is not closed.

Bridging Kamaile Street to connect the two developments could improve vehicular flow, by eliminating driveways and service accesses, and encourage pedestrian circulation between them; but, a more efficient vehicular traffic flow on surrounding streets would not be achieved.

G. Proposed Mitigation Measures

Inasmuch as the closure of Kamaile Street will have negligible impacts on traffic flow and air quality, mitigation measures have not been proposed for this action. The subsequent mixed-use development proposed for the site, however, shall have an impact on traffic flow and, consequently, on air quality. Any mixed-use development approaching densities and uses allowed by existing zoning would have such an impact, whether or not the street is closed.

Toward mitigating concerns related to traffic flow, discussions with the City Department of Transportation Services shall be pursued in connection with obtaining the necessary approvals for the development of the proposed project to determine appropriate traffic-related improvements, such as access/egress configurations for the proposed development, limiting street parking, and providing additional left-turn-only lanes on nearby streets.

VI. LIST OF AGENCIES CONSULTED

Board of Water Supply
City Clerk's Office
Department of Finance
Department of General Planning
Department of Land Utilization
Department of Public Works
Department of Transportation Services

HAWAII STATE LEGISLATURE
STATE CAPITOL
HONOLULU, HAWAII 96813

May 21, 2003

Mr. Eric Crispin, Acting Director
Department of Planning & Permitting
Honolulu Municipal Building
650 S. King Street
Honolulu, HI 96813

RE: WalMart Project — Request for Updated Environmental Assessment

Dear Mr. Crispin,

We are writing to follow-up on our April 30, 2003 correspondence with DLNR's Historic Preservation Division (copy attached) regarding the discovery of burial sites on the Keeaumoku superblock parcel being developed for WalMart-Sam's Club in the Sheridan-Kaheka neighborhood.

We understand that the 1990 Environmental Assessment prepared by Haseko Hawaii Inc.'s consultant (for the transfer of Kamaile Street for use as part of the development parcel) contained the following conclusion:

> *Since Kamaile Streeet has been improved and used as a public street for over 25 years, there is little likelihocd of encountering any archaeological remains.*

Recent developments at the WalMart construction site, however, identify new conditions involving considerable numbers of human remains and burial sites at the site. Chapter 343 requires a revised or new Environmental Assessment when there are changed circumstances.

We therefore request that the Department of Planning & Permitting require WalMart to amend the earlier Environmental Assessment in light of these changed circumstances.

We would further appreciate your keeping us posted on the status of your department's actions regarding the discovery of the burial sites and our request for an Amended Environmental Assessment.

Sincerely,

Senator Carol Fukunaga
District 11 (Makiki-Ala Moana)

Representative Ken Hiraki
(Kaka'ako-Iwilei)

cc: Ms. Genevieve Salmonson, Office of Environmental Quality Control

MAY 0 7 2003

LINDA LINGLE
GOVERNOR OF HAWAII

PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

DAN DAVIDSON
DEPUTY DIRECTOR - LAND

ERNEST Y.W. LAU
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

HISTORIC PRESERVATION DIVISION
KAKUHIHEWA BUILDING, ROOM 555
601 KAMOKILA BOULEVARD
KAPOLEI, HAWAII 96707

May 5, 2003

Senator Carol Fukunaga
Hawaii State Capitol, Rm. 216
415 South Beretania Street
Honolulu, Hawaii 96813

LOG NO: 2003.0479
DOC NO: 0305hm01

Representative Ken Hiraki
Hawaii State Capitol, Rm. 320
415 South Beretania Street
Honolulu, Hawaii 96813

Dear Senator Fukunaga and Representative Hiraki:

Thank you for your inquiry of April 30, 2003, concerning the discovery of burials at the Wal-Mart development site.

Human remains were first discovered on the Wal-Mart site by a hired archaeologist who was monitoring the excavation a desilting basin. It was reported to the Division on January 20, 2003. In consultation with our office, the archaeologist continued test excavations to determine the extent of burial area. By March 14 a total of 25 individuals had been identified and the extent of the burial area within the Wal-Mart property boundaries had been defined.

In accordance with state law (Chapter 6E-43.6, HRS), the disposition of burials found inadvertently after a development project begins is determined by the Department of Land and Natural Resources. We are in the process of making this decision in consultation with members of the Oahu Island Burial Council and the developer. Whether the burials remain in place or are relocated, it is the intent of all parties that they stay within the Wal-Mart property boundaries and that a long-term preservation easement be established for their protection. We will provide you with a copy of our decision when rendered.

Thank you for expressing concern about historic preservation issues in your districts. Please call me at 692-8028 if have any questions.

Sincerely,

P. Holly McEldowney

P. Holly McEldowney, Acting Administrator
State Historic Preservation Division

HM:jk

The Senate
State of Hawaii

STATE CAPITOL
HONOLULU, HAWAII 96813
April 30, 2003

Holly McEldowney, Acting Administrator
State Historic Preservation Division
601 Kamokila Blvd., Suite 555
Kapolei, Hi 96707

Dear Ms. McEldowney:

One of our constituents contacted us to advise us that a burial site may have been uncovered at the Wal-Mart construction site. We have reported this to Muffet Jourdane, of the State Historic Preservation Division to insure that appropriate steps are taken to determine the necessary procedures to be followed.

Please advise us of all actions your department is taking to address the potential burial site.

Thank you.

Sincerely,

Senator Carol Fukunaga
Makiki-Tantalus-Ala Moana

Representative Ken Hiraki
Downtown-Kakaako-Iwilei

Cc: Peter Young, Director
Department of Land and Natural Resources

HAWAII STATE LEGISLATURE
STATE CAPITOL
HONOLULU, HAWAII 96813

May 21, 2003

Mr. Eric Crispin, Acting Director
Department of Planning & Permitting
Honolulu Municipal Building
650 S. King Street
Honolulu, HI 96813

RE: WalMart Project — Request for Updated Environmental Assessment

Dear Mr. Crispin,

We are writing to follow-up on our April 30, 2003 correspondence with DLNR's Historic Preservation Division (copy attached) regarding the discovery of burial sites on the Keeaumoku superblock parcel being developed for WalMart-Sam's Club in the Sheridan-Kaheka neighborhood.

We understand that the 1990 Environmental Assessment prepared by Haseko Hawaii Inc.'s consultant (for the transfer of Kamaile Street for use as part of the development parcel) contained the following conclusion:

> *Since Kamaile Streeet has been improved and used as a public street for over 25 years, there is little likelihood of encountering any archaeological remains.*

Recent developments at the WalMart construction site, however, identify new conditions involving considerable numbers of human remains and burial sites at the site. Chapter 343 requires a revised or new Environmental Assessment when there are changed circumstances.

We therefore request that the Department of Planning & Permitting require WalMart to amend the earlier Environmental Assessment in light of these changed circumstances.

We would further appreciate your keeping us posted on the status of your department's actions regarding the discovery of the burial sites and our request for an Amended Environmental Assessment.

Sincerely,

Senator Carol Fukunaga
District 11 (Makiki-Ala Moana)

Representative Ken Hiraki
(Kaka'ako-Iwilei)

cc: Ms. Genevieve Salmonson, Office of Environmental Quality Control

HAWAII STATE LEGISLATURE
STATE CAPITOL
HONOLULU, HAWAII 96813

July 2, 2003

Mr. Eric Crispin, Director
Department of Planning & Permitting
Honolulu Municipal Building
650 S. King Street
Honolulu, HI 96813

RE: WalMart Project — Questions regarding Responses to Department of Planning and Permitting Review

Dear Mr. Crispin,

We are writing as a follow-up to information and documents requested by Senator Fukunaga relating to the WalMart building permits 548777 and 542177.

We additionally request copies of the project applicant's responses to the staff comments provided by DPP's Zoning Plans Review Branch (3/20/03), and by DPP's Building Division (1/27/03, 2/4/03, 5/6/03 and 6/17/03). We would also appreciate receiving one copy of the project's AutoCAD drawings, referenced in the DPP Zoning Plans Review Branch 3/20/03 staff comments, including any updated and/or revised drawings that might accompany such responses.

Based on our review of the blueprints, revised traffic study (February 2003) and DPP staff comments dated 1/8/03, 3/20/03, 5/6/03, 6/17/03, 2/4/03, 1/27/03 and 1/30/03, we have the following questions:

1. Do the heights and setbacks for the buildings (especially on Makaloa, Sheridan and Keeaumoku Streets) shown on the blueprints meet the requirements of the City's land use ordinance (Chapter 21, Revised Ordinances of Honolulu)?

2. Has a flood district designation (flood determination) and flood elevations been submitted to DPP, and revised flood elevations noted on the building plans?

3. Does the project include three floors rather than two? "Third floor not allowed. Variance from Section 505.2 was granted on the basis of a 2-story building for the retail portion" (6/17/03 staff comments). The drawings provided to us indicate a third floor, is this correct? Will three floors be allowed? Please explain the variances referred to above.

4. What is the total number of parking stalls in this project? Have the additional details to verify the parking stall count per floor (3/20/03 staff comments) been provided, and blueprints been updated? Is a 4th floor parking lot proposed for the project?

5. What are the floor area totals for each level of the project? (see 3/20/03 staff comments).

6. How will noise from the auto service and tire repair center on the Sheridan Street end of the Sam's Club (second floor of the project) be controlled so as not to disturb residents on Sheridan Street? The blueprints reflect hydraulic lifts and other noisy equipment normally used in auto service and tire repair operations; will the auto service and tire repair center be in a shielded or unshielded area of the project? What will be the hours of operation of this portion of the facility?

7. The delivery and unloading area of the project reflects fifteen unshielded loading docks off Sheridan Street with lots of lighting. How will light and noise be controlled to prevent disturbances to residents on Sheridan Street? To what extent will the lights shown on the Sheridan Street ingress (truck ramp up to second floor levels) be directed downwards (3/20/03 staff comments)?

8. How will air emissions from delivery trucks, particularly those involving freight containers, be controlled on Sheridan Street?

9. What are the ingress and egress routes for delivery trucks to the WalMart-Sam's Club loading docks on Sheridan Street?

   The blueprints reflect the use of Sheridan Street as egress/ingress for trucks; and the revised traffic report reflects left-turns by delivery trucks into the project. Is this the current plan? Where will delivery trucks be queued in the event that loading docks are full?

   What about the Makaloa Street exit from the loading dock, does this exit exist or not? Different drawings are in conflict.

10. How will the flow of delivery trucks and container trucks into the delivery docks be controlled? If the delivery docks are full, where will newly-arriving trucks be directed to? How many containers will be unloaded in the delivery dock area per day? Will container-loads be unloaded during specific times of the day, or will unloading occur 24 hours a day?

11. Has the final disposition of the iwi, which were uncovered on the project site earlier in the spring, been settled by the developer and Oahu Burial Council? Will the iwi be re-interred in another location or on the project site?

12. The blueprints reflect rooftop air conditioning units (exceeding 50 units on the Sam's Club end) as opposed to a central air conditioning system. How will noise be incrementally distributed? Will the air conditioning units run 24 hours per day? What are the total noise impacts of the roof top air conditioning units?

13. What is the timetable for traffic improvements involving the streets adjoining the project (Keeaumoku, Makaloa, Rycroft and Sheridan Streets)? Will the construction timetable for traffic improvements be coordinated with proposed City DTS roadwork also planned for 2003 and 2004? How will 2003 holiday traffic to Ala Moana Center be handled along Keeaumoku Street?

14. Has the developer's Traffic Plan been approved as of Feb 2003? Has the developer addressed the recommendations in the February 2003 revised traffic study?

15. Does the Traffic Plan or development team anticipate any uses of Kamaile Street for deliveries? How will the developer prevent container delivery trucks from using Kamaile Street if Sheridan Street is congested?

16. Have any variances been applied for and/or granted? Will any variance application be necessary to meet final requirements for a building permit?

Sincerely,

Senator Carol Fukunaga
District 11 (Makiki-Ala Moana, McCully)

Representative Ken Hiraki
District 28 (Kakaako-Iwilei)

Representative Scott Saiki
District 22 (McCully-Moiliili-Kaheka)

cc: ✓Ms. Genevieve Salmonson, Office of Environmental Quality Control, DOH
Mr. Jerry Haruno, Environmental Health Services Division, DOH
Mr. Leslie Kondo, Director, Office of Information Practices

DEPARTMENT OF FINANCE

CITY AND COUNTY OF HONOLULU

HONOLULU, HAWAII 96813

FRANK F. FASI
MAYOR

THEODORE G. JUNG
DIRECTOR

GLEN S. NONAKA
DEPUTY DIRECTOR

November 21, 1989

Mr. Brian K. Minaai
Project Manager
Haseko (Hawaii), Inc.
820 Mililani Street, Suite 820
Honolulu, Hawaii 96813

Dear Mr. Minaai:

Listed below are the comments and recommendations we received from the various City agencies regarding your request for abandonment and sale of a portion of Kamaile Street.

Board of Water Supply

We have an 8-inch pipeline, 2 fire hydrants and 12 water meter services within Kamaile Street. An easement will have to be granted to the Board before this roadway is sold.

Contact person: Royal Kashiwahara, 527-5244

Department of General Planning

It is premature to sell this portion of Kamaile Street at this time. If the properties on both sides of Kamaile Street are to be developed, the City should explore alternative arrangements with the developers that would enhance the City's position.

Department of Public Works

1. There is an existing drainage system in the roadway. Disposition and/or maintenance of the drainage must be determined.

   Contact person: Chi-Pin Chang, 527-6304

2. There is concern for long-term impact on refuse collection since there will no longer be a grid pattern.

   Contact person: David Shiraishi, 523-4771

Department of Public Works (con't)

3. An easement shall be retained for an existing sewer line. Any proposed development will require the submittal of a "Sewer Connection Application" form because of possible sewage capacity limitations which could affect the type of project allowed. Upon approval of the said application, construction plans shall be submitted for review and approval.

   Contact person: Wayne Nakamura, 527-6297

4. Gasco, Inc. - has a gas line in Kamaile Street. Should the City abandon this street we would want to have our current interest reflected and preserved against future uses.

   Contact person: George Aoki, 547-3282

5. Hawaiian Tel - we have a pole line along the portion of Kamaile Street in question which is providing service to customers within the area. Therefore, we would appreciate any steps taken by the City to protect our easement rights.

   Contact person: David Eakins, 834-6271

6. Hawaiian Electric - our existing distribution overhead line and service transformers between Keeaumoku and Sheridan Streets must be covered by an easement so we may continue to provide electrical service to our customers on Kamaile Street.

   Contact person: Charles Ane, 543-7810

Department of Transportation Services

A traffic study should be prepared to assess the potential impacts to traffic along the surrounding street system resulting from the sale and subsequent closure of the subject roadway. The study should include a description of the limits and magnitude of the proposed development and a discussion of the anticipated impacts of the street closure.

Contact person: Mel Hirayama, 523-4119

We will request the Department of Public Works for an appraisal report after we receive your response to the above-listed comments and recommendations.

Sincerely,

THEODORE JUNG
Director of Finance

TJ:si

HASEKO

HASEKO (Hawaii), Inc.
820 Mililani Street, Suite 610, Honolulu, Hawaii 96813
Phone (808) 522-5025 Fax (808) 522-5011

December 7, 1989

Mr. Theodore Jung
Director of Finance
Department of Finance
City and County of Honolulu
530 South King Street, 2nd Floor
Honolulu, HI 96813

Subj: Kamaile Street Abandonment

Dear Mr. Jung:

Pursuant your letter of November 21, 1989, we offer the following responses which correspond with the various agency comments on the subject street abandonment request:

Board of Water Supply

Mr. Royal Kashiwahara of the Board of Water Supply (BWS) was contacted and apprised of the nature of the abandonment request. Since all existing tenants will vacate the existing structures, which will be demolished, there will be no need for water service on this segment of Kamaile Street. Mr. Kashiwahara concurred, therefore, that the waterline can be abandoned.

Department of General Planning

An application for a Development Plan Land Use Map amendment, including an environmental assessment, is being prepared for filing with the Department of General Planning. We understand that land transactions involving the Kamaile Street will be addressed through the amendment process.

Department of Public Works

1. Mr. Mel Takakura of the Drainage Section was contacted. A drainage plan, including development phasing, shall be prepared and submitted to the DPW for review and approval.

2. Mr. David Shiraishi of the Division of Refuse Collection and Disposal was contacted and apprised of the nature of the abandonment request. Since all existing tenants will vacate the existing structures, which will be demolished, there will be no need for refuse service on this segment of Kamaile Street.

3. Mr. Wayne Nakamura of the Division of Wastewater Management was contacted and apprised of the nature of the abandonment request. Since all existing tenants will vacate the existing structures, which will be demolished, there will be no need for sewer service on this segment of Kamaile Street. Mr. Nakamura concurred, therefore, that the sewer line can be abandoned.

4. Mr. George Aoki of GASCO, Inc. was contacted and apprised of the nature of the abandonment request. Since all existing tenants will vacate the existing structures, which will be demolished, there will be no need for gas service on this segment of Kamaile Street. Mr. Aoki concurred, therefore, that the gas line can be abandoned.

5. Mr. David Eakins of Hawaiian Telephone Co. was contacted and apprised of the nature of the abandonment request. Since all existing tenants will vacate the existing structures, which will be demolished, there will be no need for telephone service on this segment of Kamaile Street. Mr. Eakins concurred, therefore, that the telephone line can be abandoned and easement rights terminated.

6. Mr. Charles Ane of Hawaiian Electric Co. was contacted and apprised of the nature of the abandonment request. Since all existing tenants will vacate the existing structures, which will be demolished, there will be no need for electric service on this segment of Kamaile Street. Mr. Ane concurred, therefore, that the electric service line can be abandoned. A distribution line along Kamaile Street, however, will need to be relocated to Rycroft Street.

<u>Department of Transportation Services</u>

A traffic study for the project is being prepared. The study will address the impacts of the closing of Kamaile Street as well as the impacts of the proposed project.

With receipt of this response to the various agencies' comments, please proceed with your request of the Department of Public Works for an appraisal report. In the interest of time, Haseko is willing to contract an independent appraiser, at Haseko's

expense, to conduct the appraisal. Please let me know if such an arrangement is satisfactory to your department and DPW, so that we can proceed accordingly.

If you have any questions regarding these responses, please contact me at 522-5025, or Mr. Barry Toyota of Wilson Okamoto & Associates, Inc., our consultants for this project, at 531-5261.

Sincerely,

HASEKO (Hawaii), Inc.

Brian Minaai
Project Manager

BM/ld
KSB 2.0

cc: Wilson Okamoto & Assoc.

KSB 2.0

DEPARTMENT OF FINANCE

CITY AND COUNTY OF HONOLULU

HONOLULU, HAWAII 96813

HK (HAWAII), INC.
RECEIVED
DEC 14 1989

FRANK F. FASI
MAYOR

THEODORE G. JUNG
DIRECTOR

GLEN S. NONAKA
DEPUTY DIRECTOR

December 12, 1989

Mr. Brian K. Minaai
Project Manager
Haseko (Hawaii), Inc.
820 Mililani Street, Suite 610
Honolulu, Hawaii 96813

Dear Mr. Minaai:

Thank you for your letter dated December 7, 1989, responding to the comments and recommendations made by the various City agencies on your request for abandonment and sale of Kamaile Street between Keeaumoku and Sheridan Streets.

Because there is a backlog of appraisal work at the Department of Public Works, we accept your offer to have the appraisal done at your expense.

The appraisal should be for a fifty-five (55) year lease. The annual rental should be fixed for the first ten (10) years. The remaining four ten (10) year periods and one five (5) year period of the fifty-five (55) year term shall be determined by appraisal.

Please furnish this office with three copies of the appraisal report.

Should you have any questions, please call Roy Yamada at 523-4872.

Sincerely,

THEODORE JUNG
Director of Finance

TJ:si

REFERENCES

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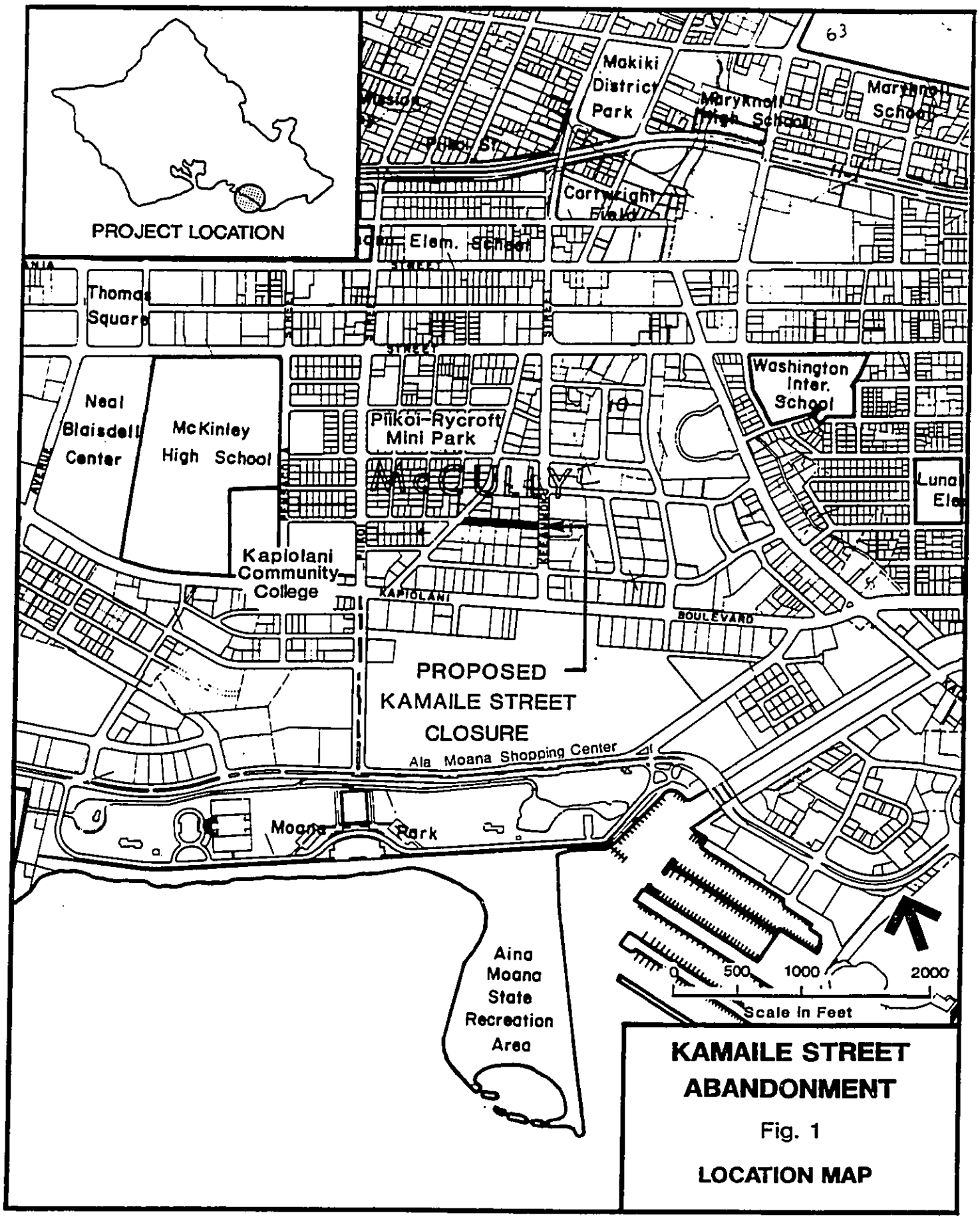
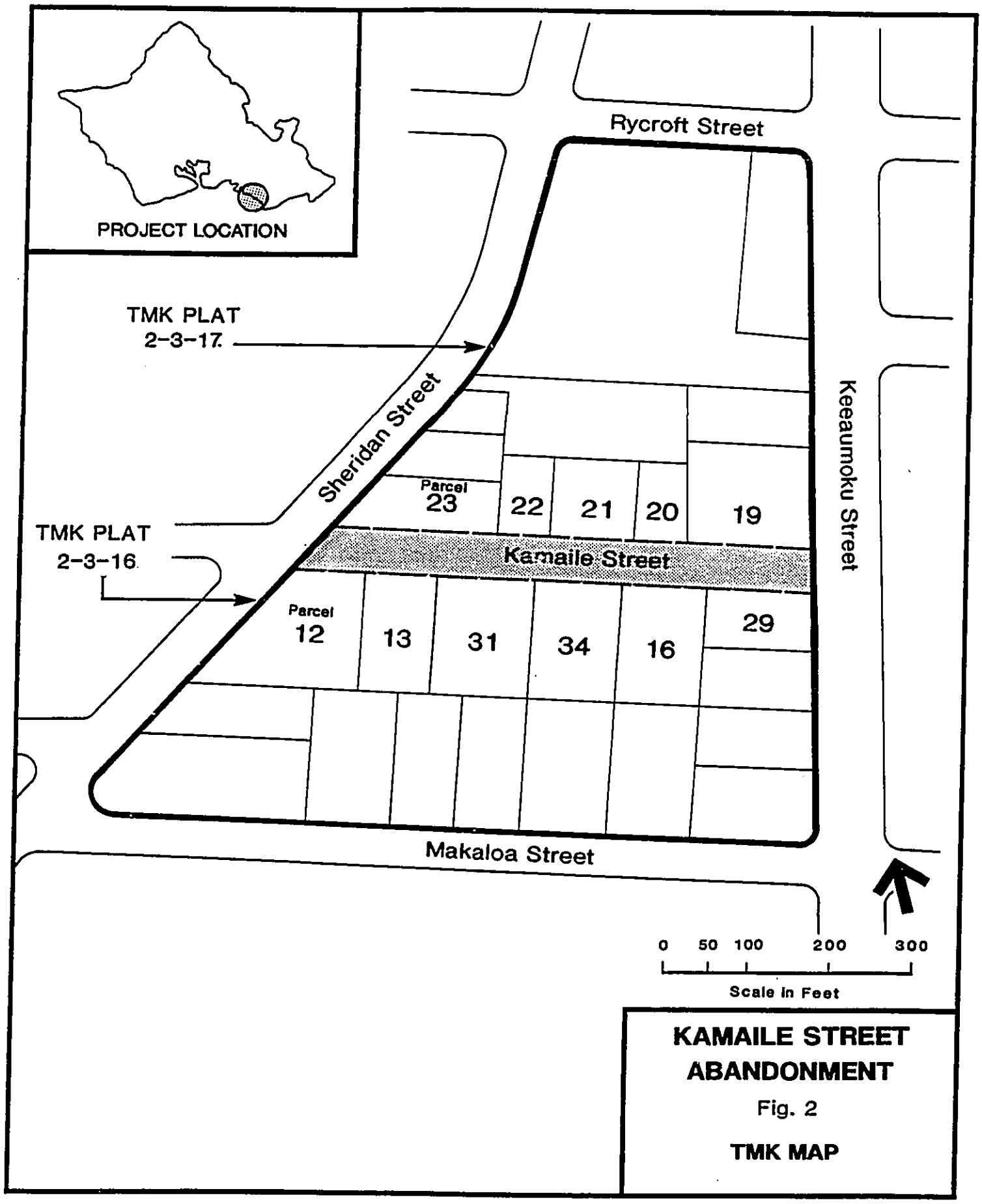
EXHIBIT A

EXHIBIT A
LIST OF FIGURES

FIGURE NO.	TITLE
1	LOCATION MAP
2	TMK MAP
3	DEVELOPMENT PLAN LAND USE MAP
4	PUBLIC FACILITIES MAP
5	ZONING MAP
6	EXISTING & PROPOSED WATER SYSTEM
7	EXISTING & PROPOSED SEWER SYSTEM
8	EXISTING & PROPOSED DRAINAGE SYSTEM
9	EXISTING & PROPOSED ELECTRICAL/TELEPHONE/CATV SYSTEM
10	EXISTING & PROPOSED GAS SYSTEM
11	FLOOD ZONE MAP

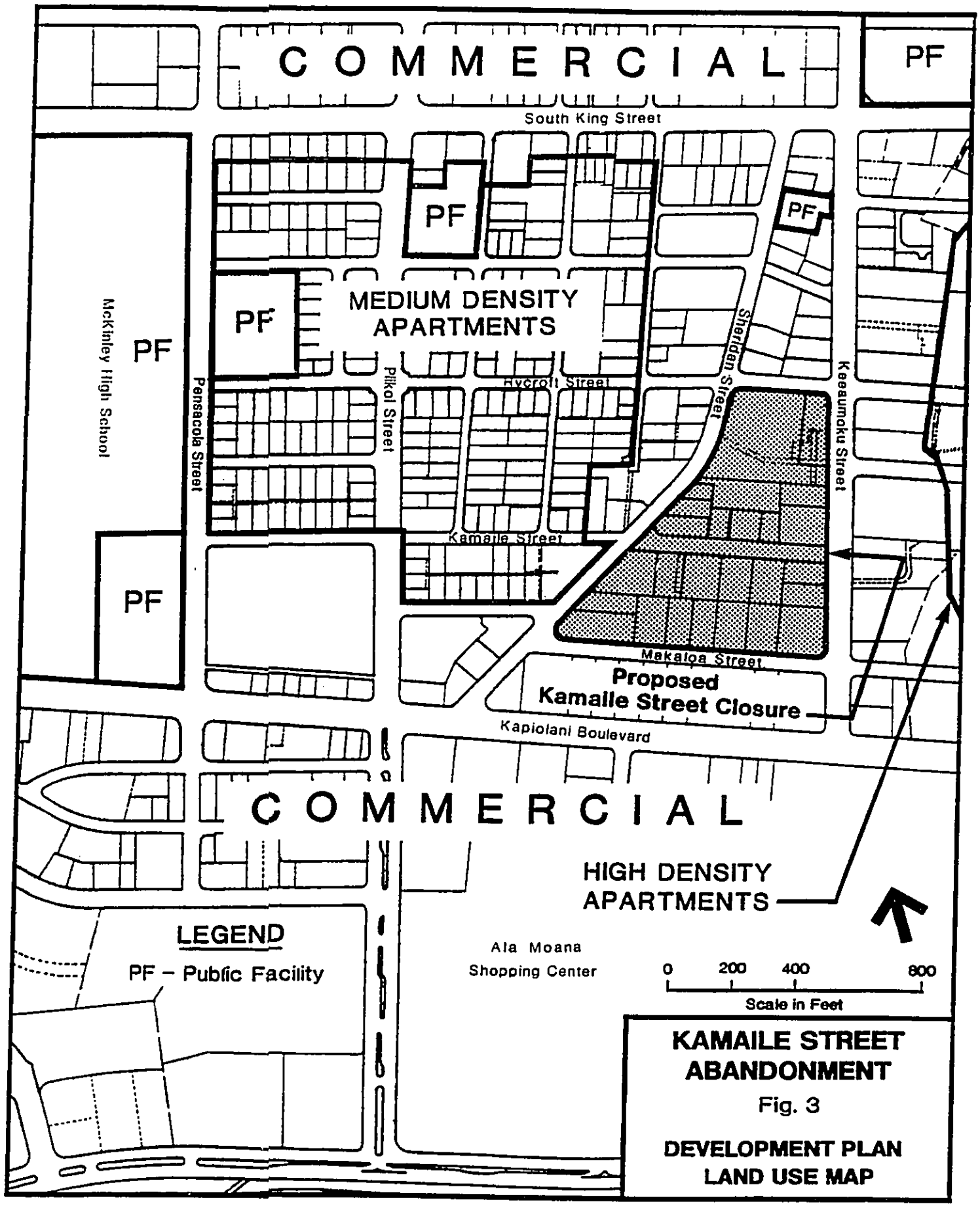

PROJECT LOCATION
63
Makiki District Park
Maryknoll High School
Maryknoll School
Pilkoi St.
Hwy
Carrwright Field
Elem. School
Thomas Square
Washington Inter. School
Neal Blaisdell Center
McKinley High School
Pilkoi-Rycroft Mini Park
McCULLY
Luna Ele
Kapiolani Community College
KAPIOLANI
BOULEVARD
PROPOSED
KAMAILE STREET
CLOSURE
Ala Moana Shopping Center
Moana Park
Aina Moana State Recreation Area
0
500
1000
2000
Scale in Feet
KAMAILE STREET
ABANDONMENT
Fig. 1
LOCATION MAP

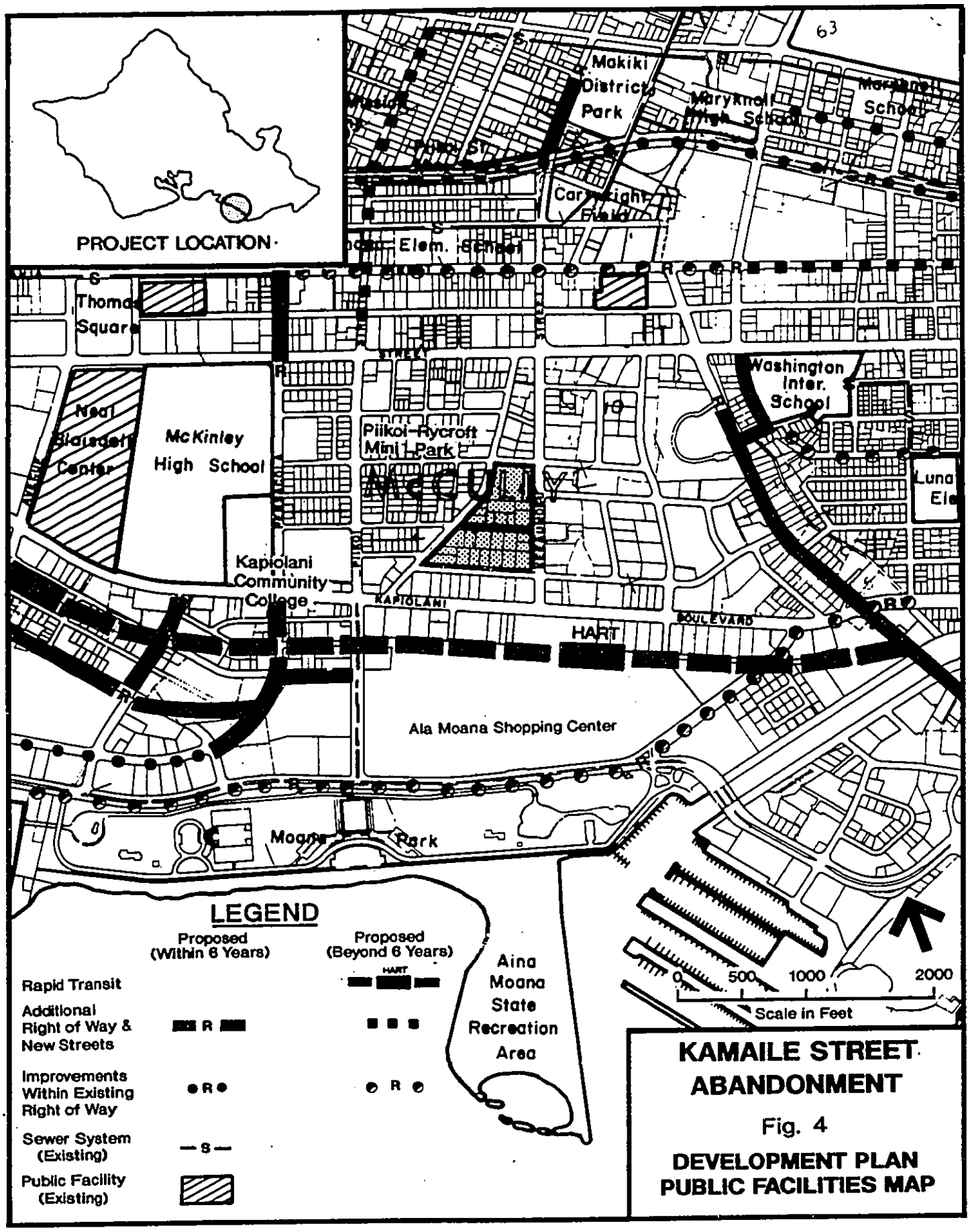


KAMAILE STREET ABANDONMENT

Fig. 2

TMK MAP

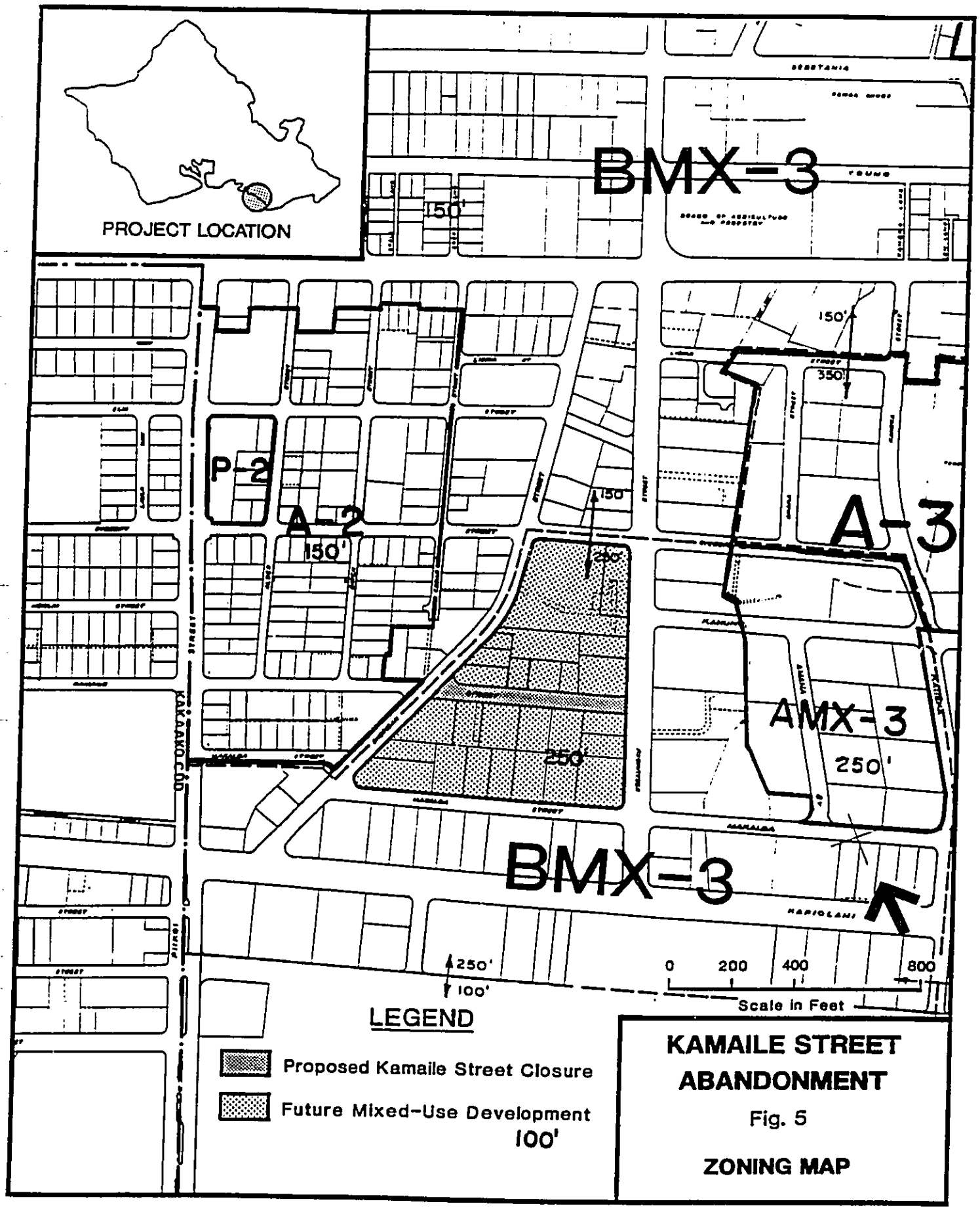

COMMERCIAL
PF
South King Street
PF
PF
PF
MEDIUM DENSITY
APARTMENTS
McKinley High School
PF
PF
Pensacola Street
Pikoi Street
Rycroft Street
Sheridan Street
Keeaumoku Street
Kamaile Street
Makaloa Street
Proposed
Kamaile Street Closure
Kapiolani Boulevard
COMMERCIAL
HIGH DENSITY
APARTMENTS
LEGEND
PF – Public Facility
Ala Moana
Shopping Center
0 200 400 800
Scale in Feet
KAMAILE STREET
ABANDONMENT
Fig. 3
DEVELOPMENT PLAN
LAND USE MAP

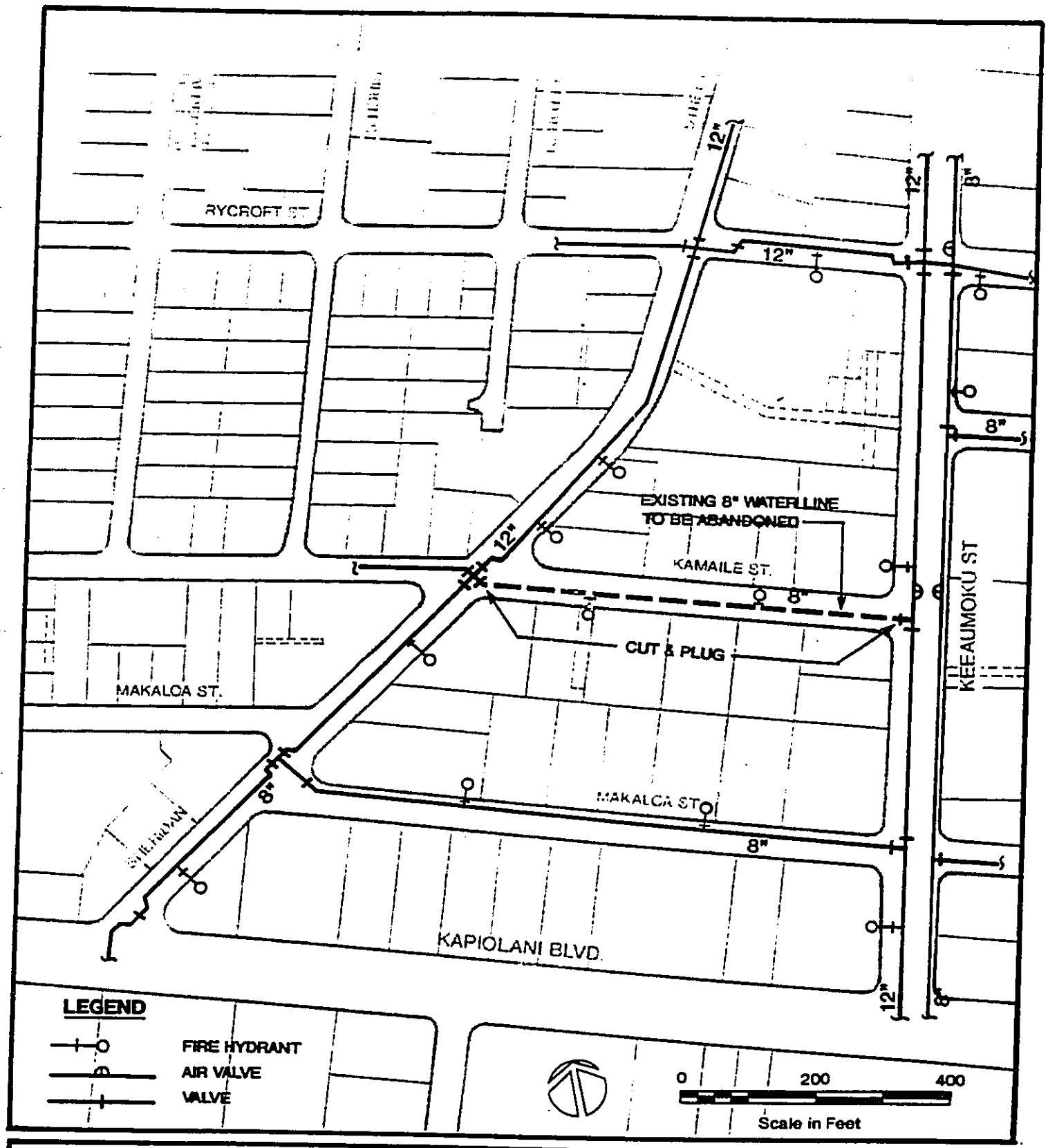


KAMAILE STREET ABANDONMENT

Fig. 4

DEVELOPMENT PLAN PUBLIC FACILITIES MAP


PROJECT LOCATION
BMX-3
150'
150'
350'
P-2
A-2
150'
150'
250'
A-3
AMX-3
250'
BMX-3
250'
100'
0 200 400 800
Scale in Feet
LEGEND
Proposed Kamaile Street Closure
Future Mixed-Use Development
100'
KAMAILE STREET
ABANDONMENT
Fig. 5
ZONING MAP



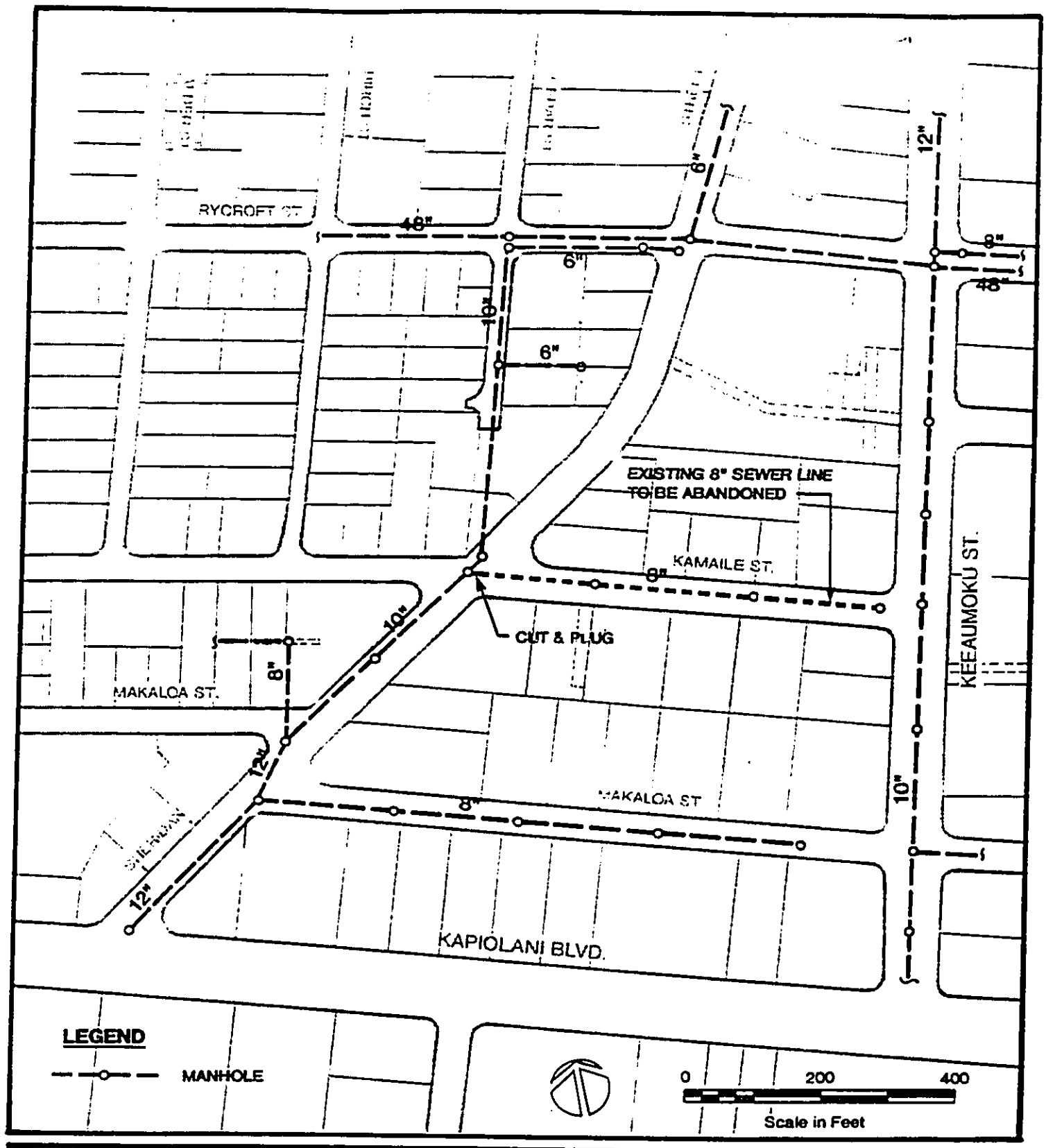
KAMAILE STREET ABANDONMENT

EXISTING & PROPOSED WATER SYSTEM

Fig. 6

Prepared for :
HASEKO (HAWAII) INC.

Prepared by :
Wilson Okamoto & Associates, Inc.



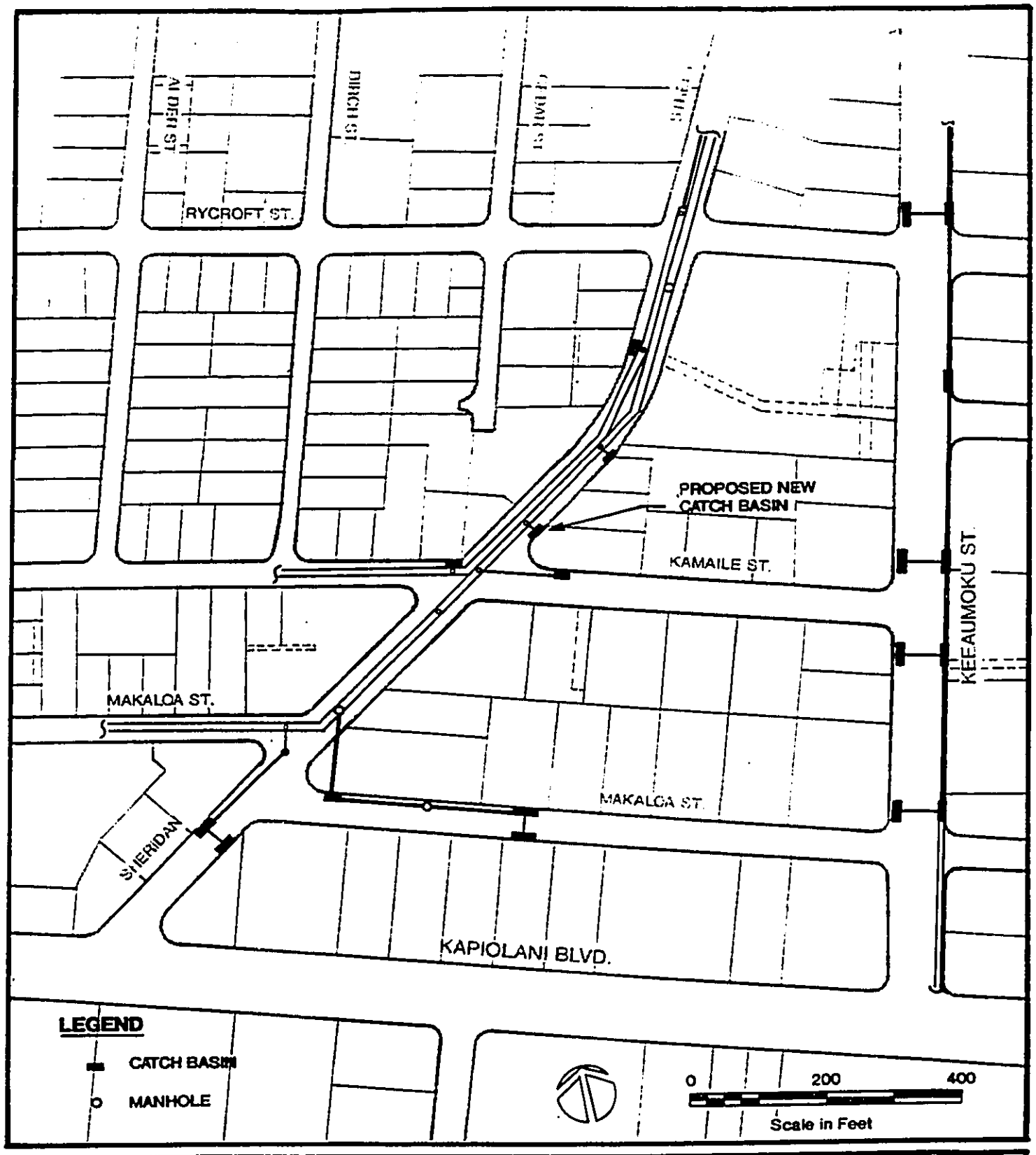
KAMAILE STREET ABANDONMENT

EXISTING & PROPOSED SEWER SYSTEM

Fig. 7

Prepared for :
HASEKO (HAWAII) INC.

Prepared by :
Wilson Okamoto & Associates, Inc.



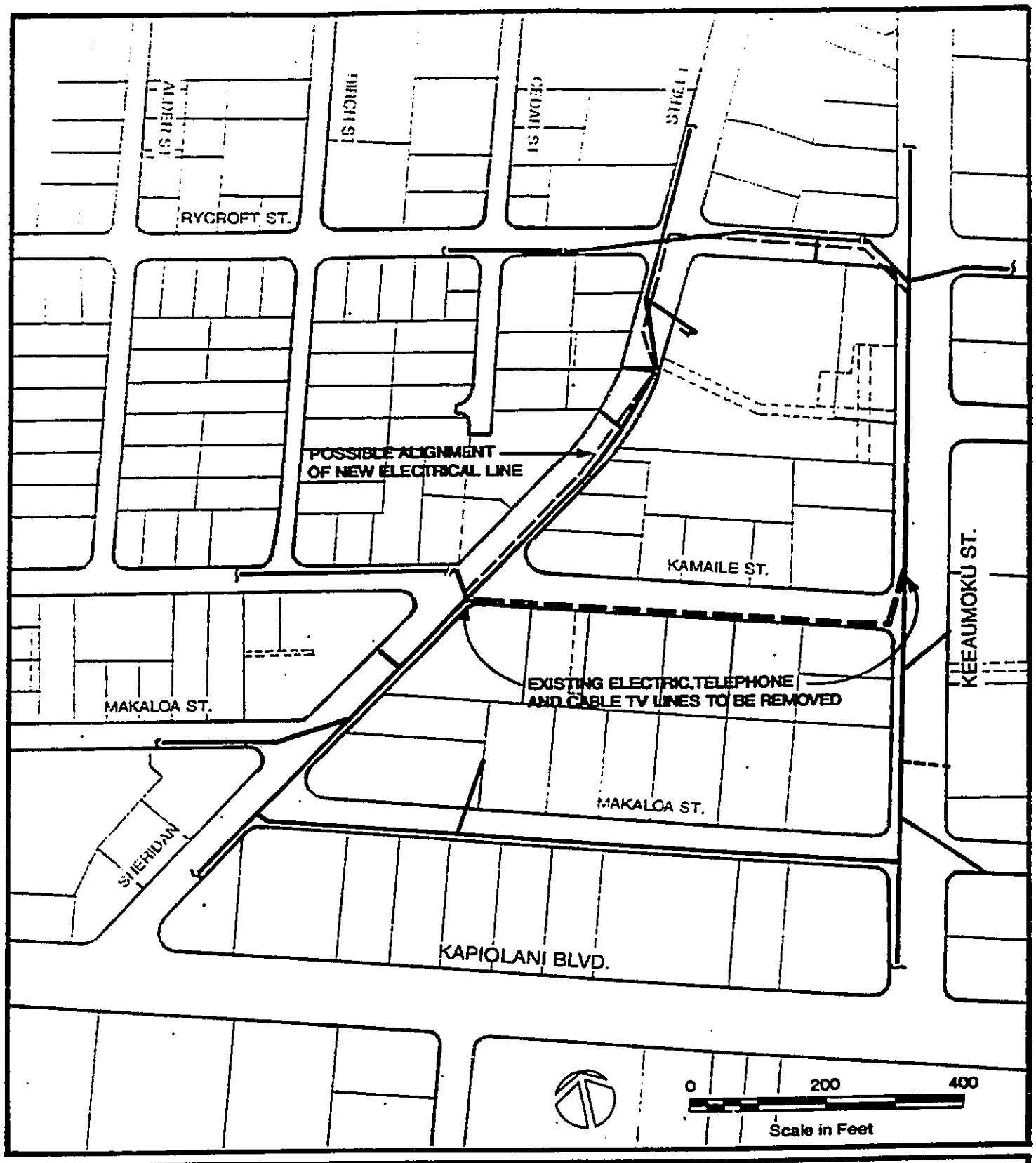
KAMAILE STREET ABANDONMENT

EXISTING & PROPOSED DRAINAGE SYSTEM

Fig. 8

Prepared for :
HASEKO (HAWAII) INC.

Prepared by :
Wilson Okamoto & Associates, Inc.



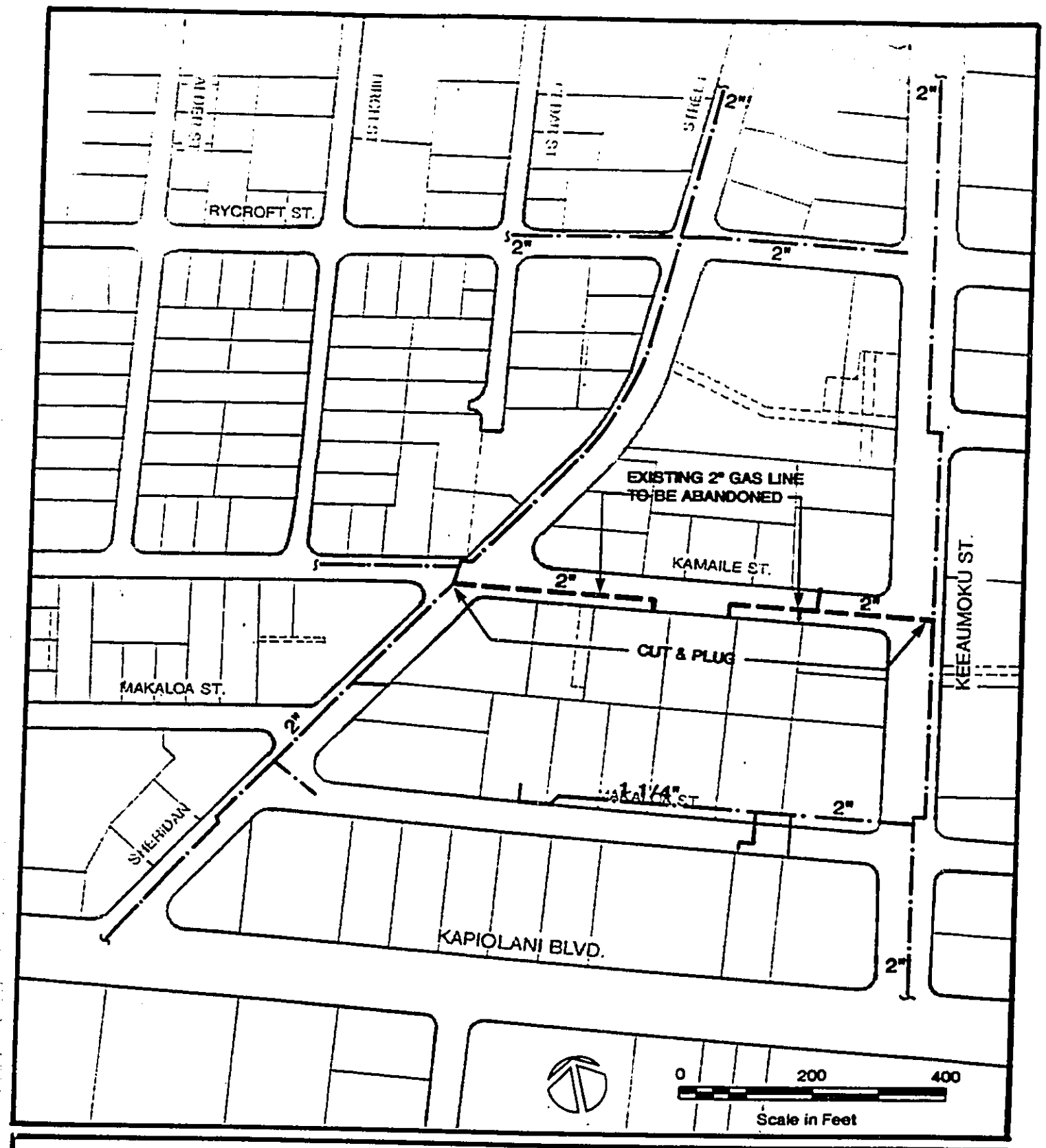
KAMAILE STREET ABANDONMENT

EXISTING & PROPOSED ELECTRICAL/TELEPHONE/CATV SYSTEM

Fig. 9

Prepared for :
HASEKO (HAWAII) INC.

Prepared by :
Wilson Okamoto & Associates, Inc.



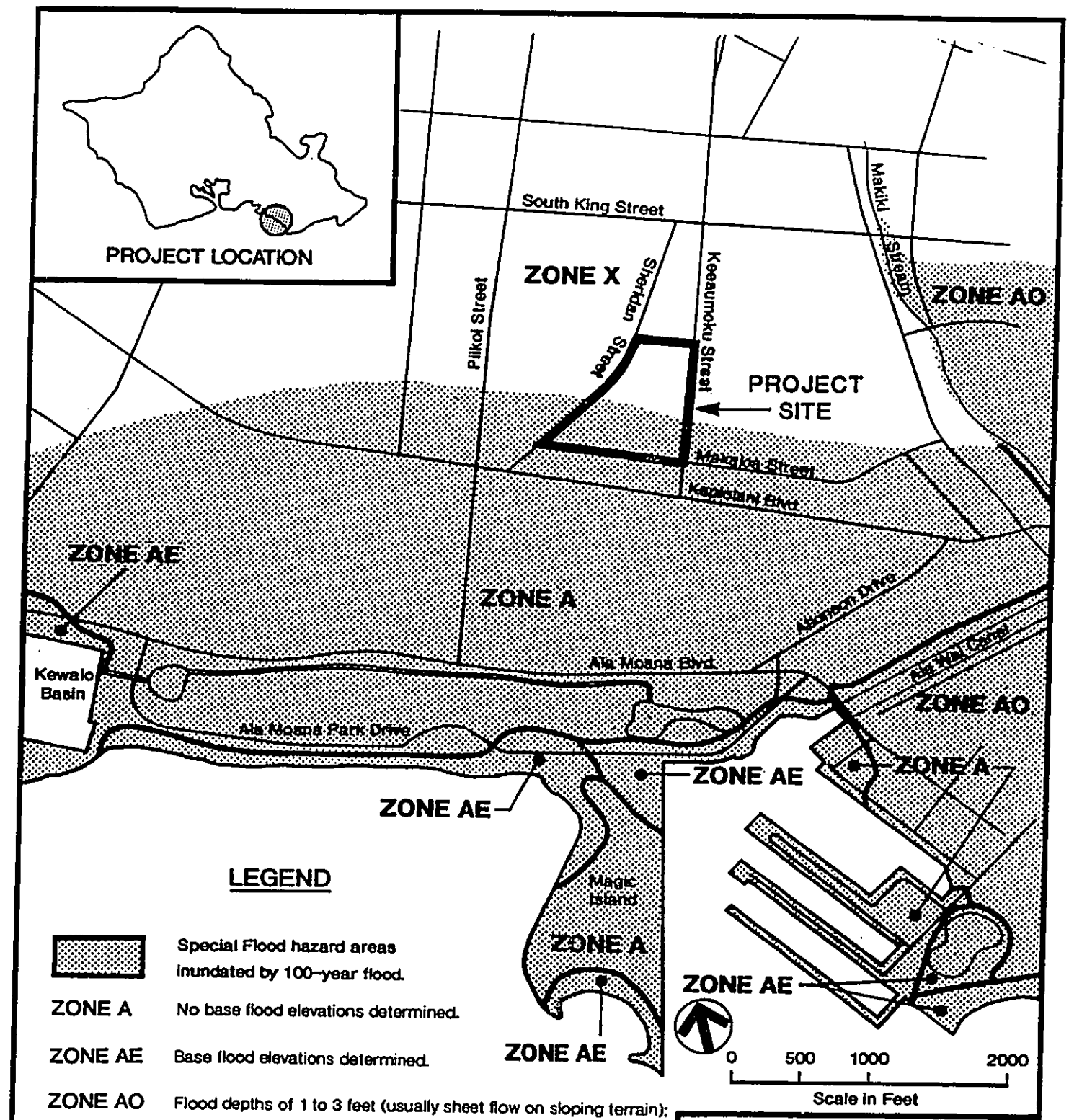
KAMAILE STREET ABANDONMENT

EXISTING & PROPOSED GAS SYSTEM

Fig. 10

Prepared for :
HASEKO (HAWAII) INC.

Prepared by :
Wilson Okamoto & Associates, Inc.



LEGEND

	Special Flood hazard areas inundated by 100-year flood.
ZONE A	No base flood elevations determined.
ZONE AE	Base flood elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE X	Areas determined to be outside 500-year flood plain.

KAMAILE STREET ABANDONMENT STUDY

Fig. 11

FLOOD MAP

EXHIBIT B

EXHIBIT B
LIST OF TABLES

TABLE 1.
OCCUPANTS OF PARCELS
ABUTTING
KAMAILE STREET

PARCEL	TMK 2-3-16
12	Pacific West Mercantile, Hawaii Pacific Metals Corp., Military Headquarters
13	Kamaile Magazine, Uniforms Hawaii, Hawaii Golf Center, Bingo Cue, Ko's Gift Shop,
31	Masu's Plate Lunch, Valori's Eggs & Produce, Fantasy, Chem Products, Club Laimu, Club Ginza, Typo
34	P & L Olympic, Club Touch 9
16	Club Angel, Elite Flowers of Hawaii, Ann Asakura Kimura

PARCEL	TMK 2-3-17
23	Club Vichon, Hakuyosha Cleaners, Redline Automotive, Alan Leong & Associates, Doremi Tour & Travel, Oahu Rental Service, Racer Video
22	Aluminum Fabricators of Hawaii
21	Full Gospel First Church, Oahu Towing & Service Inc.,
20	Apple Motoring Accessories, Billy K's Upholstery
19	Porter Muffler Clinic, Hobb's 76 Station

TABLE 1 (Continued).
OCCUPANTS OF PARCELS
ABUTTING
KAMAILE STREET

PARCEL	TMK 2-3-16
29	Ok Cho Korean Restaurant, 123 Night Club, Video Systems Hawaii, Second Skin, Corner Loft

TABLE 2.
LEVEL OF SERVICE CONCEPT

LEVEL OF SERVICE "A" - V/C = 0 TO 0.60
Describes operations with very low delay, i.e. less than 5 seconds per vehicle. This occurs when signal progression is extremely favorable, and most vehicles arrive during the green phase. Most vehicles do not stop at all.

LEVEL OF SERVICE "B" - V/C = .61 TO 0.70
Describes operations with delays in the range of 5 to 15 seconds per vehicle. This generally occurs with good progression and/or short cycle lengths. More vehicles stop than for LOS "A", causing higher levels of average delay.

LEVEL OF SERVICE "C" - V/C = 0.71 TO 0.80
Describes operation with delay in the range of 15 to 25 seconds per vehicle. Occasionally, vehicles may wait more than one red signal phase. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.

LEVEL OF SERVICE "D" - V/C = 0.81 TO 0.90
Describes operations with delay in the range of 25 to 40 seconds per vehicle. At LOS "D", the influence of congestion becomes more noticeable. Many vehicles stop, and the proportion of vehicles not stopping declines. Noticeable numbers of vehicles fail to clear signal during the first green phase.

LEVEL OF SERVICE "E" - V/C = 0.91 TO 1.00
Describes operations with delays in the range of 40 to 60 seconds per vehicle. These high delay values generally indicate poor progression, long cycle lengths, and high V/C ratios. Vehicles frequently fail to clear the signal during the first green phase.

LEVEL OF SERVICE "F" - V/C GREATER THAN 1.00
Describes operations with delay in excess of 60 seconds per vehicle. This condition often occurs with over-saturation, i.e., when arrival flow rates exceed the capacity of the intersection.

V/C = Volume - Capacity Ratio

SOURCE: Highway Capacity Manual, 1985.

TABLE 3.
EXISTING INTERSECTION LEVELS OF SERVICE
Kamaile Street Abandonment Study
Traffic Analysis

INTERSECTION	AM PEAK HOUR LOS	AM PEAK HOUR V/C	PM PEAK HOUR LOS	PM PEAK HOUR V/C
Sheridan Street/ Makaloa Street	A/A*	--	A/A*	--
Sheridan Street/ Kamaile Street	A/A*	--	A/A*	--
Sheridan Street/ Rycroft Street	A**	--	B**	--
Keeaumoku Street/ Rycroft Street	B	0.62	B	0.67
Keeaumoku Street/ Kanunu Street	E/A*	--	E/C*	--
Keeaumoku Street/ Kamaile Street	D/B*	--	E/C*	--
Keeaumoku Street/ Makaloa Street	A	0.39	B	0.60

LOS = Level of Service
V/C = Volume-Capacity ratio (where appropriate)

* LOS calculations at intersections with two-way or one-way STOP signs do not yield V/C ratios. The two levels of service shown refer to the level of service on the minor street and the left-turn from the major street, respectively.

** At a four-way STOP, a single level of service applies to all movements.

SOURCE: Wilbur Smith Associates; January 22, 1990.

TABLE 4.
FUTURE INTERSECTION WITH PROJECT
Kamaile Street Abandonment Study
Traffic Analysis

INTERSECTION	AM PEAK HOUR LOS	V/C	PM PEAK HOUR LOS	V/C
Sheridan Street/ Makaloa Street	A	0.54	D	0.89
Sheridan Street/ Kamaile Street	A	0.41	D	0.82
Sheridan Street/ Keeaumoku Street	B	0.65	F	1.08
Keeaumoku Street/ Rycroft Street	D	0.86	F	1.16
Keeaumoku Street/ Kanunu Street	A	0.56	D	0.82
Keeaumoku Street/ Kamaile Street	-	--	-	--
Keeaumoku Street/ Makaloa Street	A	0.56	C	0.77

LOS = Level of Service
V/C = Volume-Capacity Ratio

SOURCE: Wilbur Smith Associates; January 22, 1990

TABLE 5.
FUTURE INTERSECTION LEVELS OF SERVICE
WITH PROJECT AND ROADWAY IMPROVEMENTS
Kamaile Street Abandonment Study
Traffic Analysis

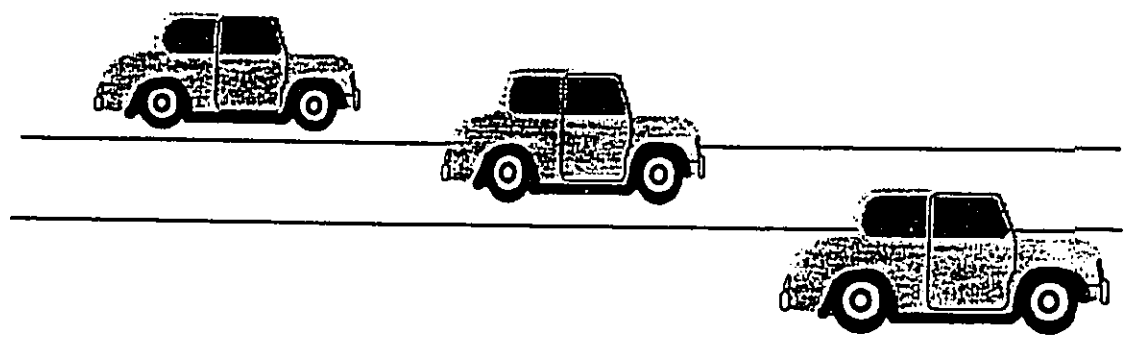
INTERSECTION	AM PEAK HOUR LOS	V/C	PM PEAK HOUR LOS	V/C
Sheridan Street/ Makaloa Street	A	0.54	C	0.74
Sheridan Street/ Kamaile Street	A	0.35	B	0.69
Sheridan Street/ Rycroft Street	B	0.58	D	0.81
Keeaumoku Street/ Rycroft Street	B	0.66	D	0.87
Keeaumoku Street/ Kanunu Street	A	0.55	C	0.77
Keeaumoku Street/ Kamaile Street	A	--	A	--
Keeaumoku Street/ Makaloa Street	A	0.56	C	0.77

LOS = Level of Service
V/C = Volume-Capacity Ratio

SOURCE: Wilbur Smith Associates; January 22, 1990.

EXHIBIT C

KAMAILE STREET ABANDONMENT STUDY
TRAFFIC ANALYSIS



WILBUR SMITH ASSOCIATES

February 12, 1990

WILBUR
SMITH
ASSOCIATES
ENGINEERS • PLANNERS

282 SECOND STREET, 2nd FLOOR • SAN FRANCISCO, CA 94105 • (415) 896-0670 • TELEX 573439

February 12, 1990

Mr. Gary Okamoto
Vice President
Wilson Okamoto & Associates
1150 South King Street, Suite 800
Honolulu, Hawaii 96814

Re: Kamaile Street Abandonment Study
Traffic Analysis

Dear Mr. Okamoto:

We are pleased to present the following Final Draft Report which summarizes our findings regarding traffic impacts of closing Kamaile Street.

While the closure of Kamaile Street would result in a small number of vehicles rerouting, the closure would not create adverse traffic impacts. The majority of the traffic on the segment of Kamaile street between Sheridan Street and Keeaumoku Street is associated with current land uses. The new driveways which would serve the parking garages at the proposed new development would replace the existing property access function of Kamaile Street. The more significant traffic impacts will result from the subsequent mixed-use development on the two blocks which the closure of Kamaile Street will consolidate into one block.

If you have any questions or comments on this draft report, please do not hesitate to contact me or Scott Ferguson at your convenience.

Very truly yours,

WILBUR SMITH ASSOCIATES

Bryant T. Brothers
Associate

BTB/GSF:ld
260720/240

Attachment

TABLE OF CONTENTS

TABULATIONS

ILLUSTRATIONS

KAMAILE STREET ABANDONMENT STUDY
TRAFFIC ANALYSIS

The following report addresses the traffic impacts of the proposed closure of a one block segment of Kamaile Street between Keeaumoku Street and Sheridan Street. Proposed changes in land use to a mixed-use development are also identified, since it would be implemented concurrently with the closure of Kamaile Street. The horizon year for this study is 1995.

A summary of the key findings for this study is presented below:

- The closure of Kamaile Street would not significantly impact traffic conditions in the study area.
- The proposed mixed-use project would introduce a greater flow of traffic than the existing land uses; and
- There are opportunities to improve traffic flows at access points to the project and along Keeaumoku Street and Rycroft Street.

Existing Conditions

The proposed mixed use project is located on a two-block section, mauka of the Ala Moana shopping center. The project site is bounded by four streets: Rycroft Street, Makaloa Street, Keeaumoku Street, and Sheridan Street. Kamaile Street, which bisects the site, would be removed. These streets are the focus of the analysis presented in this study. A description of the existing traffic conditions, parking constraints, and existing land use in the project site is presented below.

Level of Service Concept - It is a standard traffic engineering practice to describe traffic operations using the level of service concept. The six categories, Level of Service A to F, represent varying degrees of traffic congestion, with Level of Service A representing uncongested conditions and Level of Service F representing severely congested conditions. While there are

a number of methodologies which are used to calculate levels of service, the concept as illustrated in Figure 1 sufficiently describes the relationship between the degree of traffic congestion and a level of service category.

Traffic Conditions - Existing levels of service are shown in Table 1 for the key study area intersections. These levels of service were calculated using the analytical methodologies presented in the Highway Capacity Manual (Transportation Research Board, 1985). While it was observed that Keeaumoku Street currently experiences periods of highly congested operations, field observations during peak periods indicated that there is no significant congestion on the other streets in the study area, except for delays introduced by parking and truck loading activity along Makaloa Street, Rycroft Street, and Kamaile Street. No congestion was observed on Sheridan Street near the project site.

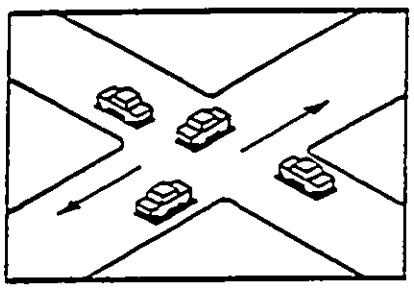
The existing intersection approach geometry is illustrated in Figure 2. Observed existing AM peak hour turning movement flows are summarized in Figure 3; PM peak hour flows are summarized in Figure 4. These peak hour flows are based on the highest one-hour traffic flows over a two hour period during each peak.

Keeaumoku Street - This is a major arterial which runs from the Ala Moana Shopping Center parking structure to H-1, extending on the mauka side of H-1 to Wilder Avenue, before ending at Keeaumoku Place. Near the project site, the adjacent land use is primarily commercial and office development, with many of the parcels having direct access to Keeaumoku Street.

The cross-section of Keeaumoku Street is 64 feet (80-foot right-of-way), with six lanes in both directions, except where on street parking is permitted. On-street parking is permitted on Keeaumoku Street between Makaloa Street and Rycroft Street in the mauka bound direction, except from 3:30 PM to 5:30 PM. In the makai bound direction, parking is permitted at all times, which limits the capacity to two lanes near the project site.

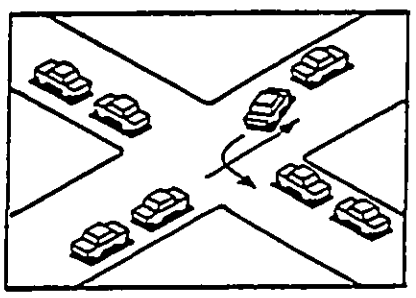
Keeaumoku Street is currently highly congested during the afternoon and evening hours. Much of the traffic congestion observed near the project site is created by left turning vehicles

LEVEL OF SERVICE "A" - V/C = 0 TO 0.60
Describes operations with very low delay, i.e., less than 5 seconds per vehicle. This occurs when signal progression is extremely favorable, and most vehicles arrive during the green phase. Most vehicles do not stop at all.



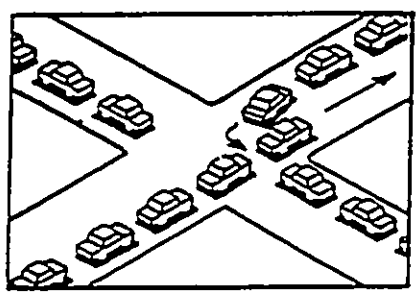
LOS 'A'

LEVEL OF SERVICE "B" - V/C = 0.61 TO 0.70
Describes operations with delays in the range of 5 to 15 seconds per vehicle. This generally occurs with good progression and/or short cycle lengths. More vehicles stop than for LOS "A", causing higher levels of average delay.



LOS 'C'

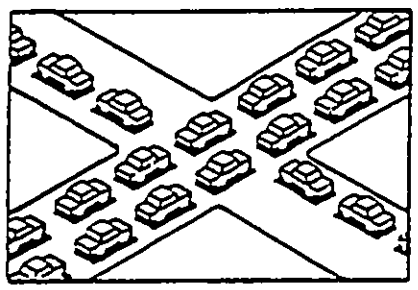
LEVEL OF SERVICE "C" - V/C = 0.71 TO 0.80
Describes operation with delay in the range of 15 to 25 seconds per vehicle. Occasionally vehicles may wait more than one red signal phase. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.



LOS 'D'

LEVEL OF SERVICE "D" - V/C = 0.81 TO 0.90
Describes operations with delay in the range of 25 to 40 seconds per vehicle. At LOS "D", the influence of congestion becomes more noticeable. Many vehicles stop, and the proportion of vehicles not stopping declines. Noticeable numbers of vehicles fail to clear signal during the first green phase.

LEVEL OF SERVICE "E" - V/C = 0.91 TO 1.00
Describes operations with delay in the range of 40 to 60 seconds per vehicle. These high delay values generally indicate poor progression, long cycle lengths, and high V/C ratios. Vehicles frequently fail to clear the signal during the first green phase.



LOS 'F'

LEVEL OF SERVICE "F" - V/C GREATER THAN 1.00
Describes operations with delay in excess of 60 seconds per vehicle. This condition often occurs with oversaturation, i.e., when arrival flow rates exceed the capacity of the intersection.

SOURCE: Highway Capacity Manual, 1985.

WSA

LEVEL OF SERVICE CONCEPT

Kamaile Street Abandonment Study Traffic Analysis

FIGURE 1

Table 1

EXISTING INTERSECTION LEVELS OF SERVICE
Kamaile Street Abandonment Study
Traffic Analysis

INTERSECTION	AM PEAK HOUR LOS	AM PEAK HOUR V/C	PM PEAK HOUR LOS	PM PEAK HOUR V/C
Sheridan Street/ Makaloa Street	A/A	*	A/A	*
Sheridan Street/ Kamaile Street	A/A	*	A/A	*
Sheridan Street/ Rycroft Street	A	**	B	**
Keeaumoku Street/ Rycroft Street[1]	B	0.62	B	0.67
Keeaumoku Street/ Kanunu Street	E/A	*	E/C	*
Keeaumoku Street/ Kamaile Street	D/B	*	E/C	*
Keeaumoku Street/ Makaloa Street[2]	A	0.39	B	0.60

LOS = Level of Service
V/C = Volume-capacity ratio (where appropriate)

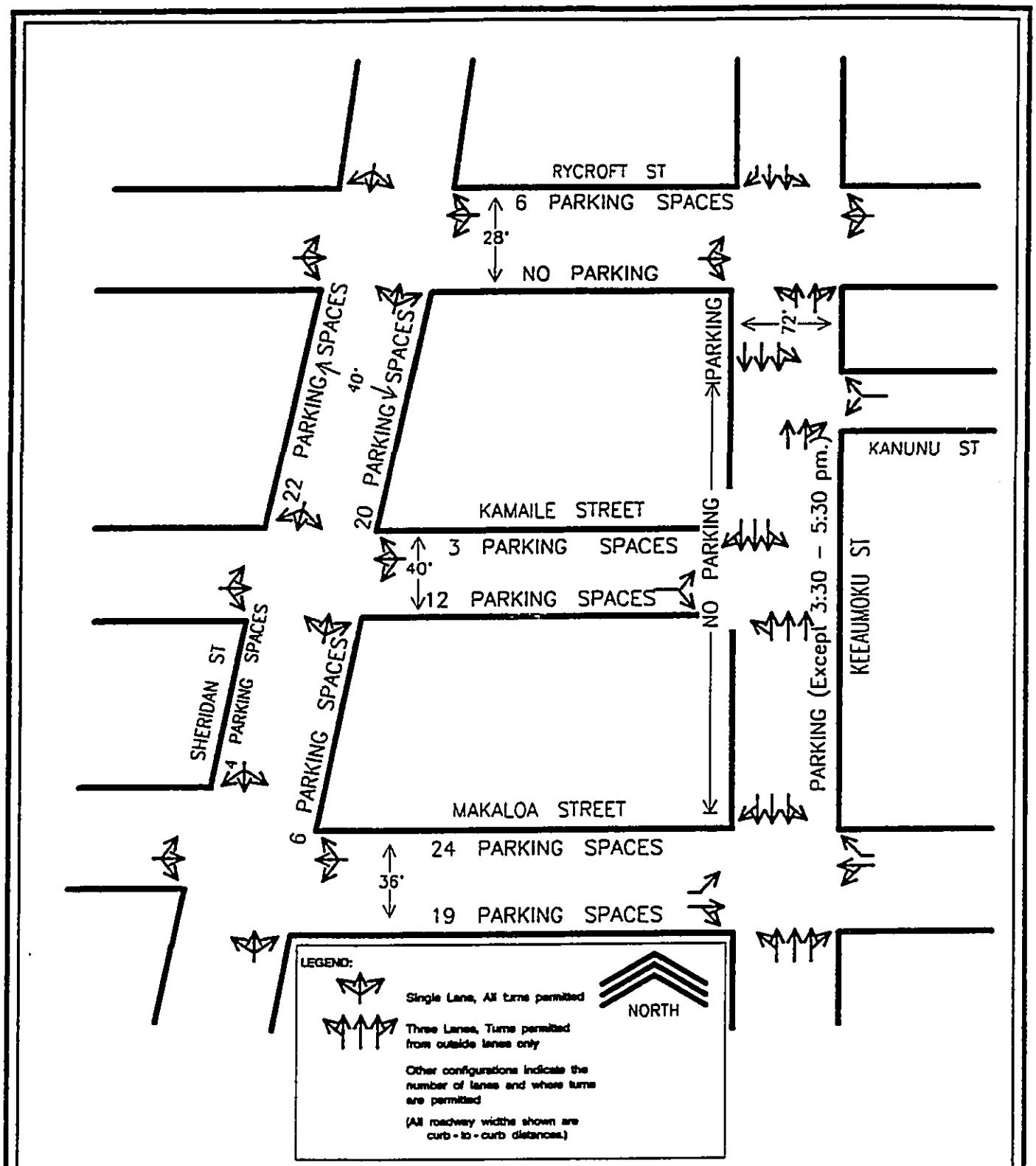
1 Downstream congestion periodically leads to conditions where traffic queues back-up into this intersection, which results in Level of Service F operating conditions.

2 Observed level of service appears to be lower than calculated levels of service. Currently, the weaving movements related to the parking garage at the Ala Moana Center result in congestion that cannot be estimated using standard isolated intersection capacity calculations.

* LOS calculations at intersections with two-way or one-way STOP signs do not yield V/C ratios. The two levels of service shown refer to the level of service on the minor street and the left-turn from the major street, respectively.

** At a four-way STOP, a single level of service applies to all movements.

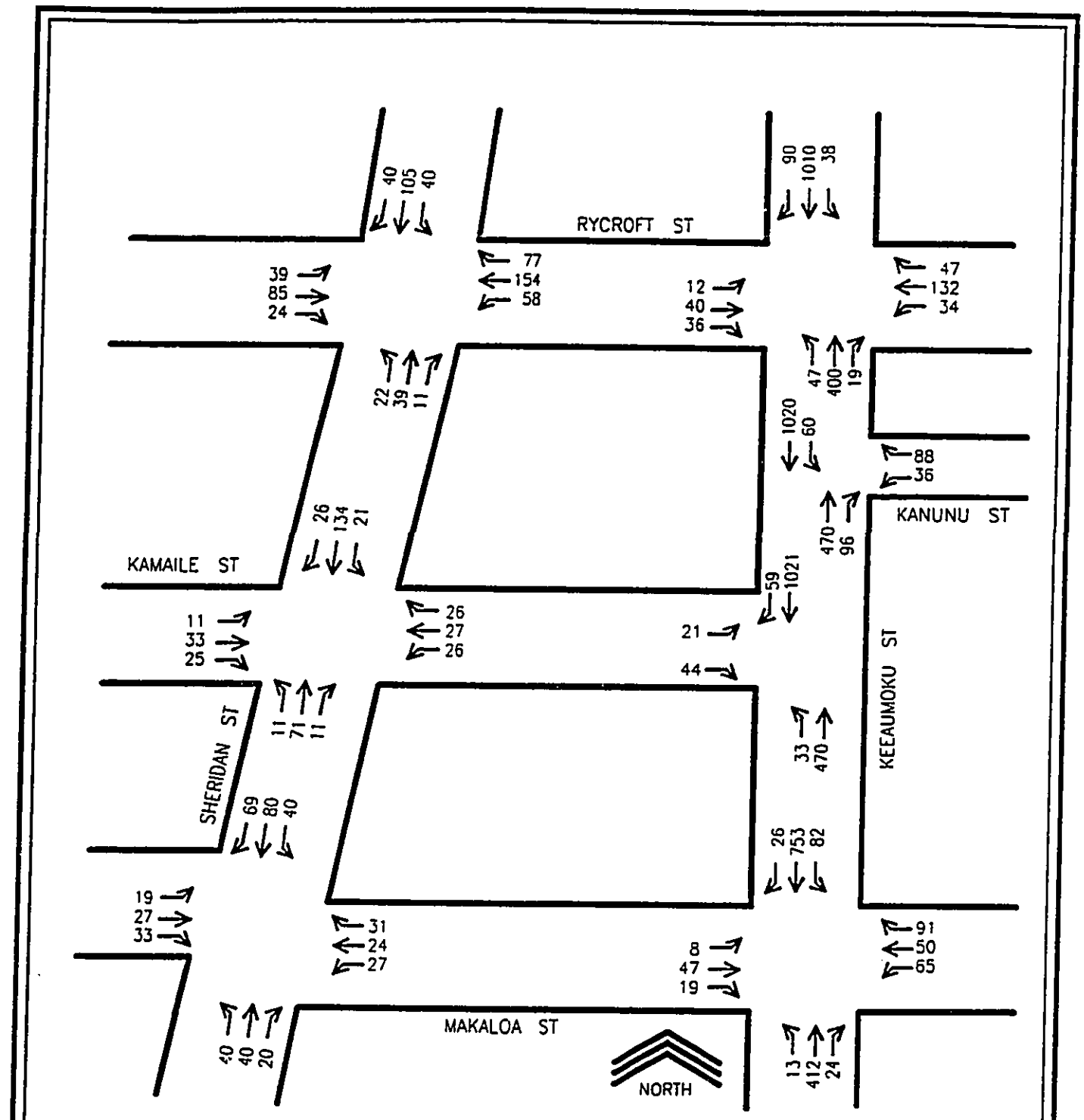
Wilbur Smith Associates; January 22, 1990.



WSA

EXISTING NUMBER OF LANES
AND LOCATION OF ON-STREET PARKING
Kamaile Street Abandonment Study Traffic Analysis

FIGURE
2

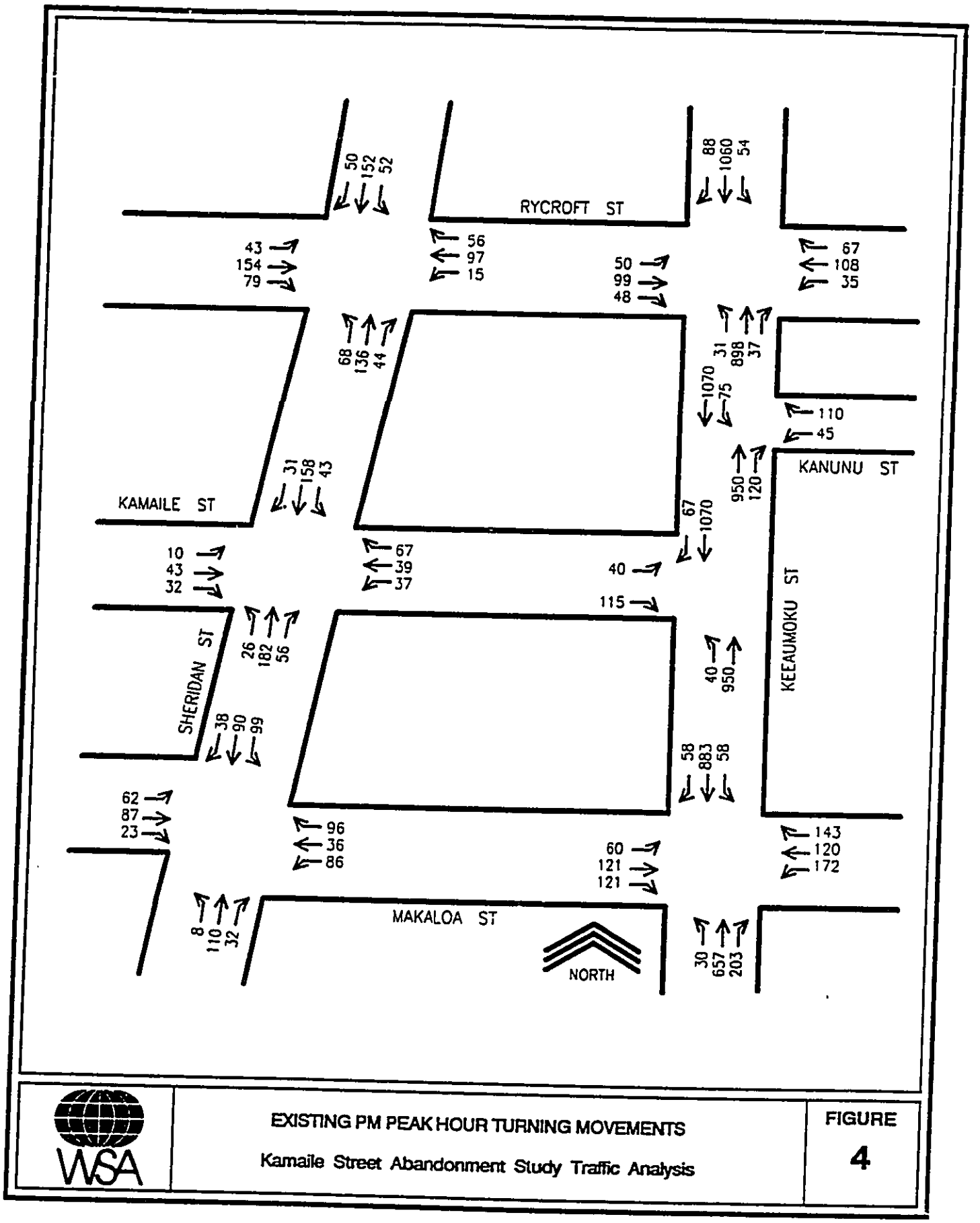


WSA

EXISTING AM PEAK HOUR TURNING MOVEMENTS

Kamaile Street Abandonment Study Traffic Analysis

FIGURE 3



WSA	EXISTING PM PEAK HOUR TURNING MOVEMENTS Kamaile Street Abandonment Study Traffic Analysis	FIGURE 4

to and from side streets and driveways. Drivers often wait through more than one traffic signal cycle during the PM peak period to clear each intersection.

Existing traffic flows on Keeaumoku Street amount to approximately 2,000 vehicles per hour during the AM peak hour and 1,500 vehicles per hour during the PM peak hour. The average daily traffic (ADT) flow is about 31,000 vehicles per day in the vicinity of the project (City of Honolulu, 1989).

Makaloa Street - This street runs parallel to and in between Kapiolani Boulevard and Kamaile Street. It is located on the makai side of the proposed project. The existing cross-section of Makaloa Street is about 40 feet. Parking is permitted on both sides.

Existing traffic flows on Makaloa Street were estimated to be about 160 vehicles per hour during the AM peak hour and 460 vehicles per hour during the PM peak hour. The ADT on Makaloa Street was about 5,400 vehicles per day in the vicinity of the project. This traffic count data was obtained from the City of Honolulu (February 27, 1989). Turning movement counts conducted at the intersection of Makaloa Street and Sheridan Street in November 1989 support the accuracy of this information.

Rycroft Street - Rycroft Street runs parallel to H-1 and Kapiolani Boulevard. The length of Rycroft street is bounded by Pensacola Street on the ewa side and Kaheka Street on the diamondhead side and would form the mauka boundary of the project site. Between Pensacola Street and Keeaumoku Street, the 28-foot paved section is wide enough to accommodate parking on the mauka side only. On the diamondhead side of Keeaumoku Street, Rycroft has been widened to accommodate parking on both sides of the street.

In the vicinity of the project site, this 28-foot wide street contains two travel lanes. Parking is permitted only on the mauka side of Rycroft Street. On the makai side, there is room for about 4 parked cars, plus about 35 feet striped yellow for loading.

Existing traffic flows on Rycroft Street were counted in November 1989. About 380 vehicles per hour were observed during the AM peak hour and 400 vehicles per hour were

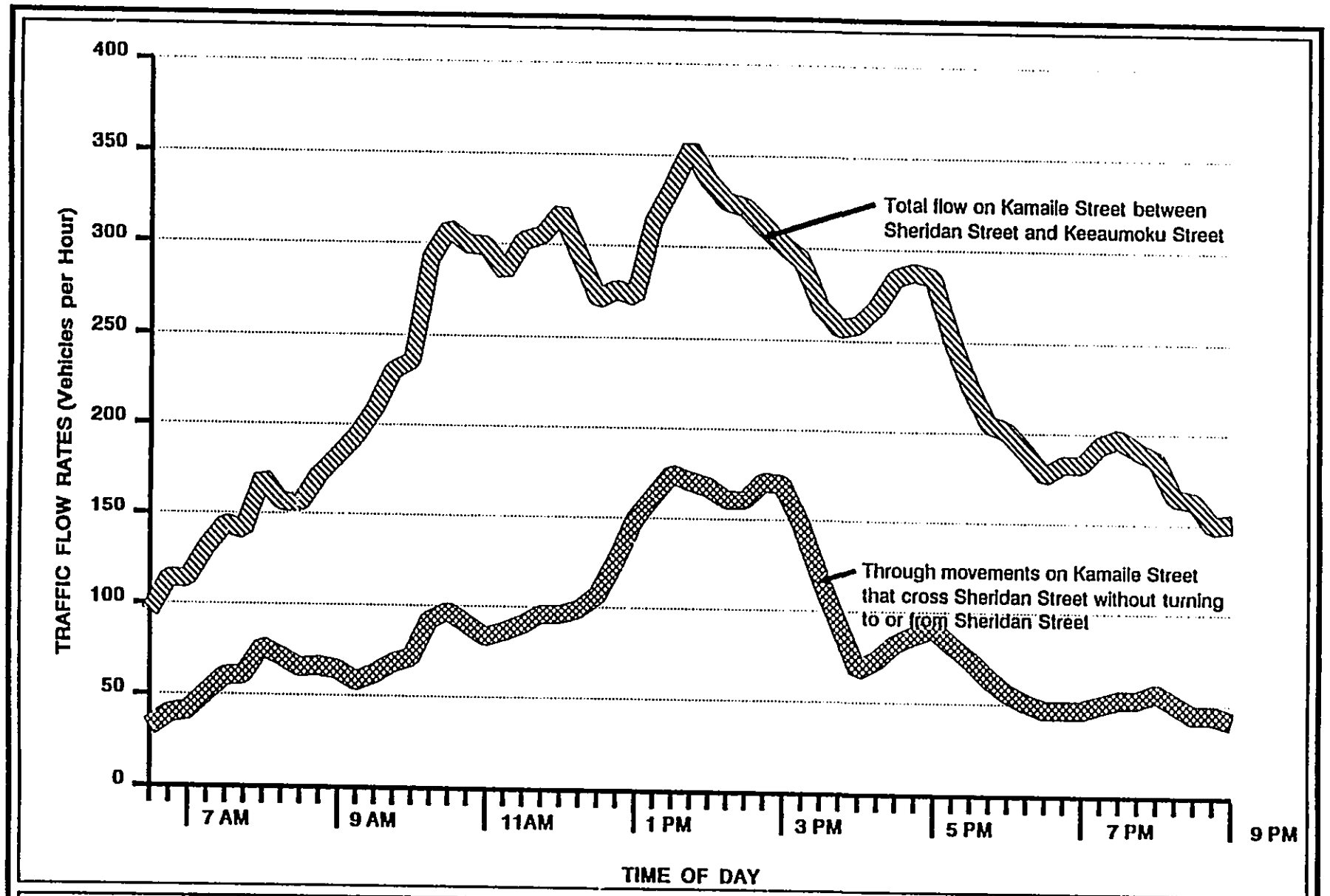
observed during the PM peak hour. An ADT on Rycroft Street of about 3,200 vehicles per day in the vicinity of the project was counted by the City of Honolulu (1981). It was estimated that the 1989 ADT is about 4,700 vehicles per day.

Sheridan Street - Sheridan Street runs in a diagonal direction through the street grid, beginning at Keeaumoku Street and ending at King Street. It is a two-lane street, 40 feet wide, with parking on both sides. Between Kapiolani Street and Kamaile Street, parking is controlled by two-hour meters. No parking fee is charged on the remainder of Sheridan Street.

Existing traffic flows on Sheridan Street were estimated to be about 270 vehicles per hour during the AM peak hour and 340 vehicles per hour during the PM peak hour. The ADT on Sheridan Street was about 4,500 vehicles per day near Makaloa Street in the vicinity of the project. This traffic count information was obtained from the City of Honolulu (February 27, 1989).

Kanunu Street - This street is located across from a proposed entrance to the parking garage for the retail space of the proposed project. Existing traffic flows on Kanunu Street were estimated to be about 300 vehicles per hour during the AM peak hour and 350 vehicles per hour during the PM peak hour. The ADT on this street was estimated to be about 4,100 vehicles per day.

Kamaile Street - This street is 40 feet wide between Sheridan Street and Keeaumoku Street. Parking is permitted on both sides. This street is of significance in this study since it will be closed as proposed by the plans. Turning movements counts were conducted between the hours of 6:00 AM and 10:00 PM at the intersection of Kamaile Street and Sheridan Street in order to determine daily travel patterns on Kamaile Street. Traffic flow fluctuations on Kamaile Street are illustrated in Figure 5. The majority of traffic on Kamaile Street turns at the Sheridan Street intersection. This implies that most traffic is not through traffic. The amount of through traffic on Kamaile Street is estimated in the next section of this report.



WSA

KAMAILE STREET TRAFFIC DEMAND

Kamaile Street Abandonment Study Traffic Analysis

FIGURE 5

Existing traffic flows on Kamaile Street were estimated to be 140 vehicles per hour during the AM peak hour and 280 vehicles per hour during the PM peak hour. The ADT flow was estimated to be 3,300 vehicles per day.

Impact of Kamaile Street Closure

Another objective of this study is to determine the impacts of closing Kamaile Street between Sheridan Street and Keeaumoku Street. With respect to this action, the following observations were considered:

- It was observed that about three-fourths of the traffic on Kamaile Street between Keeaumoku Street and Sheridan Street either originated or ended on this segment.

- It is probable that most of the traffic on Kamaile Street is not through traffic, since both Makaloa Street and Rycroft Street are signalized at Keeaumoku Street; whereas, Kamaile Street has a stop sign at Keeaumoku Street. Drivers familiar with this situation likely select the signalized intersection to negotiate movements during peak traffic periods.

- Traffic flows on Rycroft Street and Makaloa Street are almost double the flows on Kamaile, indicating that Kamaile Street is not used as a through street.

The PM peak hour flow on Kamaile Street was observed to be about 280 vehicles per hour and the AM peak hour flow was observed to be about 140 vehicles per hour. If one-quarter of these trips are through trips, the closure of Kamaile Street would require rerouting of about 70 PM peak hour trips and 35 AM peak hour trips. On a daily basis, it was estimated that about 800 trips per day would be rerouted. Assuming that these rerouted trips were distributed evenly between Rycroft Street and Makaloa Street and that all of the rerouted vehicles became critical movements at each respective intersection, the average increase in volume-capacity ratios would be less than one percent of capacity. The planned mixed-use project would eliminate existing

traffic demand for uses on Kamaile Street and the project site. Estimates of the traffic generated by existing uses and the base-line impacts are presented in the following section.

Project Description and Development Assumptions

The proposed project development includes an office tower with about 225,000 gross leasable square feet, a retail center with approximately 400,000 gross leasable square feet along Keeaumoku Street, and approximately 400 to 500 residential units (475 units used in traffic analysis). Kamaile Street would be closed between Sheridan Street and Keeaumoku Street; major entrances to the parking complexes parking structures serving the retail area would be located at the existing intersections of Kamaile Street on Sheridan Street and at Kanunu Street on Keeaumoku Street. Office tower parking access would be on Makaloa Street. High-rise condominiums access would be on Sheridan Street between Kamaile Street and Makaloa Street. Additional driveway access would be provided at either Rycroft Street or Sheridan Street to serve the low rise residential units.

Trip Generation - Projected traffic demand generated by the project was estimated according to standard trip generation equations, as developed by the Institute of Transportation Engineers (ITE, 1987). Table 2 summarizes the trip generation equations used in this study. The resulting trip generation projections follow in Table 3. It was estimated that the project would generate 21,830 daily trips, 980 AM peak hour trips, and 1,980 PM peak hour trips. This is a conservative estimate for several reasons. First, trip generation rates represent the highest one-hour flow during the peak two-hour period for each type of development. Since this highest one-hour period would not occur simultaneously for the different developments, the total trip generation of the project could be expected to be lower than the sum of the individual projects. Second, it is anticipated that each of the different developments would have a separate access point, resulting in a reduction in the actual trips generated.

Existing land uses consist of mixed use commercial buildings and restaurants, mostly single story buildings. The total existing square footage in the project site is estimated to be about 73,000 square feet, assuming an existing FAR of 0.3 over approximately 250,000 square feet. A trip generation rate of 74.3 daily trips per 1,000 square feet was assumed with 1.75 AM

Table 2

TRIP GENERATION EQUATIONS
Kamaile Street Abandonment Study
Traffic Analysis

LAND USE	TIME PERIOD	TRIP GENERATION EQUATION	IN/OUT SPLIT
Office Tower	Daily	LN(T) = 0.75LN(X)+3.77	50/50
	AM Peak Hour	LN(T) = 0.86LN(X)+1.34	87/13
	PM Peak Hour	LN(T) = 6.83LN(X)+1.46	16/84
High Rise Residential	Daily	T = 3.77(X)+224.0	50/50
	AM Peak Hour	T = 0.29(X)+29	19/81
	PM Peak Hour	T = 0.34(X)+20	62/38
Low Rise Residential Housing	Daily	T = 6.6(X)	50/50
	AM Peak Hour	T = 0.52(X)	22/78
	PM Peak Hour	T = 0.63(X)	65/35
Retail:	Daily	T = 6371+27.07(X)	50/50
	AM Peak Hour	LN(T) = 0.60LN(X)+2.40	70/30
	PM Peak Hour	T = 2.58(X)+381.0	47/53

Notes:

T = Trip ends generated.

X = Gross leaseable area in thousand of square feet or the number of dwellings trips for residential uses.

Sources: Trip Generation. 4th Edition, ITE; 1987.

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Table 3

PROJECT SITE TRIP GENERATION
Kamaile Street Abandonment Study
Traffic Analysis

LAND USE	SIZE USED IN TRAFFIC ANALYSIS	ACCESS POINT	TRIP GENERATION		
			Daily TRIPS	AM Peak Hour in/out	PM Peak Hour in/out
Study Project					
Office Tower	225,000 sq. ft.	Makaloa St.	2,520	350/ 50	60/320
High Rise Residential	440 Units	Sheridan St.	1,880	30/130	110/ 60
Low Rise Residential	35 Units	Rycroft/ Sheridan St.	230	5/ 15	15/ 5
Retail with Anchor	400,000 sq. ft.	Keeaumoku St.	17,200	280/120	660/750
		TOTAL	21,830	980	1,980

Wilbur Smith Associates; January 22, 1990.

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peak hour trips per 1,000 square feet, and 6.23 PM peak hour trips per 1,000 square feet. These trip generation rates are typical for a small shopping center and are estimated to be on the conservative (low) side, since the project site area includes several high-turnover restaurants which would generate high volumes of traffic.

With the proposed project, the displaced land uses would reduce traffic demand by approximately 5,600 daily trips, including 100 AM peak hour trips and 500 PM peak hour trips (rounded to the nearest 100 trips). The traffic generated by the existing land uses was subtracted from existing traffic volumes before project traffic was assigned. Then through traffic on Kamaile Street which would be forced to reroute was added to the existing flows. Existing traffic flows on Kamaile Street, Makaloa Street, and Rycroft Street amount to about 1,200 vehicles per hour during the PM peak hour. The rerouted through traffic from Kamaile Street was estimated to be 70 PM peak hour trips. This yielded a baseline of 770 vehicles per hour without the proposed project during the PM peak hour.

In general, trip distribution is the process of estimating where drivers will travel. To be consistent with other planning efforts in the City of Honolulu, the trip distribution patterns used to assign new traffic to the roadway system were based on the Hali 2005 regional travel forecasting model. This model is used by the City of Honolulu for long range transportation planning. The trip distribution patterns predicted by this model are shown in Table 4 as a percentage of the total trip interchange. These distributions account for the unique travel patterns associated with commercial land uses and with residential land uses. The traffic assignments presented in the following section were based on generalized distribution patterns.

Future Traffic Conditions

The proposed project as well as other developments in Honolulu would result in future increases in travel demand. To account for the planned development activity in the vicinity of the site and for growth throughout Honolulu, it was assumed that future traffic flows would increase by about 10 percent by 1995. In addition to this assumed background traffic growth, traffic assignments were made for the Tosei-Shaji office building project, now under construction on the makai side of Makaloa Street. This project is estimated to add 200 AM peak hour trips and

Table 4

TRIP DISTRIBUTION ASSUMPTIONS
Kamaile Street Abandonment Study
Traffic Analysis

ORIGIN OR DESTINATION	PERCENT DISTRIBUTION [1]			
	RETAIL AND OFFICE		RESIDENTIAL	
	Percent	Number of Vehicles[2]	Percent	Number of Vehicles
Mauka of Project (H-1)	73	14,400	30	630
Diamond Head of Project (Waikiki)	11	2,200	12	260
Ewa or Makai of Project (Downtown)	61	3,100	58	1,220
TOTAL	100%	19,700	100%	2,110

1 Estimate based on projected Year 2005 trip production/ attraction matrix for the Hali 2005 study.

2 Daily trip ends.

Wilbur Smith Associates; January 22, 1990.

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190 PM peak hour trips to Makaloa Street. The distribution patterns for this project were assumed to be the same as for the project under study.

Traffic flows with the project and future traffic are shown in Figure 6 for the AM peak hour and in Figure 7 for the PM peak hour. These figures also indicate traffic volumes at the proposed major driveway entrances.

The resulting intersection levels of service with future traffic flows are shown in Table 5. These levels of service were calculated assuming that no improvements would be made other than the prohibition of left turns on the makai bound approach to the intersection of Keeaumoku Street and Makaloa Street. This prohibition is proposed as a part of the Keeaumoku Street Improvement Program.

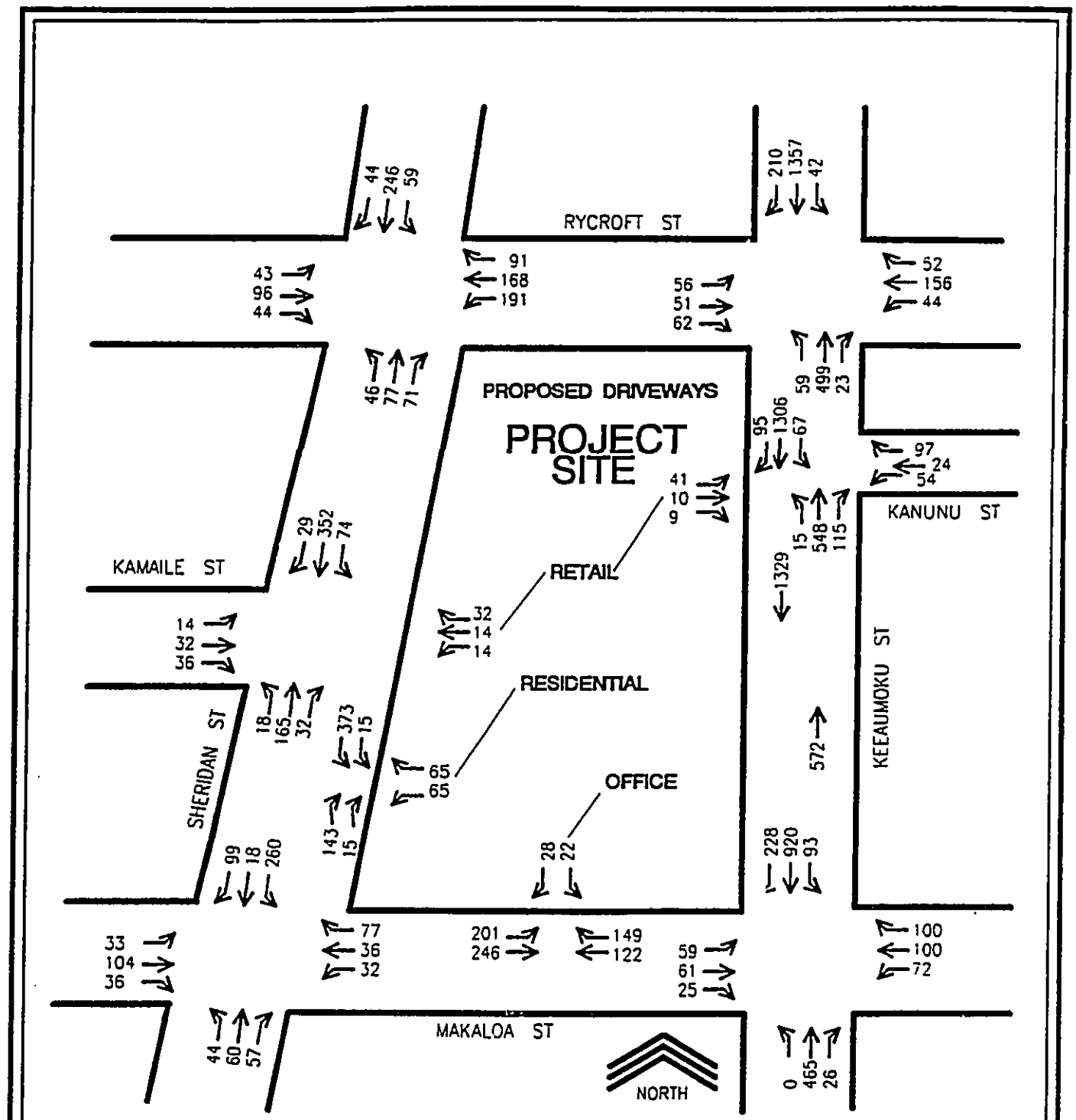
Potential Site Access and Circulation Improvements

Potential circulation improvements that would improve traffic operations to Level of Service D or better were identified for intersections which were forecast to operate at Level of Service E or F. These candidate improvements are suggested as a basis for discussion with the City and County of Honolulu Department of Transportation Services. Projected levels of service with these improvements are summarized in Table 6. Figure 8 shows the suggested lane geometry.

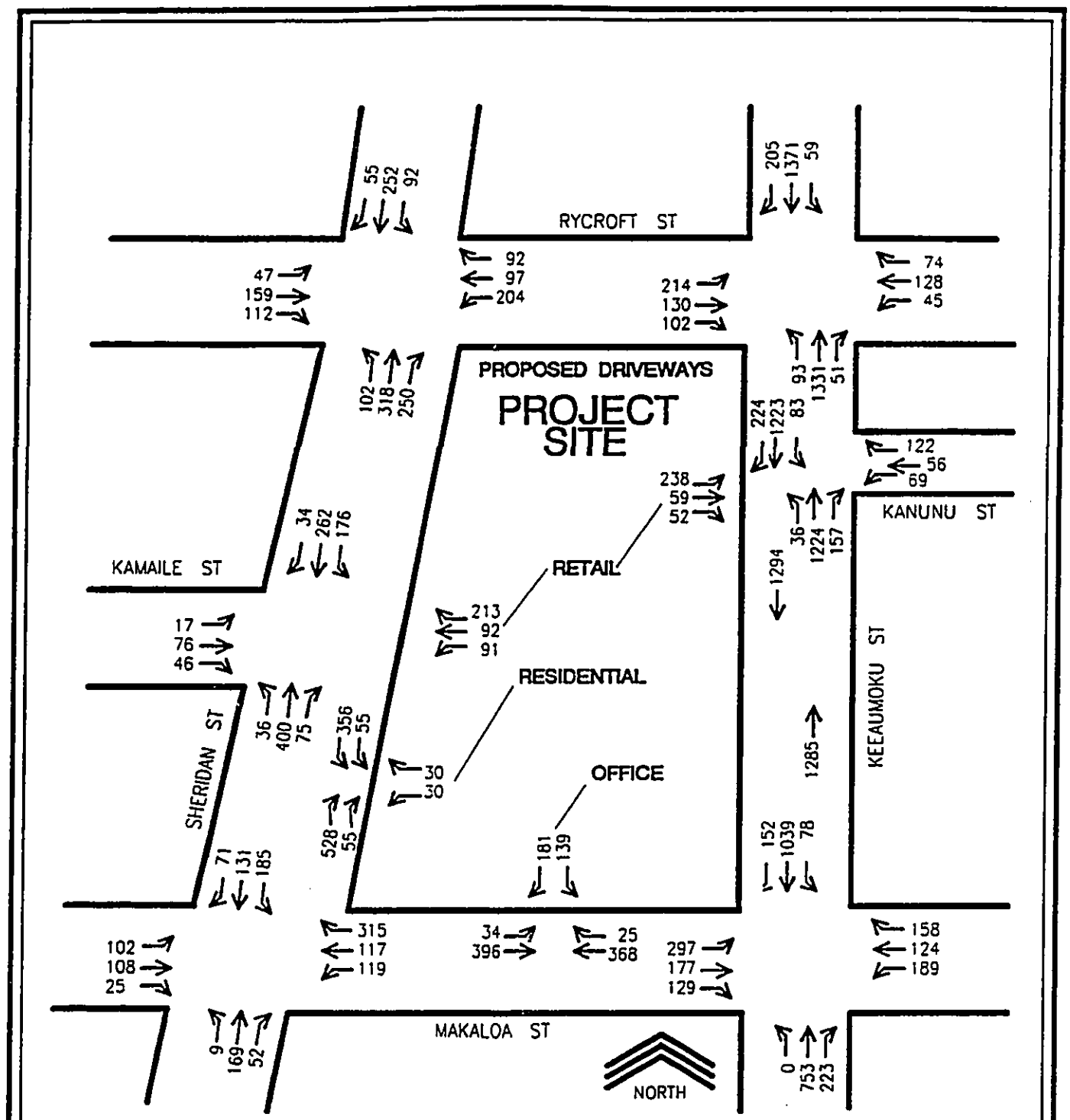
Rycroft Street

- Provide left-turn only lanes from Rycroft Street at Sheridan Street and at Keeaumoku Street. The projected traffic volumes would warrant lanes from 150 to 200 feet in length. Since this segment of Rycroft Street (Sheridan Street to Keeaumoku Street) is 300 feet long, a four-lane cross-section would be needed.

- Widen Rycroft Street to accommodate a four-lane cross-section. The removal of parking on the mauka side of the street would reduce both the



WSA	AM PEAK HOUR CUMULATIVE TRAFFIC WITH PROJECT Kamaile Street Abandonment Study Traffic Analysis	FIGURE 6



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PM PEAK HOUR
CUMULATIVE TRAFFIC WITH PROJECT
Kamaile Street Abandonment Study Traffic Analysis

FIGURE
7

Table 5

FUTURE INTERSECTION LEVELS OF SERVICE
WITH PROJECT
Kamaile Street Abandonment Study
Traffic Analysis

INTERSECTION[1]	AM PEAK HOUR LOS	AM PEAK HOUR V/C	PM PEAK HOUR LOS	PM PEAK HOUR V/C
Sheridan Street/Makaloa Street	A	0.54	D	0.89
Sheridan Street/Kamaile Street	A	0.41	D	0.82
Sheridan Street/Rycroft Street	B	0.65	F	1.08
Keeaumoku Street/Rycroft Street	D	0.86	F	1.16
Keeaumoku Street/Kanunu Street	A	0.52	D	0.82
Keeaumoku Street/Kamaile Street	-	--	-	--
Keeaumoko Street/Makaloa Street	A	0.56	C	0.77

LOS = Level of Service
V/C = Volume-Capacity Ratio

1 For the purposes of this study, all intersections were analyzed as isolated signalized intersection.

Wilbur Smith Associates; January 22, 1990.

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Table 6

FUTURE INTERSECTION LEVELS OF SERVICE
WITH PROJECT AND ROADWAY IMPROVEMENTS
Kamaile Street Abandonment Study
Traffic Analysis

INTERSECTION[1]	AM PEAK HOUR LOS	AM PEAK HOUR V/C	PM PEAK HOUR LOS	PM PEAK HOUR V/C
Sheridan Street/Makaloa Street	A	0.54	C	0.74
Sheridan Street/Kamaile Street	A	0.35	B	0.69
Sheridan Street/Rycroft Street	B	0.58	D	0.81
Keeaumoku Street/Rycroft Street	B	0.66	D	0.87
Keeaumoku Street/Kanunu Street	A	0.55	C	0.77
Keeaumoku Street/Kamaile Street	A	--	A	--
Keeaumoko Street/Makaloa Street	A	0.56	C	0.77

LOS = Level of Service
V/C = Volume-Capacity Ratio

1 For the purposes of this study, all intersections were analyzed as isolated signalized intersection.

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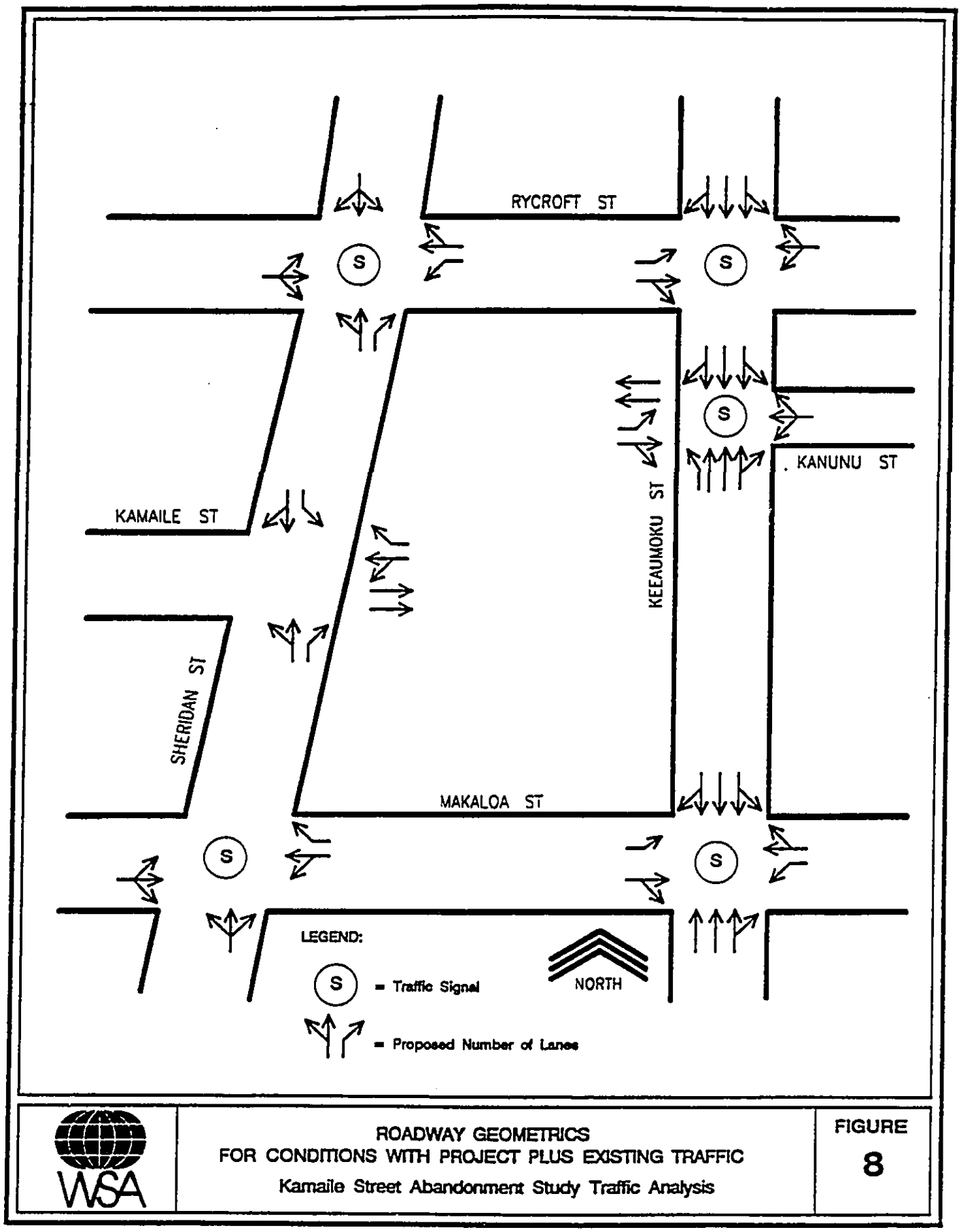

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ROADWAY GEOMETRICS
FOR CONDITIONS WITH PROJECT PLUS EXISTING TRAFFIC
Kamaile Street Abandonment Study Traffic Analysis

FIGURE
8

future width requirements and congestion due to cars moving in and out of parking spaces.

Makaloa Street

- Remove parking on the project (mauka) side of this street.
- Re-stripe to allow a right-turn lane at Sheridan Street and a left-turn lane at Keeaumoku Street.
- Realign Makaloa Street at Sheridan Street to eliminate the existing off-set (as shown in Figure 8).

Sheridan Street

- Remove on-street parking on the project (diamond head) side of the street;
- Add a left-turn lane for the driveway entrance to the retail parking area across from Kamaile Street;
- Add a right-turn lane in the mauka bound direction at the Rycroft Street intersection.

Keeaumoku Street

- Remove on-street parking on the project (ewa) side between Rycroft Street and Makaloa Street.
- Add a left-turn lane at the Kanunu Street intersection on the mauka bound approach. This would require the widening of Keeaumoku Street between Kanunu Street and a point about 200 feet in the makai direction from the Kanunu Street intersection.

- As an option, add a right-turn lane or a left-turn lane at the Kanunu Street intersection on the mauka bound approach. A right-turn lane would provide a queuing area for cars waiting to enter the garage. A left-turn lane would eliminate or reduce an offset created by a new mauka bound left-turn lane. Either of these improvements would improve access to the retail center parking area.

New Traffic Signals

Based on the assumed description of the planned project and access locations, peak hour traffic signal warrants would be met for forecast conditions at the following locations:

- Rycroft Street/Sheridan Street;
- Makaloa Street/Sheridan Street;
- Keeaumoku Street/Kanunu Street; and
- Sheridan Street/Kamaile Street.

If an intersection meets traffic signal warrants, it does not necessarily mean that a traffic signal should be installed at an intersection. Even though traffic signal warrants would be met at the intersection of Sheridan Street and Kamaile Street, this intersection would be close enough to new traffic signals on Sheridan Street and Rycroft Street and at Makaloa Street. These two signals might provide adequate gaps in traffic flow to allow trips to enter and exit the parking garage. A new traffic signal at this location could be deferred until it can be determined with actual future field data that a traffic signal would be beneficial at this location.

Likewise, at the intersection of Keeaumoku Street and Kanunu Street, a traffic signal may result in a poor traffic progression due to the close proximity of the traffic signal at Rycroft. Additional study beyond the scope of this report would be required to assess the magnitude of this potential problem.

Summary and Conclusions

This study concludes that the closure of Kamaile Street between Sheridan Street and Keeaumoku Street would not significantly impact traffic conditions in the area. The most significant traffic impacts will result from the subsequent mixed-use development of the two abutting city blocks which the closure of Kamaile Street will consolidate. Potential measures are available to improve traffic flow to at least Level of Service D. Such modifications--which include selective restriction of on-street parking, provision of left-turn lanes, and modification of intersection traffic controls--should be discussed with the City and County of Honolulu, Department of Transportation Services.

EXHIBIT D

AIR QUALITY STUDY
FOR THE PROPOSED
KAMAILE STREET CLOSURE MIXED-USE DEVELOPMENT
AT KEEAUMOKU AND SHERIDAN STREETS

HONOLULU, OAHU, HAWAII

Prepared for:

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CONTENTS

TABLES

TABLES (cont.)

1.0 INTRODUCTION AND PROJECT DESCRIPTION

The proposed mixed-use development to be built on the consolidated blocks resulting from the closure of Kamaile Street between Keeaumoku and Sheridan Streets is located in the Ala Moana District of Honolulu and encompasses approximately one-quarter of a million square feet. The proposed development is bounded by Rycroft Street on the mauka side, Makaloa Street on the makai side and Keeaumoku and Sheridan Streets on the Diamond Head and Ewa sides, respectively. Elements of the proposed project consist of an office tower (225,000 gross leasable square feet), a retail center (totaling 550,000 gross leasable square feet), and approximately 440 residential units. Presently, the project site is occupied by mixed-use, low-rise commercial buildings and restaurants providing an estimated 73,000 square feet of commercial space. Development of the proposed project would be fully completed by the year 1995.

The purpose of this study is to describe existing air quality in the project area and to assess the potential short-term and long-term direct and indirect air quality impacts that could result from the closure of Kamaile Street and subsequent construction of the proposed mixed-use development. Measures to mitigate these impacts are suggested where possible and appropriate.

2.0 AMBIENT AIR QUALITY STANDARDS

Ambient concentrations of air pollution are regulated by both national and state ambient air quality standards (AAQS). National AAQS are specified in Section 40, Part 50 of the Code of Federal Regulations (CFR), while State of Hawaii AAQS are defined in Chapter 11-59 of the Hawaii Administrative Rules. Table 1 summarizes both the national and the state AAQS that are specified

in the cited documents. As indicated in the table, AAQS have been established for six air pollutants. These regulated air pollutants include: particulate matter, sulfur dioxide, nitrogen dioxide, carbon monoxide, ozone and lead. National AAQS are stated in terms of primary and secondary standards. National primary standards are designed to protect the public health with an "adequate margin of safety". National secondary standards, on the other hand, define levels of air quality necessary to protect the public welfare from "any known or anticipated adverse effects of a pollutant". Secondary public welfare impacts may include such effects as decreased visibility, diminished comfort levels, or other potential injury to the natural or man-made environment, e.g., soiling of materials, damage to vegetation or other economic damage. In contrast to the national AAQS, Hawaii State AAQS are given in terms of a single standard that is designed "to protect public health and welfare and to prevent the significant deterioration of air quality".

Each of the regulated air pollutants has the potential to create or exacerbate some form of adverse health effect or to produce environmental degradation when present in sufficiently high concentration for prolonged periods of time. The AAQS specify a maximum allowable concentration for a given air pollutant for one or more averaging times to prevent harmful effects. Averaging times vary from one hour to one year depending on the pollutant and type of exposure necessary to cause adverse effects. In the case of the short-term (i.e., 1- to 24-hour) AAQS, both national and state standards allow one exceedance per year.

State of Hawaii AAQS are in some cases considerably more stringent than comparable national AAQS. In particular, the State of Hawaii

1-hour AAQS for carbon monoxide is four times more stringent than the comparable national limit.

Under the provisions of the Federal Clean Air Act [1], the U.S. Environmental Protection Agency (EPA) is required to periodically review and re-evaluate national AAQS in light of research findings more recent than those which were available at the time the standards were originally set. Occasionally new standards are created as well. Most recently, the national standard for particulate matter has been revised to include specific limits for particulates 10 microns or less in diameter (PM-10) [2]. The State of Hawaii has not explicitly addressed the question of whether to set limits for this category of air pollutant, but national AAQS prevail where states have not set their own more stringent levels.

Hawaii AAQS for sulfur dioxide were relaxed in 1986 to make them essentially the same as national limits. It has been proposed in various forums that the state also relax its carbon monoxide standards to the national levels, but at present there are no indications that such a change is being considered.

3.0 PRESENT AIR QUALITY

Present air quality in the project area is mostly affected by air pollutants from natural, industrial, and/or vehicular sources, and perhaps to a lesser extent from distant agricultural origins. Table 2 presents an air pollutant emission summary for the City and County of Honolulu which was compiled in 1980. These are the latest data that are available. The mineral products industry was the most significant source category for emissions of particulate matter. Sulfur dioxide emissions originated mainly from power

plants, while motor vehicles accounted for much of the emissions of nitrogen oxides, carbon monoxide and hydrocarbons.

Natural sources of air pollution emissions which could also affect the project area but cannot be quantified very accurately include the ocean (sea spray), plants (aero-allergens), wind-blown dust, and perhaps distant volcanoes on the Island of Hawaii.

The State Department of Health operates a network of air quality monitoring stations at various locations on Oahu. Each station, however, typically only monitors one or two of the regulated pollutants. An annual summary of air quality measurements that were made nearest to the project site for each of the regulated air pollutants is presented in Table 3 for the period 1985 through 1988.

Sulfur dioxide is measured by the State Department of Health at an air quality monitoring station located in Campbell Industrial Park at Barbers Point several miles west of the project site. As indicated in the table, measurements of 24-hour average sulfur dioxide concentration were made at this location. There were no exceedances of the state/national 24-hour AAQS for sulfur dioxide during the 4-year period. Concentrations monitored during the last 3 years reported were consistently low with daily mean values at or below 5 ug/m^3.

Total particulate concentrations were monitored at the Department of Health Building in downtown Honolulu, approximately 1 mile west of the project site. During the 1985-88 reporting period, the

highest 24-hour average total particulate concentration measured was 61 ug/m^3. Average daily concentrations for total particulate were about 25 ug/m^3. No exceedances of the state AAQS were recorded.

The nearest PM-10 monitoring station is located about 2 miles northwest of the project site at Liliha. Twenty-four average PM-10 concentrations monitored at the Liliha monitoring station ranged from 7 to 52 ug/m^3 between 1985 and 1988. Average daily concentrations were generally less than 20 ug/m^3. All values reported were within the national AAQS.

The nearest carbon monoxide measurements were made at the Department of Health building in downtown Honolulu (about 16 miles to the east). The average daily maximum 1-hour concentration measured at this location was about 2 mg/m^3. During the most recent year reported, 1988, the daily maximum 1-hour concentration ranged from 0.4 to 7.4 mg/m^3; no exceedances of the state 1-hour AAQS were recorded. During previous years (1985-87), maximum 1-hour concentrations were higher, and one to three exceedances of the state 1-hour AAQS were measured each year. Daily maximum 8-hour values for 1988 have not been reported at this writing, but concentrations for the 1985-87 period ranged from 0.1 to 4.7 mg/m^3. The average of the daily maximum 8-hour values was about 1.3 mg/m^3. No exceedances of the state 8-hour AAQS were recorded. Present concentrations of carbon monoxide in the project area are estimated later in this study based on air quality modeling of vehicular emissions.

The nearest available ozone measurements were obtained at Sand Island (about 15 miles east of the project site) between 1985 and

1987. During 1987 the Sand Island daily maximum 1-hour concentration averaged 38 ug/m^3 and ranged from 4 to 84 ug/m^3, and there were no exceedances of the state AAQS. Concentrations during 1986 were similar to those recorded for 1987, while in 1985 maximum 1-hour concentrations were significantly higher. Three exceedances of the state AAQS were measured during the 1985 period.

The closest available measurements of ambient lead concentrations were made at the downtown Honolulu monitoring station. During the 1985-87 reporting period, lead concentrations at this location had a downward trend, most probably reflecting the increased use of unleaded gasoline. Average quarterly concentrations were near or below the detection limit. No exceedances of the state AAQS have ever been recorded.

Nitrogen dioxide is no longer monitored by the Department of Health anywhere in the state. Concentrations of this pollutant were measured from 1971 through 1976 at Barbers Point, and annual mean values were found to vary from 11 to 29 ug/m^3, safely inside the state and national AAQS.

Based on the data and discussion presented above, it appears likely that the State of Hawaii AAQS for particulates, sulfur dioxide, nitrogen dioxide and lead are currently being met at the project site. The ozone AAQS has not been exceeded during the past two years for which data are presently available (1986 and 1987) at the Sand Island monitoring station. Carbon monoxide readings from urban Honolulu indicate that the state AAQS for carbon monoxide may be exceeded at a rate of one to three times per year in traffic-congested areas.

4.0 SHORT-TERM IMPACTS OF PROJECT

Short-term direct and indirect impacts on air quality could potentially occur due to project construction. For a project of this nature, there are two potential types of air pollution emissions which could directly result in short-term air quality impacts during project construction: (1) fugitive dust from demolition work and from vehicle movement and soil excavation; and (2) exhaust emissions from on-site construction equipment. Indirectly, there could also be short-term impacts from slow-moving construction equipment traveling to and from the project site and from a temporary increase in local traffic caused by commuting construction workers.

Fugitive dust emissions may arise from the demolition and removal of existing structures on the site and from the grading and dirt-moving activities associated with site preparation once the area is cleared. The emission rate for fugitive dust emissions from construction activities is difficult to estimate accurately because of its elusive nature and because the potential for its generation varies greatly depending upon the type of soil at the construction site, the amount and type of dirt-disturbing activity taking place, the moisture content of exposed soil in work areas, and the wind speed. The EPA [3] has provided a rough estimate for uncontrolled fugitive dust emissions from construction activity of 1.2 tons per acre per month under conditions of "medium" activity, moderate soil silt content (30%), and precipitation/evaporation (P/E) index of 50. Uncontrolled fugitive dust emissions in the project area would probably be somewhat higher because the PE index for the Ala Moana area is probably greater than 50 due to the dry climate. In any case, State of Hawaii Air Pollution Control Regulations [4] prohibit visible emissions of fugitive dust from construction

activities at the property line. Thus, an effective dust control plan for the project construction phase is essential.

Adequate fugitive dust control can usually be accomplished by establishment of a frequent watering program to keep demolition areas and bare-dirt surfaces in work areas from becoming significant dust generators. In some cases, limiting the area that can be disturbed at any given time may be necessary. Control regulations also require that open-bodied trucks be covered at all times when in motion if they are transporting materials likely to give rise to airborne dust. Paving of parking areas and/or establishment of landscaping as early in the construction process as possible can also lower the potential for fugitive dust emissions.

On-site mobile and stationary construction equipment will also emit some air pollutants in the form of engine exhausts. The largest of this equipment is usually diesel-powered. Nitrogen oxides emissions from diesel engines can be relatively high compared to gasoline-powered equipment, but the standard for nitrogen dioxide is set on an annual basis and is not likely to be violated by short-term construction equipment emissions. Carbon monoxide emissions from diesel engines, on the other hand, are low and should be relatively insignificant compared to vehicular emissions on nearby roadways.

Indirectly, slow-moving construction vehicles on roadways leading to and from the project site could obstruct the normal flow of traffic to such an extent that overall vehicular emissions are increased, but this impact can be mitigated by moving heavy construction equipment during periods of low traffic volume. Likewise, the schedules of commuting construction workers can be

adjusted to avoid peak hours in the project vicinity. Thus, most potential short-term air quality impacts from project construction can be mitigated.

5.0 LONG-TERM IMPACTS OF PROJECT

5.1 Roadway Traffic

By serving as an attraction for increased motor vehicle traffic on nearby roadways, the proposed project is considered to be an indirect air pollution source. Motor vehicles with gasoline-powered engines are significant sources of carbon monoxide. They also emit nitrogen oxides, and those burning leaded gasoline contribute lead to the atmosphere. The use of leaded gasoline in new automobiles is now prohibited. As older vehicles continue to disappear from the numbers of those currently operating on the state's roadways, lead emissions are approaching zero. Nationally, so few vehicles now require leaded gasoline that the EPA is proposing a total ban on leaded gasoline to take effect immediately. Even without such a ban, reported quarterly averages of lead in air samples collected in urban Honolulu have been near zero since early 1986. Thus, lead in the atmosphere is not considered to be a problem anywhere in the state.

Federal air pollution control regulations also call for increased efficiency in removing carbon monoxide and nitrogen oxides from the exhausts of new motor vehicles. By the year 1995 carbon monoxide emissions are expected to be about 30 percent less than the amounts now emitted due to the replacement of older vehicles with newer models. Further reductions in vehicular emissions have recently been proposed by the President for areas of the country which do

not currently meet AAQS, mainly through the use of alternative fuels.

To evaluate the potential long-term indirect air quality impact of increased roadway traffic associated with a project such as this, the normal practice is to utilize computerized emission and atmospheric dispersion models to estimate ambient carbon monoxide concentrations along roadways leading to and from the project. Carbon monoxide is selected for modeling because it is both the most stable and the most abundant of the pollutants generated by motor vehicles. Furthermore, carbon monoxide air pollution is generally considered to be a microscale problem, whereas nitrogen oxides air pollution most often is a regional issue. This is reflected in the fact that the AAQS for carbon monoxide are specified on a short-term basis (1-hour and 8-hour averaging times) while the AAQS for nitrogen dioxide is set on an annual basis.

For this project, two scenarios were selected for the carbon monoxide modeling study: year 1990 with present conditions and year 1995 assuming the project is built and complete. To begin the modeling study, critical receptor areas in the vicinity of the project were identified for analysis. Generally speaking, roadway intersections are the primary concern because of traffic congestion and because of the increase in vehicular emissions associated with traffic cycling: decelerating, stopping, queueing and accelerating.

The traffic impact assessment report for the project [5] describes the present and future conditions and configurations of the roadway system in the vicinity of the proposed project. Briefly, Keeaumoku Street bounding the Diamond Head side of the project provides a major arterial route for makai- and mauka-bound traffic between

Kapiolani Boulevard and King/Beretania Streets. In the immediate vicinity, traffic signals control traffic movements at Rycroft and at Makaloa and traffic from Kanunu Street is controlled by a stop sign. Sheridan Street runs semi-parallel to Keeaumoku Street along the Ewa boundary of the project. A four-way stop currently exists at the intersection of Sheridan and Rycroft while cross traffic at Kamaile Street and at Makaloa Street is regulated by stop signs. More detailed descriptions of the roadways in the project vicinity are provided in the traffic study cited above.

The main objectives of the modeling study were to estimate both current and projected levels of maximum 1-hour average carbon monoxide concentrations which could be directly compared to the national and state AAQS. The traffic impact assessment report indicates that traffic volumes generally are or will be higher during the afternoon peak hour than during the morning peak period. Worst-case emission and meteorological dispersion conditions usually occur during the morning hours. Thus, even though afternoon traffic counts may be higher, the morning peak traffic hour typically can be expected to cause the highest air pollution concentrations along roadways. However, due to possible effects from the queuing of vehicles at intersections, both morning and afternoon peak traffic hours were examined to ensure that worst-case concentrations were identified.

The EPA computer model MOBILE4 [6] was used to calculate vehicular carbon monoxide emission estimates for each of the years studied. Based on recent vehicle registration figures, the present and projected vehicle mix in the project area is estimated to be 91.9% light-duty gasoline-powered vehicles, 4.2% light-duty gasoline-powered trucks and vans, 0.5% heavy-duty gasoline-powered vehicles, 1% diesel-powered trucks and buses, and 1% motorcycles. For

traffic operating within the immediate project area, it was assumed that about 50 percent of all vehicles would be operating in the cold-start mode and that about 10 percent would be operating in the hot-start mode. These operational mode values were estimated based on a report from the California Department of Transportation [7] and assume an urban area type assessment where predominantly local traffic is involved. MOBILE4 idle emissions were adjusted to account for excess cold/hot-start emissions per a recent U.S. EPA memorandum [8].

National averages for "mis-fueling" were assumed. Ambient temperatures of 59 and 68 degrees F were used for morning and afternoon peak-hour emission computations, respectively. This is a conservative assumption since ambient temperatures will generally be warmer than this and emission estimates given by MOBILE4 are inversely proportional to the ambient temperature.

After computing vehicular carbon monoxide emissions through the use of MOBILE4, these data were then input to the latest version of the computer model CALINE4 [9]. CALINE4 was developed by the California Transportation Department to simulate vehicular movement and atmospheric dispersion of vehicular emissions. It is designed to predict 1-hour average pollutant concentrations along roadways based on input traffic and emission data, roadway/receptor geometry and meteorological conditions.

Input peak-hour traffic data were obtained from the traffic study cited previously. The traffic volumes given in the traffic study for the future scenario include project traffic as well as traffic from other growth that is expected to occur in the area by the year 1995.

Model roadways were set up to reflect actual roadway geometry, physical dimensions and operating characteristics. Sidewalks were assumed to located adjacent to all roadways; thus model receptor sites were located approximately 2 meters from the edge of the roadway near the intersections in question. All receptor heights were placed at 1.5 meters above ground to simulate levels within the normal human breathing zone.

Input meteorological conditions for this study were defined to provide "worst-case" results. One of the key meteorological inputs is atmospheric stability category. For these analyses, atmospheric stability category 4 was assumed for both morning and afternoon cases. This is the most conservative stability category that can be used for estimating pollutant dispersion in urban locations. A surface roughness length of 200 cm was assumed with a mixing height of 300 meters. Worst-case wind conditions were defined as a wind speed of 1 meter per second with a wind direction resulting in the highest predicted concentration.

Existing background concentrations of carbon monoxide in the project vicinity are believed to be at moderate levels. Hence, background contributions of carbon monoxide from sources or distant roadways not directly considered in the analysis were accounted for by adding a background concentration of 1 ppm to all predicted concentrations for both the 1990 and the 1995 scenarios.

Table 4 summarizes the final results of the modeling study in the form of the estimated worst-case 1-hour morning and afternoon ambient carbon monoxide concentrations. These results can be

compared directly to the state and the national AAQS. Estimated worst-case carbon monoxide concentrations are presented in the table for two scenarios: year 1990 with existing traffic and year 1995 with traffic from the proposed project as well as from other development in the area. The locations of these estimated worst-case 1-hour concentrations all occurred at or very near the indicated intersections.

All afternoon peak hour concentrations estimated for the existing case were higher than the morning peak values. As indicated in the table, the estimated present (1990) worst-case 1-hour carbon monoxide concentration in the project area, 22.7 mg/m^3, occurs during the afternoon peak hour near the intersection of Keeaumoku and Makaloa Streets. Worst-case 1-hour values at other locations in the project vicinity were generally in the 5 to 15 mg/m^3 range.

In the year 1995 with the proposed project, a worst-case 1-hour concentration of 18.2 mg/m^3 was predicted to occur during the afternoon peak traffic hour near the intersection of Keeaumoku and Makaloa Streets, the same location and time as the highest existing concentration. Values at the other locations studied for the 1995 with project case ranged between about 5 and 14 mg/m^3 during the morning peak hour. Afternoon peak-hour concentrations were generally higher with the estimated concentrations varying from about 2 to nearly 80 percent higher than the worst-case values occurring in the morning.

Thus, all estimated worst-case 1-hour carbon monoxide levels are well within the national AAQS of 40 mg/m^3. It appears likely, however, that existing concentrations of carbon monoxide may exceed the State of Hawaii 1-hour AAQS of 10 mg/m^3 on occasion near the

intersections of Keeaumoku at Makaloa, Keeaumoku at Rycroft, and Sheridan at Rycroft. In the 1995 with project scenario, the same locations would likely exceed the state AAQS, but Keeaumoku at Kanunu could become an additional "hot spot".

Worst-case 8-hour carbon monoxide concentrations were estimated by multiplying the worst-case 1-hour values by a persistence factor of 0.5. This accounts for two factors: (1) traffic volumes averaged over eight hours are lower than peak 1-hour values, and (2) meteorological dispersion conditions are more variable (and hence more favorable) over an 8-hour period than they are for a single hour. Based on monitoring data, 1-hour to 8-hour persistence factors for most locations generally vary from 0.4 to 0.8 with 0.6 being the most typical. One recent study based on modeling [10] concluded that 1-hour to 8-hour persistence factors could typically be expected to range from 0.4 to 0.5. EPA guidelines [11] recommend using a value of 0.6 to 0.7 unless a locally derived persistence factor is available. Recent monitoring data for Honolulu reported by the Department of Health [12] suggests that this factor may range between about 0.35 and 0.55 depending on location and traffic variability. Considering the location of the project and the traffic pattern for the area, a 1-hour to 8-hour persistence factor of 0.5 is probably most appropriate for this application.

The resulting estimated worst-case 8-hour concentrations are indicated in Table 5. For the 1990 scenario, the estimated worst-case 8-hour carbon monoxide concentration was 11.4 mg/m^3 at the intersection of Keeaumoku and Makaloa. Other locations ranged from 2.8 mg/m^3 near Sheridan and Kamaile to 8.3 mg/m^3 near Keeaumoku and Rycroft. The predicted maximum value for the year 1995 with project scenario improved to 9.1 mg/m^3, again occurring at the

Keeaumoku/Makaloa intersection, while other locations were generally in the 5 to 8 mg/m^3 range. Comparing the predicted values for the existing case to the AAQS, it appears that the state 8-hour standard may be exceeded at some locations and that the national 8-hour standard could be exceeded near the Keeaumoku/ Makaloa intersection. All estimated 8-hour maximum carbon monoxide concentrations for the 1995 with project case are within the 10 mg/m^3 national AAQS, but exceedances of the state 8-hour standard are indicated at intersections along Keeaumoku and near the intersection of Sheridan and Rycroft.

The results of this study reflect several assumptions that must be made concerning traffic movement and worst-case meteorological conditions. One such assumption concerning worst-case meteorological conditions is that a wind speed of 1 meter per second with a steady direction for 1 hour will occur. A steady wind of 1 meter per second blowing from a single direction for an hour is not very likely, and it may occur only once a year or less. With wind speeds of 2 meters per second, for example, computed carbon monoxide concentrations would be only about half the values given above.

5.2 Electrical Generation

The proposed project would also cause indirect emissions from power generating facilities as a consequence of electrical power usage. The annual electrical demand of the project when fully developed is not expected to exceed 40 million kilowatt-hours. The present annual electrical demand of the site is estimated to be about 4 million kilowatt-hours. Thus, the net increase in electrical demand attributable to the project will be about 36 million kilowatt-hours per year. This power demand would most probably be

provided mainly by oil-fired generating facilities located on Oahu. However, with H-Power currently coming online and plans for a coal-fired power plant at Campbell Industrial Park in the near future, some of the project power could well come from sources burning other fuels. In order to meet the electrical power needs of the proposed project, power generating facilities would be required to burn more fuel and hence more air pollution would be emitted at these facilities. Given in Table 6 are estimates of the indirect air pollution emissions that would result from the project electrical demand assuming all power is provided by burning more fuel oil at Oahu's power plants. If power is supplied instead or in part by coal or solid waste burning facilities, emissions would likely be higher than the values given in the table.

5.3 Solid Waste Disposal

Solid waste generated by the project when fully completed is expected to amount to about 20 tons of refuse per day. Existing occupants of the site are estimated to generate about 5 tons per day; hence, a net increase of about 15 tons of refuse per day is anticipated. Most if not all of this refuse will likely be trucked away and either landfilled or burned at another location. If all refuse is landfilled, the only air pollution emissions associated with solid waste disposal would be due to exhaust fumes and fugitive dust from the trucks and heavy equipment used to place the refuse in the landfill. If, on the other hand, all or part of the refuse is burned at a municipal incinerator or other facility (such as H-Power), disposal of solid waste from the project would also result in the emissions of particulate, carbon monoxide and other contaminants from the incineration facility. Table 7 gives emission factors for municipal refuse incinerators (without controls) in terms of pounds of air pollution per ton of refuse material charged. Thus, uncontrolled air pollutant emission rates

in terms of pounds per day, for example, can be estimated by multiplying the emission factors given in the table by the number of tons per day of refuse that is burned. Particulate emissions from the H-Power facility will be much lower because emissions will be treated by a high-efficiency particulate control system. It should also be noted that if the project electrical demand derives all or in part from H-Power, this will help to offset emissions from burning oil or coal to produce power that might otherwise result.

6.0 SUMMARY OF IMPACTS AND MITIGATIVE CONSIDERATIONS

6.1 Impacts Summary

The major short-term air quality impact of the project will be project construction and the potential emission of significant quantities of fugitive dust. Uncontrolled fugitive dust emissions from construction activities are estimated to amount to about 1.2 tons per acre per month. During construction phases, emissions from engine exhausts (primarily consisting of carbon monoxide and nitrogen oxides) will also occur both from on-site construction equipment and from vehicles used by construction workers traveling to and from the project.

All long-term air quality impacts associated with the proposed project are indirect. The primary long-term air pollution impact from the project will arise from the increased motor vehicle traffic associated with the project. While the closure of Kamaile Street itself will redirect some traffic onto Makaloa and Rycroft Streets, a mixed-use development on the blocks mauka and makai of Kamaile Street would be a significant traffic generator regardless

of whether it spans Kamaile Street or not. Potential increased levels of carbon monoxide concentrations along roadways leading to and from the proposed development will be the primary concern, especially near the new intersection of Keeaumoku and Makaloa Streets. Based on mathematical modeling of projected vehicular traffic and atmospheric dispersion conditions, it is predicted that carbon monoxide concentrations in the vicinity of the project will unavoidably increase at some locations by the year 1995, but the predicted highest concentrations should remain within the national ambient air quality standards set by the U.S. Environmental Protection Agency even though present levels may exceed the 8-hour national standard on occasion. However, the more stringent State of Hawaii ambient air quality standards for carbon monoxide may be exceeded sometimes either with or without the project at several locations in the study area. The current state standard is so low, however, it is probably exceeded at nearly any intersection in the state that has even moderate traffic volumes. It is worth noting here that, although the national AAQS allow higher levels of carbon monoxide, the national standards were developed after extensive research with the objective of defining levels of air quality that would protect the public health with an adequate margin of safety.

Some long-term impacts could also potentially occur due to indirect emissions from power generating facilities supplying the project with electricity and from the burning of waste materials generated by the project. Quantitative estimates of these impacts were not made, but it appears likely that any impacts would be relatively small since emissions from supplying the project with electrical power and solid waste disposal service would be less than 1 percent of current Oahu emissions.

6.2 Mitigative Considerations

Strict compliance with State of Hawaii Air Pollution Control Regulations regarding establishment of a regular dust-watering program and covering of dirt-hauling trucks will be required to effectively mitigate fugitive dust emissions from construction activities. Twice daily watering is estimated to reduce dust emissions by up to 50 percent. Paving of parking areas and establishment of landscaping early in the construction schedule will also help to control dust. Increased vehicular emissions due to disruption of traffic by construction equipment and/or commuting construction workers can be alleviated by moving equipment and personnel to the site during off-peak traffic hours.

Options available to mitigate traffic-related air pollution are to improve roadways, reduce traffic or reduce individual vehicular emissions. Long-term projections of carbon monoxide emissions from vehicular traffic associated with the completed development are based on the traffic impact study findings. It has been assumed that roadway improvements will be implemented to move traffic efficiently through the project area and adjacent locations. Aside from improving roadways, air pollution impacts from vehicular emissions can be mitigated by reducing traffic through the use of mass transit and car pooling and/or by adjusting local school and business hours to begin and end during off peak times. Further, as this project will be completed a few years hence, it is conceivable that the efficiency of motor vehicle engines and/or emission control equipment will be improved or that vehicles will be developed which burn cleaner fuels before project completion. With regard to the latter, vehicles burning methanol or compressed natural gas or powered by electrical motors are some of the possibilities for technological development that are currently being contemplated. Lastly, even without technological breakthroughs,

it is also possible that at some point in the future the State may decide to adopt a motor vehicle inspection and maintenance program which would ensure that emission control devices are properly maintained, and thereby reduce emissions.

Indirect emissions from project electrical demand could be reduced somewhat by utilizing solar energy design features to the maximum extent possible. This might include installing solar water heaters, designing homes and office/retail space so that window positions maximize indoor light without unduly increasing indoor heat, and using landscaping where feasible to provide afternoon shade to cut down on the use of air conditioning. Use of wind power generating units by the utility instead of fuel-burning facilities would also lessen indirect emissions from project electrical demand.

Any air pollution impacts from burning solid waste from the project could be reduced substantially if the incinerator is fitted with pollution control equipment, i.e., electrostatic precipitators or fabric filters. Conservation and recycling programs could also reduce solid waste which would reduce any related air pollution emissions proportionately. Quite likely, solid waste from the project will processed by the H-Power garbage-to-energy facility which is fitted with fabric filters to control air pollution. Use of solid waste to generate power offsets emissions that would otherwise occur from fossil-fuel power plants.

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Table 1

SUMMARY OF STATE OF HAWAII AND NATIONAL
AMBIENT AIR QUALITY STANDARDS

Pollutant	Units	Averaging Time	Maximum Allowable Concentration		
			National Primary	National Secondary	State of Hawaii
Suspended Particulate Matter	ug/m^3	Annual	-	-	60[a]
		24 Hours	-	-	150[b]
Particulate Matter[c]	ug/m^3	Annual	50	50	-
		24 Hours	150[b]	150[b]	-
Sulfur Dioxide	ug/m^3	Annual	80	-	80
		24 Hours	365[b]	-	365[b]
		3 Hours	-	1300[b]	1300[b]
Nitrogen Dioxide	ug/m^3	Annual	100	100	70
Carbon Monoxide	mg/m^3	8 Hours	10[b]	-	5[b]
		1 Hour	40[b]	-	10[b]
Ozone	ug/m^3	1 Hour	235[b]	235[b]	100[b]
Lead	ug/m^3	Calendar Quarter	1.5	1.5	1.5

[a]Geometric mean

[b]Not to be exceeded more than once per year

[c]Particles less than or equal to 10 microns aerodynamic diameter

Table 2

AIR POLLUTION EMISSIONS INVENTORY FOR
CITY AND COUNTY OF HONOLULU, 1980

Source Category	Emissions (tons/year)				
	Particulate	Sulfur Oxides	Nitrogen Oxides	Carbon Monoxide	Hydrocarbons
Steam Electric Power Plants	2,092	36,736	12,455	1,065	184
Gas Utilities	14	0	199	0	0
Fuel Combustion in Agricultural Industry	1,088	579	358	0	31
Refinery Industry	622	7,096	2,149	266	2,584
Petroleum Storage	0	0	0	0	1,261
Metallurgical Industries	28	96	40	0	0
Mineral Products Industry	6,884	1,883	597	0	31
Municipal Incineration	42	145	2,029	0	184
Motor Vehicles	1,413	1,014	17,270	239,198	22,853
Construction, Farm and Industrial Vehicles	184	193	2,507	3,729	338
Aircraft	382	145	1,751	5,594	1,476
Vessels	42	386	438	533	123
Agricultural Field Burning	1,399	0	0	15,982	1,692
Total:	14,190	48,273	39,793	266,367	30,757

Source: State of Hawaii, Department of Health

Table 3

ANNUAL SUMMARY OF AIR QUALITY MEASUREMENTS FOR
MONITORING STATIONS NEAREST KEEAUMOKU MIXED-USE DEVELOPMENT

Parameter / Location	1985	1986	1987	1988
Sulfur Dioxide / Barbers Point				
No. of 24-Hr Samples	59	57	53	59
Range of 24-Hr Values (ug/m3)	10-48	<5-10	<5-13	<5-19
Average Daily Value (ug/m3)	24	<5	5	<5
No. of State AAQS Exceedances	0	0	0	0
Particulate / Downtown Honolulu				
No. of 24-Hr Samples	59	57	53	59
Range of 24-Hr Values (ug/m3)	10-48	11-61	14-59	12-45
Average Daily Value (ug/m3)	24	25	25	26
No. of State AAQS Exceedances	0	0	0	0
PM-10 / Liliha				
No. of 24-Hr Samples	10	51	42	53
Range of 24-Hr Values (ug/m3)	13-52	7-35	10-33	9-25
Average Daily Value (ug/m3)	23	18	17	17
No. of State AAQS Exceedances	NA	NA	NA	NA
Carbon Monoxide / Downtown Honolulu				
No. of Days of 1-Hr Samples	342	348	345	-
Range of Daily Max. 1-Hr Values (mg/m3)	0.0-10.4	0.2-13.5	0.3-11.1	0.4-7.4
Avg. Daily Maximum 1-Hr Value (mg/m3)	1.5	2.2	1.7	2.6
No. of State 1-Hr AAQS Exceedances	1	3	1	0
No. of Days of 8-Hr Samples	246	213	228	-
Range of Daily Max. 8-Hr Values (mg/m3)	0.1-4.4	0.3-4.7	0.3-3.9	-
Avg. Daily Maximum 8-Hr Value (mg/m3)	1.3	1.4	1.2	-
No. of State 8-Hr AAQS Exceedances	0	0	0	-
Ozone / Sand Island				
No. of Days of 1-Hr Samples	341	346	342	-
Range of Daily Max. 1-Hr Values (ug/m3)	8-198	10-88	4-84	-
Avg. Daily Maximum 1-hr Value (ug/m3)	43	39	38	-
No. of State AAQS Exceedances	3	0	0	-
Lead / Downtown Honolulu				
No. of 24-Hr Samples	58	57	57	-
Range of 24-Hr Values (ug/m3)	0.0-0.3	0.0-0.2	0.0-0.2	-
Average Quarterly Value (ug/m3)	0.2	0.0	0.0	-
No. of State AAQS Exceedances	0	0	0	-

Source: State of Hawaii Department of Health

Table 4

ESTIMATED WORST-CASE 1-HOUR CARBON MONOXIDE CONCENTRATIONS
ALONG ROADWAYS NEAR KEEAUMOKU MIXED-USE DEVELOPMENT
(milligrams per cubic meter)

Roadway Intersection	Year/Scenario 1990/ Present AM	PM	1995/ With Project AM	PM
Sheridan at Makaloa	3.7	6.3	6.8	9.4
Sheridan at Kamaile	3.8	5.5	5.3	9.4
Sheridan at Rycroft	11.0	13.2	9.7	12.9
Keeaumoku at Rycroft	14.8	16.6	14.4	15.3
Keeaumoku at Kanunu	6.3	7.1	12.5	17.0
Keeaumoku at Kamaile	4.7	9.4	-	-
Keeaumoku at Makaloa	16.4	22.7	17.8	18.2

Hawaii State AAQS: 10
National AAQS: 40

Table 5

ESTIMATED WORST-CASE 8-HOUR CARBON MONOXIDE CONCENTRATIONS
ALONG ROADWAYS NEAR KEEAUMOKU MIXED-USE DEVELOPMENT
(milligrams per cubic meter)

Roadway Intersection	Year/Scenario 1990/ Present	1995/ With Project
Sheridan at Makaloa	3.2	4.7
Sheridan at Kamaile	2.8	4.7
Sheridan at Rycroft	6.6	6.4
Keeaumoku at Rycroft	8.3	7.6
Keeaumoku at Kanunu	3.6	8.5
Keeaumoku at Kamaile	4.7	-
Keeaumoku at Makaloa	11.4	9.1

Hawaii State AAQS: 5
National AAQS: 10

Table 6

ESTIMATED NET INCREASE IN INDIRECT AIR POLLUTION EMISSIONS FROM KEEAUMOKU MIXED-USE DEVELOPMENT ELECTRICAL DEMAND[a]

Air Pollutant	Emission Rate (tons/year)
Particulate	<1
Sulfur Dioxide	90
Carbon Monoxide	6
Volatile Organics	<1
Nitrogen Oxides	25

[a]Based on U.S. EPA emission factors for industrial boilers [3]. Assumes net electrical demand of 36 million kw-hrs per year and low sulfur oil used to generate power.

Table 7

UNCONTROLLED AIR POLLUTION EMISSION FACTORS FOR MUNICIPAL REFUSE INCINERATORS (lb/ton)[a]

Air Pollutant	Emission Factor
Particulate	14[b]
Sulfur Oxides	2.5
Carbon Monoxide	35
Organics	1.5
Nitrogen Oxides	3

[a]Emission factors are given in terms of weight of material emitted per unit weight of refuse material charged.
[b]Assumes incinerator equipped with settling chamber and water spray.

Source: U.S. Environmental Protection Agency [3]